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UpS is a non-profit education organization dedicated to preserving native medicinal plants.

Re-Wilding the West
Ocotillo
Ginseng Expo
Osha
Chaga

Lewis & Clark’s Influence on Echinacea
Wu Wei Zi
The Plight of Peyote
Re-Wilding the West
by UpS Executive Director, Susan Leopold, PhD

The cover picture of this issue is that of the Vochol. I spotted this work of art on display this past summer at the Denver Airport, one stop on many on this VW’s global world tour. When I saw this work of art, I thought of two cultures—one that is grounded in a sense of place, that of the Huichol (the art work) and the cultural time of the 1960s (the iconic VW bug), when the call of those seeking a spiritual road trip often led them westward. It is this western direction that we all seek at some point in our lives often in the form of our own unique rite of passage or vision quest. Many of us come from no distinct cultural identity such as the Huichol culture represents, yet United Plant Savers is a group of individuals that has reconnected with plants due to some moment in their lives when a spark was ignited. As a collective group of plant people, we have all witnessed, in one way or another, the need for conservation of these native medicinal plants we have all come to cherish.

Re-Wilding the West is this year’s theme for our annual Journal. The idea of re-wilding is not that the western landscape needs to re-wild, it is that our knowledge of tending these wild places needs to grow if we are going to protect and conserve critical habitat. The Vochol represents many wonderful aspects of the theme Re-Wilding the West because it shows a shift in understanding and acceptance of the cultural significance of healing plants and, in this case that of peyote. Displayed for all to see in the Denver Airport, this iconic work of art was there to educate and open our hearts. For me it symbolized that we are in the midst of a paradigm shift that has a western breeze, bringing a sense of maturity to how we understand the relationship between humans and plants.

Commissioned by the Museum of Popular Art, the Vochol brings to life the remarkable work of two Huichol artisan families that spent over 9,000 hours covering this classic VW with more than two million glass beads. The beaded peyote stitching that wraps every inch of the VW represents the animals and plants that are of extreme importance to the Huichol culture of the Mexican lands where peyote is collected and consumed as a healing pilgrimage. Here in the U.S. the Native American Church is allowed to use peyote in ceremony protected under the religious freedom act, and it grows naturally in its native range in parts of Texas. Peyote is on the UpS “At-Risk” list, and concerns over its habitat and ability to regenerate after sustained harvesting are detailed in an article spearheaded by Martin Terry. His research looks to further understand the regeneration and long-term sustainable harvest of this amazing cactus, and in addition Terry has looked at the conservation needs of many other native cacti that thrive in this vastly unique and fragile landscape. Terry has started the Cactus Conservation Institute, to continue to advocate and conduct research to ensure these plants continue to have a home.

Kiva Rose submitted an herbal overview of ocotillo (Fouquieria splendens) using her poetic voice to place you in the ecosystem of Guadalupe’s torch, that of the Sonoran and Chihuahuan deserts of Arizona and New Mexico. Like the cactus habitat found in Texas, Kiva’s article highlights the unique plants that appear in these dry vast regions of the U.S. that are so different from our more common eastern forests.

This year’s Journal has many wonderful contributors who highlight important western medicinal plants on our “At-Risk” list. Phyllis Hogan and Jessa Fischer from the Arizona Ethnobotanical Research Association, wrote about the significance of osha (Ligusticum porteri) in the western landscape and herbal traditions. Kelly Kindscher contributed an article about how Lewis and Clark, on their historic journey west noted the importance of echinacea while crossing the magical prairie lands. It is also important to mention a project that was done as an online exhibit that highlights the life of Lucy Marks. Meriwether Lewis’s mother, who was a locally known healer in her day. She most certainly may be a clue to Lewis’s understanding of medicinal plants and his interest in...
learning from the Native people as he traveled west. He noted in his journal those plants that provided “rations and remedies” along his journey that were no doubt critical to Lewis and Clark’s success and survival. The online exhibition in regards to his mother’s life of healing is highlighted by the work of several artists who depict the medicinal plants Lucy would have likely used in her herbalism. To read about her story and explore the amazing artwork of native medicines see the website below.

I was able to travel out to Kansas this past year to check in on the UpS “At-Risk” tool that is being worked on by Kelly Kindsercher, PhD, Rachel Crafts from the University of Kansas and Lisa Castle, PhD from Southwestern Oklahoma State University. Together we will be presenting on the “At-Risk” tool at this year’s Ethnobiology Conference in Denton, TX. The tool will soon go into publication and on the UpS website. It can then be used to review native medicinals when concern is raised, such as in the article submitted by Stephen Byers about the medicinal mushroom chaga (*Inonotus obliquus*) and, of course, concern for other plants that are potentially at risk.

While out west I had the once in a lifetime opportunity to hear Wendell Berry speak at the Land Institute. A true elder in the understanding of sense of place, Wendell Berry in 2012 received the highest honor for a distinguished intellectual achievement, the invitation to deliver the Jefferson Lecture. His essay “It all turns on Affection”, written specifically for this event is a brilliant and poetic reflection of Wendell Berry’s quest to understand the environmental problems of today and to reflect on our future though the meaning of affection. “Knowledge without affection leads us astray. Affection leads by way of good work, to authentic hope.”, Wendell Berry’s insight into what drives us to do good work, the knowledge that is acquired in the process and the true affection that makes us hopeful are part of a thread that I feel connects us to the land. I see this thread of affection and connectivity when I travel looking at how plants influence the history of the landscape.

For me the element of three often appears, and while traveling and learning the history of the landscape this past year, a triangle connecting various places and species became apparent. This fall while traveling out to Hawaii for the UpS sponsored International Sandalwood Symposium, the element of three was the connection between ginseng, sandalwood and seals. In 1823 Charles Hammatt arrived in Honolulu from Boston with the task of securing sandalwood for the China trade. Americans were limited with what they could bring to China to trade for tea, silk, porcelain and other things. There were hopes that American ginseng would be a valuable export, but it had not reached that capacity, so when news hit Boston of the successful first sale of sandalwood in Canton, Charles Hammatt was sent to negotiate a deal with King Kamehameha II—a ship in exchange for sandalwood. When I left Hawaii, stopping over in Northern California, I encountered Fort Ross, the first state park established in 1906, named Ross short for Russia. This port was where all sort of pelts were collected, and then on the way to China these ships stopped in Hawaii to get supplies and trade for sandalwood. Not only was Hawaiian sandalwood being cut to near extinction, but the sea otters were facing a similar fate being killed for their pelts.

The Russian-American company that founded Fort Ross introduced a moratorium on seal and otter hunting, establishing the first marine-mammal conservation laws in the Pacific. So here we have three species: sandalwood, seals and ginseng, and what they all have continued on page 4
This past year we launched our first e-bulletin as a means to more frequently inform our members of important events and news and cut down on printing costs.

We highlight our efforts in regards to Outreach, Activism, and Community. After we sent out our first e-bulletin, we had a member, Kay Parent email us back this wonderful poem.

*a sense of inner joy with nature spirits & us you have captured the essence of UpS and that which is the basic foundation of Rosemary’s cellular structure here, here*

To join the list to receive the quarterly e-bulletin is free. You can sign up from the Homepage of our website.

You can also join our Facebook group page where lots of great information is shared by our growing network of people who care about plants.

Please help spread the word about United Plant Savers and encourage others to join and become members!

At its peak around the 1830s Fort Ross was a multicultural settlement with individuals from native Siberia, Alaska, Hawaii and the local people of the Kashaya Pomo cultures. Imagine the immense knowledge of such unique cultures engaged in exchange of plant use and skills. Those at Fort Ross were blessed with native flora and fauna that provided abundant food along with a perfect climate for the fruit orchards that the Russians established. The Pomo were especially well known for their basket making skills for which they used sedges, bulrush roots, redwood bark, willow and redbud branches in their weaving. So impressed by these baskets was the naturalist and artist Ilya Voznesenskii he brought them back with him, and they are now on display at the Peter the Great Museum in Russia.

The baskets are a perfect symbol for Wendell Berry’s ideas of affection as a method of engagement and solution, because the materials for the baskets are collected from the wild and lead to a deeper relationship with the natural resources, just as it is with the respectful harvesting of medicinal plants and the art of medicine making. Engagement and solution are well defined by Kat Anderson in her book *Tending the Wild*. The re-wilding movement is a grassroots collective of those who are sharing knowledge of how to use wild plants. In these chaotic times, as we look to live within moderation of our natural resources by being local in how we source our food and medicine, I thought about the Pomo collecting wild acorns in the fall and wild clover in the spring. A food/medicine source that is harvested from the wild speaks to the concept of health sovereignty, protecting our wild places for the native plants that have sustained cultures for generations. How we look to our wild areas in our local ecosystems, as well as how we learn and share knowledge about them will be a determining factor in how we manage and care for them with affection. The west is still an open, vast rolling mountainous wild that draws the human spirit to a state of blissful wanderlust. Enjoy this year’s *Journal* and be inspired towards engagement and affection as you read about some amazing western medicines.

(Endnotes)

1: http://vacholamap.blogspot.com  Official website of this amazing traveling art exhibit of Rosemary’s wild areas in our local ecosystems, as well as how we learn and share knowledge about them will be a determining factor in how we manage and care for them with affection. The west is still an open, vast rolling mountainous wild that draws the human spirit to a state of blissful wanderlust. Enjoy this year’s *Journal* and be inspired towards engagement and affection as you read about some amazing western medicines.

(Endnotes)

1: http://vacholamap.blogspot.com  Official website of this amazing traveling art exhibit of Doctress Lucy Marks
2: www.cactusconservation.org  was formed in 2004 is a source of published research in regards to peyote and other endangered plants of the desert.
3: www.azethnobotany.net  established in 1983 is a bioregional organization to promote environmental education and ethnobotanical awareness.
4: 4 www.monticello.org/library/exhibits/lucymarks/about/introduction.html  website of the online exhibit of Doctress Lucy Marks
Our Historical Panacea: Ginseng
Historical Use, Trade & Our Current Need for Preserving its Land, Culture & the Herb Itself
by Jennifer Heinzel

If the people of the United States were educated as to its use, our supply of ginseng would be consumed in our own country and it would be a hard blow to the medical profession.

~ Dr. Arthur Harding, ginseng expert, 1909; Bergner

We have two species of ginseng that are native to North America, American ginseng, Panax quinquefolius, and dwarf ginseng, Panax trifolius, the former being “At-Risk” due to loss of habitat and overharvest for trade. Some folk names, similar to its botanical ones, include sang, pannag, red berry, Root of Life (Hutchens), Ren-Shen (Foster), and Garentiquen, “five-leaved cure-all” by the Mohawk (Bergner). American ginseng is a perennial woodland-herb, which favors “north-or-east facing slopes in well-drained humus rich soil”, and is primarily identified by its “bright red two-seeded berries” (Foster), which ripen in late-July through October.

Ginseng was a highly-favored herb by Native Americans and used for fertility, to induce childbirth and help with feminine problems and headaches, by the Cherokee and Crow; as a general tonic and strengthening herb, similar to the Chinese’s use, by the Ojibwa, Menomonie, and Seneca; for sore eyes, earaches and body sores by the Potawatomi and Iroquois, and fresh root for healing wounds by the Creek; for croup and fever as a tea. Ginseng was also used by the Ojibwa, as a good luck charm, and by Meswaki women when mixed with, “gelatin, and snake-meat to lure a husband” (USDA).

Ginseng also became a tradable item and was so between Native Americans and Europeans from the 1700s–1800s, and Jesuit missionaries in Canada to the Chinese around 1718. By 1880, American ginseng had been listed in the U.S. Pharmacopeia for 40 years and was used by many an eclectic and homeopath (Bergner). Later, in 1932, Huron Smith stayed with an Ojibwe tribe and noticed their possibly-sustainable harvest of ginseng, “…root when the red berries were mature, but before they were ready to drop. Into the whole from whence the root came, they would thrust the fruiting top”, and in 3-5 years they’d return to find many more (USDA).

With American ginseng still being used for immunity and exhaustion, it has become one of the most popular herbs, along with echinacea, but I fear that if we don’t reverse this process of exporting, and thus overharvesting (see CITES treaty), that we’ll escalate past this: By 1989, “over, 2,350,510 pounds of cultivated ginseng…valued at $54,299,600, while over 203,440 lbs of wild root were exported, valued at... $18,867,000”.

We must preserve this herb for fear of losing a unique indigenous and ancient medicine, and with that, part of our North American culture, be it Native American, or natural medicine practitioners.

Medicinal plants are even disappearing from the sacred groves of Asia, ancient forest preserves that are protected habitats for many plants...When wild populations disappear, genetic variation is lost, and extinction to the species is a greater likelihood... but for many medicinal plants, cultivation and seed-saving may be the only pathway to their...survival.

~ Sumner

For information regarding growing, preserving and using alternatives to American ginseng:
http://dnr.wi.gov/topic/endangeredresources/ginseng.html
www.cites.org/
Planting the Future, edited by Rosemary Gladstar
The Earthwise Herbal by Matthew Wood

Works Cited

Jennifer has an herbal blog www.motherearthliving.com, including one recently published on Echinacea in December, and her business at www.etsy.com/shop/ThymesAncientRemedy
A vibrant patch of arnica, with flowers radiant in the summer sun, is a lovely focal point of the apothecary garden. In herbal medicine, arnica is among the most useful of remedies. The tincture or oil infusion of the dried flowers, applied topically, is an effective treatment for blunt traumatic injury, strains and sprains. The herb is an effective discutient, increasing circulation and helping dispel morbid matter – swelling goes down, bruises dissipate. Since antiquity, arnica (Arnica spp.) has been combined with calendula (Calendula officinalis) and St. John’s wort (Hypericum perforatum), a dynamic threesome that assuages pain, fights infection, promotes nerve reparation and speeds healing, a formula that proves useful to this day.

Arnica montana (mountain arnica), the endemic European species, is considered official. However, other species of arnica (there are 28 in North America) are used by local herbalists and appear to be medicinally interchangeable with the official species.

Arnica chamissonis (meadow arnica) enjoys a wide distribution in North America and Europe and is listed in the German Commission E Monograph as a viable substitute for A. montana in herbal medicine. Finding substitutes for the official species is a worthy goal, since populations of A. montana are declining over much of its range.

Collection of flowers for medicinal purposes is illegal in France. The plant is classed as “vulnerable” in Bosnia-Herzegovina, Croatia, Germany, Lithuania and Slovenia. A. montana is variously protected in Czech Republic, France, Italy, and the Ukraine. The plant is listed as “critically endangered” in Luxembourg, “threatened” in Sweden, and “extinct” in Hungary. Collection of flowers and roots for medicinal purposes, combined with encroaching agriculture and urbanization have contributed to depopulation of the wild stands, creating shortages of the herb in commerce. Under the circumstances, it makes sense to grow arnica and arnica analogs, and this is precisely why United Plant Savers has chosen arnica for the spring seed giveaway.

We’re supplying 100% 100% certified organic seed of Arnica montana, Arnica chamissonis, and the “arnica analogs”, Helichrysum italicum and Calendula officinalis. In this seed set, there is certainly a little bit of something for every gardener. Those living at altitude will do well to concentrate on the A. montana, which makes large flowers that are easy to pick and make lots of medicine. Those living at lower altitudes might have better luck with A. chamissonis, which is a bit easier to grow. Given a suitable soil and sun exposure, this plant will thrive even at sea level. Helichrysum italicum (curry plant) is native to the Mediterranean and grows well in hot, dry climates with mild, wet winters. The herb is anti-inflammatory, fungicidal and astringent. The yellow flowers of Helichrysum are pretty and aromatic, very good in dried arrangements, and can be distilled, tinctured or infused in oil to make the medicine. Everybody knows calendula, and we’re offering our nicest large-flowered orange calendula, the easiest of all herbs to grow, and one of the finest medicinal herbs to know.

Arnica seeds respond well to standard flower seed propagation methods. Prepare a light seeding mix that is free of lime and contains sand, forest loam and peat moss (or coir). Press the seeds into the surface of the soil or barely cover and tamp, and then keep the flat warm, in the light, and evenly moist until germination, which occurs in 1 to 3 weeks. The seedlings will be quite small and slow growing at first. Once they are large enough to handle, individuate into pots and tend them for up to a year before transplanting out to the garden. Once a good patch is established, it is fairly easy to produce more plants by means of division. Dig a rhizome, pot it up, and aerial parts will soon appear.
Plant the future with this year’s selection of medicinal plant seeds. This year’s Spring seed giveaway consists of one packet each of:

- **mountain arnica** (*Arnica montana*)
- **meadow arnica** (*Arnica chamissonis*)
- **curry plant** (*Helichrysum italicum*)
- **calendula** (*Calendula officinalis*)

Seeds are all grown by Horizon Herbs. Planting instructions are included with your order.

To order seeds please send your name, address, and a check or money order for $7.50 (to cover shipping and handling) by April 15, 2013 to:

**UpS Spring Seed Giveaway**

P O Box 400

East Barre, VT 05649

Current members only; one order per member. We’ll send the orders in April, but you will still be able to order while supplies last.

**Please note:** We have raised our price for the seed giveaway due to the cost of shipping & handling, but this is still a great membership benefit at this price.

Arnica enjoys a full sun exposure and loose, moist to mesic, acidic soils. The plant is intolerant of lime. Because it is rhizomatous (reproducing by way of underground creepers), it quickly populates a raised bed with a dense, monotypic stand. We have found that amending the native soil with compost, coir, peat, and sand, making a very loose mix that can easily be penetrated by the runners, helps promote the spread of arnica and will result in a good yield of medicinal flowers in the fall of the first year, in the summer of the second year and for years thereafter. Harvest the flowers in early flowering stage and dry on screens in a warm, dark and well ventilated place. Dry until crispy. It is a good idea to use the flowers soon after drying, as they tend to get buggy in storage.

Arnica is apomictic, meaning that seed formation is initiated asexually by spontaneous division of the gamete prior to the blossoming phase. The plant does not require pollination in order to make viable seed, and every seed will produce a plant identical to the mother plant. For the purpose of seed saving, this means that there is no need to collect seed from a minimum number of individuals, and there is no concern about hybridization with other species – the seeds you harvest will remain true and strong whether harvested from one seed head or a thousand. So feel free to grow your arnica and save your own seed – nature needs your help!

 Arnica chamissonis ©Richo Cech

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...with this great new short-sleeved Ginseng T-shirt!

- **100% organic cotton**
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**If you Listen, They Will Teach You**

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- Fitted women’s T with cap sleeve & scooped neckline. Gold & green art on a natural background. $24 (sizes run small!)

**All Shirt Sizes:** S, M, L, XL

Shipping included

Please visit the website [www.unitedplantsavers.org](http://www.unitedplantsavers.org) to order online.
A Candle in the Desert: the Healing Heart of Ocotillo

The desert has a raw poetry that peels back the visitor’s skin, exposing shimmering bone and raw sinew until finally, there is nothing else. Veins of turquoise and chrysocolla thread through stone and stun me into silence. My hands still smell like Larrea resin and red clay, while the mesas, buttes, and crumbling redrock spires surround me and remind me what home is.

This place where the mountains and deserts of Arizona and New Mexico meet, where the ocotillo flowers stand scarlet against the rising moon and osha coils its roots down into the stony soil of the Mogollon Rim, is a landscape fallen from a storybook or carved from an ancient myth. While many use the word “barren” when describing or imagining the American Southwest, nothing could be further from the truth. The deserts and forests of southeastern Arizona and southwestern New Mexico are actually some of the most biodiverse landscapes in North America.

Even in the Sonoran Desert, set ablaze with wildflowers after a rain, there are few sights as striking as the ocotillo (Fouquieria splendens) in flower. Its scarlet blossoms burst from twelve foot wands adorned with multi-colored thorns and small waxy leaves. Growing at the base of mountains jutting out of the wild deserts of the American Southwest and Mexico, La Guadalupe’s Torch is a sign of healing and heart in even the most extreme of landscapes.

The common name of ocotillo stems from the Náhuatl word ocotl, meaning “torch”, an apt name considering its brilliant flowers and towering stature. Whenever I see this plant in flower, I think of Guadalupe striding through the desert, her torch held high to show the way to the profound medicine found at the heart of this land. Prickly as it may be, the healing power of the Southwest is intense and undeniable.

Ocotillo is found in the desert, canyon, and foothill regions, generally below 5,000 feet in the deserts of the U.S., but occasionally up to 9,500 feet. I have personally experienced the plant primarily in the Sonoran and Chihuahuan deserts of Arizona and New Mexico and speak from my experience rooted in those ecosystems. Appearing to be a haphazard array of thorny, crooked sticks for much of the year, ocotillo only unfurls its leaves once the rains come. These flame flowered plants are amazingly well adapted to their arid surroundings, and leaf growth can be initiated a scant 24 hours after a rainfall. Their leaves are semi-succulent and waxy. Their sour-sweet flavor and slightly bitter aftertaste are so intriguing, that when I’m processing the plant’s branches for medicine, I often get distracted eating them. A number of birds and insects, including several species of hummingbird, are attracted to the sweet nectar of Fouquieria’s blossoms.

Blossom, Root & Thorn: Plant Parts Used

While the bark seems to be the only part of the plant in common use in mainstream American herbalism by Anglos, all parts of the plant have been utilized traditionally and have value as medicine, fiber, and food. In fact, when I have been taught about this plant by local New Mexico and Arizona Hispanics, they have almost invariably referenced the flower rather than the bark. I have also known several Apache grandmothers to prefer the root over any other part, which speaks both to the versatility of the plant and the diversity of cultural traditions and habits. I work with all parts of the plant, including the curved thorn, preferring to integrate all possible facets of the plant and its medicine into my healing work.

Coughs & Colds

The flowers as well as the bark have long been used to treat spasmodic coughs, and while their action is fairly mild, it is consistent and widely applicable. I frequently use an elixir made of flowers, leaf, and bark extracted into honey and alcohol to treat the dry, hacking coughs common in my mountain village each winter. Since the plant is also a lymphatic decongestant, it’s especially helpful in seasonal colds accompanied by persistent, spasmodic cough and hypoimmunity indicated by swollen glands, chronic sore throat, and the tendency to catch every bug that comes around.
**Pelvic congestion**
The bark is best known as a pelvic decongestant, and this indeed is where it tends to shine in clinical practice. Southwest herbalist Michael Moore said of ocotillo:

I have also found it useful in some cases of what is commonly diagnosed as interstitial cystitis, a frequent urge to urinate and accompanying discomfort, but with little actual fluid in the bladder. In the cases where ocotillo will be most effective, it will be accompanied by at least some of the typical signs of pelvic congestion, including varicosities, constipation with hemorrhoids, a feeling of fullness in the abdomen and/or groin, and an inability to efficiently digest fats. Along these same lines, local Hispanics sometimes recommend the use of ocotillo bark in the treatment of bladder infections. It can certainly help alleviate the symptom of feeling unable to urinate even when the bladder is full. Ocotillo frequently finds its way into my formulae for prostatitis and similar conditions, and I find that it tends to increase the effectiveness of other commonly recommended herbs for this ailment, especially nettle root and saw palmetto. Again, look for the signs of pelvic congestion common to benign prostate inflammation and enlargement, including a feeling of fullness in the groin and difficulty urinating.

> It is useful for those symptoms that arise from pelvic fluid congestion, both lymphatic and venous.... Most hemorrhoids are helped by Ocotillo, as are cervical varicosities and benign prostate enlargements.

Alder bark (*Alnus* spp.), another lymphatic native to the Southwest (and beyond), can also combine well with ocotillo for this purpose.

**Las Manos de la Guadalupe: Wound care & External Use**
The leaves make an excellent poultice for wounds, abrasions, bruises, and contusions by reducing inflammation and pain, while speeding healing and lessening the chance of infection where there is broken skin. The bark and flowers can also be used in the same way, and I make a salve that includes all three parts of the plant for general first aid uses, often in combination with chaparral (*Larrea tridentata*), another common plant of the desert southwest.

**Ecological Status, cultivation, & Harvesting Ethics**
This plant is usually abundant in the areas to which it is native and is easily propagated by cutting, but is protected in some states, so take care to know local regulations when harvesting. It’s often best to harvest from private land, or where it’s being dug up anyway for development purposes. If you plan to have a long term alliance with this herb, you may wish to cultivate it from a harvested branch. This is also a great way to be sure the plant continues to thrive and proliferate.

**Preparations**
The medicine of ocotillo bark tends to be best extracted via alcohol, although decoctions are a traditional preparation throughout the American Southwest. The flowers may be prepared as an alcohol tincture, an infused honey, an elixir (alcohol and honey), or as a tart and tasty beverage tea.

**Consideration & contraindications**
There is no known toxicity in reasonable amounts as a food or medicine, but due to its blood moving nature, this is not an appropriate herb during pregnancy.

**Resources & References**
- Austin, D. Baboquivari Mountain Plants: Identification, Ecology, and Ethnobotany.
- Garcia, C. Healing with Medicinal Plants of the West.
- Hodgson, W. C. Food Plants of the Sonoran Desert.
- Moore, M. Los Remedios.
- Moore, M. Medicinal Plants of the Desert & Canyon West.
Limitations to Natural Production of Peyote: 
Lophophora williamsii

by Martin Terry, Teodoso Herrera, Keeper Trout, Bennie Williams and Norma Fowler

This article was recently published in 2012 in the *Journal of the Botanical Research Institute of Texas*. The full article is available on the [www.cactus-conservation.org](http://www.cactus-conservation.org) website. The article is shortened for our *Journal* and excludes the methods section and some aspects of the data and discussion. The website of the Cactus Conservation Institute is an amazing source of information, and we would like to applaud the efforts of the organization to protect native plants of such a unique and fragile environment. This study is monumental because it clearly demonstrated over a four year period that peyote is a classic case of over harvesting of a wild medicinal plant and in this case a cactus. Peyote can be easily cultivated, and our hope is that this study will help encourage a shift from wild sourced peyote to cultivated, but this will take action from regulatory agencies to clarify the rules and regulations in the handling of this sacred medicine.

Effects of Repeated Harvesting at 2-Year Intervals in a South Texas Population

Abstract

In 2008 we began a long-term study of the effects of harvesting on a wild population of the cactus *Lophophora williamsii* (peyote), including harvesting treatments similar to those used to harvest it for legally protected religious use by members of the Native American Church. Here we assess the effects of harvesting in three different treatments: (1) plants that were harvested once, (2) plants that were harvested every two years (typical of commercial harvesting rates), and (3) control plants that were never harvested. After four years, the survival rate was significantly greater in the unharvested control plants (94%) than in the harvested plants (73%). Average harvested mass of fresh tissue per plant decreased significantly (by 44%) between the first and second harvests, and then further decreased significantly (by 32%) between the second and third harvests. The average number of crowns per plant, which increased after the first harvest, decreased after the second harvest. Estimated total volume of the above-ground crown(s) of each plant, which was closely related to harvested plant mass, was used to compare growth rates between treatments. The average growth rate of the multiple-harvest plants was significantly lower than the average growth rates of plants in the other two treatments. Growth rates in the control and single-harvest treatments did not differ significantly in 2012, but because the single-harvest plants were so much smaller than the control plants in 2010, they remained smaller than the control plants in 2012. The annual number of crowns harvested and sold commercially as “buttons” by licensed peyote distributors continued its slow decrease in 2011, while the price per unit continued to rise. These trends and the results of this study all indicate that present rates of peyote harvest are unsustainable.

Introduction

*Lophophora williamsii* (Lem. ex Salm-Dyck) J.M. Coult. (Cactaceae), known as peyote both in Spanish and in English, is a small cactus (rarely exceeding 10 cm in diameter) of northeastern Mexico and adjacent border areas of Texas. The aerial crowns of plants are approximately hemispherical in shape. Some plants are *caespitose*; i.e., they have multiple crowns arising from a single rootstock. The literature on the biology of this plant up to the mid-1990s is summarized by Anderson (1996), who first suggested that the species might be endangered by overharvesting (Anderson 1995).

There is active commercial trade in the harvested crowns of peyote, which are collected and sold by licensed distributors to the Native American Church (NAC) for religious use as protected by U.S. law. There is substantial concern that the rate of harvest of peyote from wild populations is not sustainable. Anecdotal reports by members of the NAC include descriptions of the decline or decimation of natural populations and a decrease in both the availability and the quality of peyote being offered for sale in the regulated peyote market (TH, pers. obs.). A number of papers in the scientific literature have described the decline of peyote in its native habitat, apparently due to overharvesting (Anderson 1995; Trout 1999; Terry & Mauseth 2006; Powell et al. 2008; Terry 2008 a,b,c; Terry et al. 2011). Despite such reports involving both Texas and Mexican populations, the species is not (yet) considered in danger of extinction (NatureServe 2012; Fitz Maurice and Fitz Maurice 2009), except in Texas, where NatureServe determined it to be in the S4 (imperiled) category. The work of Terry et al. (2011) was the first experimental investigation of the effects of harvesting on peyote plants *in situ*. In that paper we reported the effects that were detectable two years after the initial harvest. The present report focuses on effects detectable four years after the initial harvest.

Results

Survival. – Of the 100 plants of the initial (2008) census, 4 (2 control, 2 harvested) were dug up by feral hogs and were therefore dropped from all further analyses, leaving 96 plants. Of these 96 plants, 6 (1 control, 5 harvested) died before the second (2010) census. Ninety plants were still alive in 2010 (census 2): 47 control plants and 43 plants that had been harvested in 2008. Of these 43 surviving plants that had experienced one harvest, 23 were assigned to
of the single-harvest treatment and 20 were assigned to the multiple-harvest treatment.

Of the 47 control plants alive in 2010, 45 were still alive at census 3 in 2012. Nineteen of the 23 single-harvest plants (83%) and 16 of the 20 multiple-harvest plants (80%) were still alive in 2012. By 2012 the survival rate of control plants from census 1 through census 3 was significantly higher than the survival rate of harvested plants over the same interval (94% [45/48] versus 73% [35/48], \( x^2 = 8.65, P = .0033; \) Fig. 1).

Regional harvesting trends in South Texas. Annual peyote sales data covering the years 1986-2011 (Texas Department of Public Safety, unpublished data) are presented in Fig. 5. Although these figures do not include all sales of peyote (Terry et al. 2011), it is reasonable to assume that the number of buttons sold in the regulated trade is positively correlated with the total number of buttons harvested in the region of South Texas known as “the Peyote Gardens.” In 2011, the DPS-regulated peyote sales totaled slightly over 1.4 million buttons, continuing the generally downward trend which such sales have followed since 1997. It is noteworthy that prior to the current decline there was a decrease in numbers of buttons sold during the late 1980s that appears to have corresponded to the historical decline in the available harvest of mature plants, followed in the early to mid-1990s by a marked increase in numbers of buttons sold when the proliferation of small regrowth buttons began to be harvested to meet the needs of the NAC. Anecdotal accounts from NAC meetings during the period of temporary increase in numbers of buttons noted the prevalence of fresh buttons as small as dimes (TH & KT, pers. obs.). The number of buttons sold in 2011 was the lowest for any year in the last quarter of a century. As the annual number of buttons sold has declined steadily since 1997, the price has shown a marked increase; the price per button is roughly equal to total sales (in U.S. dollars) divided by the number of buttons sold.

**Discussion**

Peyote shows many of the hallmarks of a classic case of unsustainably harvesting of a wild resource. First, the decline in total harvest combined with an increase in price/unit is characteristic of harvested wild species (cf. Fig. 1 in Schippman et al. 2002). A declining number of wild plants is a likely explanation for the increase in unit price because a declining population causes decreases in “catch” per unit of harvesting effort, so that increasing the harvest is financially unrewarding even if there are still individuals to be harvested (Hilborn and Walters 1992; Thurstan et al. 2010). Second, there are anecdotal reports of declining unit (button) size (TH, pers. obs.). Declining body size is another classic indicator of overharvesting (Stergiou 2002; Berkeley et al. 2004; Genner et al. 2010). Third, there are anecdotal reports of declining quality of the harvested buttons (TH, pers. obs.). Fourth, the harvesting frequency (every other year) shown to be unsustainable by the present study is typical. Finally, our results may underestimate impacts of harvesting, as our harvests may have been less damaging to individual plants than a commercial harvest, due to the care taken in the harvesting of this study. As far as we are aware, this study is the first well-documented case of overharvesting of a cactus species (but see Jiménez-Sierra and Eguiarte 2010, in which browsing was also involved). It is also one of a limited number of well-documented cases of overharvesting of non-timber plant species in general. Most well-documented cases of overharvesting of wild resources involve marine and freshwater species (Jackson et al. 2001; Allen et al. 2005; Genner et al. 2010). There are detailed reports of overharvesting of many tree species (e.g., Schwartz et al. 2002; Schulze et al. 2008). There are some detailed reports of overharvesting of herbaceous plant species, of which ginseng (*Panax quinquefolius*) is perhaps the best documented (Nantel et al. 1996; McGraw 2001; Case et al. 2007; McGraw et al. 2010). However, many hundreds (at least) of other plant species are threatened by overharvesting, especially plant species harvested for medicinal uses (Schippman et al. 2002), for lumber (Oldfield et al. 1998), or for collectors (Oldfield 1997).
the regulatory panorama

At the moment there are only two major interested parties with any standing in the discussion about the fate of peyote in its natural habitat: (1) the Native American Church (NAC), whose right to consume peyote for religious purposes is protected by legislation such as the American Indian Religious Freedom Act (AIRFA), and (2) the Drug Enforcement Administration (DEA), which is obligated by the Controlled Substances Act to regulate the use and distribution of peyote by and for the NAC, and to prevent the diversion of peyote to non-persons. Neither of these parties is speaking very audibly about regulatory solutions to mitigate the deteriorating state of the wild peyote populations. This is unfortunate, as the problem has a feasible solution, namely the regulated cultivation of peyote by and for the NAC, which would reduce authorized persons. Neither of these parties is speaking very audibly about regulatory solutions to mitigate the deteriorating state of the wild peyote populations. This is unfortunate, as the problem has a feasible solution, namely the regulated cultivation of peyote by and for the NAC, which would reduce the harvesting pressure on the wild populations (as in, e.g., Kay et al. 2011). Furthermore, this solution is technically within reach (Chandra et al. 2006) and culturally acceptable (TH, pers. obs.). The barrier to bringing this solution to fruition is essentially a regulatory one. Cultivation of *L. williamsii* is anticipated in the American Indian Religious Freedom Act (as amended 1994), which "...does not prohibit such reasonable regulation and registration by the Drug Enforcement Administration of those persons who cultivate...peyote...."

But to date no interested party (e.g., the NAC of North America) has petitioned the DEA to promulgate any such “reasonable regulation” spelling out the details for such registration. Pending such action, cultivation of peyote, though not illegal, lacks the needed regulatory framework to provide legal certainty and protection for NAC members who would prefer to produce their own sacrament by cultivation rather than continuing to overharvest the wild populations. Until such time as the NAC and the DEA negotiate specific regulations to govern cultivation, the harvesting pressure on the wild populations can only increase.

But let us assume that the current level of unsustainable harvesting pressure is maintained, and that populations of peyote continue to produce steadily decreasing yields, as demonstrated in this study. Under the current system – which can accurately be described as “management by extirpation” – at some point the conservation crisis will become so critical that the U.S. Fish and Wildlife Service who will be obligated to the terms of the Endangered Species Act to evaluate the conservation status of the species *Lophophora williamsii*. At that point the regulatory situation will become substantially more complex. If a regulatory stalemate then ensues the NAC’s options may broaden (or narrow) to include the Supreme Court and/or Congress as sources of relief.

REFERENCES


Terry, M. 2008e. Stalking the wild *Lophophora*. Part 5.
U.S. Department of Agriculture. 2012. USDA Field Office Climate Data for WETS Station at Hebbronville Texas.

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**Mt. Rose River Project**

by Jacqueline Logan

Everything you spray, grow, flush, discard, or dispose of enters your watershed, and this is a major reason why a large percentage of our freshwater systems, including rivers, streams, and lakes are polluted. All of us at Mountain Rose Herbs realized that immediate recovery actions were necessary to further protect and enhance our watersheds, and this is why we created the Mountain Rose River Project, which is a company run grassroots action campaign that is entirely coordinated and funded by Mountain Rose Herbs. Each year we manage 6-Restoration projects that are fully staffed by paid employees, and these employees are compensated for their work by our Paid Time for Community Involvement Program. Our projects focus exclusively on riparian ecosystems, stream health, and fish habitat, and we work with several organizations and agencies to achieve our goals of total watershed protection. The Mountain Rose River Project conducts the following:

- Planting native trees and shrubs along eroded or compromised river banks. This work is done in partnership with any one of our local watershed councils or land trusts.
- We aggressively pursue hand removal (never chemicals) of invasive species along our river corridors and we currently target English Ivy, Scotch Broom, Japanese Knotweed, and Himalayan Blackberry.
- Each year we extract numerous water samples from segments of the Willamette and McKenzie rivers. These water samples are tested for impurities and pollutants, and if excessive quantities are found, we alert the appropriate agency for immediate action and recovery.
- We currently remove an average of 500-800 yards of garbage and waste from our waterways.

We are currently enrolled in the ODFW Salmon/Trout Enhancement Program, and we will sometimes assist this agency with fish counts, macroinvertebrate populations, and river conditions.

We have formally adopted a riverside trail, which spans about 4 miles. This trail is known as the “Anglers Trail” and is located between Elijah Bristow State Park and Dexter State Park. We maintain this stretch by removing invasives, planting natives, clearing the waterway of garbage, and upkeep of the riverside trail.

We have formally adopted 2 segments of the Willamette River through the Oregon state program called SOLV. The segments we adopted include the Upper Middle Fork of the Willamette between Lookoutpoint Point and Hills Creek and the section from Elijah Bristow State Park to Dexter State Park.

We have recently finished the enhancement of our industrial campus bio-swale. The headquarters for Mountain Rose Herbs sits on 2 acres of industrial land, and in order for us to prevent all of our wastewater and storm water from entering our public waters, we need the bio-swale to retain it for further filtering and purification. This alone prevents countless contaminants from entering our river systems.

Jaqueline Logan is Media and Public Relations Coordinator for Mountain Rose Herbs. For more information, please visit: www.mountainroseherbs.com/riverproject/
Lewis and Clark are known to have made the first US expedition to explore what would become the western United States. They should also be known in herbal circles as the first US citizens to ship echinacea (Echinacea spp.) roots and seeds back East from the Great Plains. For the expedition, they were looking for a water route to the Pacific Ocean, knowing they had to cross the Rocky Mountains, and also looking for valuable resources. One resource that they learned about from the Native Americans was the use of echinacea.

In May, 1804 they left from St. Louis and traveled up the Missouri River where they visited the Arikara village (that was located in northern South Dakota) and stayed near the Mandan village (in central North Dakota today) during the following winter. Although Lewis and Clark are viewed as some of the first European-heritage travelers up the river, the Arikara villages and people had already been decimated by smallpox (a European disease). Also, when they were at the Mandan village, an English trader of the North West Company arrived from their Assinboine River outpost in Canada (at present day Brandon, Manitoba). He visited with William Clark and told him on December 16, 1804 about Echinacea angustifolia root as “the cure of a Mad Dog.” Clark wrote in his journal (in quaint language) on February 28, 1805 that in addition to its use for rabies, it also was used for snake bite and other ailments.

Meriwether Lewis was the first person to ship echinacea roots back East from the Great Plains. From their Mandan village camp, he discussed echinacea in his note that accompanied a botanical specimen (which was unfortunately lost), a “parcel of its roots, and seeds that were sent to President Thomas Jefferson. He commented in these notes written on April 3, 1805, that an Arikara chief, who had accompanied them from his village up the river to the Mandan village, had told him that the root “pounded in either green or dried state makes an excellent poltice for swellings or soar throat.”

The echinacea was shipped on one of their small boats, along with other unique wonders of great interest, including many other plant specimens, a live caged prairie chicken, four magpie, and a prairie dog (one magpie and a prairie dog survived the travels and were received by Thomas Jefferson). We don’t know what happened to the echinacea seeds or roots, but Lewis and Clark’s interest in echinacea is noteworthy, especially their effort to document the value of this herbal product to both Native Americans and for future herbal product users.

If you want to read more, Lewis and Clark’s journals are now on line (at the U of Nebraska Press, see: http://lewisandclarkjournals.unl.edu/index.html) and are searchable by key words like echinacea. Also, Thomas Jefferson’s botanical interests were significant and were related to the Lewis and Clark expedition specifically; see: www.monticello.org/site/house-and-gardens/public-treasures-thomas-jefferson-and-garden-plants-lewis-and-clark and www.monticello.org/library/exhibits/lucymarks/medical/periodpractices.html

Kelly Kindscher is well-known for his study of prairie plants. He is the author of two books: Edible Wild Plants of the Prairie (1987) and Medicinal Wild Plants of the Prairie (1992).

Kelly is a former UpS board member, currently working on a UpS-funded “At-Risk” project (which members will hear about soon, with an article in the Journal).
Considering the Commercial Future of Chaga: *Inonotus obliquus*
by Steve Byers

My sustainability alarm went off a few months ago when my mother gifted me a bag of “Chaga Chai.” The label touted its many medicinal benefits, such as its very powerful anti-tumor, anti-oxidant, and antiviral qualities. It’s true—tradition and modern research prove chaga’s numerous medicinal benefits. Yet, I wondered about the fate of wild harvested chaga populations and the growing market for it in America. After a quick browse of the internet, I discovered other products are being marketed, such as chaga skin creams, encapsulated chaga powder (which is likely to pass through undigested since it needs to be broken down either with hot water or alcohol), and a popular mushroom website extolling chaga as a successful replacement for hops in a homemade beer recipe. Are wild chaga populations able to keep up with this popularity and commercialized demand?

Traditionally, chaga has been used for centuries in Russia and Eastern Europe as an important remedy for cancer, diabetes, TB, arthritis, and heart disease (Winston, 2011). It wasn’t until the 1950s in Russia that chaga became commercially available after receiving approval as an anti-cancer drug called Befungin for treatment of breast, lung, cervical and stomach cancers (Hobbs, 2003). Now that it is gaining global attention, especially in undeveloped markets like North America, it could be prudent to begin monitoring the commercial harvest of wild chaga. It also seems essential that we not only find ways to cultivate this valuable resource, but also better understand its reproductive cycle and how that is affected when we remove the chaga sclerotium (the crusty, black, and hardened woody mushroom that is a non-sporulating fruiting body) from the tree. Mushroom expert, Paul Stamets recently posted a Youtube video stating, “What scientists do not know is whether or not the removal of Chaga will harm the formation of the spore producing crust. We do know that wild harvesting of Chaga is radically reducing this species’ populations. And since we can grow mycelium - sustainably - while retaining its beneficia properties, please refrain from harvesting wild chaga for commercial purposes.”

A new study has explored the chemical similarities and in-vitro anti-tumor effects of the wild harvested chaga sclerotium, cultivated chaga sclerotium, and the cultivated fruiting body. The fruiting body is the spore reproducing structure found growing briefly on a dead tree or the ground nearby where the sclerotium grew. The cultivated sclerotium extract was found to have the greatest anti-tumor effect, and both the cultivated sclerotium and cultivated fruiting body had the same principal compounds (lanosterol, inotodiol, and ergosterol) as the wild sclerotium (Yong et al, 2011). The study concluded that these cultivated forms could serve as an ideal commercial alternative to the wild chaga. Human clinical trials would also be essential to further affirm the efficacy of these new forms in promoting a shift in harvest practices amongst the greater commercial market.

I interviewed Jerry Angelini, the National Science Educator for Paul Stamets’ company, Host Defense, and asked about the risk of the commercial over-harvesting of chaga in the wild. He explained that the chaga sclerotium isn’t like a plume of maitake; it takes 7-20 years to mature. “We are always wanting to think that species are abundant, and we can harvest as much as we want to. That has gotten us into trouble in the past,” said Angelini. Chaga is not an inexhaustible resource, but it can be cultivated with success. When I asked Angelini if he knew of anyone selling chaga spores, he said, “Spawn plugs are being discussed but since no one has been asking for them, no one is supplying them commercially yet.”

For the time being, it seems that an occasionally and ethically harvested chaga sclerotium for personal use is sustainable. But to meet the growing global commercial demand, it is worth considering our cultivation options.

RESOURCES:
Angelini, J. Phone Interview on 11/27/12 about “Chaga and Sustainable Harvest.”

Steve Byers is an herbalist currently living in East Montpelier, Vermont with his wife and daughter. He is a student at the Vermont Center for Integrative Herbalism.
Statement of Purpose

For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UpS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

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**"At-Risk"**

**AMERICAN GINSENG**
Panax quinquefolius

**BLACK COHOSH**
Actaea (Cimicifuga) racemosa

**BLOODROOT**
Sanguinaria canadensis

**BLUE COHOSH**
Caulophyllum thalictroides

**ECHINACEA**
Echinacea spp.

**EYEBRIGHT**
Euphrasia spp.

**FALSE UNICORN ROOT**
Chamaelirium luteum

**GOLDENSEAL**
Hydrastis canadensis

**LADY’S SLIPPER ORCHID**
Cypripedium spp.

**LOMATIUM**
Lomatium dissectum

**OSHA**
Ligusticum porteri, L. spp.

**PEYOTE**
Lophophora williamsii

**SANDALWOOD**
Santalum spp. (Hawaii only)

**SLIPPERY ELM**
Ulmus rubra

**SUNDEW**
Drosera spp.

**TRILLIUM, BETH ROOT**
Trillium spp.

**TRUE UNICORN**
Aletris farinosa

**VENUS’ FLY TRAP**
Dionaea muscipula

**VIRGINIA SNAKEROOT**
Aristolochia serpentaria

**WILD YAM**
Dioscorea villosa, D. spp.

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**"To-Watch"**

**ARNICA**
Arnica spp.

**BUTTERFLY WEED**
Asclepias tuberosa

**CASCARA SAGRADA**
Rhamnus purshiana

**CHAPARRO**
Casatela emoryi

**ELEPHANT TREE**
Bursera microphylla

**GENTIAN**
Gentiana spp.

**GOLDTHREAD**
Coptis spp.

**KAVA KAVA**
Piper methysticum (Hawaii only)

**LOBELIA**
Lobelia spp.

**MAIDENHAIR FERN**
Adiantum pinnatum

**MAYAPPLE**
Podophyllum peltatum

**OREGON GRAPE**
Mahonia spp.

**PARRIDGE BERRY**
Mitchella repens

**PINK ROOT**
Spigelia marilandica

**PIPSISSEWA**
Chimaphila umbellata

**SPIKENARD**
Aralia racemosa, A. californica

**STONEROOT**
Collinsonia canadensis

**STREAM ORCHID**
Epipactis gigantea

**TURKEY CORN**
Dicentra canadensis

**WHITE SAGE**
Salvia apiana

**WILD INDIGO**
Baptisia tinctoria

**YERBA MANSA**
Anemopsis californica

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Osha

by Phyllis Hogan & Jessa Fisher

It is the new moon in October; I am sitting in my herb store holding a tattered pillowcase with 25 pounds of freshly gathered osha roots. Collected by one of my trusted wildcrafters, I can rest assured that he blessed the roots with prayer offerings, songs, and a heart full of gratitude. He finds the shade-loving plants growing in aspen or spruce forests on the west slopes of mountains in mature stands of conifers. Because of its very narrow habitat requirements, osha (Ligusticum porteri) is extremely difficult to cultivate, which is why he utilizes a technique of *in situ* root propagation to ensure the continued health of the species. He removes the crown of every fourth root and replants it in the same spot where it was picked. Four years will pass, and my collector will revisit the site and find that 80% of...
the plants will have grown new roots, but he will not collect them—not for another four years, allowing eight years to pass before he collects in the same spot. This is sustainable wildcrafting, and as far as I know, only a few folks nowadays follow these honorable methods.

I sprinkle a small amount of cornmeal on the roots as a symbolic gesture, feeding the powerful spirits that accompanied these plants on their journey from western Colorado to my hands in northern Arizona. I sit with the medicine as the aroma of the volatile oils penetrates my skin. I remember the first time I smelled and tasted the roots of *Ligusticum porteri* nearly 40 years ago. A Hopi medicine man, who carried some with him at all times called it bear root (hongyapi). It was his talisman, and now is mine. The large, gnarly-rooted plant is called bear root for a reason—bears love it! Osha to a bear is like catnip to a cat. When they come out of their winter-long hibernation, bears seek out osha root and will rub it all over their body, tasting the pungent plant to help stimulate their sluggish digestion. This gives testimony to a long tradition of belief that animals first discovered the medicinal uses of plants.

Osha is also a bear of a medicine, used and revered by all of the tribes living in the Rocky Mountains, the plains, down south into Mexico where it is called chuchupate, and west and north up into Alaska, where other varieties of *Ligusticum* grow. Osha, being a protector plant, is the first line of defense for many illnesses. It is a traditional remedy for coughs and sore throats, headaches and nausea. It is an effective, reliable expectorant and is one of the best herbs to help your body combat an invading flu virus. The roots have an anodyne effect on the throat, which is why Navajo medicine men, who sing lengthy chants for hours and even days at a time find it immensely valuable. Whenever I travel, I place a small piece of the root between my cheek and gum allowing the juice to trickle down my throat and coat my mouth with a powerful taste that also refreshes my breath.

Osha is in the carrot family, with a beautiful, robust umbel of white flowers and wide, flat, celery-like leaves. Utmost precaution must be used so as to not mistake this plant for its relatives, poison hemlock and water hemlock, which prefer wetter areas. Going to the right habitat and finding osha growing in the wild is one of the most exhilarating mountain experiences one can have. The plant as a medicine retains the qualities of its environment, and holding these damp, fresh roots in my hand is like holding the earth itself. I love osha like a member of my family. This plant is so important to me that I would have a difficult time living without it. Whenever I travel, I take the protection of bear root medicine along. I place a small piece of the root between my cheek and gum allowing the juice to trickle down my throat and coat my mouth with a powerful taste that also refreshes my breath.

Phyllis Hogan is the director and co-founder of the Arizona Ethnobotanical Research Association (AERA) and owner of Winter Sun Trading Company in Flagstaff, Arizona. Jessa Fisher sits on the board of directors of the AERA.
He looked all of 5 feet 2 inches tall, with piercing, deeply set blue eyes that belied his Cherokee/Creek heritage. His name was Doug, and he worked in maintenance at a state park near Memphis. I was looking for a place to hold herb walks near my home and was introduced to Doug as the person who knew what was growing there. Within 5 minutes of our meeting, Doug pulled out a leather medicine bag from his pocket and poured into my palm some dried berries. “These look like schizandra,” I mused aloud. I tasted one and recognized the familiar pungency of Wu Wei Zi (the Chinese name for schizandra). “Years ago I began to notice this vine, so I went to the library to research what it might be and found out it was *Schizandra glabra*. These berries are what healed my Hepatitis C,” said my new best friend.

Thus began a friendship and a chronicle of the status of a local population of *Schizandra glabra*, North American kin to the famed *Schizandra chinensis* of Traditional Chinese Medicine. *Schizandra glabra*, also known as magnolia vine, is federally listed as threatened, but because the few populations that exist are well established, it has stayed off the endangered species list. Over the years, Doug monitored the vines closely, checking every summer for dangling clusters of cherry-red berries. Most years between 2000 and 2008, the vines failed to produce more than a few berries, if any at all. I got involved in 2009, going along with Doug on his yearly sojourn into the deep woods to check the harvest. The following year saw enough of a crop to produce about an ounce worth of ruby red tincture, and this year the vines throughout the park fruited outrageously.

I began to look through my own references and could find no record of any historical usage of the plant. An internet search turned up Matthew Valente, a graduate student in biology at the University of Tennessee, Knoxville who wrote his master’s thesis on *Schizandra glabra*. I contacted Matthew, who graciously sent me a pdf of his thesis. He noted the fragmented distribution of the plant across the Southeastern U.S. For his research, Matthew analyzed 10 populations of schizandra, revealing distinct genetic variability within populations. Like me, Matthew could find no record of any usage by native people. More searching turned up an online article, “Saving the Starvine” from Emory University. Carl Brown, biologist and resident expert at Emory on *Schizandra glabra*, noted a gap in the ethnobotanical record of the piedmont due to a war between the Creeks and the U.S. at the time early botanists would have been canvassing the area. Brown contacted biologists across the U.S. looking for information regarding historical usage, with no luck.

It is interesting to me to note that two prominent populations of this plant are located in proximity to large metropolitan areas, Atlanta and Memphis. Herbalists have always known that the best medicine grows nearby, and Valente’s observation of genetic variability within populations could be illustrative of this axiom. Hopefully *Schizandra glabra* will get the attention and study it deserves.

*Schizandra glabra* seeds are available from Horizon Herbs.

**References**

‘Clonality and Genetic Diversity Revealed by AFLPs in *Schisandra glabra*, (Brickell) A Rare Basal Angiosperm.’ Matthew Valente


Glinda Watts, AHG is a Lightworker and Herbalist living somewhere in Middle Tennessee.
An historic event took place in Mills River, North Carolina (outside Asheville) in early December, 2012 when the North Carolina Natural Products Association held a “wild and wild-simulated” American Ginseng Exposition. This gathering accomplished a number of “firsts”. It was the first “wild” American ginseng conference that excluded cultivated and sprayed woods-grown plants. The conference was also unique in that it had a well-received “value-added” American ginseng panel geared toward export of value added products instead of roots, demonstrating the potential for expansion in the American and international markets. The expo was also the first time Bob Beyfuss, Scott Persons, Dr. Jeanine Davis, and Robert Eidus were together discussing their knowledge of wild-simulated American ginseng. The event was dedicated to Andy Hankins, who recently passed away. Andy was an extension agent for the state of Virginia. He taught at UpS events and helped many small farmers start ginseng, among many other incredible projects geared towards small farms, such as cut flowers and herbs. You can read about Andy Hankins and his research at [http://pubs.ext.vt.edu/author/h/hankins-andy-res.html](http://pubs.ext.vt.edu/author/h/hankins-andy-res.html).

Three staff members from Washington, DC regulating agencies were there and were excited about wanting to see efforts towards a “wild-simulated” American ginseng conversation program. A wonderful presentation was given by the West Virginia ginseng coordinator about a three-year old “wild-simulated” ginseng program that has been very successful. West VA is leading by example of what states can do if they are serious about wild-simulated ginseng as a non-timber forest product.

The conference was well attended, and those who were there were well rewarded with food that was what I call “beyond organic”, since it was all sourced locally from our NCNPA friends and businesses. The highlight of the reception was the Ginseng Chicken with wild mushrooms, and did I mention the ginseng truffles? The after-hours get-together included ginseng wine and a performance by a local flute player and Doug Elliot. On the UpS website you can see Doug perform “Ginseng”, a song written by Jim Duke. This event was recorded by Ned Doyle and will soon be made available; for further info about the taping and the event go to [www.ncnaturalproducts.org](http://www.ncnaturalproducts.org). Several interviews about the event were featured on a wonderful radio show [www.oursoutherncommunity.org](http://www.oursoutherncommunity.org).

A really interesting and innovative aspect to the expo was a polling of questions that took place live, as each person was given a remote clicker to answer a survey on important questions. For example, one of the questions asked was if local native ginseng seeds should be available to growers, and nearly 90% answered yes. In answer to the question whether the U.S. Fish and Wildlife Service should change the age restriction for the export of wild ginseng roots, 5% thought it should be lower, 21% said it should be raised, 26% thought it should stay the same and 42% needed more information. There was deep concern expressed about the rapid decline in wild populations, and there was enthusiasm about those who grow ginseng locally figuring out how to market “NC ginseng” in locally made value added products. The Natural Products Association helped make the in person survey happen, as well as the expo. There was also a concern and a need expressed that those who choose to plant ginseng do so with local germplasm as a source for seeds, versus buying ginseng seeds from farms in Wisconsin.

The conference was covered by the Hendersonville Times under the headline, “Forest farming key to saving wild ginseng from extinction.” The key point mentioned was that “Conference speakers agreed that more ginseng must be grown on private lands by forest farmers to take the pressure off wild populations on federal lands, which have been hard-hit by drought, poaching, and decades of intense collecting pressure”. Pat Ford, with the U.S. Fish and Wildlife Services, was quoted as saying, “Getting more ginseng grown on private lands is key to sustainability of ginseng long term.”

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**Highlights of the International American Ginseng Expo**

by Robert Eidus, MPCA Recipient, 2009 & Susan Leopold

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Plants At Home and In Place
by Carol Jacobs

Time and time again, I’m reminded to be still and listen. Sit and observe. Watch and wait before proceeding with action. I am reminded that as a human being, I am only a part of the circle of life. And there are other points of view to explore, circles within circles to get to know.

Within certain circles, wild ones are not just considered medicines for humans. Many are regarded as medicines for the Earth, balancing, cleansing, and healing. But sometimes, certain native ones are thought to become overwhelmed when living in isolation, as their homes become surrounded by imbalance or they are separated from their place of origin and companions.

Rather than ‘the survival of the fittest’, Charles Darwin’s emphasis was on local adaptation. Henry David Thoreau added another line of thought which was also novel at the time: that mankind influences nature. And, both of these ideas have been evolving ever since.

Land set-asides, preserves for future generations, began in earnest in the times between Darwin, Thoreau and our own, aided by such notables as Abraham Lincoln, Teddy Roosevelt, Aldo Leopold and others. Yet, it’s been found that land set-asides, alone, are not quite working as expected. They degrade, too, if fragmented and isolated, and if the plants and animals, land, air and water, both within and surrounding these areas, have been affected by a number of factors, including human alteration.1 ‘Defragmentation’ is one of the key words in what is now being called a ReWilding movement, relevant to reconnecting pieces of land, as well as parts of the human mind, too.2

Perhaps two other key words to consider could be ‘habits’ and ‘habitats’. Habits are repeated behaviors (mostly human, but not always). Habitats are specific environments populated by particular plants and animals. As I understand it, most of us bring our own cultural upbringing and habits (and our favorite plants, too) with us as we move around; whereas, most indigenous plants have evolved over long periods of time within certain habitats for reasons of their own.

Natural plant communities do change over time, as is most evident in the in-between places: edges of biomes (regions influenced by geography and climate) and along floristic tension zones3 (physiographic boundaries, for example, between former glaciated and unglaciated areas), but also in other transition zones, such as woodland and prairie edges, wetland edges, and others. These are areas of natural adaptation where both genotypes and phenotypes reflect local shifts. (genotype: underlying genetics; phenotype: a combination of genetic and environmental influences)

These are not the only examples. Most native plants have evolved and adapted to particular ecosystems, in cooperation with their companions, in tune with their surroundings - quite a different concept than the adjustment of plants introduced by humans.

Within some circles of people, the words ‘plants out of place’ refer to plants from different countries introduced into ‘new’ habitats by enthusiasts and entrepreneurs. These are usually non-native colonizers, which have had unexpected consequences on native populations.

However, not all ‘plants out of place’ are from other countries. Some can be native medicinal plants, too. And, although they may or may not thrive in either ‘old’ or ‘new’ habitats (some need help), there may still be a bit of the old colonial mindset in moving them around the country.

Similar plants may grow in a variety of places, but local environments can create genetically unique populations. Protecting and encouraging these local genotypes and phenotypes are considered vital, by some people, as a type of insurance for the future. Much of our modern industrial and agricultural practices reduce biodiversity, but so does introducing ‘plants out of place’. Is awareness of these issues a blessing or a curse?

There are a few circles of plant enthusiasts and entrepreneurs which advocate for native plants and seeds to be obtained from within 15 miles of where they will be planted. Others see such a limited mile restriction as impractical and go farther, perhaps 150 miles or many, many more. Yet, for people who may be interested in plants and seeds that are genetically similar to those in their own home and place, it is important to know that most of the time, bioregionally identified plants or seeds will not be sent when placing an order with a native plant business unless specifically asked for. How do we know what to ask for? There are online databases which make plant profiles and distribution maps available.4, 5, 6, 7
And some, although not all, native plant businesses are willing to talk to customers and coach them on ecotype selections.

When exploring for plant and ecosystem matches, it is helpful to pay careful attention to Latin names. The 1st Latin name (first letter capitalized) is the genus name, a generalized name given to a group of related plants that have traits in common, but are not all the same kind of plant. The 2nd name (no capital letter) is the species name, which usually tells us something about a detail, often a physical characteristic, a location where it was first found or a person for which it was named. Sometimes, there will be a 3rd name, a subspecies name, giving more detail, perhaps a clue to a phenotype, a hybrid origin or a deliberate cultivar. Some people consider man-made cultivars as improvements over nature, but these are technically no longer classified as native plants. Ah, the devil can be in the details.

Two examples with opposite results come to mind. The 1st: An enthusiastic friend living on the prairie in Nebraska was very proud of her native plantings. She had a variety of plant groupings, including one which contained certain at-risk medicinals from Eastern Woodland Regions planted on the shady side of the barn along with several young trees for cover, and, in another grouping, in a sunnier location, row upon row of echinacea. The woodland species near the barn which were not doing very well were acknowledged as ‘plants out of place’, but she wondered why some of the locally purchased echinacea were ‘ugly’ and others were not. A few of these were beginning to show signs of susceptibility to disease because of overcrowding, but many turned out to be not local at all - they were different species of echinacea® commercially brought in from other states. Some of these differing echinacea had the potential to crossbreed with the natives of that area which naturally grew within several miles of her farm.

The 2nd: Another excited friend was also proud of her native plantings. Yet, one type of plant which seemed to be doing better than the rest, turned out to have originated from a nursery in a Western Region which she had unknowingly introduced into her Wisconsin ecosystem. It had become aggressive and out-competed a local plant not only of the same common name, but also of the same genus and species names. How could that be? It was a different variety. It had a 3rd name.

With family farms in decline, some University programs offer help by encouraging alternative crops, including both native and foreign herbs. On a more grassroots level, small groups across the U.S. encourage locally grown herbs for local people.° Many people interpret both as self-sufficiency and a lessening dependence on foreign imports from questionable sources. Still other people may take these issues a step further and ask: What has Nature already provided in her wisdom?

Is there a way to support and encourage natural communities in the habitats where we live, no matter where we live, even if it is in a city?

““When we see land as a community to which we belong, we may begin to use it with love & respect””

~ Sand County Almanac, Aldo Leopold, 1949

In late Winter, when looking at colorful catalogs and contemplating offerings, many of us, myself included, tend to plan according to our own dreams and desires. Is it even possible to engage in a Co-Creative model when it’s still cold and snowy outside? To consider nature as an equal partner?

I remind myself to be still and listen. Watch and wait. Gather information. Then proceed where the heart leads.

1-en. wikipedia.org/wiki/Island_biogeography
2-en. wikipedia.org/wiki/Rewilding
3- www.bonap.org/TensionZoneMaps/Tension.html
4- nativeplantwildlifegarden.com/introducing-bonap
5- wisplants.uwsp.edu
6- cluster3.lib.berkeley.edu/EART/vegmaps3.html#noamer
7- http://plants.usda.gov
8- www.fs.fed.us/r9/wildlife/tes/ca-overview/docs/Plants/Echinacea.pdf
9- HerbalGram, # 88, Nov ‘10 - Jan’11, pages 15-17

Carol Jacobs has been professionally involved in federal, state and private forestry projects, woodland and prairie plant inventories and the native plant and seed industry, as well as, in her community as an Herbalist and an advocate of local food, local herbs and local probiotics. She is an Herbasus Educatorus from the Driftless Region of the Upper Midwest – an area where the glaciers split and left the land untouched – an area shared by portions of 4 states: SE MN, SW WI, NE IA, NW IL.

““Why Use Chemical Drugs when nature in all her wisdom and beneficence has provided in her great vegetable laboratories – the fields and forests – relief for most of the more common and simple ills of mankind?””

~ Joseph E Myers, 1935 The Herbalist
United Plant Savers’ vision is to see UpS Botanical Sanctuaries established in people’s backyards, farms and woodlands, creating a living greenway of native medicinal plants across the landscape of America. A sanctuary isn’t defined by size or magnitude, but as sacred space, a place where one can find protection and the peace and renewal of nature. Nor is a sanctuary necessarily designated or define by government agencies or large organizations, though often we think of it as such. We can all create sanctuary on the land we care-take. As our Sanctuary Members are demonstrating, Botanical Sanctuaries can be created in small backyards as well as on large plots of wilderness, in towns as well as in the country. As you well know, it takes attitude, willingness, and a desire to transform the way we value land, our assumptions about land use, and the way we design our gardens and farms. If we want to preserve wilderness and the wild populations that thrive there, we can’t look to others to do it for us. We need to be willing to actively participate in the preservation and restoration effort, and as good a place to start as any, is in our backyards. And that is what you’re doing. That is what the Botanical Sanctuary Network program is about.

Thank you to all Botanical Sanctuary Network members for being part of this vision and for your efforts to help preserve and restore the native landscape and our treasured medicinal herbs.

Meet Some of our New BSN Members!

**THE SERPENTINE PROJECT (BLD FARM)**
Conneaut, OH
Sanctuary Stewards:
Leah Wolfe & Charles Schiavone

The desire to create a refuge for people and plants was where the Serpentine Project and BLD farm met. We wanted to create a place where native could thrive; but we also wanted a place where those striving for social and environmental justice could escape their work in the city, take time to heal, and learn about living more sustainably.

Leah Wolfe decided to work toward developing a UpS Sanctuary for medicinal plants while she was studying plants in Oregon. Much of her studies centered on indigenous or native plants and naturalized ones. Some of the indigenous plants are rare and require ethical wildcrafting and propagation to ensure that they continue to exist. So she invites them to the places she lives and hopes that they settle in and get comfortable. In 2009, Leah started the Serpentine Project. She had a garden in Oregon and then later started another garden around the meditation center at Anathoth Community Farm in Wisconsin that is still doing well. Now she lives in NE Ohio at BLD farm.

Charles Schiavone started BLD farm on his family’s land. He is an artist and an environmental justice activist. Originally, BLD was a warehouse in Columbus, OH that he transformed into a studio and gallery. He carries that experience with him, hoping that as we build infrastructure more people will join us in the adventure.

The wooded areas at BLD farm house Jack-in-the-pulpit (Arisaema triphyllum), black cohosh (Actaea racemosa), trillium (two species, Trillium spp.), bloodroot (Sanguinaria canadensis), goldenseal (Hydrastis canadensis), blue cohosh (Caulophyllum thalictroides), partridgeberry (Mitchella repens), and mayapple (Podophyllum peltatum). We also have open areas where two kinds of lobelia (Lobelia spp.) grow. Some of the wooded areas were fields 50 years ago, and the understory plants are not as diverse as those in the wood lots. Mayapples and partridgeberry have begun to live there because they are propagated by deer and birds, but plants like trillium, propagated by ants, will need some help getting there.

We have medicine gardens among the vegetable and food forest gardens. We are in the process of building a greenhouse that would also include a sunroom made with timber frame and cob. We are hoping to grow other “At-Risk” plants and adjunct medicinal plants locally so that they can be supplied without taxing native populations.

A learning garden with the “At-Risk” species has been established closer to the house so that people who want to come learn and see the plants can do so without braving ticks and mosquitoes. So far that garden has a few plants each of Jack-in-the-pulpit (Arisaema triphyllum), black cohosh, bloodroot, goldenseal, wild ginger (Asarum caudatum), great blue lobelia, and red trillium. The other medicine gardens are in open areas near the garden and the work site for the greenhouse.
Dandelion Herbal Center sits on 10 acres of land in Kneeland, in the coastal redwoods of Northern California. My husband Ken and I have been on this property for almost 20 years raising kids and hosting 100’s of herb students. On the North Coast of California, we are blessed with a temperate rainforest, and our property harbors a wonderful representation of the variety of plant and animal species that are native to this type of ecosystem.

The canopy contains redwood (*Sequoia sempervirens*), Douglas fir (*Pseudotsuga menziesii*), and alder (*Alnus rubra*) with a secondary layer containing evergreen huckleberry (*Vaccinium ovatum*), red huckleberry (*Vaccinium parvifolium*), cascara sagrada (*Rhamnus purshiana*), willow (*Salix spp.*), salal (*Gaultheria shallon*), native blackberry (*Rubus laciniatus*), thimbleberry (*Rubus parviflorus*) and flowering red currant (*Ribes glutinosum*). Underneath there is a variety of herbaceous plants and ferns, including trillium (*Trillium ovatum*), wild ginger (*Asarum spp.*), yerba buena (*Satureja douglasii*), redwood sorrel (*Oxalis oregana*), redwood violet (*Viola sempervirens*), bracken fern (*Pteridium aquilinum*), Western sword fern (*Polystichum munitum*), common lady fern (*Athyrium filix-femin*), deer fern (*Blechnum spicant*), licorice fern (*Polypodium glycyrrhiza*) and horsetail (*Equisetum arvense*). And this is merely a sampling of our most prolific plants! With the help of my students, I am blessed to be able to care for these and many more species of native medicinal plants.

We have, for years, been avid about conserving and fostering the native plants by providing a safe environment for them to grow and reproduce unhindered by excessive mechanical or human traffic and by keeping the soil free from chemicals and as nutrient rich as possible. We also do extensive recycling and composting of food and plant materials. Within the past couple of years we have installed a large rainwater catchment with a filtration pond and waterfall aeration system to provide drinking water for the people and plants on our beloved piece of land.

We are primarily geared toward herbal education and offer a variety of classes here at Dandelion Herbal Center. In her classes, Jane likes to provide a balance of information about the herbs and how to identify them, as well as their medicinal uses and effects on the body. It is such a pleasure to be able to share plant wisdom with our students in the plants’ native environment, as well as the hundreds of non-native medicinal plants we grow in our demonstration garden beds. Students also have the opportunity to get their fingers into the soil by aiding Jane in planting more native and medicinal plant species.

One of our greatest offerings to the UpS Botanical Sanctuary Network and the world at large is put very succinctly by one of Jane’s students from the past: “This one person teaches and inspires these 25 people, who in turn teach and inspire another 25 people and so on...to regain their relationship with and appreciation for the earth. This relationship will send positive energy, respect and love back into the earth, thus bringing all its inhabitants to a higher level of health and existence.”
The energy is high on this Ozark Mountaintop. There are many native medicinals, including heal all (*Prunella vulgaris*), bloodroot (*Sanguinaria canadensis*), goldenseal (*Hydrastis canadensis*), etc. The Deva guided gardens are happy here.

My husband and I have lived lightly on these 19 acres of mostly woods. Over the last 26 years we have watched as the electric company has changed our tunnel of tree and plant to a regulated two-lane country road.

I have foraged on our land, using the native gifts as medicine for myself, my pets and my family. I see the butterfly weed (*Asclepias tuberosa*), goatsbeard (*Aruncus dioicus*), and mayapple (*Podophyllum peltatum*) populations dwindle. My goal is to keep Happy Homestead/Blue Bird Botanical Farm a sanctuary where it is safe to make my simple tinctures and salves freely. It is my hope to hold classes in tincture and salve making, along with co-creative organic gardening and appreciation for nature spirits and the joys of “less is more” homesteading.

Juggling all that life sends us, along with work, gardens, maintenance, and play is the dance for all of us. Stewarding this beautiful Ozark Mountaintop is a gift of grace. If I can save one little corner of green on this planet, then I feel like I’ve been true to my Soul’s work.

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Florida School of Holistic Living’s “Bodhi Garden” is a 40’ x 40’ herb garden in the heart of urban downtown Orlando. The garden is surrounded by an eclectic and supportive community, including an organic vegetarian teahouse, a yoga studio, a healing center, a massage and chiropractor office, and the school’s two-story educational facility.

Our botanical sanctuary offers a peaceful respite for education, meditation, and communion with nature, smack in the middle of the concrete jungle. As an urban sanctuary, we often trade out the sweet sounds of the countryside for the rhythms of planes overhead and cars whizzing by along the nearby highway. Still, we delight in the wildlife that gathers in our urban garden — birds, butterflies, and small wildlife find a habitat in our small oasis. We grow approximately 50 species, which are used for educational purposes. These focus on medicinal herbs but also include species to feed and support pollinators.

Our school offers organic gardening, herbalism, and sustainable living curriculum using the garden as our classroom and model. We offer both extended courses and one-time workshops on topics such as gardening practices, plant life cycles, and sustainable technology. In addition, everyone has an opportunity for hands-on education through internships and our volunteer program. Students at the school also use the garden for educational research on growth rates using different organic fertilizers, herbal treatments, and seed stock. Finally, anyone who visits our neighborhood has the opportunity to enrich their experience by wandering through the garden and learning more about individual plants through educational placards and our plant guide. In addition to our classes, we hold music and meditation circles in the garden every full and new moon.

As an educational garden, each harvest is carefully scheduled based on earth, lunar, and garden cycles. Garden classes and volunteers are coordinated to facilitate all harvesting. We focus our harvest on educational activities and on propagating new plants to distribute in our community. We are proud to have distributed over 1000 plants, through harvests from our garden in the form of seeds and propagated seedlings to community members, local school gardens, and local community gardens. Volunteers and students in the garden also have an opportunity to take home freshly harvested herbs according to the harvest schedule.

Our garden’s centerpiece, the Bodhi tree (Ficus religiosa) is a fifth generation descendant from the Bodhgaya grove in India, where the Buddha is said to have sat when he reached his enlightenment. This tree was rescued by staff of the Florida School of Holistic Living from the University of Central Florida, where the administration was removing its mother to pour a concrete courtyard.

This tree was planted on September 11th, 2007 – a New Moon – with 250 community members in a procession of prayer. Each participant added a shovelful of soil along with their prayers for peace and harmony within our community. Around the Bodhi tree is a community altar, which stands as a testament of our community’s spirit, and individuals often leave tokens of gratitude, blessing, and prayer for loved ones or the planet. In addition to the Bodhi tree, medicinal herbs that get extra attention in our garden include henna (Lawsonia inermis), beautyberry (Callicarpa americana), vitex (Vitex spp.), rue (Ruta graveolens), elderberry (Sambucus spp.), lion’s tail (Leonotus leonurus), lemongrass (Cymbopogon citratus), passionflower (Passiflora incarnata), and a stately neem tree (Azadirachta indica). Garden beds were constructed from lumber made from recycled milk jugs. An arbor was recently erected with a locally grown bamboo roof to highlight the entry as a sacred space. We also recently launched a Garden Map, which outlines the species we grow and directs visitors to visit our website to download a garden guide with more information about the medicinal and culinary uses, growth habits, and historical roots of each plant.

It has been a deep privilege to steward this small garden and to hear the feedback of those who have found a moment of peace among its borders. Our garden is open year-round, and you can visit www.HolisticLivingSchool.org to learn more.
It Takes a Community to Tend a Sanctuary

by Jessica Rubin

All living things require tending as they grow, evolve, change, and transform. In East Montpelier where an old farm dump once sat embedded in layers of ferns and moss, now grows a sweet sanctuary of endangered, threatened, and habit-enhancing species. While blue cohosh (Caulophyllum thalictroides), maidenhair fern (Adiantum pentalatum), and red trillium (Trillium erectum) already grew amidst the wild ginger (Asarum canadense) and baneberry (Actaea pachypoda) in a hemlock forest, new green friends continue to join the networks here. It has been fascinating to watch what is able to adjust and firmly take root and what is not, due to predation, lack of sufficient soil nutrients, microbial intricacies, or various other synergistic gaps.

Certain plants like lady’s slipper (Cypripedium acaule) that require a particular mycorrhizal fungi, we decided to not replace. However, we tried again with goldenseal (Hydrastis canadensis). Fifth grade students in Cathy Elie’s botany unit researched the plant’s needs using Richo Cech’s book, Growing At-Risk Medicinal Herbs and Rosemary Gladstar and Pamela Hirsch’s book, Planting the Future.

This spring we rekindled the flame of phenological tracking, which sixth grade students had started the first year they planted the trail in 2008. This year’s students came up with criteria we plan to use throughout the years as we collect data each year in early June. We hope that over a decade or two this data will not only be valuable in recording trends of particular species’ propagation rates, but also in terms of tracking the flowering phases as they relate to global climate change. The current criteria the students came up with is as follows: common and Latin name of plant, date, time, alive or dead, healthy or sick, height and width, habitat description, how many plants, and phase of growth. I wonder if we should add temperature and weather. Any ideas?

This past year I have heard several scientists, such as Dr. Beth Kaplin, Bernd Heinrich, and Dr. Richard Primak discuss the importance of phenology and in particular the relationship between birds, shrubs, insects, and flowers. The windows of flowering for pollination and fruiting for seed dispersal are dramatically changing. How this relates to migration patterns and the resulting trophic cascade is critical and complex.

Today we spent a lot of the day working with Volunteers for Peace from Turkey, Taiwan, Germany, Mexico, and Spain removing common buckthorn (Rhamnus cathartica), fly honeysuckle (Lonicera canadensis), and common burdock (Arctium minus). Though it is not the season for harvesting burdock, we did make tea and burdock chips so that these young adults could experience some of this plant’s many gifts. We laid piles of coppiced buckthorn and honeysuckle along an eroding river bank in an effort to slow the erosion from Irene. We hope to eventually put in willow waddles there. We were able to harvest many first year and catch second year burdocks before seeds were ripe. Buckthorn berries were not visible. And we were not sure if the red honeysuckle berries were fully ripened in packages ready for mammals to successfully transport.

Continually the question arose for me as I scythed and pruned branches: What is our relationship with
these plants? While their non-native origins are a historical fact, as is the reality of native species being displaced as a result, I kept wondering why we two-leggeds are not being scythed and pruned off the planet, for aren’t we, too currently displacing various species at an alarming rate? The honeysuckle blossoms provide nectar and pollen while the berries provide food, though less nutritious than native berries. At whose expense? At the expense of various species such as spicebush (Lindera benzoin), elderberry, dogwoods (Cornus spp), viburnums, witch hazel (Hamamelis virginiana), serviceberry (Amelanchier alnifolia), and native trumpet honeysuckle vine (Lonicera sempervirens). Is this the fine line where we can help our wild friends by tending to parts of our forests as gardens?

Bees hop to and from tall, white, black cohosh (Actaea racemosa) spikes flowering from the bottom up. Arnica (Arnica cordifolia) and bloodroot (Sanguinaria canadensis) flowers are no longer visible, while their leaves are a faded green. Pleurisy root (Asclepias tuberosa) buds swell with impending opening. Echinaceas (Echinacea spp.) slowly open their radiant disks. Goldthread (Coptis spp.) and partridge berry (Mitchella repens) flowers have already blossomed, and now the hardy green plants ramble across the forest’s lower sinusium. Vibrant green goldenseal buds looks ready to burst. Elderberry’s few green leaves seem to have survived recent foraging. I would like to stay here and curl up, like one of those caterpillars weaving a chrysalis, with a periscope allowing me a bird’s eye view of the whole trail to see who is visiting who and what phases are passing by. The glimpses we have caught are just milliseconds in the long days of summer when trillions of interactions are happening each moment. As we linger at the kiosk garden, I realize how much more there is to see, hear, smell, feel, touch, and sense. A giggle floats down from the canopy reminding, “You did not even begin to look beneath the humus layer.”

Jessica Rubin just earned her Masters of Environmental Studies and NH/VT middle and high school science teaching license from Antioch New England. She co-founded this Botanical Sanctuary Trail at Orchard Valley Waldorf School in East Montpelier where she used to teach Earthcrafts. She still tends the trail while helping with botany units, monitors Green Mountain Corridor, runs ‘Roots and Trails’, and will begin serving as a middle school science teacher at Lyndon Town School in September.

Sending a special strand of deep gratitude to Liz Moniz for her steady support as a local UpS consultant, and to Susan Leopold and UpS for their continued assistance in our Sanctuary maintenance projects!

---

**PIE: Partners in Education**

United Plant Savers offers a special student membership fee of $20 per student for all herbal schools, apprentice programs and training courses that enroll their students as a group. Each student receives a UpS membership package with all the benefits ~ informative Journals, access to Member Resources on the UpS website, plant seed giveaway twice a year, membership discounts at UpS conferences and more. When your school/program joins Partners in Education you will receive our publications, the UpS Education Guide and the Take Action! Guide, a copy of the UpS book Planting the Future, free rental of the UpS “At-Risk” Slide Show & DVD, a listing in both the UpS Journal and on our website, guidance from experienced educators and the opportunity to make a difference ~ One Seed at a Time. PIE students are welcome to apply for the UpS internship program at Goldenseal Sanctuary in Ohio. With a recommendation letter from the PIE school, students can receive a $100 discount on the internship fee.

**2012 ~ Participants**

**Bastyr University**
Sheila Kingsbury
Kenmore, WA

**Living Awareness Institute**
Kami McBride
Davis, CA

**Blue o her School of Herbal Medicine**
Sarah Holmes & Karyn Sanders
Fort Jones, CA

**Misty Meadows Herbal center**
Wendy Snow Fogg
Lee, NH

**c alifornia School of Herbal Studies**
Rebecca Maxfield
Forestville, CA

**Northwest School for Botanical Studies**
Christa Sinadinos
Fieldbrook, CA

**c hesnut School of Herbal Medicine**
Juliet Blankespoor
Leicester, NC

**Sage Mountain**
Rosemary Gladstar
East Barre, VT

**Dandelion Herbal center**
Jane Bathwell
Kneeland, CA

**Southwest Institute of Healing Arts**
JoAnn Sanchez
Phoenix, AZ

**Greenwood Herbs**
Debra Mercier
Limerick, ME

**Sweet Herb Medicinals**
Bridget Owen
Boulder Creek, CA

**Healing Power of Plants**
Cascade Anderson Geller
Portland, OR

**he c mmons Brooklyn**
Richard Mandelbaum
New York, NY

**Heartstone Herbal School**
Tammi Sweet & Kris Miller
Van Etten, NY

**twin Star Herbal Studies**
Lupo Passero
New Milford, CT

**Hocking technical college**
Molly Jo Stanley
Nelsonville, OH

**vermont center for Integrative Herbalism**
Betzy Bancroft
Montpelier, VT

Please contact Betzy at the office or see the website to find out how you can become a Partner in Education.
Thank you for your generous contributions & support

We extend a special thank you to all members of UpS who continue to support us with memberships and donations. Your support, efforts and concern are the only thing that can really make a difference in the protection and conservation of our important medicinal plants. All donations and help, whether it be organizational, cultivating, educating or choosing medicinal herb products more consciously are appreciated. Great gratitude goes to the many in-kind donations of goods and services from companies and friends that support our work. We gratefully acknowledge the following long-time Green Angels, Leaders, Lifetime Members and Donations in 2012:

Green Angels – $50,000+

Aveda Corporation, Judy and Michael Funk & Paul Strauss

Leaders – Individuals & Companies - $5,000+

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David Hoffmann Loren Israelson Sarah C. James Patricia Joaides Sara Katz Donna Kelleher Kelly Kindischer, PhD Roxanne Klein Phillip Knowlton Christopher Kopka Joel Kreisberg Nick Kullbaba Rhonda Kurtis Lara Landrum Kathy Larson Lynda LeMole Susan Leopold, PhD Richard Liebmann Kathleen Maier

thank you also to the many people who made smaller donations this year!
Donations were also given in fond memory of Patrick Ndumbi and John Northage.

Great thanks to the 2012 Advanced Apprenticeship class at Sage Mountain for their generous donation!
Many of our members have herb businesses and have created ways for their “money green” to support the UpS green! We want to highlight several companies whose contributions to UpS come as percentages of sales of dedicated items. You will see a section for Partners in the Green on the left of the front page of the UpS website and we’ve made it easy for you to link to these thoughtful businesses. By supporting these companies, you are supporting UpS!

Alchemilla Pure Skin care - skin care trial kit
www.myalchemilla.com/Summaries-Kits/Summary-TrialKits.html

Dreamseeds Organics – avena soap
www.dreamseedsorganics.com

Elemental Herbs – herbal products
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Old Ways Herbals – organic tinctures, salves & syrups
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Woodland Essence – flower essences & herbal goodie
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More Thanks

Great thanks to all the generous sponsors of this year’s UpS Events:

I love your Mother – Mountain Rose Herbs

Planting the Future conference in Oregon – Herb Pharm, Pacific Botanicals & Horizon Herbs

Planting the Future in Vermont – Mountain Rose Herbs, Zack Woods Herb Farm & Sage Mountain Herbal Retreat Center


We’re also grateful to the sponsors of the NE Women’s Herbal conference – Herb Pharm, Mountain Rose Herbs, Frontier Natural Products Cooperative and New Chapter, Inc.

UpS has also begun receiving donations from wonderful programs like Network for Good, 1% For the Planet and the Standard Matching Fund. Thanks to Elemental Herbs!

Great appreciation is also due to:

Medicines from the Earth
Breitenbush
HerbStalk
Florida Herbal conference
American Herbalists Guild
SE Women’s Herbal conference
MidWest Women’s Herbal conference
Central Indiana Herbal Symposium
the PawPaw Festival
Traditions in Western Herbalism

These conferences make UpS info available at their events. This is especially helpful because we meet many new members and have a lot of opportunity to let folks know about native medicinal plant conservation at these kinds of events.

Special thanks also to UpS Interns Ashley Reiger, Kelsey Siekkinen and Denise deSpirito, as well as Aimee Fairman and Desiree Cripps for staffing tables for us! Many other people make UpS information available at farmers’ markets, workshops, Herb Day and other events. We are deeply grateful for all this support! If YOU know of a great opportunity for plant-lovers to connect with UpS, we are happy to provide you with brochures, newsletters and more!

No Journal would be complete without thanking the friends who make our publications possible – Liz Butler, our graphics goddess and Beth Baugh, our wonderful editor! We love you!
What the Frack?
by Susan Leopold

On February 17th over 50,000 people showed up on the national mall to stand up for "Forward on Climate Change," the largest protest to date in an effort to move beyond coal and the use of fossil fuels. In Ohio near the Golden-seal Sanctuary several protesters were arrested this February attempting to shut down a disposal site for fracking waste-water. Sasha White, who runs the UpS fall internship program at the Sanctuary, wrote a detailed article entitled "On the Fracking Lines of Southeast Ohio" that highlights the threats to our national forests and local resources if the fracking trend continues. This article is on the UpS website under the NEWS section. The March 2013 National Geographic cover article is about the fracking boom in North Dakota in the heart of the Lewis and Clark National Park and surrounding areas. The human and environmental costs keep rising as extraction continues, but the hope is that the tide is changing. To get involved and find out more Appalachia Resist! www.appalachiaresist.wordpress.com Athens County Fracking Action Network: www.acfan.org End mountain top coal removal: www.Ilovemountains.org
The Hawaiian Sandalwood Project
by Susan Leopold

This past fall United Plant Savers co-organized the International Sandalwood Symposium that took place over four days, with over 30 academic presentations on the following topics: local and global markets and threats, chemistry and genetics, cultivation and propagation, ecology and environment, regional use and development, regulation and sustainable management. Speakers were from several countries, including the United States, Australia, Fiji, New Caledonia, India, Indonesia, Sri Lanka, Tonga and Vanuatu. I would like to highlight three take home points of the ISS gathering, beginning with the fact that the sandalwood story of Hawaii is one that is sadly playing out in island nations throughout the Pacific as small fragmented populations that are left of endemic species and varieties are struggling to survive due to an increase in price as supply shrinks. Secondly, it is important for consumers to understand that nearly half the world’s global supply is being poached and that adulteration of sandalwood products is taking place. Third is that sandalwood as a value-added product has the potential to be an economic contribution to remote, rural island nations if efforts are invested in research, education, conservation and cultivation.

In the winter of 2012 before the ISS gathering I traveled with my three kids to the Big Island to investigate the Hawaiian Sandalwood issue. I conducted four interviews filmed on my iPhone that highlight various people involved in sandalwood conservation. I encourage all to watch the videos, briefly described below that are now up on the Ups website.

“Nature at Work”. This interview highlights the spontaneous return of sandalwood (S. paniculatum) to Dr. Shay Bintleff’s property. Dr. Shay, a retired pediatrician and famous local surfer, sells sandalwood seeds to those who wish to grow sandalwood, and she also markets her seeds as a tasty unique local food, perfect for making pesto.

“Sandalwood Man”. Watch sandalwood restoration in action as Mark Hanson, founder of the Hawaiian Restoration Project and also known as the sandalwood man, talks about his life’s passion. The video demonstrates the obstacles to saving native Hawaian endangered plants.

“Permaculture Sandalwood Style”. This video shows how to create a natural guild by using secondary species to mimic natural succession. Sandalwood is a perfect fit for this kind of permaculture approach to growing food on the short term and forest restoration on the long term. This interview is with Neil Logan who is an ethnobotanist, farmer and researcher who lives on the Big Island with his wife Sofia and their daughter Ona on their Mohala Lehua farm.

“The Plant of Aloha”. This interview tells the brief history and culturally significant meaning of sandalwood, also known as iliahi in Hawaiian. The interview is with Leigh-Wai Doo, sandalwood activist and passionate retired Hawaiian planner, politician and proponent of the sandalwood bill that has been proposed at the state legislature. This interview demonstrates the symbolic nature of sandalwood as the ultimate plant of Aloha.

Medicinal Plant Conservation
2012 AWARD
Jeanine Davis

United Plant Savers is happy to announce that Jeanine Davis is the 2013 Medicinal Plant Conservation Award recipient. Jeanine is a whiz at getting small farmers into specialty crops, including medicinal plants. Her influence over the last two decades in North Carolina is legendary; just take a look at her amazing website, www.ncherbs.org for resources for small organic farmers and how to grow guides for black cohosh (Actaea racemosa), bloodroot (Sanguinaria canadensis), echinacea (Echinacea spp.), false unicorn (Chamaelirium luteum), goldenseal (Hydrastis canadensis) and more to come. Jeanine is a big supporter of UpS, has taught at Planting the Future Events, and recently helped coordinate the Ginseng Expo this past December. Below is a brief bio of Dr. Jeanine Davis, and with this award we would like to further send a thank you for the hard work of extension agents across the U.S. who are the on the ground working directly to help small farms succeed.

Jeanine Davis is an Associate Professor and Extension Specialist in the Department of Horticultural Science at North Carolina State University. She is also the Coordinator of the N.C. Specialty Crops Program, which is a multi-agency program in eastern North Carolina. The primary objective of her program is to increase diversity, sustainability, and profitability of agriculture through development of high-value crops such as herbs, native botanicals, specialty vegetables, industrial crops, and organics. She and her coauthor, W. Scott Persons, wrote the book Growing and Marketing Ginseng, Goldenseal, and Other Woodland Medicinals (2007), which will be an ebook soon and though it is currently out of print, it is in the process of being revised. She is a founding member of the immensely popular Organic Growers School and the N.C. Natural Products Association.
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SPRING 2014

The Art of Extinction
Phylogeography of American Ginseng
Unearthing the Roots of American Herbalism
Osha Research in Colorado
Losing the Scent of Sandalwood
Castela
Paul Strauss’ New Book
The Big Herbs
Gardening with Shamans
The Art of Extinction
by UpS Executive Director, Susan Leopold

I became infatuated with Mark Catesby (1683-1749), a colonial naturalist whose exploration of the new world was deeply reflected in his artistic composition. I valued his ethnobotanical observations and his appreciation of the native people who were his guides. In many ways I was jealous of his opportunity to explore the towering chestnut forests, the prairies of Virginia where Eastern Buffalo once roamed and to have seen the Carolina parrot, the ivory billed woodpecker and the passenger pigeon—all now extinct. I was fortunate, however to spend countless hours with both of his works, *The Natural History of the Carolina, Florida and the Bahama Islands* 1729-1747 and *Hortus Europae Americanus* 1767, during the ten years I worked at the Oaks Spring Garden Library.

Catesby’s work predated Audubon and pioneered the composition of birds and plants in natural history art, demonstrating at times interrelationships based on keen observation. The cover of this year’s *Journal of Medicinal Plant Conservation* is the illustration of ginseng paired with the whip-poor-will by Mark Catesby. I stumbled across this interesting pairing in the process of researching another epic botanist, John Clayton (1695-1773) author of *Flora Virginica*, first edition published in 1739. Catesby was a mentor to John Clayton, and I was aware that Clayton sent many plant specimens to Catesby, but I later learned he also sent him a carefully preserved and stuffed “wip-poor-will” as requested. It seems that while Catesby worked on his final drawings back in England, he struggled to accurately understand this mysterious bird, closely related and often confused with the infamous goatsucker. I mention this because it’s curious as to why Catesby paired these two species together, and it is also symbolic of the relationship between Catesby and Clayton, who were both pioneers in documenting native medicinal plants of the New World.

In this pairing, however, Catesby did not note an ecological connection of direct interdependency but instead highlighted his observation that “abundance of people (in the colony of Virginia) look upon them as birds of ill omen, and are very melancholy if one of them happens to light upon their house, or near their door, and set up his cry, as they will sometimes upon the threshold, for they verily believe one of the family will die very soon after”.

This colonial fear of the illusive nightly call of the “wip-poor-will” is derived as Catesby further mentions: “The Indians say these birds were never known till a great massacre was made of their country folks by the English and that they are the souls of departed spirits of the massacred Indians....”

This infamous massacre is that of Patawomeck nation that took place in 1666, around 50 years before Catesby arrived in Williamsburg. I am a descendant of one of the Patawomack princesses that was spared because she was married into the colonial landscapes as a means of survival. My children and myself are members of the Virginia recognized Patawomack people. I found this personally extremely intriguing as to why Catesby, in what was one of his last illustrations, chose to artistically unite these two species.

Catesby paired a bird whose existence is known in folklore to represent the souls of native people with a medicinal herb we now know to be a powerful adaptogen that...
can bring back vitality, which seems very telling. I first viewed this composition as a foreshadowing of further demise of our native biodiversity perhaps foretold by Catesby. This was in part because Catesby is known as one of the earlier scientists to empirically observe the natural and manmade dangers impacting species’ survival. Then after pondering further, I found this composition incredibly healing—that perhaps ginseng has the ability to save our forests and to help us see the human and plant interactions in a different capacity. The call of the “wip-poor-will” as dusk falls on the open sky is significant of the transition time between light and dark. Ginseng is the quintessential adaptogen, helping us shift our energy and focus as we move through these incredibly trying times, both from an ecological and humanistic standpoint and perspective.

In this issue you can read further about current ginseng issues, such as understanding its genetic diversity, a new verification program for woods-grown ginseng as non-timber forest products, and if you have not yet done so, you can do something positive by signing our “Save American Ginseng Petition” on change.org. Our petition is there to demonstrate our commitment to a National Ginseng Conservation Plan, which is needed if we, as a nation are going to shift the way we manage our forests on both federal and privately owned lands.

Reflecting back on 2013, the year kicked off with a spring trip to Texas, with UpS presenting our “At-Risk” Tool at the Ethnobotany Conference. The International Herbal Symposium was highlighted by Betsy Bancroft’s receiving a spontaneous standing ovation in the church as she was acknowledged for her decade of dedication to United Plant Savers. Paul Strauss from Equinox Botanicals and catalyst for the creation of the Goldenseal Sanctuary premiered Sanctity of Sanctuary, a film by Blis Devault. This film tells the story of how Paul became symbolically married to the land, healing the scars of strip mining and by doing so built a community of people that is reflected in the plant communities that sustain them. United Plant Savers held two amazing events, one in Wisconsin and one in Ohio at the Goldenseal Sanctuary. We moved our main office from Vermont to Ohio with Erika Galentin, herbalist, plant biologist and former UpS intern taking over as our Community Outreach Coordinator.

In late summer I traveled out to Colorado to participate in the osha study spearheaded by Kelly Kindscher that you can read about in this Journal. I was inspired to see the wild stands of Oregon grape and many species of arnica all in abundance among the osha habitat of the Southern Rockies. After the field research, I attended for the first time the Telluride Mushroom Festival, the theme being “Fungi as Medicine”. My attention was drawn to the fact that we know so little about wild native fungi beyond those we hunt for food and medicine. These lesser-known bioregional fungi have unlimited potential for regional remediation, environmental restoration and survival of native ecosystems. Jay Schindler, founder of “Fungi for the People” spoke of spore libraries, where through citizen science type programs regional fungi can be spore printed, catalogued and identified. Should United Plant Savers include in its mission the conservation of native medicinal fungi? In our last Journal we published an article about the concern over chaga harvesting. From my perspective one cannot separate native plants from the native fungi, as they are so deeply related and interconnected. To find out more about native continued on page 4

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Cover Photo Credit:
Catesby’s Natural History of Carolina, Florida and the Bahama Islands.
fungal conservation and why it is so important, I recommend the International Society for Fungal Conservation.

This brings me to the sandalwood, the eyebright, the Indian pipes. How many wild medicinals are hemi-parasitic or have adapted unique and dynamic fungal relationships? These unique medicinal plants can only be found thriving in the ecosystem to which they are so deeply connected and which is necessary for their survival. It is the hemi-parasitic medicinals that we know the least about: they are those plants that cannot be easily brought into the realm of conservation through methods of cultivation. We have to shift our mantra from conservation through cultivation and look at ecosystem stewardship if we are to sustainably use these medicines.

These hemi-parasitic medicinals teach us that not only will they not survive if we continue to fragment their habitat, but we are essentially breaking the neurotransmission capabilities of the ecosystem when we allow horrific ecosystem death through mountain top removal, and then stand by and do nothing as native plants experience rates of rapid extinction. My insight is that we are literally reducing the earth’s ability to adapt, to be resilient to climate change and to provide ecosystem services we take for granted.

Looking forward to 2014 and reflecting on 20 years of United Plant Savers, I am promoting this mantra: Democratic Herbalism Giving Voice to the Plants.

Here is a list of ideas and programs we are working towards. Many of these topics you will read about in this Journal, and you can learn more about them in person at our two events in 2014 in Kansas and Ohio.

- Establish the need for research using technology to do more population studies as these medicinal plants are constantly shifting
- Look further at genetic diversity of wild populations.
- Promote the use of our “At-Risk” Tool.
- Promote and support sustainable harvest studies.
- Promote organic woods-grown herbs and prairie pollinator medicinals.
- Regional seed sourcing and sharing of medicinal plants.

In late fall I attended a talk by Peter Raven for the Center for Plant Conservation, and he made the point that we cannot save animals by protecting them in zoos, and we cannot save endangered plants by planting them in botanical gardens; nor can we stop the massive extinction through seed banks. Doug Tallemy so eloquently explains in his book, Bringing Nature Home, how the plants are the food source for the insects, and why we should be gardening with natives. The insects that feed on the native plants are then the food for the birds, as just one example; essentially the plants are critical to the food chain we all learned about in school. Yet why does plant conservation rate at the bottom of the totem pole in conservation funding, endangered species funding and in non-profits effort? E.O Wilson for decades has been writing about the greatest tragedy facing humanity, the loss of biodiversity. Elizabeth Kolbert’s newly published book, The Sixth Extinction, takes a deeper look at the human role in the rapid rates of extinction. Recent news of the rapid population collapse of the monarch butterflies is incredibly symbolic of the fragile relationships that are driving the ecological landscape, deepening our understanding of the role wild medicinals play in the ecosystem, such as the beloved milkweeds.

How can we politicize and humanize the issue? As the fire cider issue heats up our radar of protecting traditional herbal remedies, we need to fire up our efforts to educate and protect native ecosystems for our planet’s vitality and for our own. The medicinal plants are our teachers, their remedies unite our tribe and our collective voice heeds to their voice.

Catesby, who artistically captured the extinction of species and documented the ghosts of our ecosystem, hopefully ignites us to be diligent observers and to create sanctuary!

(Endnotes)
3 The Natural History of the Carolina, Florida and the Bahama Islands 1729-1747 by Mark Catesby.
4 http://patawomeckindians.org
5 www.fungal-conservation.org
Reconstructing the Phylogeography of American Ginseng
(Panax quinquefolius L., Araliaceae)
Thesis Summary for United Plant Savers
by Ciara Lockstadt

Climate oscillations, species' life history, and landscape affect the geographic distribution of genetic patterns, or phylogeography, observed in the flora of eastern North America. Specifically previous glaciations and, most recently, the Wisconsin glaciation shrunk plant ranges into the southern United States. As populations remained isolated throughout the glaciation, unique genetic mutations accumulated. When climates warmed, geographic barriers to seed flow, such as mountains or large rivers, hindered northward seed migrations. Thus a pattern emerged across the eastern North American landscape where genetic diversity was divided across large landscape features. Many species occupying similar niches show congruent phylogeographic patterns. This is certainly the case for herbaceous understory species like groundnut (Apios americana) and white trillium (Trillium grandiflorum), whose ranges show a division of genetic lineages on either side of the Appalachian Mountains.

Mapping these genetic patterns is a significant tool in developing modern conservation strategies to preserve genetic diversity. In the wake of anthropogenic threats, distinct genetic lineages harbor mutations that may provide traits critical for survival. Knowing the range of a lineage allows land managers to protect rare haplotypes, while allowing less stringent requirements for others.

In undertaking a Master of Science project at Appalachian State University (ASU) on American ginseng (Panax quinquefolius L., Araliaceae), I hoped to map genetic diversity across the landscape to aid in protecting this rare medicinal herb. My research questions were as follows: 1) Does the distribution of P. quinquefolius lineages support the hypothesis of an east-west phylogeographical break similar to that documented in other species? 2) Where are potential locations of P. quinquefolius refugia, specifically in the southern portion of the species' range or in the Blue Ridge Mountains? 3) Are there any regions of high genetic diversity? 4) What are the implications of phylogeographic history to the conservation of this rapidly declining species?

Sampling the vast range of ginseng was daunting, and my goal was to at least cover the 19 states that regulate ginseng harvest. Through collaboration with the United States Geological Survey and my own personal sampling, I was able to cover 24 states of ginseng’s 34 state distribution. I prioritized sampling southern states where ginseng populations may harbor unique genetic variation. I scanned segments of chloroplast DNA, called haplotypes, for genetic mutations. Chloroplast DNA has a slow mutation rate and is maternally inherited, meaning that it is only transferred in seeds, not pollen. This enabled me to track long-term seed migration patterns and analyze genetic diversity since the Wisconsin glaciation. I next mapped the geographical ranges of the lineages using ArcMap and constructed phylogenetic trees to determine which lineages were most ancestral.

I found a partial east-west phylogeographical break in the Appalachian Plateau. This break is partial because the ranges of the haplotypes creating the break overlap. One haplotype extends throughout the entire range of the species, while another grows exclusively east of the Appalachian plateau.

Unexpectedly, the most widespread haplotype is of recent evolutionary origin, while the ancestral lineages have small southern distributions and appear to be going extinct. Not surprisingly, I found the center of ginseng’s genetic diversity in the southern United States, indicating possible refugia. Rare haplotypes in the Blue Ridge mountains of West Virginia and Ozark Mountains of Missouri suggest existence of refugia further north than is apparent from fossil records of species occupying the same niche.

Since the Endangered Species Act does not apply to plants on privately owned property, my main conservation recommendation is to prevent harvest from populations that harbor rare haplotypes. Despite harvest being unregulated on private property, many landowners heavily guard their plants from harvest and are willing to participate in conservation efforts. Therefore, private property owners in ginseng’s southern range should be alerted that they harbor an important component of the evolutionary history of the species.

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This past summer I had the privilege of utilizing the Lloyd Library and Museum in Cincinnati, Ohio to research the history of the American movement for plant medicine. This premier botanical library was established in 1898 and guaranteed a future by a trust set up in 1917 by Curtis Gates Lloyd. The Library grew throughout the years from a barely 1,600 square foot building to an over 30,000 square foot, four-story bastion of botanical and medical history on the corner of Plum and Court Streets in downtown Cincinnati (Lloyd Library and Museum 2013a). In addition to housing current books and journals that span a variety of topics (including natural history, botany, pharmacy, medicine, pharmacognosy and more), the Lloyd Library also houses rare and historic books. Taken together the book and journal collection totals nearly 250,000 volumes. It also houses special print collections, numerous archive collections encompassing over 1,000 linear feet of shelf space, and at least 50,000 journal volumes, with some items dating as far back as the late 1400s.

The Lloyd Library is truly a unique and comprehensive resource for the broad botanical community and beyond where United Plant Savers’ members may find items of great interest.

Curtis Gates Lloyd was characterized as a generous person (Lloyd Library and Museum 2013b). And I am grateful, both for his trust allowing longevity and public access to this incredible warehouse of botanical knowledge and for the Fellowship named after him (Curtis Gates Lloyd Research Fellowship; see http://www.lloydlibrary.org/fellows.html for more information) that gave me the opportunity to live and research in Cincinnati during the summer of 2013. The Lloyd Library is one of the only surviving (and thriving) plant medicine institutions from the late 19th century—a time when plant medicine (as practiced by Thomsonians, Eclectics, Botanics, and Homeopath) dominated the American medical scene. As described by Michael Moore, a renowned American herbalist, the Lloyd Library is a repository of "the accumulated libraries of ALL the Eclectic medical schools, shipped off to the Eclectic Medical College (the "Mother School") as, one by one, they died" (Moore 2008).

During my research with the Native Medicinal Plant Research Program at the University of Kansas, Lawrence (KU), I learned that the adult use of what are legally termed ‘dietary supplements’ increased seven-fold from only 2.5% of the US adult population in 1990 to 17.7% in 2007 (Barnes et al., 2007; Eisenberg et al., 1998). I was struck with the classic question of “Why?” Specifically, why are more people using medicinal plants for health and well-being? Previous work identifies this trend with the growing dietary supplement market, increasing political support, and the increasing availability of supplement information and advertising (Goldstein 2002; Ruggie 2005).

For my doctoral dissertation in Sociology at KU, I wanted to dig deeper: I want to understand how people make the choice to use medicinal plants in a culture dominated by pharmaceuticals; how someone becomes reliant on plants for medicine. I started interviewing people in Cincinnati and St. Louis who use medicinal plants to learn why and how they use them. But another question haunted me: “Why are there so few of us?” That is, how did we go from an historical estimate of 100% of the US population relying on plants for medicine to only 2.5% of the population reporting dietary supplement use in 1990 with a comparably meager rebound to 17.7% in 2007? What happened? And how does this impact the movement for plant medicine today?

I soon found that knowledge is the key to understanding the historical demise of plant medicine in America. Historically, what has been accepted as ‘medicine’ and ‘medical knowledge’ has changed. The transition from plants as medicine to pharmaceuticals as medicine throughout the 19th-20th centuries entailed the discrediting and appropriation of medicinal plant knowledge by the emergent American Medical Association (Winnick 2005). As a historical complement to my interviews, I turned to documents written in the late 19th – early 20th century in order to understand how competing definitions of medicine and medical knowledge served to dismantle one of the last surviving medicinal plant movements in America—the Eclectics.

I spent nearly every weekday afternoon in the Lloyd Library buried in their impressive collection of historical texts: scanning countless boxes of archives, including the Eclectic Medical Institute records and the works of John Uri Lloyd, and Alex Berman; hundreds of Eclectic Medical Journal issues, including the Eclectic Medical Journal and the National Eclectic Medical Association Quarterly; and paging through related books, such as those written by Morris Fishbein, former editor of the Journal of the AMA, including The Medical Follies (1925), and The New Medical Follies (1927), as well as Arthur Cramp’s works published.
by the AMA, including *Nostrums and Quackery, V.* I-II (1910; 1921) and *Nostrums and Quackery and Pseudo Medicine, V.* III (1936). These, and much more (if not all) of the Lloyd’s holdings are catalogued on their website, which also includes information about how to access the materials (see [www.lloydlibrary.org/services.html](http://www.lloydlibrary.org/services.html)). While I focused on these historical Eclectic texts, I worked alongside others, including artists who found inspiration from Civil War and alchemical texts and illustrations and other patrons interested in ethnobotanical uses of plants.

I began cataloguing the different ways the AMA and Eclectics constructed notions of themselves and the other in terms of conflicting, competing discourses about what constituted ‘medicine’ and ‘medical knowledge.’ I became interested in how the AMA derogatorily characterized the Eclectics as ‘irregulars,’ ‘cultists,’ ‘quacks,’ and so on, as well as how the Eclectics characterized themselves, particularly in the face of these negative designations. I believe that these characterizations of the Eclectics and other medicinal plant movements eventually contributed to the stringent medical college curriculum and licensing laws that in turn led to the demise of the legal practice of plant medicine in the early-mid 20th century.

While I am analyzing this discursive conflict over plant medicine as it contributed to the decline of plant medicine in America, this work is less a story of marginalization and repression than it is a story of resistance from the standpoint of the Eclectics and present-day medicinal plant users. It is through the historical works of the Thomsonsians, Botanics, Homeopaths, and Eclectics, and the resurrection of medicinal plant knowledge in cultural and ethnobotanical accounts, that the knowledge base of western herbalism remains active in historical documents. It is through the generosity of Curtis Gates Lloyd and the hard work and dedication of the Lloyd Library staff and Board of Directors that many of these works survived the 20th century and remain accessible for library patrons to engage with and act upon.

Herbalists have persevered into the 21st century, reclaiming medicinal plant knowledge from texts like Margaret Grive’s *A Modern Herbal* and James Duke’s *Green Pharmacy*, and finding more avenues to share their knowledge, whether by website or published books and pamphlets; hosting or participating in workshops, conferences, and informal events; or pioneering organizations such as the American Botanical Council, the American Herbalists Guild, the American Herbal Products Association, United Plant Savers, and smaller community groups. While this is very much a work in progress, I am enjoying graduate student life in the trenches of this ongoing discursive battle between whole plant medicine and pharmaceutical medicine, as recounted by Eclectics in historical texts and by present-day herbalists and medicinal plant users in interviews and other supporting documents.

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Additionally, these lineages should be preserved in germplasm banks or protected gardens. Future research should work to conserve genetic diversity. Studies examining rapidly evolving nuclear DNA could help land managers understand how short term evolution plays a role in long term migration patterns seen in chloroplast DNA. All of these recommendations push to protect genetic diversity and further conservation developments while still allowing responsible harvest in eastern North America.

Early patent medicine

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Works cited:


1 Anna Heran, Lloyd Library and Museum, email message to author, October 10, 2013.

2 John Uri Lloyd, Curtis Gates Lloyd’s brother, also left behind quite a legacy, as he published over 5,000 articles in his lifetime (Lloyd Library and Museum 2013b) and proved to be one of the most outspoken advocates of the Eclectic movement during the late 19th and early 20th centuries.
Osha Research

by Rachel Craft

Osha (Ligusticum porteri) is an ethnobotanically important medicinal plant whose roots are wild harvested by individuals and sold by herbal product companies to treat multiple ailments, including influenza, bronchitis, and sore throat. Native Americans wild harvest osha as a medicinal plant and for ceremonial use. In addition to increased consumer demand and the wildcrafting of roots from older plants, osha has a limited range, occurring only in high elevation sites (greater than 6000 feet), and is difficult to cultivate, which has led to concerns about over-harvest and its inclusion on the United Plant Savers (UpS) “At-Risk” List. Therefore, in 2012, with support from UpS, the Missouri Botanical Gardens, and Botanical Liaisons, LLC, and funding from the Rio Grande National Forest Service and the American Herbal Products Association, researchers led by Kelly Kindscher from the University of Kansas (KU) Biological Survey initiated a multi-year field experiment to study the impact of harvest on osha populations in the Rio Grande National Forest in southern Colorado.

"79% of harvested plants in the meadow site and 66% of harvested plants in the forest site were replaced either with resprouts (small plants emerging from remaining fragments of the harvested plant’s root) or with plants that emerged from an adjacent plant’s root."

The overall goal of this research is to determine acceptable thresholds of harvest intensity that allow for the regeneration and sustainable harvest of this important medicinal plant species. First, researchers established 40 experimental plots in both a meadow site with high light availability and an adjacent forest site with substantial canopy cover and lower light availability. They collected data on the osha plants in each of the 80 plots, including the number of plants, % cover, and age class of each plant (seedling, juvenile, mature, or mature flowering). At both sites, they harvested osha roots from the plots in varying intensities (ranging from 0% harvest to 100% harvest of mature plants in the plot). Two hundred and fifty of the plants harvested (125 at each site) were marked so that they could be relocated in following years.

During the summer of 2013, KU researchers and the Forest Service, joined by volunteers from UpS and the Mountain Studies Institute, returned to the Rio Grande National Forest to monitor the status of these osha populations. They repeated data collection on the osha plants in each plot and located the marked plants dug a year prior.

Data were additionally collected for each of the tagged plants. Of note is that the data indicated that approximately 79% of harvested plants in the meadow site and 66% of harvested plants in the forest site were replaced either with resprouts (small plants emerging from remaining fragments of the harvested plant’s root) or with plants that emerged from an adjacent plant’s root. With additional funding, they will continue this long-term study and ascertain the conditions under which osha populations can recover from harvest and remain stable.

For more information, see:
Rest in Peace, Crucifixion Thorn

(*Castela emoryi*)

by Nicole Telkes

I believe that knowledge is power. In some parts of Mexico, when children are taught to identify their plants, they are taught the poisonous ones first, so as to avoid them. I believe that teaching the poisonous and the “no picks” is important for those coming into herbalism and deciding to wildcraft their own medicines. Foraging is a very exciting and empowering adventure, and popular culture is glamorizing many aspects of it on the internet, TV and other media. In this article I present Crucifixion thorn (*Castela emoryi*), a very special desert medicinal that I call a “no pick”.

There is nothing normal or common about Crucifixion thorn. The plant shares the Simaroubaceae Family of plants with tree of heaven and quassia. The Spanish name, chaparro armagosa means short/squat and bitter. It is a very special and rare desert medicinal plant growing in the Sonoran Desert, just barely creeping into the United States. It is listed as Salvage Restricted Protected Native Plants by the Arizona Department of Agriculture meaning these species of native plants “are not included in the highly safeguarded category but are subject to damage by theft or vandalism”. As far as a medicinal plant, chaparro is more of an “herbalist’s” herb. Herbalist Michael Moore used and taught it as medicine. I rarely see this plant made into a preparation and sold outside of the desert southwest and am hopeful it stays that way. This unique plant was one of the first medicinal plants I was taught to wildcraft, and is one of the easiest to damage if harvested incorrectly.

*Castela emoryi* is found in Arizona and California, and there is also a species in Texas, *Castela erecta*, ssp *texas* that may or may not be as effective. You can find a link at the bottom of the article to see its range and distribution.

*Castela emoryi* is a native shrub comprised of leafless stems and covered in thorns that seem to erupt out in a sort of explosion. The seeds occur in dense clusters at the end of branches and vary from yellow to red to dark brown as they age. The spines and stems vary from bluish gray to an olive green. The shrub can grow up to 15 feet tall. Stress and age can cause entire branches to yellow and die back. This plant could be misidentified as palo verde, so take care when identifying it that you have really found the right plant.

*Castela* has a reputation for being an effective medicinal plant to safely treat various parasitic infections. It is extremely bitter and has been used to treat many stomach upsets, especially those that respond well to bitters. Humorally, the plant is cold and dry and has a rather interesting aftertaste that reminds me of water when drunk out of a garden hose.

My first experience with *Castela* was in the field, wildcrafting it in herb school with Michael Moore. We were carefully taught that this plant may look very tough, but it is easily damaged by improper harvesting. In fact, the plant seemed to be disappearing in numbers. In a desert that receives 2-9 inches of rain a year on average, any sort of disturbance can be extremely long lasting. We were taught NOT to cut in such a way that left the stems open to sunlight and NOT to make several cuts, thereby leaving this plant that was already struggling to survive in harsh desert conditions with several wounds to heal. We were warned to be careful about teaching how to find and use this plant to others because in the past, folks that had very innocently taken their communities on plant walks had ended up really hurting the stands by harvesting improperly. The first time I collected *Castela* I made about 1 quart of tincture, which I used sparingly for a decade.

My next couple of experiences locating and tracking *Castela* have not been as happy as my first magical experience. I was walking up a random dry wash in Arizona looking at plants and had a sudden draw to get up out of the wash and almost ran about 1/2 a mile. The plants literally pulled me towards them. My friend (who was luckily another wacky herbalist) did not think I was crazy but instead followed me as I stumbled right up to a stand of *Castela*. As I walked up, I could see the plants were immensely stressed, as large branches were dying and yellowing. I spent a great while trying to figure out what was wrong. Then I saw clipper marks and yellowing tips. I started to tear up, and I sat for a while and tried to apologize to it.

In 2010 while I was back on a botanical field trip in Southern California, I stopped at a very large stand of *Castela*. One of the most distressing things at this legally “protected” site, at which NO ONE was to be harvesting, was what looked to be an abundant use of clippers at the tips of the plants. In the wetter regions of the country, clipper marks fade, but in
Losing the Scent Sandalwood
by Susan Leopold

Prologue
Imagine an elderly Chinese woman with a delicately carved sandalwood fan and as the afternoon heat of the day becomes too intense, the slight breeze of this aromatic fan changes the mood with one inhalation of an intoxicating smell. The sandalwood story that has unfolded, like the fan that opens and closes, in the Hawaiian Islands is tragic history, but one that is not unique to Hawaii, as tragedy haunts the sacred trees’ fragrant scent. The fan, in all its intricately carved beauty, further signifies the deep cultural roots endemic plants like sandalwood often have and how their persistence on the landscape is jeopardized by multiple pressures that range from overharvesting/poaching, land use decisions resulting in loss of native habitat, hybridization and invasive species.

This story unfolds with a deep historical significance beginning with the legendary figure Kamehameha, who after his encounter with Captain Cook in 1779 would become King in 1791. As King, he embraced the new technologies that were introduced to the remote islands, and with the use of guns and ammunition he began his Napoleonic quest to unify all the islands under his rule. By 1810 King Kamehameha had conquered and unified the islands of Hawaii. During his reign he was exposed to American fur traders and whalers, who figured out that the Hawaiian Islands had sandalwood and knew that there was a demand for it in China. At that time there was a decline in availability of sandalwood trees for the Canton markets because in 1792 the Sultan of Mysore declared Indian sandalwood a royal tree, limiting its sale to control the market, as well as address its overharvesting.

The significance of the sandalwood trade that took place during the years 1790-1840 is illustrated in the Chinese language that still to this day uses the term Tan Heung Shen (literal translation: the sandalwood mountains) to refer to the islands of Hawaii. Now when tourists from China come to the land of Tan Heung Shen, they often think they are coming to see the famous sandalwood mountains, but unfortunately sandalwood is not easy to find. The sandalwood trade changed the economy and brought about a terrible time period called the sandalwood famine. Many first-hand accounts describe what visitors to the island witnessed, as native people neglected their fishing and crops to extract sandalwood from the mountainous regions of the islands to pay the tax the King demanded. The sandalwood era was very much driven by the Hawaiian Monarchy’s obsession to obtain ships and trade goods.

After the sandalwood economy collapsed, the monarchy was facing an unimaginable situation. Since Cook’s arrival, and subsequent “discovery”, nearly 90% of the native people of Hawaii had died from smallpox, influenza and many other foreign diseases that had been introduced to the most remote island chain in the world. The unification of the islands, the sandalwood famine, disease, the royal family’s decision to abandon the traditional kapu system (ancient laws and rules), along with the influx of missionaries, traders and immigrant workers had all taken place in a very short time period, and it dramatically changed the cultural and physical landscape. The monarchy was considering all types of new business ventures to stimulate a broken economy, such as whaling, sugar cane, pineapple and cattle, but this created a demand for labor, since its own population had been so decimated. Dr. William Hillebrand, Hawaii’s pioneering botanist and medical doctor was hired by the monarchy to go out on expeditions to solicit the importation of immigrants. This afforded Hillebrand the additional opportunity to travel the world and collect useful and ornamental plants from other tropical lands. He would be successful in importing Chinese, as well as Portuguese immigrants; the latter would bring with them the famous ukulele, the knowledge of horsemanship and the skills needed to become good ranchers and laborers for the cane fields. The island of Hawaii would fashion over time a deep sense of pride as the Portuguese cowboys would teach Hawaiians how to ranch. These two cultures created a unique mix of cowboy, the Paniola, that is still iconic and present today. I mention this because the cultural ideals of the Paniola way of land use conflict deeply with a conservationist’s desperate attempt to save endemic species. Many of the state and federal land agencies struggle with decisions as they confront how to address management of the parkland forests for biodiversity versus the public’s use, which currently includes hunting exotic game and grassland habitat for cattle. I do believe that with thoughtful intention towards what is necessary for watershed management and the changing economics of the cattle industry that the state, conservationists and the Paniola cultural landscape can find common ground in the mission to save the remaining sandalwood forests.

Hillebrand was a compassionate humanitarian, doctor and visionary botanist, who established a botanical collection on Oahu and wrote the first
Flora of the Hawaiian Islands published just after his death in 1888. His life is fascinating because his letters and documents bear witness to a critical time period towards the end of Hawaiian monarchy. His descriptions depict the outbreak of smallpox and leprosy, the historic eruption of Kilauea Volcano and changes to the land and the people of Hawaii. In 1846 he addressed the monarchy in an epic speech entitled, “The Relation of Forestry to Agriculture” that is still relevant today. In this speech he is quoted as saying, “Of all the destroying influence man brings on nature cattle is the worst” . He explains the value of native forests, arguing the case for their critical protection in sustaining the rainfall and local Hawaiian watersheds, as well as their impact on the vitality of agriculture and the islands ecosystem. It is hard to say if the Monarchy heard his plea to protect the native forests.

Businessmen with support of the U.S. government would overthrow Queen Liliuokalani in 1893, thus annexation in 1898, and in 1959 statehood followed. In 1926, C.A. Judd, in his paper on the conservation of Hawaiian forests, reiterated, “...damage to the forest consequent to the trade ... was insignificant in comparison with the damage to the native forest wrought by cattle” . Cattle had been allowed to roam the islands and multiply since the time of King Kamehameha; Parker Ranch on the Big Island is the largest cattle ranch of any state in the Union. Hillebrand was outspoken about the devastation to the landscape he was witnessing in 1846, and many more would continue to echo the concern for the islands’ forested mountains. Flash forward 160 years to present where on the Big Island, the sugar cane plantations have been abandoned, and the military has become a major landowner. However, the cattle industry still dominates this island, and the remaining sandalwood forests, the endemic birds, insects, the plants and unique island ecology have all suffered in ways that are immeasurable. There is no current study that really adequately addresses the historical range or the current range of the sandalwood forests in regards specifically to the Big Island. There is a historical map dated 1906 of the Big Island that marks the presence of a large sandalwood forest that must have made a significant impression on the cartographers and is the location of the large scale logging taking place today .

This brings us to the current state of native Hawaiian sandalwood and the desperate, underfunded attempt to save remnant sandalwood trees and their coexisting disappearing species. As the hot spot of the world in regards to the rate of extinction, the island of Hawaii has a certain intensity that is hard to describe. You are essentially witnessing the loss of biodiversity that is taking place, while trying to understand the complexity along with what feels like a complacent attitude to stand by and watch it unfold. Saving sandalwood is an important story regarding an ancient genus of plants that is on the brink of disappearing before we even fully understand its global diversity, its role in the ecology of island ecosystems or its full medicinal potential. I further highlight that the Hawaiian story is not unique to Hawaii. It has unfolded tragically in all parts of the world where sandalwood exists. In the Juan Fernandez Islands, S. fernandezianum has gone extinct due to human exploitation in the last century. It is hard to even say how many other species of sandalwood have gone extinct due to human actions but were just never academically identified before their fate was sealed. In Hawaii alone historically up to nine species have been described, and four have been academically accepted until recent reclassification that now describes six. For such an economically important plant it is startling to realize how little research has been conducted on its taxonomical/genetic diversity and its ecological role in island forest ecology as a hemiparasitic tree/shrub.

Here I take you through my reflections and perspective as Executive Director of United Plant Savers. UpS is a small organization but one that has been a voice for medicinal plant conservation of wild harvested species whose populations are fragile and whose habitat is already threatened. I begin with why UpS decided to become involved and how it used its “At-Risk” Tool to determine the degree of threat to the species. As I became more deeply engaged, I began to get a sense of the complexity of the sandalwood issue and its many fascinating dimensions. I provide a taste of these by discussing sandalwood’s ecological and botanical aspects, its history and management, existing uses, medicinal potential and global demands to create a holistic understanding of this unique genus of plants. I then provide a brief overview of what UpS is doing to promote conservation of this species and summarize some key observations from the most recent International Sandalwood Symposium, which UpS co-organized. I conclude in part four with a personal vision of what conservation of this sacred species could look like.

How UpS Became Involved

Environment Hawaii under the leadership of Pat Tummons first published an article in its October, 2010 issue, about the logging of sandalwood that had been exposed due to a controversial bankruptcy case just southeast of the town of Kona. This area was uniquely noted on a historical map as the “Sandalwood forest” in 1906 by surveyors, who mapped the ahupua’a land divisions of the Big Island. It is hard
to believe that despite the cattle, logging and infestation of invasive rats, ungulates and plants that this forest still persists today. The exposure revealed that a large land sale of 3000 acres of sandalwood forest had been made and was now being actively logged. Because the company, Jawmin that had purchased the property went into bankruptcy court, the substantial sale records of sandalwood were now public knowledge.

According to the loggers, they had received orders for nearly 15 million dollars in sandalwood from companies in Sri Lanka, Dubai and China.\(^7\)

The logging of sandalwood in recent times is not new. In fact, concern over the harvesting of sandalwood was the stimulus for the Sandalwood Symposium that happened in 1990 at the East West Center in Honolulu over concerns of harvesting of sandalwood that had taken place on the same property, though at the time it was owned by the Pace Family (known as Hokokona).\(^8\)

Pat Tummon’s article that appeared in *Environment Hawaii* was brought to the attention of UpS by Board Member Tim Blakley, who lives on the Big Island and is very familiar with the sandalwood oil industry and trade as an essential oil expert and educator for Aura Cacia, a division of Frontier Co-op. The criteria that UpS considers in adding a new species takes into account the morphology of how the species grows and reproduces, the distribution range of the species, the threats to its natural habitat and the market demand for the species relative to the species population. These key components also form the basis for the “At-Risk” Tool assessment, which ranks several questions in each of the above-mentioned categories and assigns a numerical ranking. The goal of the tool is then to offer to the larger community transparency into UpS’s decision-making process, as well as a more scientific method of “At-Risk” List assessment.

United Plant Savers used its “At-Risk” Tool to evaluate the threat of sandalwood. In regards to the risk to native Hawaiian sandalwood, it became very clear that concerns needed to be addressed in looking at the following issues: 1) vulnerability due to its life history/morphology, 2) effects of harvest on individual plants and populations, 3) its abundance and range, 4) the status of its habitat and 5) its market demand.

Considering all the above mentioned details in regards to sandalwood, UpS’s governing Board of Directors unanimously voted to add all six native and endemic species: *S. freycinetianum* (endangered), *S. haleakalea*, *S. paniculatum*, *S. ellipticum*, *S. involutum* and *S. pyrularium* to the “At-Risk” List in an effort to bring about awareness of eminent poaching due to the value of this tree and to encourage landowners and state agencies to engage in stewardship of these living Hawaiian heirlooms that desperately need oversight along with regulations that will provide guidelines to its management and protection.\(^9\)

**Dimensions of the Hawaiian Sandalwood Issue**

As I delved deeper into the issue, I began to understand how complex and challenging it would be to have an impact. There are many dimensions in play to really gain a more holistic understanding of the challenges that face sandalwood conservation. The dimensions that are discussed are as follows:

1) sandalwood’s diversity and taxonomy
2) its ecology and cultivation
3) global demand and poaching
4) adulteration
5) use and value
6) medical research

After UpS announced that sandalwood had been added to the “At-Risk” List, I traveled to the Big Island in January of 2012 to investigate for myself the status of sandalwood so that I could gain a deeper understanding of the cultural and ecological components of native Hawaiian sandalwood. Two issues became very clear at the start of UpS involvement in the sandalwood issue. The first was that research was needed to further understand the diversity of sandalwood’s being logged since it had never been adequately studied taxonomically, nor its historical range and current distribution. The second important piece to conservation was the need to address the issue of global demand and markets. At the time Hawaiian sandalwood was not being processed and marketed as a value added Hawaiian product but being chipped into pieces that were shipped to distilleries in the Middle East, Asia and Australia—essentially being fed into the global demand for sandalwood.

As you read below, you will see that UpS acted on both things mentioned. We initiated a grant to look more closely at the taxonomy and range of *S. paniculatum*, the one Hawaiian species that is currently being logged, and we co-organized the International Sandalwood Symposium held in October of 2012 from which much of the information presented in this article was gathered. Furthermore we are now providing a student scholarship to consolidate all current data regarding species distribution of *S. paniculatum* on the Big Island.
Taxonomy
Santalum, derived from the Latin word Sanctus, meaning holy and sacred, is not limited to the well-known *Santalum album*, known as Indian sandalwood, but to 18 distinct species that are scattered from the island of Australia to the archipelago of Hawaii. Native Hawaiian sandalwood with six distinct species represents over a quarter (33%) of the diversity of Santalum.

To address the first issue UpS awarded a grant to Danica T. Harbaugh-Reynaud, who started the International Sandalwood Foundation (ISS) to collect specimens of *S. paniculatum* and document its current locations on the Big Island. Danica is a botanist and authority on native Hawaiian sandalwood. She did her doctorate work on the four red flowered sandalwoods present on the other islands of Hawaii, but had not yet intensively studied the two species of white flowered sandalwoods found only on the Big Island. Her research led to the reclassification of what was recognized as four Hawaiian species and is now accepted as six.11

The grant was to do a preliminary study of the genetic diversity of *S. paniculatum*, the mountain sandalwood that is at present being commercially logged. Currently, two varieties are recognized, including the type *S. paniculatum* and var. *pilgeri*, which historically were regarded as two distinct species. While var. *paniculatum* consists of small trees that are usually located around Kilauea crater, var. *pilgeri* consists of trees up to 65 ft. high typically found near Kealakekua. Recent logging has been taking place around Kealakekua, and could possibly be the only location where *S. paniculatum* var *pilgeri* can be found.12 Scientific research in regards to taxonomy, genetics and chemistry is deepening our understanding of how diversity affects medicinal plant populations. As a side note, recent genetic and chemical research of wild ginseng has demonstrated significant alkaloid variations linked to the local ecotypes of those variations that were tested. This demonstrates the need for further research and also makes the case for conservation of genetic diversity of within species conservation, especially when it comes to medicinal plants. This means we need to be thinking how to regionally conserve genetic diversity for its unique chemical distinctions and medicinal properties.

Combining all three methods of scientific inquiry and analysis (ecology, genetics and chemistry) will be critical if we are to understand and implement conservation of these valuable medicinal plants. This is cutting edge research that is necessary to understand how morphological/chemical differences relate to genetics and/or are influenced by the ecological niches where plants thrive.

In the case of *S. paniculatum* there have been reports that two distinct morphological and chemotypes occur in sympathy around Hokukano ranch. The initial collection of specimens revealed significant variation in bark texture, leaf size and flower formation. Wade and Jeff Lee, who are the owners and current loggers of the Sandalwood property allowed Danica to study the site and gather specimens for the UpS study. According to Wade Lee of Jawmin, he has correlated some of these morphological characteristics with distinct chemical properties. Those trees with large greenish flowers, darker wood and fissured bark have greater oil volume but lesser quality (40% alpha-santalols and 18-25% beta santalols) — while trees with lighter heartwood and smooth bark have less oil volume but higher quality (50% alpha-santalols and 25-30% beta-santalols).13 Further genetic studies to determine the extent of species delineation have not been completed due to lack of funding at this time. Certainly a strong case has been made that further research is necessary to really understand *S. paniculatum*’s chemistry, diversity, range and its unique role in a fragile ecosystem.

Based on the locations of where specimens were collected and the range that sandalwood has been known to inhabit by its elevation range, UpS produced two maps. The first shows the potential range of sandalwood and the native plant communities, and the second highlights locations of where sandalwood was located and collection specimens taken, along with illustrating the impact of invasive plants on native plant communities. It also highlights where military lands are and the expansive range of Parker Ranch, in contrast to protected areas. These maps that were created are based upon previous ones created by the Department of Natural Heritage in coordination with The Dryland Forests, a non-profit that is an umbrella for several groups working towards restoration of the dryland forests. In Joseph Rock’s book, *Indigenous Trees of Hawaii*, published in 1913 he wrote in regards to the dryland forests, “It is in these peculiar regions that the botanical collector will find more in one day collecting than in a week or two.
Observations from this grant revealed that several areas of sandalwood are still present on the Big Island. The most serious of threats may not even be the logging, since the sandalwood trees are under serious environmental distress. Extensive dieback is visually apparent, with over 50% of the sandalwood appearing dead or dying in most areas where sandalwood was documented. Other threats apparent to the species survival are ungulates that trample and devour nearly 100% of all young seedlings and rub away the bark of mature trees while eating any new leaf growth they can reach. Rats devour seeds as they hit the ground, hawk moths cause leaf damage and furthermore old trees show apparent dieback the cause of which is unknown, but one can speculate that it is due to the lack of adequate host plants. The Lee brothers, who have renamed their former company Jawmin to Haloa Aina claim the logging that has been carried out is to remove dead and dying trees; this is the justification that was presented at the ISS by forestry consultant Randy Senock. His presentation at the International Sandalwood Symposium of his research on the main property that is being currently harvested concurs with the UpS research that the forest is not thriving due to all the threats mentioned. The dire situation for sandalwood forests is that it will take human mindfulness and intervention if the sandalwood of the dry montane forests of Mauna Loa is to be saved.

The completion of UpS’s research project that has been ignited in its first phase would help determine if S. paniculatum should be regarded as two distinct taxa, if these potential new taxa merit endangered species listing and if sustainable harvesting is even possible at this time. Furthermore, researchers need to extensively map the species current distribution and status of the species due to severe ecological threats that prevent sandalwood from reproducing in the wild.

Ecology & Cultivation

It has been mentioned that sandalwoods are hemiparasitic trees/shrubs, and this is a vitally important aspect of their ecological niche and the needs for propagation and restoration. Conservation through propagation has always been a fundamental aspect of UpS’s mission. In recent years serious headway has been made in regards to how one germinates seeds and masters their propagation for cultivated sources of rare native medicinal plants. Sandalwood is both tricky and fascinating in this regard. A hemiparasitic plant can photosynthesize but derives some of its water and nutrients through attaching to roots of other species. It can also root-graft, meaning its roots grow together. This happens mostly with the same species or a similarly related species. Sandalwood roots can graft onto many different species, effectively joining whole plant communities through their root systems. Imagine for a second what that might look like if one could see through the soil substrate the web of interconnected roots linking an entire plant community.

A study out of Australia looked at the quandong (S. acuminatum) in its native pristine coastal shrub habitat to evaluate the role of sandalwood’s parasitic nature from an ecophysiological perspective. What it revealed was that quandong took in up to 70% of its nitrogen from its primary native host (Acacia pulchella), not surprising since most native hosts identified in natural settings are nitrogen fixin plants. The images of the quandong’s suckers look like puckered lips. This adaptive trait makes sense in the context of an island species where the natural conditions are extreme, where rainfall may be sporadic and fires eminent, for it allows the nutrients to be shared, stored and then perhaps accessed as necessary. Very little is really understood about this unique relationship, so of course the research in regards to quandong concludes with the need for further inquiry into these extremely complex relationships that are at this time far from being fully understood.

Though rarely addressed in scientific literature, I bring up the esoteric role of plant communication because I feel it adds to the discussion of sandalwood as a hemiparasitic species. Recent research regarding the “mother tree concept” demonstrates how
fungi wrap themselves around root cortical cells of trees connecting one tree to another, as a form of communication. The tree sends down carbon, and the fungal web allows carbon and nitrogen to be shuffled back and forth according to which tree needs it. The mother trees are the big old ones because of their mature establishment network. This pioneering work on how fungi help trees communicate has been carried out by the research of Suzanne Simard in the ancient forests of the Northwest through the University of Victoria.19 I mention her work because it could be hypothesized that the sandalwood roots serve the role of the fungi in the soil. Allowing for structural and species diversity, the sandalwoods are in a sense mother trees and help form the underground networks that enable resilience to withstand disturbance. What dying mother trees do is move resources into living trees, so if a tree is allowed to die in place before it is cut, it will transfer its nutrients to the larger ecosystem, a passing on of its legacy. In the case of sandalwood this aspect is expressed in root suckering meaning once a sandalwood tree has been cut down, clumps of suckers will regenerate in a circular pattern several meters away from the original stump. Though I am presenting a possible theory, I do want to highlight that the role of sandalwood in the ecology of its native habitat is poorly understood and for such an economically important species and one that is critical to such a fragile ecosystem I find this shocking.

The species profiles from Pacific Island Agroforestry include a plant monograph of Hawaiian sandalwoods with a detailed look at germination, propagation and agroforestry potential.20 Propagation by seed is desired with good germination results. Suitable hosts are needed for survival once the young seedlings are ready to be transplanted. Native species thought to be good host plants are koa (Acacia koa), Koai’l (Acacia koai), a’ali’l (Dodonea viscosa) and Ko’oko’ola (Bidens spp.).

Session three of the ISS conference was dedicated to current research and case studies in cultivation and propagation. The majority of presentations were focused on research related to S. album, as it is the species with the most effort put towards cultivation on any large scale. S. album has the most potential in a cultivated capacity because it appears that the trees can be harvested within 15 years, (though this was a controversial topic) as it is a fast growing species that thrives in wetter climates. Anantha Padmanabha is the world authority on this topic. He is a forest consultant from Bangalore, India and was the keynote speaker at the ISS conference. In his talk he addressed the intense over exploitation of sandalwoods worldwide. He then presented models of agroforestry systems from small rural farmers from India, Costa Rica, Australia and other tropical areas where he has consulted on establishing S. album. He pointed out that there are obstacles to the success of sandalwood in the agroforestry system. These obstacles are the lack of seed supply, appropriate models to replicate and lack of private participation. It was certainly controversial as to how oil derived from S. album trees that are being harvested at the young age of 15 years will have the quality of oil similar to trees 40 plus years old. There was a sense at the ISS conference that many countries would be presenting on successful cultivation efforts, but instead the consensus, outside of the Australian work, was that very little had been invested in agroforestry on any real scale that entailed sandalwood, and that poaching was rampant to the point of deterring rural farmers to even consider the long term investment. The Australian work has changed everything, literally, and other nations with sandalwood resources should take note of how their government has invested in the long-term management of wild forests, which has resulted in Australia now dominating the sandalwood industry.

One very hopeful presentation was Neil Logan’s based on his use of S. paniculatum as a secondary species in an agroforestry system located on the leeward side of the Big Island. Successional agroforestry systems mimic natural succession by building species assemblages that contain necessary stages or guilds. The case study he presented showed how he planted native sandalwood along with a native host trees surrounded by food crops (taro, sweet potato, manioc, yacon, banana, pineapple, legumes). This system allows the assemblages to create a microhabitat, then phase into a long-term native tree forest that has economic value. His pictures showed thriving young sandalwood trees with food production in an area that was once a barren field of invasive grasses and has no source of irrigation; essentially the system he established was thriving even amidst varying climatic conditions.21

...it could be hypothesized that the sandalwood roots serve the role of the fungi in the soil."

The biggest experiment in large-scale sandalwood cultivation is the plantation run by TSF Corporation, which acquired Mt. Romance. This plantation is discussed later in more detail under medical research with details of a phase 2 trial for sandalwood oil as a pharmaceutical botanical. Concern was expressed at the ISS over what the impact might be on the sandalwood industry if young trees were harvested before the oil content in the trees had time to mature. There was much disagreement over the time period needed until the trees were ready to be harvested, ranging from 15-30 years. The results have shown the oil to be of a reasonable quality at a younger age, and trial and error were mentioned in regards to trees in a plantation setting dying around the age of ten years due to over planting. The years to come will be a dynamic time in the global sandalwood industry.
There will be a need to address the widespread poaching, the management of plantation, research in agroforestry systems and conservation of species and genetic diversity.

Another relevant concern to the conservation of wild sandalwood is the threat of hybridization. S. album, being the most valued and the species most widely used in experimental plantations crosses very readily with indigenous sandalwoods. S. album has been introduced into many Pacific countries for the purpose of establishing plantations. It has been said, though I have not seen it myself, that a plantation of S. album has been planted in Hawaii. Hybridization has taken place, and at the Lyon Arboretum you can see a living hybrid tree that is a cross between S. album and the endangered S. freycinetianum.
The wild sources of sandalwood are diminishing rapidly. Tim Coakley points out that twenty years ago about 400 tons of sandalwood oil were being produced annually, and now his estimates are around 100 tons. These numbers exclude Osyris lanceolata oil being distilled out of West Africa, but certainly explain why the demand over the last ten years has spilled over into false sandalwood species being harvested out of the wild (discussed in more detail later in this article).

**Adulteration**

Tim Coakley notes that many of the products marketed as sandalwood are actually not sandalwood at all. His figures show that 300,000 tons of agarbatti are produced in the world per year and sold as sandalwood, when only 7,000 tons of sandalwood are harvested world-wide. These numbers alone demonstrate the deceptive labeling of sandalwood products and demand for imitation wood. The intense global demand creates extreme pressure on wild sandalwood in each part of the world where it grows and further into Africa for false sandalwood, Osyris lanceolata, where these slow growing hemiparasitic trees whose ecological role is not even understood are being extracted at an alarming rate.

A serious health concern and awareness for the consumer is that sandalwood adulteration is rampant since the demand far outweighs the supply and cost. In regards to agarbatti, cedar powder is often used as substitute filler since it is cheaper than sandalwood powder and is then sprayed with synthetic oils. Sadly many products are now using cheaper plastics such as Diethyl Phthalate (DEP) instead of cedar. This type of plastic is obviously harmful when the smoke is inhaled; because of this, many governments have begun banning the burning of joss sticks in temples, even in parts of China. It was presented at ISS that DEP had been detected in sandalwood oil as well.28

**Use & Value**

Dandalwood, known as iliahi was known as a kupuna tree, meaning an ancestral tree that was spiritually respected. Iliihi shavings and oil were used as a preservative rubbed on the skin of a deceased body, ingested as a curative for genital and gastrointestinal conditions, used as a preservative to ward of insects from valuable tapa cloth (clothing made from a type of mulberry) while in storage and as a scent added to coconut oil. In a recent interview with local ethnobotanist, Hawaiian herbalist and traditional artist, Momi Subino from the Big Island showed me how she had made the pounding tool out of sandalwood, which is used to make tapa cloth. In the process of using the wood for carving she is then able to take the shavings and powder and use them in the making of her lip balms and salves. She told me how effective it was in the treatment of severe sunburns, making note that the literal translation of the Hawaiian language is burnt skin.29

Local manufacturing of value added products and regional branding of indigenous sandalwoods certainly have the potential to create niche markets, such as the surge in regional/wild foods. In Hawaii sandalwood seeds themselves are being gathered and sold as seed source for propagators and as a native edible food. Raw they can be used in making pesto, and toasted they are similar to that of a tasty pine nut. Sandalwood oil could be distilled on the islands, creating a much higher value for the wood, and local herbalists could market skin salves and lip balms to name a few of many wonderful products that could be made creating a niche value added market from an island resource. Certainly the concern now over the current Hawaiian sandalwood oil that is being marketed is that there is no oversight or regulation of the sandalwood harvesting. Currently what few older trees that are known to be still surviving are being cut at an alarming rate and the roots are being extracted as well. No study or research has looked at the ability of sandalwood to be harvested sustainably in Hawaii or on the Big Island. We are dealing with a species that is not reproducing in the wild, and we are allowing the cutting of the last “mother trees” with no knowledge of how the sandalwood forest will regenerate. I would caution anyone who is thinking that they are buying “sustainable sandalwood oil” from Hawaii.

In Australia an example of innovation in value-added products is Westcorp development of incense sticks called New Mountain Sandalwood. These sticks are made from 100% Australian sandalwood and are marketed as a natural and safe mosquito repellant. Westcorp makes the claim that if you can secure local supply and investments in equipment and marketing you can increase the value of raw material to wholesale by 17 fold.29 Historically wild-crafters in island nations have been paid very little in comparison for the end value of the sandalwood. This had resulted in lack of incentive for rural farmers to invest in the propagation of sandalwood in agroforestry systems or for wild-crafters to sustainably manage wild sandalwood forests. Value-added products being manufactured locally are certainly one option for many regions where small supply of indigenous sandalwood is found. Sandalwood oil, seeds for food and propagation, locally made wood carvings, local production of salves, and other herbal concoctions could create a niche economy for the islands, but only if great effort is put into restoration of sandalwood habitat.

**Medicinal Properties**

Sandalwood’s use as a medicine is well documented in the ancient Ayurvedic healing traditions where it is referred to as Chanadana. Sandalwood is associated with a cooling effect, and the powdered wood is mixed into a paste and applied medicinally to relieve heat conditions such as sunburn, acne, rashes, fever, herpes, infections, sores and ulcers. The oil is used in soap for its natural antimicrobial and hydrating...
properties. Sandalwood is used religiously in India, Sri Lanka and other Hindu regions where its essential oil is applied to the third eye for lifting depression and awakening intelligence. The burning of sandalwood incense is used for calming the mind and, in many documented sources, during religious funerals. In the Hindu tradition it has many spiritual significations in rituals and ceremonies as being able to purify the space and, with the paste being applied to the forehead bring the devotee closer to the divine. In Yoga practice sandalwood oil and incense are used to create the meditative ambiance associated with eastern religions, thus creating a demand in the western markets as yoga grows in popularity. Certainly there is a long history of use in Asia among the Buddhists in both a religious sense and in the long history of Traditional Chinese Medicine. In Tibetan tradition sandalwood is used internally to treat inflammation of the lungs and blood in the sputum. It is literally endless the use of sandalwood in folklore healing and symbolism in spiritual sacredness as an aromatic wood traded for thousands of years and used in remote island cultures around the world. The compounds called santalols are what give the oil its unique fragrance, and it is that smell that also acts as a repellent against insects. Aromatherapists use the scent for its calming and depression-lifting effects, as well as applying the oil externally as an antifungal. Beyond the santalols, the chemistry and bio-activity of sandalwood have yet to be fully explored. So it is no wonder that recent research in the *Journal of Ethnopharmacology* has identified sandalwood to be further studied due to its use in traditional Aboriginal medicines in Australia. Furthermore, it is currently in the process for FDA approval as a potential pharmaceutical botanical drug. This FDA process is similar to the recent approval of the botanical drug Fulyzaq derived from the sangre de grado (*Croton lechleri*), which is only the second botanical drug on the market, the first being Veregen, approved in 2006 and derived from green tea (*Camellia sinensis*).

“...it is currently in the process for FDA approval as a potential pharmaceutical botanical drug.”

According to Center Watch, clinical trials have begun for a possible new botanical drug called albuterpenoids, derived from East Indian Sandalwood oil, to be used as a topical ointment. The FDA approved a phase 2 trial that began in March 2011, to test the efficacy and safety for treatment of common warts (*Verruca vulgaris*). The sponsor of these trials is ViroXis, a bio-pharmaceutical company located in San Antonio, Texas that is focused on developing and commercializing innovative, proprietary and botanical pharmaceuticals derived from sandalwood oil. If this drug makes it to the market place, the supplier of this oil will be TSF Corporation out of Australia. TSF at this time is the largest sandalwood plantation in the world with 6500 hectares of *S. album* trees planted in northern Australia where it has a wetter climate and is not prone to the severe poaching problems that *S. album* faces in India. TSF is now the parent company of Mt. Romance, which is supplying large companies, like Lush and Aveda that use the oil in hand bars and other personal care products and in addition is a supplier to the global fragrance industry. Though they are still a handful of years away from harvesting the plantation grown sandalwood in large quantities, they are thinking ahead and hopeful of expanding their markets for sandalwood oil by becoming the sole supplier to the pharmaceutical sector with an agreement with the start-up company ViroXis. Currently TSF is also engaged in the supply of sustainable native Australian sandalwood, *S. spicatum* from WA Australian sandalwood for both wood and oil products for the global market. TSF has invested serious research, time and money towards a sustainable plantation of sandalwood that is promoted through their motto, “soil to oil”. This slogan represents a concept to be a full service grower, manufacturer and supplier of sandalwood for a dynamic global market place. Most sandalwood comes from established native or naturalized sandalwood forests that are 60 or more years old, and TSF will be setting the stage and addressing the obstacles as they tackle a large-scale, long-term strategy towards achieving cultivated sandalwood production.

Further independent medical research has been done on sandalwood as a part of a study conducted on the antibacterial activity of traditional Australian medicinal plants, published in the *Journal of Ethnopharmacology*. Another study looked at seven traditional aboriginal medicinal plants, based on those identified in the previously mentioned study; this study will also include five Indian Ayurvedic plants to look at the potential of enzyme inhibitory and antioxidant activities as potential application in the management of hyperglycemia. Of the twelve plants tested *S. spicatum* along with the Indian plant *Pterocarpus marsupium* showed the highest inhibitory activity against the metabolic enzymes a-amylase and a-glucosidase that break down carbohydrates into sugars. The study makes the case that though there are many pharmaceutical drugs to help manage diabetes, side effects of these medication are still a challenge; therefore, plants continue to play a major role in the discovery of new compounds for treatment, and sandalwood shows serious potential as one of the plants that may play a critical role in new drug development.

**What UpS is Doing to Conserve Sandalwood Advocacy**

UpS voices the concern as an advocate for plants on its well-known “At-Risk” List so that care can be considered in regards to the impact of harvesting and
when possible encourage propagation and
cultivation for large commercial use to reduce the
pressure on wild populations.

UpS invested time, funding and energy into
researching the issue before submitting a petition to
the U.S. Federal Fish and Wildlife Service to consider
listing all 6 species of native, endemic Hawaiian
sandalwood to appendix two of CITES. Every three
years under the agreed treaty over 175 countries
gather to hear various nations petition possible listings/
delisting/amendments, and then party members vote
on the official listing that includes the terms of
monitoring the species in regards to trade as outlined
in the listing proposal. Though the U.S. seriously
considered recommending a proposal for listing, they
have decided to wait and monitor the situation more
closely. Pat Ford, botanist for the U.S. Fish and Wildlife
Service attended the International Sandalwood
Symposium (held October 2012) co-hosted by UpS
and presented on CITES. In her presentation she
mentioned that at this time no sandalwoods are listed
on CITES.

Pat Ford did however inform everyone that in the
upcoming convention which was to be held in spring
2013, that Kenya had put forth a proposal for the
listing of Osyris lanceolata, known as east African false
sandalwood. Kenya argued in its petition proposal
that in the last decade O. lanceolata has entered the
international market as a substitute for “true”
sandalwood (particularly S. album and S. spicatum). Since
supplies have become strictly regulated, limited
and expensive, this has caused a shift in the trade to
an alternative source, leading to over exploitation of
the species in East Africa. Since 2007 O. lanceolata has
been protected in Kenya and Tanzania, and between
2007 and 2011 over 200 tons of illegal false
sandalwood have been confiscated in Kenya. It is
estimated that 1,000 tons are harvested annually from
East Africa. Similar to other sandalwood species, O.
lanceolata is also a hemiparasitic plant that takes 40-
50 years to mature. Its habitat is already threatened
due to conversion to agriculture and quarry mining,
and the oil that it is harvested for primarily is in the
heartwood and roots. Currently all harvesting is from
wild population since cultivation is difficult, and it takes
a significant long-term commitment. Following the
Sandalwood Symposium, it was agreed at the 2013
CITES convention that O. lanceolata be added to the
list of protected species Appendix 11.

United Plant Savers feels very positive about its
contribution towards sandalwood conservation by
bringing attention to the issues at hand. Through our
CITES petition UpS brought awareness of the issue that
got state and federal botanists, forest management
and fish and wildlife to be engaged in what is taking
place in Hawaii and around the world. Not only did
Pat Ford travel from Washington to be at the
symposium, but in addition Paul Conry, Deputy
Director of DLNR (Division of Forestry and Wildlife,
Hawaii’s Department of Natural Resources), gave the
closing talk entitled, “The future of Iliahi Hawaiian
sandalwood: Learning from the Past and Looking
Forward”. DLNR had employees with ipads at the end
of the conference walking participants through an
online survey asking questions in regards to possible
regulations and efforts the state should consider.

In the last legislation session there was a Sandalwood
Bill that was proposed, in large part due to the efforts
and advocacy of sandalwood activist Leigh-Wai Doo.
This bill acknowledged the significant cultural and
ecological role of sandalwood and proposed a
permit process for logging sandalwood. UpS has been
a huge part of this momentum that we hope will
continue as important questions are asked and further
research committed to address the conservation of
sandalwood in Hawaii. Sandalwood’s extraordinary
fragrance, exceptional wood, sacred religious
significance in many cultures, its versatility and
medicinal properties have put it in high demand for
centuries all over the world. Despite the historical
sandalwood trade, Hawaii still remains the only region
in the world and is part of the only country where
sandalwood is being commercially harvested without
regulation or consideration for its conservation.

The hope is that through articles, our annual Journal,
e-newsletters and outreach to consumers/product
manufacturers that we can create a more sustainable
sandalwood industry. Awareness by the consumer to
demand that sellers reveal details in regards to the
contents of the products and origin will help build a
source trail of sandalwood that is not being poached or
adulterated.

Public Awareness – The International
Sandalwood Symposium
The International Sandalwood Symposium that took
place October 2012 co-organized by United Plant
Savers and the International Sandalwood Foundation,
whose vital contribution played a key part in the
success of the symposium, published proceedings that
are now available. ISS had several sponsors that
really represented a nice diversity of stakeholders in
the sandalwood industry. I would like to again
acknowledge and thank all the sponsors that helped
financially to make the Sandalwood Symposium
possible: Wescorp, CSIRO (Australian Tree Seed
Centre), Haloa Aina, DLNR (Hawaii Division of Forestry),
WA Sandalwood Plantations, Foundation for Island
Harmony, Botanical Dimensions, Aura Cacia and
Hawaii Forest Industry Association. Non-profits, the
State, sandalwood companies, essential oil folks,
landowners and researchers/presenters were all there
to share research and discuss issues related to
conservation. The conference took place over four
days, with over 30 academic presentations on the
following topics: local and global markets and threats,
chemistry and genetics, cultivation and propagation,
ecology and environment, regional use and
development, regulation and sustainable


management. There were speakers from every sandalwood-producing country including the United States, Australia, Fiji, New Caledonia, India, Indonesia, Sri Lanka, Tonga and Vanuatu.

Several take home points of the ISS gathering have been highlighted throughout this article, beginning with the fact that the sandalwood story of Hawaii is one that is sadly playing out in island nations throughout the Pacific. Small fragmented populations that are left of endemic species and varieties are struggling to survive due to an increase in price as supply shrinks. Secondly, it is important for consumers to understand that nearly half the world’s global supply is being poached and that adulteration of sandalwood products is taking place on a massive scale. Third is that sandalwood as a value-added product has the potential to be an economic contribution to remote, rural island nations if efforts are invested in research, education, conservation and cultivation.

One of the most moving moments for me at the symposium was when the children of the Iliahi Elementary School danced on the eve of the opening day of the symposium. Before they danced, Leigh-Wai Doo, who had arranged for the students to perform, came in to give the students a pep talk about the role of iliahi in their Hawaiian culture. He looked out over the large glass windows where you could see the beautiful Japanese garden at the east-west center and he said to them, “You might look out and see a spectacular garden, but none of these plants are native plants; they are brought in from other countries. The Iliahi is a native tree from your culture that is sacred. The native plants are disappearing at an alarming rate, and preservation of your heritage and culture is intimately linked to the native plants of your Hawaiian Home.”

A Positive Vision
Imagine a world where, as educated consumers we support the diversity of sandalwood species through the products we buy. As I sat there on the last day of the sandalwood symposium, I imagined that I could one day buy expensive sandalwood oils from around the world—their origin would be verified through their unique DNA markers, and their genetics preserved in gene banks and living germplasm at protected botanical sanctuaries around the world. I could choose the iliahi, known as *S. paniculatum* of the Big Island and think of healthy sandalwood forests thriving with its Koa hardwood host. Next to it I could envision its ancient ancestor, the Australian, *S. spicatum* and its red earth, arid desert scent that has been harvested by the aboriginal people. Aromatherapists may choose to use the sandalwood from Fiji, *S. yasi* for its wetter rainforest version of base notes, and let us not forget the mother *S. album* found right in the middle of all this diversity with its sacred, historically rich oil content. We could be choosing to embrace the diversity of sandalwood so that we as the consumer know its origin, and therefore create a niche understanding of the cultural significance, ecological diversity and long-term forest agro ecological systems that are needed to sustain world-wide sandalwood diversity. I envisioned local and regional governments and educational institutions supporting vital sandalwood research before it is too late.

I thought of the new products we might see in the herbal supplement world that would include a sandalwood based cream for severe acne, topical warts and those viral diseases for which we don’t have adequate effective medicines at this time. I thought about sandalwood being a missing link that shows promise in curing diabetes. And then I had a moment of karmic clarity: here we have a sacred tree with aromatic wood whose story represents the worst of human greed and exploitation that shows dramatic abilities to cure some of the worst diseases such as diabetes, viral warts and imbalances of the skin. How not only does it bind the roots of other plants that it grows with through its hemiparasitic roots, but in aromatherapy its oil is a base, upon which it holds together any other aromatic oil you add to it, explaining why it is so revered in the fragrance world. The lessons of sandalwood are so poignant, that of course it would make sense that the Hindu burns the oil when cremating the dead as they transcend to the soul realm. It’s fascinating how the fragrant oil is known for its antibacterial and antimicrobial qualities while also being used to clear spiritual negativity and bring further clarity and sacredness of the mind, body and soul. I certainly hope that as we look forward and as we work diligently to save sandalwood, that the reward is obvious—its healing potential virtually unlimited. If we choose our karmic fate of harvesting to extinction, then we deserve to be stripped of its healing synergistic chemistry and sacred gifts.

(Endnotes)
10. Sandalwood symposium and logging 1990.
the dry, dry sparse Sonoran deserts when a plant is clipped, that clipping mark can be seen for many years to come. As a wildcrafter who practices deep ecology and sustainable harvesting techniques, this was quite upsetting. The unfortunate thing is that the folks responsible probably had no idea that they hurt the plant!

I am not going to publish proper harvesting of this plant because this plant is, in my books, a no pick. I am happy to report that the abovementioned stand of Castela had a very happy little nursery of babies everywhere, and plants further away from the roads were doing very well. I decided after my experience to explore alternatives or analogous to this plant and leave it alone.

I have spent the past 15 years trying to use effective substitutes, or analogous, and have found that there are many alternatives you can experiment with for parasitic bowel infections. In fact, I simply do not use this plant in practice because it is not something I feel is a sustainable for the future. If you were lost in the desert with a parasitic infection, I can see that this could be a viable herb. If you live in the Sonoran desert and tend stands, then you may have a different perspective; but for those that are visitors please consider leaving this plant alone. I can and do find many bitters and many verifications that I have had success with that are good substitutes.

Nicole Telkes is the founder of The Wildflower School of Botanical Medicine in Austin, Texas.

For Further Research
http://jpet.aspetjournals.org/content/114/4/331.abstract
http://www.wildflower.org/plants/result.php?id_plant=CAERT
http://plants.usda.gov/core/profile?symbol=CAEM4

Marc Williams, Executive Director, has taken on the mission of PHI, which is to celebrate and further the work of Frank Cummings Cook IV by documenting his life and supporting activities that promote his vision of advancing human culture in harmony with the natural world. The vision of PHI is to facilitate knowledge exchange, skill building, inspire individuals and equip communities with tools to transition to a sustainable society that is in harmony with the natural world. PHI’s interactive website, documentaries, international herbal resource centers and the published writings of Frank Cook are some ways in which the organization is making a profound and positive impact on the world. Marc has also created an amazing website, www.botanyeveryday.com, which offers free online botanical course. Frank Cook conducted this class via email for 9 years, and Marc has now expanded the course in new format via the web. “We focus on understanding the characteristics and classifications of plant families in our class. Familiarity of patterns within the plant world can allow one to demystify the green wall and begin to have confidence in the usefulness and abundance of plant resources all around us.” — Marc Williams
"AT-RISK" & "TO-WATCH" LISTS

Statement of Purpose
For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UPS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

"At-Risk"

AMERICAN GINSENG
Panax quinquefolius

BLACK COHOSH
Actaea (Cimicifuga) racemosa

BLOODROOT
Sanguinaria canadensis

BLUE COHOSH
Caulophyllum thalictroides

ECHINACEA
Echinacea spp.

EYEBRIGHT
Euphrasia spp.

FALSE UNICORN ROOT
Chamaelirium luteum

GOLDENSEAL
Hydrastis canadensis

LADY’S SLIPPER ORCHID
Cypripedium spp.

LOMATIUM
Lomatium dissectum

OSHA
Ligusticum porteri. L. spp.

PEYOTE
Lophophora williamsii

SANDALWOOD
Santalum spp. (Hawaii only)

SLIPPERY ELM
Ulmus rubra

SUNDEW
Drosera spp.

TRILLIUM, BETH ROOT
Trillium spp.

TRUE UNICORN
Aleuris linnosa

VENUS’ FLY TRAP
Dionaea muscipula

VIRGINIA SNAKEROOT
Aristolochia serpentaria

WILD YAM
Dioscorea villosa, D. spp.

"To-Watch"

ARNICA
Arnica spp.

BUTTERFLY WEED
Asclepias tuberosa

CASCARA SAGRADA
Rhamnus purshiana

CHAPARRO
Castela emoryi

ELEPHANT TREE
Bursera microphylla

GENTIAN
Gentiana spp.

GOLDTHREAD
Coptis spp.

KAVA KAVA
Piper methysticum (Hawaii only)

LOBELIA
Lobelia spp.

MAIDENHAIR FERN
Adiantum pinnatum

MAYAPPLE
Podophyllum peltatum

OREGON GRape
Mahonia spp.

PARTRIDGE BERRY
Mitchella repens

PINK ROOT
Spigelia marilandica

PIPSISSEWA
Chimaphila umbellata

SPIKENARD
Aralia racemosa. A. californica

STONEROOT
Collinsonia canadensis

STREAM ORCHID
Epipactis gigantea

TURKEY CORN
Dicentra canadensis

WHITE SAGE
Salvia apiana

WILD INDIGO
Baptisia tinctoria

YERBA MANSA
Anemopsis californica

"At-Risk" Tool Debuts in Texas

by Susan Leopold

The Powers of the Prairie and the Texan Immortal aka Asclepias asperula....

This Texas milkweed, a uniquely beautiful Asclepias, is commonly known as "immortal" for its seriously strong medicinal value. The milkweed's name, inspired by the Greek physician who became known as the "father" of medicine, makes sense when thinking of the value of pleurisy root (Asclepias tuberosa), another potent medicinal milkweed. I was taken in by this native prairie medicine while exploring the LBJ grasslands in Texas, since I had never heard of the "immortal". The dried root is noted for being used in small doses to assist in stalled childbirth and to treat enlarged, or congested hearts. Highly toxic as well, this BIG medicine is not for the inexperienced. Milkweeds are known not only for their medicinal value, but also as critical food for various pollinators and their unique role in the prairie ecosystem.

This brings me to my visit to the Botanical Research Institute of Texas, known to most as BRIT (www.brit.org). I was thrilled to be able to visit the state of the art LEED certified solar powered, native prairie plant rooted botanical library and herbarium collection that has become globally famous for its innovation. BRIT is famous in my neck of the woods as the publisher of the newly printed and long awaited Flora of Virginia. No other publisher wanted to take on this task, and those that turned it...
down should feel some regret considering the first run of the book sold out in just a few months. It’s refreshing to visit an institution that values sustainability and the role of native plants in the ecosystem. In the evening I attended Kelly Kindscher’s talk on Medicinal Plants of the Prairie, and the unique program Kelly oversees at Kansas University, referred to as the “Native Medicinal Plant Research Program” (www.nativeplants.ku.edu). Students go out in the field and collect large amounts of certain plants species that have been identified as having key ethnobotanical uses. These plants are then dried, processed, and tested for certain chemical characteristics that might lead to potentially new drug development. One promising plant that has shown real potential in the fight against cancer is the fruit of the wild Physalis longifolia, commonly known as wild tomatillo. This is one plant you may want to grow, eat and enjoy—those wild tomatillos!

This Summer UpS will be gathering in Kansas to celebrate the medicine of the prairie, with a Planting the Future Event scheduled for June 14th, 2014.

The reason I was able to go botanizing at the LBJ grasslands and drop in to check out BRIT was that I was in Texas to present with Kelly Kindscher and Lisa Castle the “At-Risk” Tool as a new methodology at the annual gathering of the Ethnobiology Conference. Not only did we present UpS funded research, but in addition Lisa Castle presented a poster of using the tool as a teaching guide, and one of her students, Zella Classen, presented a poster on using the tool to assess the vulnerability of native plants to over harvest. Overall the tool was well received. A Journal article will be published soon, as well as UpS placing the Tool on the website.

Celebration of Cohoshes
by Erika Galentin

Celebration of the Cohoshes was a celebration indeed. On September 28, 2013, researchers, medicinal herb growers, herbalists and students alike gathered in the spirit of medicinal plant conservation and were kept company by the warm autumn sun and brilliant glow of the hills at the Goldenseal Botanical Sanctuary in Rutland, Ohio.

The event hosted classes in wild-simulated cultivation, propagation techniques, and herbal medicine therapeutics and use of black and blue cohosh (Actaea racemosa and Caulophyllum thalictroides). Folklore and history surrounding these Ohio natives were also celebrated, providing a well-rounded educational experience on not only conserving and perpetuating the source of these native medicinal plants, but also cultivating a better understanding of the consumers of these herbs, their therapeutic value, and their demand in the natural products marketplace.

“This place is special...because you have to seek it out. Therefore, these people that come here to participate in these events do so earnestly.”

Although the event was structured around the conservation and use of black and blue cohosh, many of Ohio’s native medicinal plants were also attended to throughout the conference. Tanner Filyaw, Forest Botanicals Specialist from Rural Action taught on the cultivation of Ramp (Allium tricoccum) as a non-timber forest product. There were also classes in wild-simulated cultivation and propagation of American ginseng taught by Chip Carroll of Woodland Wise Botanicals and Ed Flecther of Strategic Sourcing. These classes on American ginseng, whose conservation continues to be of high priority to United Plant Savers, were able to create more momentum from the current national media attention to the plight of American ginseng (www.cbsnews.com/8301-505269_1...plant-species/) and the United Plant Savers ‘Save American ginseng’ petition through change.org (www.change.org/petitions/save...-quinquefolius). The Goldenseal Botanical Sanctuary was also honored by a visit from Adam Seitz of Pennsylvania Certified Organic, who came to speak to the organization and our presenters about a 3rd party verification program for growers and processors of forest-grown American ginseng that is being launched in 2014.

The Goldenseal Sanctuary (www.facebook.com/GoldensealSanctuary) is a special place. And, like all special places, it harnesses the ability to inspire hope and purpose in the lives of those who come here. We had the opportunity to engage and speak with some of our members who attended the event. One member in particular had a very poignant and humble truth to share. “This place is special’ she says, “and it is special because you have to seek it out. Therefore, the people that come here to participate in these events do so earnestly.”

There is no doubt that smiles of fulfillment and furrowed brows of pensive thought were expressed by all. One of the most exciting observations from the day, from both presenters and our Executive Director, Susan Leopold, was the number of younger people who attended this event. Their presence at events such as this is what drives the mission of United Plant Savers and the work of medicinal plant conservationists and growers. In the mission statement of United Plant Savers, we make a vow to future generations. Their presence at this event lets us know that they are hearing us and feel inspired to seek us out. We would like to cordially thank Molly Jo Stanley and Hocking College of Nelsonville, Ohio, one of our Partners in Education, for continually encouraging their students to join our organization and participate in our events.

United Plant Savers was also significantly excited by the attendance of many of our local community members from Athens and Meigs County, Ohio. These are exciting times for our organization, inclusive of the recent move of our ‘base of operations’ from Vermont to the Goldenseal Botanical Sanctuary in Rutland, Ohio. There are so many fantastic organizations and proactive individuals within the SE Ohio Appalachian region. We are very much looking forward to

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New “Verified Forest Grown” Program

by Adam Seitz

Pennsylvania Certified Organic (PCO) is proud to announce the launch of its new non-timber forest product verification program - PCO Verified Forest Grown. This program has been a long time in the making, and is the result of collaborations between PCO, experts in the field of non-timber forest products, regulatory agencies, and other industry stakeholders.

The PCO Verified Forest Grown program establishes a confidential, third party verification process for forest-based producers and collectors of botanical and fungal non-timber forest products operating on private forestland (owned or leased) in the United States. It also establishes a verification process for those processing items such as tinctures and supplements with ingredients originating from such operations. Though the only item currently verified under the program is American ginseng, PCO hopes to increase the number of non-timber forest products verified under the program to include items such as black cohosh (Actaea racemosa), ramps (Allium tricoccum), and goldenseal (Hydrastis canadensis) to name a few. It should be noted that the PCO Verified Forest Grown program is a stand-alone PCO program; organic certification is not required for enrollment but is encouraged!

Though the program serves several purposes, a primary aim is to verify products as being forest-grown, sustainably produced or collected, and legally acquired. In addition to these distinctions, verified products are further categorized as being forest farmed (wild-simulated, woods cultivated, etc.) or wild stewarded (truly wild). As such, consumers of verified products are assured that the products are produced in a natural environment, and that the use of a verified product does not contribute to the degradation of the species from which the product originates.

Another goal of the program is to ensure continued market access for producers, collectors, and processors of verified products by assisting regulatory agencies in verifying compliance with current laws dictating the trade of some non-timber forest products. This is an on-going process but is certainly an overarching goal for the program.

Forest farmers, wild stewards, and processors of American ginseng can apply for verification in the PCO Verified Forest Grown program starting this spring. The process of verification entails completing an application packet, having an on-site inspection, correcting any issues of concern as applicable, and completing a renewal process to continue enrollment in subsequent years.

About Pennsylvania Certified Organic

Pennsylvania Certified Organic is a non-profit organization that educates and certifies organic growers and handlers, mostly in the Mid-Atlantic region. PCO certifies more than 700 farming and food production operations, including produce, field crops, herbs, wild crops, dairy products, poultry products, value-added products, livestock, mushrooms, maple, snack foods, coffee, tea, cosmetics, and more. PCO is accredited by the USDA under the National Organic Program. Organic products certified by PCO may be labeled and sold as organic in the United States, Canada, the European Union, and other countries that recognize USDA organic certification. For more information regarding the PCO Verified Forest Grown program or to apply for verification, contact Adam Seitz at PCO (adam@paorganic.org/814-422-0251).

engaging and building reciprocal relationships with our local community as we move forward... ‘Planting the Future’. United Plant Savers and Goldenseal Botanical Sanctuary would like to thank our presenters for donating their time, resources, and knowledge to providing participants with such a rich educational experience. Ed Fletcher (Strategic Sourcing Inc., www.strategicsourcinginc.net), Amanda Vickers (Bent Creek Institute, www.bentcreekinstitute.org), Betzy Bancroft (Yermo Mont Center for Integrative Herbalism, www.yihergcenter.org), Caty Crabb (Wildfire Herbs), Rebecca Wood (Hopewell Holistic Health), Mimi Hernandez (American Herbalists Guild www.americanherbalistsguild.com), Marlene Waechter, CPM (Ohio Midwives Alliance), Tannor Filyaw (Rural Action, www.ruralaction.org), Maureen Burns-Hooker (Herbal Sage Tea Company, www.herbalsage.com), Chip Carroll (Woodland Wise Botanicals), Robert Eidus (North Carolina Ginseng and Goldenseal Co., www.ncgoldenseal.com), Sasha White (United Plant Savers), and Marlene Waechter, CPM (Ohio Midwives Alliance).

United Plant Savers would also like to take the opportunity to thank our national and regional sponsors for assisting us in producing such a fulfilling event: Mountain Rose Herbs (www.mountainroseherbs.com), American Herbalists Guild, Herbal Sage Tea Company, the Farmacy (www.farmcynaturalfoods.com), Chelsea’s Real Food, and Rural Action. We would also like to thank Controlled Folly (www.facebook.com/controlledfolly, muka?ref=t) from Athens, Ohio for providing great music for all as we watched the sun set over the hills of Meigs County. What an incredible day!
Two hours down the Amazon River and then two hours up the Rio Napo in Peru is a small botanical garden with a remarkable history. For those brave souls willing to make the excursion, this garden is a hidden gem of beauty, learning and discovery. The RenuPeru garden, located at the ExplotNapo lodge, far away from the chaos of Iquitos, Peru, started as a seed in the mind of Dr. Jim Duke.

In 1977, the United States Department of Agriculture commissioned Dr. Duke to search the world for plants that might help cure cancer and, later, to seek out high value lightweight crops, such as medicinal plants. So in 1991, he welcomed an opportunity to join an eco-tour to the Amazonian rainforest, a geographical area with an estimated 80,000-90,000 plant species. The other USDA government employees could not officially venture to the backwoods of Peru at that time because of the fear surrounding the threat of the revolutionary group known as the Luz Sendero (The Shining Light). Dr. Duke used some of his accumulated vacation time and risked going on his own, a decision that he is glad he made.

In Peru, Dr. Duke met a shaman named Antonio Montero Pisco. Antonio helped Dr. Duke navigate the challenges of the rainforest—an ever-changing vibrant landscape of mud, vines, plants and animals. Together they spent days searching for certain medicinal plants in the rainforest. Dr. Duke decided that the plants would be easier to study if they were in a garden setting. The soil conditions are poor, and many plants, like vines, rely on other plants for structural support, and some plants have symbiotic dependencies with insects like ants, other insects and even mammals. Antonio and Dr. Duke worked together with Peruvian botanist, Rodolfo Vazquez to identify the plants and translate the local names to Spanish, then English and Latin. At first, the garden consisted of just a few plants and a little shack where Antonio and his sons would perform simulated ayahuasca ceremonies for local tourists. The garden was finished in 1994 and currently has around 230 species. There have been several spin-off gardens in the area with the help of Dr. Andrea Ottesen, PhD.

I have been blessed with the opportunity to visit this garden as an instructor for the University of Massachusetts course, The Shaman’s Pharmacy with Medicine Hunter, Chris Kilham. We have met with Dr. Ottesen and her ethnobotany students from the University of Maryland. The RenuPeru is now under the care of two shamans, Guillermo Rodriguez Gomez and Don Julio Morales. Guillermo comes from the Bora and Ocaina tribes, and his knowledge and love of plants come from his father, who was also a shaman and curandero. Even though Julio is originally from San Martin, he learned his vast knowledge of the medicinal plants from the teachings of his uncle, a Shipibo shaman and curandero. While many tourists pass through the garden, few actually stop to smell the flowers or rub the garlicky ajo sacha in their hands.

References:
(D. Duke, personal communication, November 25, 2013)
(A. Ottesen, personal communication, November 25, 2013)

Nathaniel Putnam serves as the Education Coordinator for the Medicinal Plant Program at the University of Massachusetts, Amherst. He is currently working on his graduate degrees in ethnobotany and anthropology and can be contacted at nathaniel@plantsEyeweview.com

“As a scientist, ginseng has become our model species for understanding environmental effects on the understory and biodiversity of temperate deciduous forests.”

James McGraw in Response to the Ginseng Petition on Change.org
What makes a plant species rare or endangered? Globally, and in Vermont, the biggest threat to most of our endangered plants is habitat loss—more specifically, development. Once a site is built up, the plants may be replaced by lawn or building, or pushed into a tiny corner of their original habitat. Other increasing threats to some of our species are the loss of natural processes (such as the suppression of fire), as well as climate change, and invasive species. Many species, including a number of our orchids and ferns, are declining for reasons we don’t fully understand. Some species are naturally rare to begin with, and then they are more vulnerable to any of these threats. At Vermont Natural Heritage program, we work hard to monitor over 600 species of plants, to learn more about their distributions and habitat needs, and to slow or prevent the loss of their populations. We also monitor and protect exemplary natural communities, animals, and even mosses, following a similar protocol. In the process, we hope to maintain intact and functioning ecosystems, which will also serve to protect other groups of species, such as fungi and lichens, and may allow for some of these species to recover on their own.

United Plant Savers is one organization that is concerned about our dwindling wild herb populations. Another organization doing this work is the Vermont Department of Fish & Wildlife’s Natural Heritage program. Our mission is to conserve our fish, wildlife, plants, and their habitats for the people of Vermont. State by state, and province by province, we have a network of “Natural Heritage” programs that extend across the US and Canada and also cover a large portion of Central and South America. Each Natural Heritage program is charged with monitoring any species that may be under threat of being lost within the borders of that state.

American ginseng (Panax quinquefolius) and goldenseal (Hydrastis canadensis) are two species that are considered globally vulnerable to extinction from the wild. But, unlike many species, ginseng and goldenseal are most threatened by unsustainable levels of harvesting. For this reason, both species are monitored by Natural Heritage programs in most states and provinces where they natively occur. Here in Vermont, we are lucky to still have a fair quantity of ginseng—it grows natively in well over 100 locations, scattered around the state; but because of the threat of harvesting—primarily for expanding Chinese markets—it is on our “Watch List.” As is the case everywhere, ginseng was once far more abundant here. Today most populations are very small and are unlikely to be able to tolerate much harvesting pressure over the long term. In fact, there is some question whether populations as small as the Vermont ones can sustain themselves in the long term. In some areas ginseng patches appear to be in decline, while in other areas the populations appear to be stable or recovering—for now. After over a decade of significant decreases in harvest, ginseng harvesting has been back on the upswing since 2005 with no sign that it will let up soon.

Goldenseal is much rarer in Vermont, with only 4 known native populations. In fact, these populations make up a good chunk of the 9 populations known to be left in all of New England. It is listed as Endangered in Vermont, and we do what we can to monitor and protect the plants. In one location, we have worked with landowners to keep cattle from grazing a site. In other locations, the New England Wild Flower Society is collecting seeds for long-term storage. Someday, if all our populations are lost, we might grow some of these seeds for reintroduction. Even presuming that our plants do persist, we might use these seeds to increase the size of existing populations. Both of these practices are labor intensive and have uncertain outcomes.

A seemingly obvious solution to support the intensifying herb markets might be to support “wild simulated” growers—where herbs like ginseng are planted in the wild and left alone until harvest. However, there are many concerns in the scientific community about this. Both wild plants from other regions of the country and cultivated plants have been demonstrated to be quite different genetically from their wild local counterparts. This is because they come from different genetic lineages, and also because they have been selected for different traits that have made them adapt to their nursery or wild environments respectively. Mixing these lineages has the potential to decrease the fitness of a population, but on a larger scale it also irreversibly mixes the gene pool in a way that can never be undone. Introducing cultivated individuals near a wild population may beneficially reduce the risks of inbreeding, but it also comes with its own outbreeding risks, which need to be far more thoroughly assessed. When plants of very different genetic lineages cross, it can result
I first heard of the “Green Spark” upon my first visit to Rutland, Ohio in 1996. I came with a class from Hocking College to meet Paul Strauss and see the United Plant Savers Botanical Sanctuary. Paul spoke of how one of his and the Sanctuary’s “jobs” was to pass the Green Spark to us and to all of those who come through the Sanctuary. Folks could then carry this spark out into the world and share it with others.

Since its inception, the Goldenseal Sanctuary in Rutland has hosted more than 100 interns from all over the world for the 6-8 week program. We have had the pleasure of hosting interns at the Sanctuary from Ireland, Japan, Nigeria, Australia, and all over the United States and Canada. The impact that the Sanctuary has had on them and that they have on their communities keeps the green spark alive all over the globe. It is amazing to think that this all originates from a 360-acre tract of forestland in Rutland, Ohio.

One of the most rewarding aspects of my job in overseeing the program at the Sanctuary is to see the life changing effect that being in this place has on people. Living here it is sometimes easy to forget just how lucky we are and why. Seeing the reactions that others have upon being here is truly a wonderful thing to witness. Not many people move through here without feeling the magic of the place. I have come to understand that the thousands of people who have moved through the Sanctuary in the past 20 years, sharing their love of the forest and the plants have had as many positive effects on the Sanctuary as it has had on those who pass through it.

Several past interns have settled permanently into or near this community, buying or renting old farms to grow food and try to live a little closer to the Earth. Past interns have been responsible for helping to protect and steward thousands of acres of land in this region and beyond. Many past interns visit the Sanctuary often. It is so nice to see people stay connected with this place over so many years. These folks have a real sense of ownership here as they have been the ones putting the blood, sweat and tears into the soil here for so many years. The entrepreneurial spirit is also alive and well in past interns with many creating their own businesses in herbalism, education, permaculture, landscape design or further pursuing their studies of plants.

All over the planet social and environmental justice issues and organizations are being spearheaded by past UpS interns, who continue to see the world as much bigger than just themselves. This selflessness is really the key to understanding why we all come here and why it continues to bring us together. It is all about the plants, the trees, the wildlife and the soil. It’s about Heart Pond, Main Hollow, Slaughter Ridge and Hopeful Prairie, the Sanctuary’s landmarks. These are the things, the important things that will always remain, even when we are all gone. It is our responsibility now to see that it is here and even better for the future.

Whether providing the inspiration for people to buy their own piece of land to steward, the inspiration to go out and educate others or the inspiration to live more self sufficiently, the Botanical Sanctuary has deep and long lasting impacts on those who have spent some time here.

We extend a special THANKS to all of the past UpS Interns for all that you have done. We would like to host an event at the Sanctuary for past interns in the future. Due to the UpS Office fire years ago that took out a lot of past files, we have lost contact information for some of our earliest interns (1995-2000). If you were an intern during this time, or know any who were, please send us your updated contact information so that we can keep in touch with you.

Sanctuary

A look into humanity
As simple as a rock
As complex as an ocean
Its ancient wisdom found within us
An undeniable Mecca of interesting natural beauty

A natural beauty so stupendous
What is upon and around us now is the culmination of life and death
Something (or someone) looking grey from a distance we find green and alive up close

Knowing that this interconnected web is the essence of who and what we are

The wind whispers through the tree tops, the sun reveals the beautiful colors and shapes of the leaves
Yellow falling through green

Poem Written by United Plant Savers Interns during Field Trip to Crane Hollow Nature Preserve October 6th, 2009
When I moved here in 1970/1971, not an insect—let alone a fish, frog, turtle, or mink—lived in the creek. Acid mine runoff had killed all life in it. Surrounding parts of the old farms looked like the moon with garbage. Back then, to see a deer was a wondrous event; it is everyday common now. Bobcats were not even a thought back then, but they’re back. As are bear sightings. Turkey did not even exist here then, they are everywhere now. Raccoons, squirrels, groundhogs, and opossum populations, thought noticeable back then, are far more numerous now. We did have a songbird population then, but now it has doubled, maybe more.

But even then, down in the deep hollows there were the herbs, large populations of hundreds of species, a veritable botanical ark. The big old limber had been selectively cut over the past 150 years, but there are still some old ones left, along with thousands of acres of mature forest. Next to me and the United Plant Savers Botanical Sanctuary, on Joe and Wendy Viny’s property, there is still some old growth that is protected and will never be cut. And those herbs down in all our hollows are absolutely going crazy, taking over the place. Our creeks are again full of insects, turtles, frogs, fish, and mink.

It’s a good story. Finally reclamation took place in the 1980s by the government and also by me on the acres of land I bought to protect the forest and watershed. We now have a young, like-minded community who have bought up many of the local farms around me, thousands of acres. And of course there is the United Plant Savers Botanical Sanctuary (aka The Goldenseal Sanctuary), the first sanctuary in the United States dedicated to at-risk medicinal plants. Hard to believe in Meigs County, Ohio, known more for the extractive industries of coal mining and logging, along with deer hunting, tomato farming, and marijuana cultivation, we now have something that has always been here to be very proud of, a herbal botanical ark worth protecting and promoting.

As a means of simple, local conservation, for there is more land to protect than I can handle, I have encouraged as many friends, interns, and students to purchase land when it would come up for sale in the neighborhood. I have also sold a few parcels from my farm. It is nice to know that herbology and farm life—besides being simply self-sustaining and self-fulfilling—have the ability to protect land and build community. At the same time, because of my relationship with botany professors at Ohio University in Athens, I have allowed and encouraged many students to have access to this land for their Masters theses. Oh, and in no way am I the leader of this community. Every one of these families has The Green Spark and has figured out their own way to live green on the land. I was only here first and it was evident to me that conservation of this bountiful herbal land was of prime importance. I have always been a truly spoiled herbalist. I had always taken my good luck for having access to so many important medicinal plants for granted. As I did for our plethora of food and survival herbs. It’s just the way it was. Being spoiled is good when it can do good for all.

Sanctuary of Sanctuary: Paul Strauss & the Equinox Farm Traveled the World in 2013
by Blis DeVault

Sanctuary of Sanctuary: Paul Strauss and the Equinox Farm had an impressive screening year in 2013. With its Premier and win, as the Best Environmental Film in Australia at the Byron Bay International Film Festival, it has traveled to the International Film Festival for Environment, Health and Culture in Jakarta, Indonesia, where it won an honorable mention. It has also screened in the Athens International Film Festival, the Maui Film Festival, the Bahamas International Film Festival, and won Best Regional Film at the Cincinnati Film Festival. In 2014 there will be more festival screenings and the release of the DVD, which will contain the feature film version that is screening now, as well as a shorter broadcast and educational version that has just been completed. Stay tuned!

“I am amazed by how this film held me, moved me, inspired and nourished me. The camera work, editing, music almost never fell forced or formulaic. The story evolved, grew; it all felt right. That’s a good documentary.”
Juror William Messer Cincinnati Film Festival

“Sanctuary of Sanctuary weaves separate strands of vital importance to environmental activity — sustainable living, conservation of endangered medicinal plants and rehabilitation of land degraded by strip mining — into a compelling biographical tapestry of Ohio’s passionate eco-hero, Paul Strauss.”
Juror Rosy Whelan Byron Bay International Film Festival

Blis DeVault is an Assistant Professor of Communication Arts and the Director of the Television Center at Xavier University. www.sanctityofsanctuary.com
Meet Some of our New BSN Members!

United Plant Savers’ vision is to see UPS Botanical Sanctuaries established in people’s backyards, farms and woodlands, creating a living greenway of native medicinal plants across the landscape of America. A sanctuary isn’t defined by size or magnitude, but as sacred space, a place where one can find protection and the peace and renewal of nature. Nor is a sanctuary necessarily designated or defined by government agencies or large organizations, though often we think of it as such. We can all create sanctuary on the land we care-take. As our Sanctuary Members are demonstrating, Botanical Sanctuaries can be created in small backyards as well as on large plots of wilderness, in towns as well as in the country. As you well know, it takes attitude, willingness, and a desire to transform the way we value land, our assumptions about land use, and the way we design our gardens and farms. If we want to preserve wilderness and the wild populations that thrive there, we can’t look to others to do it for us. We need to be willing to actively participate in the preservation and restoration effort, and as good a place to start as any, is in our backyards. And that is what you’re doing. That is what the Botanical Sanctuary Network program is about.

Thank you to all Botanical Sanctuary Network members for being part of this vision and for your efforts to help preserve and restore the native landscape and our treasured medicinal herbs.

BEE FIELDS FARM
Wilton, NH
Sanctuary Stewards:
Lior & Elad Sadeh

Bee Fields Farm is a home for plants and animals in southern New Hampshire. The farm sits on the northwestern slope of Abbot Hill and consists of 13 acres of woods, wetland and gardens. “The Hill” is home to two other biodynamic farms, High Mowing School Farm and the Temple Wilton Community farm. We feel lucky to be in a community that shares our values and supports our work.

Our family, Elad, Lior and our three children, lives in a beautiful 1760 cape that sits in the midst of the garden. We are blessed to share our lives with bees, three goats, 90 chickens and the occasional visits from deer, wild turkeys, a bear, an owl who loves the black birch and many other wild animals.

During the past three years since we arrived, we have been busy observing and cleaning the land, making beds, seeding, transplanting and bringing back plants such as the black and blue cohosh (Actaea racemosa, Caulophyllum thalictroides), Solomon’s seal (Polygonatum multiflorum) and lady’s slipper (Cypripedium acaule) that once were the dwellers of the woods and meadows of New Hampshire.

Our vision is to create a place where plants, animals and human beings can live in an interdependent relationship. The farm is diverse—we care for the animals and grow 100 medicinal plants, as well as enough vegetables to feed 25 families. We strongly believe that a farm that is based on diversity benefits the earth. Since the health and vitality of the plants are deeply connected to the soil in which they grow, we put a lot of attention into enhancing our earth’s fertility and vitality. The interdependency between the different parts of our farm is expressed in the way our goats and chickens provide compost for the vegetable and healing herb garden. In the healing herb garden we grow plants like valerian (Valeriana officinalis), yarrow (Achillea millefolium) and chamomile (Matricaria recutita) that we use for the biodynamic preparations. We use the straw from the oats that we grow for our remedies to mulch the beds and feed the chickens with food scraps. By keeping bees, we ensure pollination; by planting plants that bees love, we make sure that they thrive.

The garden is embraced by the 25 families that are CSA members. They create a community that comes together to work in the garden, but also to celebrate its abundance in summer and its rhythms during the winter.

We work full-heartedly with the intention to create wholesome food and medicine. Most of the work on our farm is done gently, by hand, with the aim of minimizing the heavy impact of machinery on the land. Moreover, because we believe that our hands are an extension of our hearts, we seed, transplant, weed, harvest and craft our remedies by hand. While I am sitting and writing, the garden is covered with a heavy blanket of snow. I remember the garden in the summer when it was filled with the radiant colors of flowers and butterflies, the aroma of herbs and the sweet singing of birds. These memories by themselves are healing. The garden has magical healing properties. Being in the garden,
joining its rhythms and sitting by the plants teaches us every day.

We would like to share the garden’s teachings with others. We invite people for self-guided tours and a monthly free garden tour. We offer workshops on herbalism and on using vegetables in season to create wholesome food. The garden is open to people to come and explore their relationship to food, medicine, nature and each other.

FIRE OM EARTH RETREAT CENTER
Eureka Springs, AR
Sanctuary Stewards:
Lorna & Craig Trigg Hirsch

In 2001 my husband Craig and I set out from suburban Buffalo, NY to find the perfect place to live. Although we had created a Sanctuary in suburbia, with organic food and medicinal plant gardens, we felt the need to find a community of like-minded people and some acreage. We are both artists and create wind and percussion instruments, as well as clay art for home and garden.

We were drawn to the Ozark Mountains. As we drove down from the plateau of Missouri, I immediately felt we were home. The small eclectic town of Eureka Springs, Arkansas lies nestled in between two plateaus composed of intricately intercalated layers of limestone, shale and sandstone.

A fifteen acre property with a Historic Lodge and Guest cottage presented itself to us on our first day of home hunting. The property had been neglected for a number of years and was overgrown with wisteria (Wisteria sinensis) as high as 80 feet into the juniper trees, as well as honeysuckle (Lonicera spp.) vine and vinca (Vinca spp.). When we saw the property, we both said, “Perfect!”, being undaunted by the task that lay ahead of reclaiming and rediscovering what lay under the overgrown landscape. We bought it.

As we walked the property on our daily rounds and discovered its springs, bluffs, creeks, native plants and hidden gardens, it became evident that this was a place for community to gather, renew and refresh.

In the last 12 years we have dedicated ourselves to restoring the gardens, opening up walking trails, identifying plants, building a Labyrinth, Sweat Lodges, Camping Platforms, Fire Pits and Sacred Meditation and Contemplation areas.

We have been blessed to have wonderful teachers, including Steven Foster, Melissa Clare, Bob & Lee Nitsch, Elle D’Coda, Jim Twofeathers and others who have shared their wisdom and knowledge with the community on subjects such as Herbal Walks, Nature’s Medicines, Community Lodges, teachings from the indigenous Elders, Plant Spirit Medicine and Granny Women lore.

The slogan, “If you listen, they will teach you” that UpS uses is very apt to this property and our way of being. The land and plants tell us what is needed, ideas and people show up to help it on its way, and we, as stewards of this land listen and follow.

Becoming part of UpS and creating this Botanical Sanctuary are wonderful ways to further our commitment. We offer workshops, retreats and creativity events. We invite community to come and walk the trails and be in nature. www.fireomearth.com.

“Conservation of native plants is my top environmental issue. Natives are critical to the entire ecosystem.”

Donna Deal in Response to the Ginseng Petition on Change.org
Green Turtle Botanical Sanctuary joined the UPS network in 1999 and consists of 5 acres amidst the rolling hills and woodlands of southern Indiana. Woodland gardens are home to goldenseal (*Hydrastis canadensis*), bloodroot (*Sanguinaria canadensis*), blue and black cohosh (*Caulophyllum thalictroides*, *Actaea racemosa*), wild yam (*Dioscorea villosa*), trillium (*Trillium erectum*), wild ginger (*Asarum canadense*), and cranesbill (*Geranium maculatum*). Sun-loving herbs are cultivated in the field gardens and include echinacea (*Echinacea spp.*), pleurisy root (*Asclepias tuberosa*), blue vervain (*Verbena hastata*), feverfew (*Tanacetum parthenium*), wood betony (*Stachys officinalis*), elecampane (*Inula helenium*), lavender (*Lavandula officinalis*), hyssop (*Hyssopus officinalis*), wormwood (*Artemisia absinthium*), astragalus (*Astragalus membranaceus*), isatis (*Isatis indigotica*), motherwort (*Leonurus cardiaca*), holy basil (*Ocimum tenuiflorum*), horchowd (*Marrubium vulgare*), senna (*Senna alexandrina*), passionflower (*Passiflora incarnata*), skullcap (*Scutellaria lateriflora*), and many others.

Susan produces a healing salve comprised of 20 herbs in a base of olive oil and also tinctures many herbs individually and in formulas for different health challenges. She markets these with the "Green Turtle Botanicals" label to local health food stores and uses them in her private holistic nursing practice.

**MARYLAND UNIVERSITY OF INTEGRATIVE HEALTH**
Laurel, MD
Sanctuary Stewards:
Herbal Department

Our garden emerged out of residential student volunteers working in an educational setting and has historically been managed by paid herbal students, volunteer students and/or alumni. Beginning this year, management of the garden has been contracted to a professional gardener, also an alumnus of the Maryland University of Integrative Health (MUHI). Student volunteers adopt garden beds and help design and conduct research projects. As our Herbal Program has moved coursework and student enrollment online, we are still trying to work out whether having an external garden manager represents a sustainable solution.

Within the garden we have cultivated a number of plants that are considered “At-Risk”, including black cohosh (*Actaea racemosa L*), blue cohosh (*Caulophyllum thalictroides*), goldenseal (*Hydrastis canadensis*), echinacea (*Echinacea spp.*), false unicorn root (*Chamaelirium luteum*), and wild yam (*Dioscorea villosa*). In addition, the garden also grows naturalized specimens of butterfly weed (*Asclepias tuberosa*), lobelia (*Lobelia inflata*), pipsissewa (*Chimaphila umbellata*) and stone root (*Collinsonia canadensis*). These plants have been established and are spreading slowly within the garden. The goldenseal has grown from a single plant to a small stand of six individuals. Since the garden itself was created in an open field, once part of the Great Plains that
extended into Maryland, the soil and substrate are unusual in supporting such a wide array of plants used by native tribes. Numerous local native, medicinal species have been encouraged to grow: calamus (ACorus calamus), Joe Pye weed (Eupatorium purpureum), boneset (Eupatorium perfoliatum), wild bergamot (Monarda fistulosa), vervain (Verbena hastata), Adam's needle (Yucca filamentosa), fringe tree (Chionanthus virginica), redbud (Cercis canadensis), magnolia (Magnolia virginiana) and sassafras (Sassafras albidum).

Many naturalized medicinal specimens grace the garden, including native nettles (Urtica spp.), wild geranium (Geranium maculatum), serviceberry (Amelanchier alnifolia), elderberry (Sambucus nigra), bayberry (Morella spp.), marshmallow (Althea officinalis) and horsetail (Equisetum arvense).

Currently, students, faculty, staff and guests of MUIH visit and use the garden. The garden is open to the public, and the employees of local companies often walk to the garden. Future plans include community programs open to the public. Sharing knowledge about past and present uses of these plants is promoted through community involvement via herb walks, medicine making lectures and online blogs. The garden stands as testimony that the average gardener, farmer or herbalist can grow a diverse garden of native plants without a lot of knowledge or experience. The native plants also act as good examples of species that protect the watershed.

The MUIH garden offers our students a living classroom. As part of our research efforts we provide local organic farmers both traditional and evidenced based techniques to help them develop Community Supported Medicine (CSMs) in growing medicinal plants and herbs, particularly “At-Risk” medicinal plants. Using the medicine making classes offered to the public, we also aid CSMs in their attempts to transform their own plant harvest into herbal medicine. To encourage the distribution of native and endangered species, we also maintain a living collection and a seed bank. Eventually the area surrounding the garden will be used to selectively plant herbs to supply the MUIH dispensary tincture making production goals.

On first encountering this enchanted space of Piedmont forest, I knew this was where I was to begin the work. It felt as if the location and I had chosen this space together, that we had finally found one another.

A great mixed hardwood canopy rose above, and in the bottoms a wetland stream flowed year-round. The earth was dipping and leaning to form hills and banks in all directions. A plethora of ecological niches were worn out of the forest and stream banks, which created for me a sort of matrix from which I felt my will was originating. The vision of it all was taking form as I saw where the bloodroot (Sanguinaria canadensis) patch would begin, and a rooky sun-dappled location came into focus as the den for a large skipkenard (Aralia racemosa) root. A couple of fairly deep and shady northern slopes were where goldenseal (Hydrastis canadensis) and blue cohosh (Caulophyllum thalictroides) would live. There was a large area along the north side of the stream suitable as a nestling place for black cohosh (Actaea racemosa). And so on. It was as if these plants had once lived here in the past and I was tapping into their ghosts. And perhaps they had once lived here. After all, this has long been their home.

The following spring I discovered an incredible situation: wild yam (Dioscorea villosa), false unicorn (Chamaelirium luteum), and Virginia snakeroot (Aristolochia serpentaria) were already residing in the sanctuary. They had proven resilient against the stampede of modernity. I was beyond ecstatic to have them as residents. Had I felt a need for confirmation of my site selection, this would have certainly been it.

So the work continued—mayapple (Podophyllum peltatum), Solomon’s seal (Polygonatum biflorum), partridgeberry (Mitchella repens), turkey corn (Dianthus canadensis), beth root (Trillium erectum). Months later I was still expanding the sanctuary and extending the trail. Farther downstream, beneath a root-woven and well-sheltered northern bank, ginseng (Panas quinquefolius) was plugged into the earth with a bit of apprehension: Should I keep this sacred plant in secret? No. There are no secrets here, nor fears. Wisdom and the way live here. Many roots were planted. Now ginseng can assist in teaching others of its hardships...and of its powers.

This past October I taught our first class on propagation of native “At-Risk” medicinal plants.
Having built two small footbridges from old pallets and fallen trees, people were brought into this sacred realm of the forest to listen. Their enthusiasm was fantastically inspiring.

The attendance matched or exceeded that of any other workshop we had previously led. Red Root Natives and Mountain Gardens, two local native plant nurseries, assisted us by donating roots and seeds. This class will be extended and is now a staple of the education we will be offering each fall.

My partner Stacey and I wish to discover the true power of place here. The sense of it: the tastes of the soil, the smells of each season, the language to be learned, and the creations we formulate to be seen against the passing of time. The plants are a necessary part of experiencing place, bringing us much closer to our origins. We are rekindling primitive flames and conversing with ancient archetypes when we tend to our native forest plants. Here at the homestead we can simplify all that we do into a single intent: a returning of the vital force to Earth and to each of us, as healing of the self and an awareness of the whole are unified in daily life.

And life as we know it on Earth begins with the plants.

I moved to the Smokey Mountains in 2003 to explore my dream of living closer to the land. I knew there was ginseng (Panax quinquefolius) here but had no idea how many other endangered native species existed and were abundant here. These include black cohosh (Actaea racemosa), trillium (Trillium erectum), bloodroot (Sanguinaria canadensis), mayapple (Podophyllum peltatum), as well as wild yam (Dioscorea villosa), an herb I use in my product line. It has been exciting to explore and learn, not only about these plants, but also the many others that greet me on my walks in the woods.

I came here to this small five-acre piece of land nestled in the Smokey Mountains to grow some or all of the herbs I use in my business. I have been able to cultivate comfrey (Symphytum officinale), calendula (Calendula officinalis), rosemary (Rosmarinus officinalis), roses (Rosa spp.), and lemon balm (Melissa officinalis); but the idea of cultivating natives had not occurred to me. This site is a natural place to encourage those natives that are already here, but also to propagate ones like wild yam and goldenseal (Hydrastis canadensis) that are not so abundant. I use a large enough amount of wild yam that I am not quite comfortable harvesting it from here, but it is a comforting feeling to know that the energy of the plant is all around me.

Exciting news for us here at MoonMaid Botanicals Plant Sanctuary—we are adopting wild yam in cooperation with United Plant Savers. It is a plant I love and marvel at each year as it spirals into whorls in the garden and woods and shows up in the most amazing places like our Medicine Wheel.
And every year brings new surprises.

Our five year plan is to build a classroom, increase our outreach into our community here with programs for kids and increase plant walks, both here, for schools and even on other folks' land. I believe that if more people knew what was growing in their backyards, we would have a lot less pesticide use. If you are ever here in the Smokies, please come visit. We love folks dropping in and showing them around our little patch of paradise.

**THE TRILLIUM CENTER**

_Conneaut, OH_  
_Sanctuary Stewards:_  
_Leah Wolfe & Charles Schiavone_

On a ridge three miles south of Lake Erie in the quiet city of Conneaut, Ohio, there is a small family farm, BLD farm, where seeds are being sowed. They aren’t just the seeds one would expect. Yes, there are carrots, tomatoes, and cabbage. But we’ve also planted less common things like high bush cranberries, northern pecans, and oaks that produce low acid acorns.

Stranger still, you will find a three-petaled flower deep in the woods that wraps its seeds in what looks like a pat of butter. Ants carry these seeds, three times their size, and store them in their underground tunnels as food for the colony and its queen. Thus the flowers spread slowly through the woods, unlike the may-apples (Podophyllum peltatum) and partridgeberry (Mitchella repens) dispersed by deer and birds.

That flower is called trillium (Trillium spp.). There are two species growing here—the common white trillium (Trillium grandiflorum), some of which may be as old as 50 years, and the rarer red trillium (Trillium erectum) that was given as a gift from a friend on the Medicine Council for the Lenape Nation.

Trilliums are at risk of becoming endangered. As we work on this land, helping to restore the forests and growing gardens, we realize that the relationship between the trilliums and the ants is like the dream we are weaving of a place where people can come to find creation and creativity in the retreat from the buzz and the press of the cities. People will come here and carry away their own precious seeds and perhaps store them until the time comes for them to germinate and bloom into new projects and ideas.

The place is called the Trillium Center. The Trillium Center is an educational endeavor to improve community health and resilience through preventive medicine, education, wilderness skills, folk traditions, and more sustainable approaches to living—a place where people can learn folk arts through experiential skill building projects and workshops. The workshops will allow participants to create in a collaborative environment so they can apply these skills in their own communities.

We believe that health and healing are intrinsically connected to artistic expression and hope to encourage people to integrate functional art and folk traditions into their healing process.

The prevention of disease and injury are key to community health and resilience. We hold workshops and trainings on preventive medicine and public health, healing with foods and herbs, first aid, disaster preparedness, and other workshops. As we grow we expect to have workshops on plant-based dyes, carpentry, creative gardening and cooking, outdoor skills such as building shelters and starting friction fires, wildcrafting foods, bee keeping, wildcrafting plants to make cordage and baskets, making snowshoes, and other folk and healing arts. Please visit trilliumcenter.org to see the schedule.

We started our botanical sanctuary in 2009 in NE Ohio where people can come learn and practice wildcrafting and medicine making. The medicine gardens preserve native medicinal plants and allow participants to cultivate Earth-based approaches to health, wellness, and community resilience.

We are building infrastructure at BLD farm to make a center where people can learn folk arts through experiential skill building projects and workshops. We are in the process of building the Seed House, a greenhouse and education project to teach people how to care for plants that are on the United Plant Savers “At-Risk” List. Check the Calendar for upcoming work parties and next year’s programs: trilliumctr@gmail.com / trilliumcenter.org

*“All medicines can be found within the earth’s bounty.”*

Aimee Raoul in Response to the Ginseng Petition on Change.org
The ramp (*Allium tricoccum*) has been favored for generations for its tasty garlic and onion flavor and as a spring tonic to cleanse the blood. Each year the emergence of the ramp signals harvesters to flock to the woods to gather the bulbs for their own table or to sell into the growing ramp retail market. Ramps have traditionally been sold at roadside stands, from the bed of pick-up trucks, at rural diners, and at ramp festivals. With new interest in wild foods and specialty produce the ramp has now found its way into urban farmers’ markets and five-star restaurants in places like New York City, Chicago, Seattle, and Washington D.C to name a few.

There is no official record keeping or data collection to determine how many ramp plants are harvested each year, but estimates suggest it would take at least 2 million plants annually to meet current market demand, and that figure could be very low. There are very few established ramp growers in the U.S., and nearly all of the current demand is being supplied from wild populations.

Ramps can form extensive patches in the wild, some covering 15-25 acres or more. A large and maybe indefinite amount of ramps could be harvested from these patches with sustainable management practices, but there are no guarantees that these practices are being used. Certainly some harvesters are using sustainable collection practices, but there are many who are not. Last year, here in Athens County, Ohio I was doing some spring hiking and photographing wildflowers on the Wayne National Forest when I came across blatant evidence of ramp poaching. Aside from a lack of tire tracks, it looked like these harvesters could have come in with a tractor bucket and scooped up large chunks of the patch. There were large patches of bare soil without a single plant left for reproduction, roots from surrounding plants were left exposed, and seedlings and smaller plants were trampled, tossed aside, and left to rot. Researchers have modeled population disturbance and recovery times after harvest events of different intensities.

Despite varying results from recovery models, it is clear that excessive and unsustainable harvesting from a population will take many years to heal. If an entire population is harvested, it could take 150 years for it to fully recover. Ramps only become reproductive and produce seeds after 7 years of growth, and seed mortality is also very high. One West Virginia grower suggests that unplanted seeds may only have a 5% survival rate. It’s likely that most of the growth in ramp populations comes from bulb division, with one plant sprouting a second bud on the bulb. This is why many ramps are found growing in clumps.

The best way to reverse these trends and take pressure off wild populations is to educate harvesters about sustainable collection practices and wild stewardship and promote cultivation on private forestlands. Ramp patches can be started from seed or by purchasing bulbs for transplanting. Once the bulbs begin to flower, seeds can be collected and planted, and the patch can be expanded at no cost. Limiting harvests to no more than 10% of the patch and seed planting are also important for both wild and cultivated patches. By simply planting the seeds below the leaf litter in good habitat the chance of germination and survival can increase by as much as 90%. By doing these few simple things we can accomplish a lot to ensure that the ramp will continue to thrive in our woodlands, and there will be plenty of ramps to eat for all.

Planting Guidelines:
1. Plant on north or east facing slopes.
2. Rake back the leaf litter, scuff the soil with a rake, and broadcast 12- 15 seeds/sq. ft.
3. Recover with the leaf litter
4. Plant bulbs by making a hole 3 in. deep with a mattock or trowel.
5. Place the bulb in the hole so the tip is just above the surface of the soil, and firm up the loosened dirt and recover with leaves.
6. Space bulbs from 3 inches up to 3 feet apart.

Tanner R. Filyaw, NTFP Programs
Rural Action Forestry, www.ruralaction.org/forestry
**PIE: Partners in Education**

United Plant Savers Partners in Education program is designed to enrich school programming and students’ education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted ‘student-friendly’ price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: [www.unitedplantsavers.org](http://www.unitedplantsavers.org). United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating schools and programs.

**Participating Schools for 2013-2014**

- Bastyr University Herbal Sciences  
  Kenmore, WA
- Blue Otter School of Herbal Medicine  
  Fort Jones, CA
- Centro Ashe  
  Bryans Road, MD
- Chestnut School of Herbal Medicine  
  Leicester, NC
- Dandelion Herbal Center  
  Kneeland, CA
- Earth Tracks Outdoor School  
  Durham, Ontario
- Florida School of Holistic Living  
  Orlando, FL
- David Winston’s Center for Herbal Studies  
  Washington, NJ
- Green Comfort School of Herbal Medicine  
  Washington, VA
- Green Turtle Botanicals  
  Nashville, TN
- Greenwood Herbals  
  Limerick, ME
- Healing Power of Plants  
  Portland, OR
- Hocking College  
  Nelsonville, OH
- Living Awareness Institute  
  Graton, CA
- Maryland University of Integrative Health  
  Laurel, MD
- Milagro School of Herbal Studies  
  Santa Fe, NM
- Misty Meadows Herbal Center  
  Lee, NH
- Northwest School of Botanical Studies  
  McKinleyville, CA
- PrairieWise Herbal School  
  Leavenworth, KS
- Sacred Plant Traditions  
  Charlottesville, VA
- Sweet Herb Medicinals  
  Boulder Creek, CA
- Twin Star Herbal Studies  
  New Milford, CT
- Vermont Center for Integrative Herbalism  
  Montpelier, VT
- Yerba Woman Herbal Apprentice Program  
  Willits, CA

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**Medicinal Plant Conservation Certificate Program**

**Hard Working?**

**Motivated to learn about medicinal plants?**

**Want to experience United Plant Savers’ 360-acre plant sanctuary in Ohio?**

**SPRING SESSION:**  
May 19 - June 27  
(already underway!)

**&**

**FALL SESSION:**  
September 1 - October 17  
(application due by July 24th)

**Apply now for early acceptance!**

**A HANDS-ON PRACTICAL APPROACH**

Interns work 30 hours per week doing a variety of medicinal plant conservation & cultivation projects. Classes & opportunities to work with Chip Carroll, Program Manager, as well as UPS staff teachers. Interns learn general plant propagation techniques working with “At Risk” and endangered species, general farm upkeep and maintenance, landscape care and maintenance, greenhouse work, medicinal plant identification, sustainable wild harvesting principles and practices, medicine making & more!

Application available online at [www.unitedplantsavers.org](http://www.unitedplantsavers.org)

740-742-3455  
office@unitedplantsavers.org
UpS President, Sara Katz Wins Herbal Community Builder Award

excerpted from ABC’s Herbal E-Gram

(AUSTIN, Texas, March 3, 2014) The nonprofit American Botanical Council (ABC) announces that herbalist and educator Sara Katz has been selected as the second-ever recipient of its Mark Blumenthal Herbal Community Builder Award. The award is granted to persons in the herbal medicine community who have played a significant role in creating a sense of community among herbalists, researchers, members of the herb and natural products communities, and related groups who work in the area of medicinal plants. It was created in 2013 and is named after ABC’s Founder and Executive Director, Mark Blumenthal.

Among her many noteworthy accomplishments, Katz is co-founder of the herbal products company Herb Pharm, a founding member of the American Herbalists Guild, and board president of United Plant Savers (UpS), a nonprofit organization dedicated to conservation and sustainable production of indigenous American medicinal plants. She has served on numerous local and national boards — including that of the American Herbal Products Association — and she has organized and co-organized multiple herbal conferences throughout the United States, notably five UpS conferences at Herb Pharm between 2000 and 2012, with proceeds benefiting the conservation nonprofit.

Along with strong support from others in the herbal community, Katz received a nomination for the honor from the recipient of the inaugural Mark Blumenthal Herbal Community Builder Award, celebrated herbalist, author, and UpS Founder Rosemary Gladstar. “[Sara] is a driving force in the herbal community and is involved in so many herbal ventures. In fact, there’s very little Sara’s not involved in, or [hasn’t] supported in one way or another,” said Gladstar. “The thing is, she does it quietly, often behind the scenes … but she’s always speaking out, doing, helping, being involved in the greater circle.”

“I am so humbled, floored, and surprised. To be in the same teacup as Mark and Rosemary — I cannot imagine a more meaningful award…. I couldn’t be happier and I am over-the-moon honored,” said Katz. “The herbal community is international, ranging from scientists to herbalists to farmers,” she observed. “There is a spirit and a spark and an understanding that unites all of us, and that’s a lot of people.”

Katz grew up in south Florida without much exposure to herbs or the natural-living culture. “In my early 20s, I chose to break away, and I went about as far as I could — to Portland, Oregon,” recalled Katz. In search of a career and drawn to natural healing, Katz enrolled in Western States Chiropractic College (now the University of Western States). Though bodywork ultimately was not Katz’s calling, her chiropractic training did connect her with a group of like-minded individuals endeavoring to establish an herbal medicine-centered naturopathic college. The start-up funding for what became the Pacific College of Natural Medicine was raised through conferences Katz co-organized.

Shortly thereafter, Katz and herbalist Ed Smith chose to diverge from that path, forging a trail that led to their 1979 co-founding of Herb Pharm — today an award-winning herbal extract manufacturing business and certified-organic farm. “We packed up our bags, found a rental, and moved to Williams, Oregon, where we started making extracts in our kitchen. Ed traveled the country teaching herb classes, and people were fascinated by our extracts, so we joined forces and started doing everything about herbs,” said Katz. She added: “It was the most modest home business that you can imagine, the way it started.”

Katz and Smith’s “Pharm Farm” in southern Oregon grew simultaneously with their Herb Pharm Herbaculture Intern Program, which currently offers three 10-week sessions per year. During that time, the interns live on site, spending weekdays learning medicinal plant cultivation and harvest, and evenings and weekends in classes devoted to topics ranging from plant identification to therapeutic herbalism. Over the past 35 years, the program has provided training to thousands — many of whom have gone on to pursue careers in natural medicine. It stands among Katz’s proudest and most passionate efforts, along with her “completely gratifying” work to conserve and protect indigenous medicinal plants with UpS.
United Plant Savers’ Goldenseal Sanctuary announces plans to raise funds to renovate an old barn into the “Jim and Peggy Duke Welcome Center”.

**How can you get involved & help?**

Firstly, we are asking for contributions to our ‘brick-by-brick program’. For a $1,000 donation your name or organization will be featured as a donor to our ‘Welcome Center Fund’.

Our goal is to raise $50,000 by August of 2014.

We are also asking for any books that are relevant to botanical studies for our UpS library, which will serve as reference material for student interns, visitors and the local community.

The Welcome Center will feature educational displays about Goldenseal Sanctuary, a reference library reading area, and herbarium specimens from the Sanctuary.

This will be a wonderful opportunity to honor long time UpS supporters, Jim and Peggy Duke, for their immense contributions to the botanical knowledge of medicinal plants. The Welcome Center is part of our plan to provide greater access to the botanical wonderland of Goldenseal Sanctuary.

**About Jim & Peggy Duke**

“Each year Jim would head to the Goldenseal Sanctuary with a group of students from MUIH (formerly Tai Sophia Institute) in the spring, just after the goldenseal bloom. Although always one for a frolic in the woods, Jim was keen to the many treasures there, on the lookout for new plants or ones we hadn’t seen before. And no matter the plant, there would be a story to go with it. His joy in finding each of his plant friends on the sanctuary and surrounding forests each year was palpable. In the warm afternoons, he would wade into the pond, cover himself with mud, and go looking at the calamus and the irises like some kind of amphibious plant lover. Jim would fill jars with ‘families’ of plants, looking for flowering examples he could put together for the students to observe and learn their interrelationships. Jim had many gifts towards conservation of medicinal plants, and perhaps his greatest one was the inspiration of his love of plants inciting in all who met and learned from him.” – comments from Bevin Clare, UpS Board Member.

Jim Duke has been such an inspiration to members of the United Plant Savers Board and many of the members of the UpS community, and together with Peggy Duke (acclaimed botanical artist), they have articulated a love for medicinal plants. It is with great honor that we work towards the construction of this much needed Jim and Peggy Duke Welcome Center. Jim and Peggy have educated the masses through the establishment of the green pharmacy garden; and both they and Helen Metzman, UpS board member who oversees the stewardship and outreach of the garden are excited to see the welcome center come into fruition. Help us make this happen.

To make a donation, send a check directly to UpS, PO Box 776, Athens, OH 45701 or email susan@unitedplantsavers.org

Drawing by Wendi Viny

Peggy & Jim Duke, Helen Metzman, Marla McIntosh & Susan Leopold
GREEN THANKS & GRATITUDE

Thank You For Your Generous Contributions & Support

We extend a special thank you to all members of UpS who continue to support us with memberships and donations. Your support, efforts and concern are the only thing that can really make a difference in the protection and conservation of our important medicinal plants. All donations and help, whether it be organizational, cultivating, educating or choosing medicinal herb products more consciously are appreciated. Great gratitude goes to the many in-kind donations of goods and services from companies and friends that support our work. Thank you to all our supporters and members who continue to rally for the plants.

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Thank you to the four women from Vermont who ran the Mad
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Jennifer Afflig,
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Corporate members have a unique opportunity to educate their customers about issues surrounding the sustainable supply of our native medicinal plants. More information about the corporate member program is on our website.

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UpS EVENTS & GREEN NETWORK

Herb Events 2014

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Charlottesville, VA
www.sacredplanttraditions.com

May 3: Herb Day, 2014
Have your local event featured for Herb Day!
Register at www.herbday.org

May 10: Ohio Herb Day
Presentation on UpS
Gahanna, OH
More information at www.herbday.org

May 11-14: Society for Economic Botany
Society for Ethnobiology
Cherokee, NC
Register at http://econbot.org/ or http://ethnobiology.org/

June 7-8: Herbstalk
Somerville, MA
www.herbstalk.org

June 6-8: Midwest Women’s Herbal Conference
Muckwongago, WI
www.midwestwomensherbal.com

June 14: Planting the Future
Lawrence, KS
www.unitedplantsavers.org

July 19: Green Bank Herb Fair
Susan Leopold will be presenting on ginseng
Green Bank, VA

August 2: Midwest Native Plant Conference
Dayton, OH
www.unitedplantsavers.org

August 23-25: New England Women’s Herbal Conference
Newfound Lake, NH
www.womensherbalconference.com

September 20: Nashville Herb Society Presentation on UpS
Nashville, TN
www.unitedplantsavers.org

September 4-7: Breitenbush Herbal Conference
Detroit, OR
www.breitenbushherbalconference.com

September 27-28: Chesapeake Herbal Gathering
Susan Leopold, Keynote Speaker
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October 4: Planting the Future
The Goldenseal Sanctuary, Rutland, OH
www.unitedplantsavers.org

October 10-12: Southeast Women’s Herbal Conference
Black Mountain, NC
www.sewisewomen.com

November 6-9: American Herbalists Guild Conference
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www.americanherbalistsguild.com

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in very significant changes in fertility and overall fitness. For this reason, we believe it is important to preserve our native Vermont plants along with their unique genetic makeup.

How can you help? Our real limitation is that we are tracking well over 600 rare and Watch List plant species. That’s a lot of plant populations; so only the very highest priority species get the attention and monitoring they need. Fortunately, we receive help monitoring, collecting seed, and employing management projects from a number of volunteers and contractors. If you know of a native population of either of these species in Vermont, or in another state or province that tracks these species (as many do), please report your population to your local Natural Heritage program. If your population is declining, that’s also important for us to know. The data will be kept secure. The information can allow conservation organizations and land trusts to prioritize conserving these parcels with rare species. It can inform foresters and developers which areas to avoid cutting or disturbing. It will also be used for continued monitoring, so we can keep a better eye on the overall health of ginseng and goldenseal in Vermont and globally. Together we can help conserve our herbal heritage.

Aaron Marcus is Assistant Botanist for Vermont Natural Heritage Inventory, part of Vermont Department of Fish and Wildlife. He can be reached at aaron.marcus@state.vt.us.

Showy lady’s slipper orchid (Cypripedium reginae) one of over 100 other plant species on our Watch List. Photo by Aaron Marcus/Green Mountain and Finger Lakes National Forest.

“I never before saw a plant so full of life, so perfectly spiritual, it seemed pure enough for the throne of its Creator. I felt as if I were in the presence of superior beings who loved me and beckoned me to come. I sat down beside them and wept for joy. Could angels in their better land show us a more beautiful plant? How good is our Heavenly Father in granting us such friends as are these plant creatures, filling us wherever we go with pleasure so deep, so pure, so endless.”

John Muir, “For the Bot Recorder That Calypso borealis [Orchidaceae],” Boston Recorder, 1866

Medicinal Plants Conservation

2013 AWARD

Mark Hanson

Recipient

Founder of the Hawaiian Restoration Project

Mark Hanson is known to most as the “Sandalwood Man.” He was out collecting and propagating endangered species before I had even graduated from high school! In an article written back in 1992, Mark was being referred to as the Johnny Appleseed of sandalwood. He was chosen for the Medicinal Plant Conservation Award because of his work over several decades in propagating thousands of sandalwood seeds and his tireless efforts to educate the people of Hawaii on the important role sandalwood plays in the ecosystem and restoration of the native forest. As sandalwood is grown symbiotically, needing the nitrogen-fixing energy of other native trees, it is interesting to note that the three main Hawaiian trees: koa (Acacia koa), the mamani (Sophora chrysophylla), and the williwili (Erythrina sandwicensis) are all in the Fabaceae family and critical to supporting sandalwood’s growth. When Mark talks about sandalwood and the mutually supportive relationship it needs to survive as a hemiparasitic species, he reminds us that it also represents a call to action, one in which we need to step in at a critical time to ensure that sandalwood survives. The healing message of sandalwood beyond its fragrance, cultural history, antifungal and antimicrobial healing essence is learning to work together in a mutually beneficial way. Mark is promoting sandalwood seeds being marketed for their edible and highly nutritious nut instead of for their valuable sandalwood oil. Harvesting the nuts is a more sustainable way to profit from the tree versus cutting these trees down to extract the oil. Mark is the founder of the Hawaiian Restoration Project, a non-profit dedicated to restoring endangered Hawaiian ecosystems by growing, planting and tending several native plant projects throughout the Big Island. I first met Mark when he took my three kids and me to a state park where we helped plant endangered plants in a project that was years in the making with the local boy scouts and park employees. To see a video of Mark teaching my children, see the Hawaiian Sandalwood Video project on our website. Congrats Mark—you are a superhero for the Planet!
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Planting the Future
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with Bevin Clare
Prairie Medicinal Plant Walks
with Kelly Knecht
Human Impact on Medicinal Plants
with Steven Foster
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with Rosemary Gladstar
Intro to Western Energetic Herbalism
with Kathleen Maier
Using the UpS At-Risk Tool Assessment
with Lisa Castle
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with Jennifer Hopwood

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Medicinal Mangrove

Sacred Seeds

Forest Grown Verification
Pirates for the Planet
by UpS Executive Director, Susan Leopold

The “At-Risk” Tool made its published debut in 2014 culminating in years of work by many in the UpS community. The visionaries of the “At-Risk” tool are former UpS Board Member Kelly Kindscher of the University of Kansas and Lisa Castle, the 2014 Medicinal Plant Conservation Award recipient, of Southwestern Oklahoma State University. The format of the assessment tool was in part patterned after the Blue Oceans Group’s Seafood Mini Guides. Similar to plants’ susceptibility to over-harvesting, wild caught seafood is also in deep decline from over-fishing. Vulnerability of species that are wild and in demand depends on many different factors, from intrinsic life history traits to market forces. Based on literature, logic, and discussions with conservation practitioners, five main factors that influence a species’ vulnerability to overharvest were determined: life history, effect of harvest on individuals, population size, habitat, and demand. These five categories are the framework for the tool, and in each section a series of questions leads to a numerical answer, and the total scores then rate a species. The higher the number, the more vulnerable the species is to over-harvesting. In figure one you can see a graph of all the at-risk and to-watch plants that have been reviewed, which illustrates the numerical risk and the colors indicate scores within each of the five main factors.

Figure one: See www.unitedplantsavers.org for all scoring data assessment tool and Journal article

Paul Watson founder of the Sea Shepherd movement, a true modern day pirate defending the whales, dolphins, sharks, and ocean vitality is a person I have been fortunate to meet. When I inquired about the term sustainability in regards to seafood, his remark was, “It’s just another term for business as usual”. Sadly I agree as I have witnessed the logging of endemic Hawaiian sandalwood being promoted by many essential oil companies and the loggers themselves with the simplistic green-washing of terms, such as eco-harvest, renewably sourced, and sustainably harvested/cultivated. These terms are used on websites and in promotional videos without any research or guidelines that define the terms used. The “At-Risk” Assessment Tool is designed to be transparent, and it is on our website in a format that the general public can use. In addition, the tool has unlimited potential as a teaching tool for herbal schools and classrooms.

http://atochagold.com/TheWhydah.htm
In regards to sandalwood, I was in Hawaii in the winter of 2014. While on this trip I was interviewed for a feature article that appeared in the Hanna Hou magazine, which you can read from a link on our website. The article highlights Mark Hanson (winner of the Medicinal Plant Conservation Award in 2013) for his heroic efforts in sandalwood reforestation. Fragrant Fragrances, an article by Jen Landry featured in this year’s Journal goes into further detail about the questions we should be asking when we are considering purchasing essential oils. As the pyramid marketing of essential oil grows, so should the awareness of which oils are harvested from wild sources and of those, which are endangered.

Paul Watson and I talked about the social justice that pirates represented that goes beyond their Hollywood personification. For pirates the ocean was a place of refuge where slavery and class distinction were not the defining cultural norm. Pirates were free on the open waters. There was a pirate code of ethics based more on skill and merit unlike that on land where servitude, class distinctions, and religious prosecution prevailed. An example is that of the famous pirate ship, Whydah, Captained by “Black Sam” whose crew called themselves “Robin Hood’s Men”, they lived by a democratic set of rules. A terrible storm sank the ship off the coast of New England in 1717 and when it was recovered, historians were able to piece together a more accurate concept of pirates in the seventeenth century. On board were a diverse group of former African slaves, Carib and Native American Indians, and social outcasts from Europe and elsewhere. They did not have a common language or religion but instead were united by a spirit of revolt against the current conditions of their time. You can imagine the interesting mix of unique cultural backgrounds that would bring these men and, in some cases women together, to go from a system of slavery to freedom on the sea.

Social and environmental justice are also important aspects of native medicinal plant conservation that are not adequately discussed and addressed. We need to look beyond the packaging and ask who are the people harvesting these plants, what are they getting paid, how is this sustainable to the people, the plants, and the ecosystems. We have to raise the bar and lift the veil if we are going to pay farmers/harvesters fair prices and shift towards conservation through cultivation. When you look at the prices paid for forest botanicals, you see they are based on the uncompensated ecosystem services that provide wild plants. The ecosystems that produce wild populations are sadly being tapped and the economic incentive of realistically farming slow-growing woodland botanicals is going to need to be readdressed if we are going to ensure a future of the medicinal plants we use and love.

To address this issue, United Plant Savers hosted the Ginseng Summit in July of 2014. This event was well documented through NPR, You can listen to the podcast from the Up’s website, and the print version is also reprinted in this Journal. The Ginseng Summit was a two-day invitation gathering of ginseng stakeholders; growers, law enforcement, top ginseng researchers,
and herb companies. We held both formal and informal discussions to address the complexity of the wild/forest-grown ginseng market and how to ensure its future. Ginseng is a poster child for the forest farming movement that is taking place. If a model can be established for ginseng, the implication for other non-timber forest products and other forest botanicals starts to look more hopeful. We need to desperately shift the paradigm of how wild plant material is sourced and collaborate on a future vision where these botanicals are cultivated in a forest-grown environment and these forest farmers are supported through a fair cost for their efforts. In addition, the forest-grown verification program is a way that buyers and consumers can ensure that the medicinals sourced are being stewarded. The forest-grown verification program is an innovative effort that has been years in development and recently launched by Pennsylvania Certified Organic. United Plant Savers members have a unique opportunity to educate those in their local community about the importance of understanding which plants are "At-Risk", where plants are sourced, and how they are grown and harvested.

In October of 2014, I attended the Forest Farming Gathering, which was well documented in a short video that presented an overview of the forest farming movement from the eastern woodlands. Three recent books have emerged, Integrated Forest Gardening and Farming the Woods, both published by Chelsea Green; and the reprint and updated Growing and Marketing Ginseng Goldenseal and other Woodland Medicinals, published by New Society Publishers. All three books are excellent overviews of the potential of the eastern forest and filled with hands-on how-to approaches for land-owners.

The concept of Forest Farming has been spurred by those in the permaculture movement, such as Dave Jacke and Eric Toensmeir, who wrote the two-volume Edible Forest Gardens, now in its 4th printing and also published by Chelsea Green. This book deals with the concept of permaculture adapted from the lessons of the tropics to the temperate climates. The tropics provide a consistent growing season in which fruit trees can start bearing in a relatively short time frame, and the strata of a food forest guild develops as an abundant producer, allowing for land restoration and regeneration that is more tangible in one person's lifetime. The temperate forests require a much deeper sense of mindfulness as we look to develop the integrated forest gardening of botanicals.

Looking ahead United Plant Savers intends to reach out and expand the networks of Botanical Sanctuaries in hopes of creating stronger regional alliances. Each of us in our own way represents the spirit of a modern day pirate. We are a mix of many cultural backgrounds creating new networks to protect the biodiversity that our native plants call home. We are essentially Pirates for the Planet in these current times, charting an alternative route to ensuring a future for all species, from mangroves to ramps.

REFERENCES
8. https://youtu.be/hex5_w8nvlU
www.extension.org/forest_farming
United Plant Savers & Sacred Seeds Sanctuary
Collaborate for Plant Conservation

by Hannah Bauman (HerbalEGram: Volume II, Issue 12, December 2014)

In October 2014, United Plant Savers (UpS) announced its merger with Sacred Seeds Sanctuary, uniting two organizations with the common goal of native plant conservation. Both organizations oversee groups of botanical gardens devoted to raising and preserving native plants, including UpS’s Botanical Sanctuary Network and Sacred Seeds’ Foundational Gardens. According to a Sacred Seeds press release, the merger is intended to grow our Botanical Sanctuary Network and the Foundation Gardens in the effort to safeguard traditional plant knowledge and the native habitats in which these sacred plants thrive.

Sacred Seeds, a coalition of sanctuaries and gardens managed through the Missouri Botanical Garden in St. Louis, works to preserve biodiversity and plant knowledge around the world through its Foundational Gardens. Sacred Seeds began with Finca Luna Nueva in Costa Rica, and there are now Foundational Gardens in 14 different countries, including at the American Botanical Council’s Case Mill Homestead in Austin, Texas. These gardens propagate native plants with medicinal, ceremonial, food, and craft value.

UpS celebrated its 20th year in 2014, and Executive Director Susan Leopold, PhD, looks forward to expanding the scope of its projects. “This merger allows us to share internationally the framework that UpS had created,” she wrote (email, November 22, 2014). “Sacred Seeds brings with it the knowledge of [its founders]... [T]he new partnership with Sacred Seeds will allow the project to go global. “[The List] has helped bring awareness and more sourcing of cultivated plant material when possible,” she wrote. “We hope to work in international Sacred Seeds gardens to help establish regional lists of at-risk and to-watch plants.”

Plants with traditional and medicinal uses face dwindling population numbers due to a number of environmental factors and human activities, including overharvesting, destruction of habitat, an increased herbivore population, and drought. Such factors emphasize the importance of conservation-focused organizations such as UpS and Sacred Seeds. “We all know the cultural and physical landscape is changing rapidly,” Dr. Leopold wrote, “and we need the ethnobotanical tool box to reverse the loss of plant knowledge and the rapid extinction of native medicinal and sacred plants.”

“All of us at Sacred Seeds are thrilled that Dr. Susan Leopold and her team at United Plant Savers will now be administering our international project,” wrote Tom Newmark, chair and co-founder of Sacred Seeds (email, December 8, 2014). “We are deeply grateful to Ashley Glenn and the William L. Brown Center at the Missouri Botanical Garden for their foundational work on behalf of our project, and we look forward to their continued collaboration. We need to establish more Sacred Seeds sanctuaries around the world; indeed, our founding mission was to have sanctuaries in every life zone around the world, and by connecting them in an open network help to preserve both plants and traditional knowledge. We’re well on our way, and through this federation with UpS we expect a rapid build of our international network.”

The collaboration between the two organizations was made possible through support from New Chapter® supplement manufacturer, a key sponsor of Sacred Seeds Sanctuary.

REFERENCES
American Ginseng Summit
by Glynis Board, West Virginia Public Radio

United Plant Savers was honored to host the 2014 American Ginseng Summit at our Goldenseal Botanical Sanctuary in Rutland, OH where we discussed safe-guarding wild populations of American ginseng, as well as protecting the American ginseng export industry and creating a domestic market. Below is the write up of the NPR radio coverage. You can also listen to this program with a link from our website.

Ginseng annually brings millions of dollars in revenue into Appalachia. But its future as a revenue option, or even its existence at all in these parts is far from certain. Growers are struggling to conserve the plant and ensure the vitality of the industry. Those concerns, as well as new research that sheds light on the therapeutic qualities of the plant were discussed at the 2014 Ginseng Summit.

A small gathering of key stakeholders in the ginseng industry gathered at the Goldenseal Botanical Sanctuary just outside the small town of Rutland, in Meigs County Ohio, to discuss important topics surrounding the medicinal root.

About 35 gathered, including producers, buyers, government enforcement agents, and academics to discuss relevant topics within the ginseng industry. United Plant Savers hosted the summit. Susan Leopold, the medicinal native plant conservation group’s executive director, said there are two main goals of the summit, both focused on conserving the plant:

Conservation through cultivation; encouraging people to grow American ginseng on their wood lots.

Promoting a national conservation plan that looks at protecting wild populations of genetic diversity throughout ginseng’s range.

Folks at the 2014 Ginseng Summit were also working to find ways to collaborate among themselves to develop and align best practices to sustain their agro-forest business.

Demand for ginseng root in Asian markets has fueled the ginseng industry since the 1700s when the plant was discovered in North America. Since then, an ever-increasing demand has landed the plant on a list of endangered species, alongside things like ivory and shark and mahogany—species that are carefully monitored to ensure that international trade doesn’t threaten their survival.

Threats to the Industry
It’s hard to convince forest owners to endeavor to cultivate and promulgate ginseng since it requires a 5-10 year time investment to legally harvest roots, and without much organization throughout the industry, there’s little assurance for producers that the investment will pay off.

Lack of Industry Alignment
Eric Burkhart, one of the organizers of the Ginseng Summit and the program director of plant science at Shavers Creek Environmental Center at Penn State University, says there’s very little awareness in this country that the ginseng industry even exists in North America, let alone the threats it faces.

Burkhart has been working over the past several years to determine how to better align state programs with the growing ginseng industry, working to address grower concerns, as well as those of regulators.

Current regulations are designed to safeguard the plant’s existence in the wild:

• You can’t harvest a plant that is younger than five years old
• You can’t harvest except when the berries are ripe, red, and ready, themselves, to be planted.
• You must have all roots certified with approved dealers.
• The rules vary from state to state.

Burkhart points to the maple sugar industry as an example of an agro-forest business that is well-organized, working with agriculture colleges and other organizations to develop robust programs not only around research but also economics and branding and appropriate involvement of government agricultural departments.

Ginseng, he says, is still considered a fringe product in the states where it’s exported, so growers struggle with very basic things like the ability to harvest their crop whenever they deem it appropriate versus being bound to regulations designed for wild harvesters.
Plant Extinction
Habitat fragmentation and loss, as well as pressures that come with it like overgrazing from initiated deer populations increasingly threaten ginseng occurring naturally in the wild.

Poaching
With such a high demand for ginseng, a very cautious and protective culture exists among producers. That’s exacerbated by the prevalence of poaching. It’s difficult to enforce anti-poaching laws. Right now, poachers must be caught red-handed, more or less, to face prosecution. The recent television show Appalachian Outlaws is thought by many within the industry to have glorified the practice of poaching off of private and public land.

Ban on Wild Exports
In Canada the sale of wild ginseng is already illegal. Experts like Burkhart believe a ban on the sale of wild ginseng is imminent in the United States given the rapid decline in populations. He and others are working to prepare for such scenarios, creating a certification process for those who cultivate ginseng in wild simulated environments.

Expanding Market
Ginseng is big medicine here in the states and especially in China according to Holly Chittum a researcher from Maryland University’s Integrative Health department who has done a lot of work researching forest-grown medicinal plants.

She explains that Western (Allopathic) medicine already classifies ginseng as an adaptogen, meaning it modulates functions in the human system like hormones and immune responses.

“The theory is – and there’s a lot of research behind it that really supports it,” Chittum said: “[ginseng] helps your body deal better with the stress response on a cellular level so that you have more energy, but you also sleep better; it also helps to level your mood; if your immune system is working too hard, then it would modulate that down, and if your immune system needs a boost, it would bring it up.”

Chittum is hopeful that a more robust market will develop in this country.

Research
Marla McIntosh, professor in the Department of Plant Sciences and Landscape Architecture at the University of Maryland at College Park, studies the genetics of American ginseng.

Studying and comparing ginseng populations that span various geographical regions throughout the country, McIntosh was able to determine genetically different variations of the plants. Among those differences, she found various levels of the bioactive components, called ginsenosides, from region to region.

“This is very important because the different ginsenosides have different modes of action,” McIntosh explained, “For example, some ginsenosides are known to promote cell growth and would help in heart diseases, whereas others are known to inhibit growth and these would be helpful for applications in cancer therapy.”

McIntosh says given the genetic testing procedures and technologies available today, conservation efforts need to be aimed at preserving not simply the plant, but also the genetically diverse populations, which stand to benefit us in ways we’ve only just begun to understand.

“...When we take a view of the vast number of vegetables with which our country is adorned, we must candidly acknowledge that our acquaintance with their medicinal properties, is extremely limited indeed. The investigation of their uses is the arts and as medicines, is an object of importance to society. There is perhaps, no portion of the globe that has been more highly favored by nature in esculent and medicinal vegetables. The Podophyllum peltatum, nicotiana, spigelia and what has been emphatically called the vegetable antimony, the Eupatorium perfoliatum are medicines not inferior to any yet discovered...I have made a feeble attempt to investigate the properties and uses of the Sanguinaria canadensis, a plant peculiar to our country...”

Reverend John Andrews, Dissertation University of Pennsylvania 1803
**Fragrant Fragrances Are Essential Oils Sustainable?**

by Jen Landry, Dipl. ABT (NCCAOM)

As a community striving for a holistic healing paradigm, herbal practitioners need to be fully conscious of the ecological consequences of the products we use and promote. An extravagant amount of resources is necessary for the cultivation, harvest, distillation, and global distribution of essential oils. In a few cases, global demand is driving some plant species to the brink of extinction. Like so many of the privileges we First-Worlders enjoy, the substantial ecological costs of essential oils are hidden. On a planet burgeoning in population and limited in natural resources, these oils should be used sparingly.

Essential oils have gained widespread popularity in recent years, their use and appearance in a wide array of consumer and therapeutic goods skyrocketing. Concentrated plant essences stimulate deep breathing, positive feelings, and the release of tension and anxiety. Numerous studies support the efficacy of essential oils for a range of conditions from skin disorders to headaches to treating antibiotic resistant bacteria. Essential oils are used in products as varied as candles, perfumes, cosmetics, bath and body care products, vitamins, candies, and processed foods. Therapeutically, they are increasingly used for self-care by individuals and professionally by massage therapists, herbalists, aromatherapists, and nurses in hospitals.

It often takes hundreds of pounds of plant material to make one pound of essential oil (as a visual reference, this is roughly 16 fluid ounces). Companies reach extensively across the globe to slake their sizeable needs. For example, one pound of essential oil requires:

* 2,000 lbs of cypress (*Eucalyptus globulus*).
* 200-250 lbs of lavender (*Lavandula spp.*). Sources include Bulgaria, England, France, USSR, Yugoslavia, Australia, USA, Canada, South Africa, Tanzania, Italy, and Spain.
* 5,000 to 10,000 pounds of rose blossoms (*Rosa spp.*). Primary cultivation sites for one company include France, Tasmania, Spain, Italy, England, and China.

These figures are averages gleaned from numerous sources; figures vary among companies.

**Land Resources & Carbon Footprint**

Modern monoculture farming techniques are typically used to grow the substantial quantities of plant material needed to produce essential oils, with large swaths of land dedicated to that single species. Intense mechanization, heavy fossil fuel reliance, synthetic fertilizers, intensive irrigation—the unpleasant panoply of modern agribusiness practices is utilized to ensure optimal oil production of crops. In many parts of the world arable land is becoming scarce. As global citizens we have not learned how to equitably distribute vital foodstuffs, and water resources are heading toward a crisis. I feel there are deep ethical concerns about devoting croplands to essential oils destined for use in first world luxury products such as scented candles, bath oils, perfumes, massage, and for spa purposes.

Fossil fuels are again required for the heat distillation process. Typically, plant materials are heated above two hundred degrees from 2-24 hours to extract various oils. Chemical solvents may be used in other cases, which pose their own concerns of toxicity for people and the environment.

Steam distillation is not suitable for the delicate fragrances of rose, tuberose, gardenia, lily, jasmine, and frangipani flowers. A process called “enfleurage” employs fat as the primary saturation medium for these fragrances, which are later extracted into alcohol. Since the time of the Egyptians, animal fats have been the most cost effective and accessible substance for this process. Animal fats may raise more than a few ethical hackles, but unfortunately modern times have provided another cheap and increasingly ubiquitous fat source that is one of the environmental tragedies of our time—palm oil. Vast swaths of tropical rainforests have been razed to create palm oil plantations, particularly in Southeast Asia, endangering wildlife, disrupting indigenous communities, and contributing to global warming. Species such as the orangutan, Asian elephant, tiger, and Sumatran rhinoceros are threatened with extinction. The Union of Concerned Scientists warns that nascent standards for “sustainable” palm oil are not nearly strong enough, and critical issues in its production are not being addressed.

**Threatened & Endangered Species**

For those essential oils that are derived from wild harvested species, questions of sustainability are more disturbing. Some species are at risk, particularly those occupying dwindling habitats such as tropical forests. We all hope that botanical knowledge will help spare tropical forests, but unfortunately that does not seem to be the reality that is playing out. Impoverished rural residents will often do whatever is necessary to earn money and survive. Cropwatch,
an independent watchdog organization for the natural aromatics industry, has published a list of
threatened species. (See partial list at end). Species such as rosewood \( (Dalbergia\) spp.) and sandalwood
\( (Santalum\) spp.) are particularly at risk due to the long regeneration cycle of these trees. Despite
these known threats, some brands continue to wild source these oils.

There is not an international standard for the term “sustainable harvest”, let alone enforcement.
A few companies have gone to great lengths to promote sustainable harvest practices, but
threats from illegal logging, smuggling, and lack of funds seem to plague these efforts.

Purity
Many botanicals are not available ‘organically grown’. Fortunately, it appears uncommon for herbicides and pesticides to be used in the cultivation of essential oil crops. Nevertheless, in countries with low environmental standards, or agricultural sites compromised by proximity to industrial areas or traffic arteries, pervasive air, soil and water borne pollutants can lead to products of questionable purity. If these compounds are present in raw botanical material, what happens when this material is concentrated? The closer each of us is to touching, growing, harvesting, and processing plant materials, the more we can be assured of their quality, as well as fair labor practices.

Many unsubstantiated claims have been made about essential oils. According to Cropwatch, there are no standards for “pure”, “therapeutic grade”, or even “organic”. The Organic Consumer’s Association (OCA) has been working to promote organic standards for the bodycare industry, but states, “The word ‘organic’ is not properly regulated on personal care products as it is on food products, unless the product is certified by the USDA National Organic Program.”

AFNOR certification and what that actually means is best discussed in the article, “The ‘Therapeutic Grade’ Essential Oils Disinformation Campaign”.

Safety
As an herbalist I want people to be excited and passionate about plants. Yet, the combination of passion and enthusiasm does not always translate to wise action or outcomes. Due to the highly concentrated nature of essential oils, they no longer resemble the whole herb. Essential oils have warnings similar to many harsh household chemicals or hazardous substances and have special requirements for their safe disposal; i.e., they should never be put down a drain where they can enter the water supply or impact vegetation or wildlife. Several herbs which

Essential Oils are generally not considered safe for use:
• internally
• undiluted directly on the skin
• on children
• on pets
• by pregnant women before the first trimester

Only the safest oils should be used by pregnant women.

Essential oils are safest used in dilution; twelve drops in one ounce of carrier oil is effective for adults (this is referred to as a 2% dilution). Using essential oils in higher concentrations has not proven to be more effective; it is simply a waste of precious resources. Essential oils need to be stored in a cool place. They do have a shelf life which varies depending on the type of oil; resins generally last only 2 years while other essential oils may be fine for twenty years. As with all botanical materials, oxidation can degrade and deteriorate what was once vital. (Note: don’t throw the old oils away– just don’t use them on your body. They will make a great cleaning agent around the house. But be careful how you use them, as they can dissolve plastic and rubber.)

Alternatives to Essential Oils
I have used essential oils in my practice and in my first aid kit, but based on these concerns I have drastically reduced their presence. If we are going to use essential oils, I believe we should truly consider them as precious, not a drop to be squandered. I have come to the realization that an essential oil is often like ‘using a sledgehammer to crack a nut’. There are a myriad of less resource intensive and more locally available therapies that will achieve the same end effectively and more safely. Wildcrafters or herbalists gathering or growing plant materials for a small local market are generally going to be more sensitive to plant

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population dynamics than those harvesting for a global market.

Essential oils are often used to support emotional well-being. As we all know, the real change comes not from an external fix but from the changes we make within ourselves and our lives. Slowing down, sharing quality time with supportive friends or family, simplifying our lives to decrease stress, truthful communication, and addressing and working on our emotional shadows and wounds are at the root of healing and transforming ourselves.

Despite the appeal of ‘miracle’ cures and fixes, those things outside of ourselves such as essential oils, herbs, reiki, or flower essences only play a supporting role to the hard inner work of transformation. Flower essences are an exponentially more sustainable approach to plant medicine, as they use small amounts of plant material very efficiently and rely on the sun for extraction. They are a more local solution for those seeking herbal support for emotional healing. Relying on the synergy of local plants benefits not only our local community — local plants share our environment, are exposed to the same environmental stressors that we are and have adapted themselves to thrive in these conditions…which means they possess and offer to us the energetic strengths we need.

There are many common problems from anxiety to skin imbalances to headaches to sore muscles to allergies where essential oils may be proposed. A little research will likely reveal another therapy more appropriate for the well-being of our bodies and the planet.

Before choosing essential oils these are the important questions to ask:
Is there less resource intensive therapy? Is there a more locally produced therapy? How much do you really know about the essential oil? What is the safety data particular to this essential oil?

If you are going to buy an essential oil:
Is there a Latin name on the oil to verify the species? Where on the earth is it coming from?
Does it come from a threatened species?
What methods are used to extract it?
What are the claims associated with this oil?
Are there scientific studies supporting the indication for which you are using it?

Below is an incomplete list of essential oils and herbs to avoid due to threats to the species (mostly summarized by common name or genus, however some threats are species and/or location specific)

For detailed information, go to the Cropwatch Threatened Species List:
- Rosewood oil
- Frankincense oil (Boswellia spp.)
- Amyris oil (Amyris balsamifera)
- Sandalwood oil
- Thyme oil (Thymus moroderis, T. baetigus, T. zygis gracilis)
- Jatamansi oil (Nardostachys jatamansi)
- Chaulmoogra oils (Hydnocarpus wightiana)
- Gentian (Gentiana spp.)
- Kenyan cedarwood oil (Juniperus procera)
- Himalayan cedarwood oil (Cedrus deodora)
- Cedar atlas oil (Cedrus atlantica)
- Agarwood (Aquilaria spp.; Gonyustus spp.)
- Greater wormwood oil (Artemisia gracilis)
- Anise scented myrtle oil (Anetholia anisata)
- Havoso tree oil (Ravensara anisata)
- Origanum oils (species include Origanum barygli, O. dictamus, O. vetter)
- Buchu oils (Agathosma betulina, A. crenulata)
- Cinnamon oils

Recommended Reading:
Links to high quality educational materials, sources of essential oils, associations and scientific studies:
www.greenscentsations.com/aromatherapy(links.html)
(Mindy Green is an aromatherapist, herbalist, author and lecturer. She is an advocate for the wise use of essential oils. She used to work for Aveda Corp. and founded a line of essential oils.)

Cropwatch is a highly regarded, independent watchdog organization for the natural aromatics industry. They have extensive materials and a “Pesticides in Essential Oils” database.
www.cropwatch.org/index.htm
“The Adulteration of Essential Oils – and the Consequences to Aromatherapy & Natural Perfumery Practice”, Tony Burfield
www.cropwatch.org/cwfiles.htm
“Conservation and Aromatherapy—is There A Problem?” by Dr. Keith Shawe
www.users.globalnet.co.uk/~nodice/new/magazine/shawe/shaw.htm
For a critique of Raindrop Therapy:
www.naturesgift.com/aromatherapy-information/essential-oil-safety/rdt/ and
http://aromatherapycouncil.org/?p=44

SOURCES:
1. Aura Cacia’s Eucalyptus Essential Oil Profile from Frontier Natural Products Online www.auracacia.com/auracacia/aclearn/eo_eucalyptus.html
3. Aura Cacia’s Rose Essential Oil Profile from Frontier Natural Products Online. www.auracacia.com/auracacia/aclearn/ eo_rose.html
Imagine the “forest primeval” as described by Longfellow in his well-known poem. What do you see? We often imagine the pre-colonial New England landscape as a vast forested space broken up only by bodies of water and granite rock outcrops.

Poets and painters have given us images of an untouched pristine landscape made up of towering giants and understories devoid of vegetation. Yet, the pre-colonial landscape was shaped by many influences—some better understood than others. We are most familiar with the “natural” influences. Beaver activity created ponds and marshland. As water stagnated over time, shallow ponds would fill in with marshland plants.

Severe storms created clearings along hillsides and shorelines. Natural fires cleared mountain tops and hillsides. Significant storm events occurred every 85 years on average and lesser events occurred every 5-10 years (Foster, 2001). These occurrences do not explain the landscape mosaic that we found 400 years ago.

We don’t consider the participation of man in nature as part of the ecology of our natural world. However, the role of indigenous people who inhabited the land since the melting of ice from the last ice age, over 10,000 years ago, did have a role in the shaping of the natural landscape.

What was their influence? To what extent did they affect the topography, the landscape, and the species growing in these places? Does in fact our pre-colonial landscape reflect a different kind of human activity – that is one where food plants and medicinal plants were managed?

David Foster (2004) estimates that 75,000 indigenous peoples inhabited New England for thousands of years. Historical accounts written by early colonists in the early 1600s tell of the widespread use of fire by native peoples which makes it certain that the landscape was influenced by human activity (Foster, 2001). The extent of the use of fire has been controversial among scholars. However, no one disputes that fire was used to manage and shape the landscape for their needs.

While, it is discussed that burning was used to favor wildlife habitat and clear land for villages and agriculture, the literature is scant concerning the use of fire to manage wild foods and plant medicines. One paper; “The Pristine Myth: The Landscape of the Americas in 1492” (Denevan: online: 2015) discusses the significance of Native American use of fire to favor the “gatherable foods” such as blueberries, raspberries, and blackberries. Nuts were also favored by burning fire tolerant oak and chestnut tree forests (Foster, et al 2001). Denevan (online 2015) supports my notion that plants were saved, protected, planted and perhaps transplanted, in addition to being managed to support food and medicine resources.

Native Americans used the trees, understory woodland plants, and plants from wetlands and from dry open areas for medicine. While many important medicinal plants grew in mature woodlands, a significant number required human intervention in order to be maintained. Undoubtedly, the pre-colonial landscape was a complex mosaic due to, not only natural events, but also due to human activity of notable significance.

Rachel Ross is a botanist, herbalist, certified nurse midwife, and owner of her small local herb business, Hillside Herbals. Current interests include preserving native plant medicines and their habitats and medicinal herbalism for women and infants. Rachel lives on a five acre hillside of mixed forest, gardens, and abandoned meadow in Central Massachusetts.

REFERENCES
Denevan, W.M. 2015. The Pristine Myth: The Landscape of the Americas in 1492, Department of Geography, Univ. of Wisconsin, Madison, WI. 53706 online: http://jan.ucc.nau.edu/~alcoze/for398/class/pristentmyth.html
When Europeans came to North America, the mayapple (*Podophyllum peltatum*), also called mandrake, raccoon berry or wild lemon, was one of the earliest plants to be noticed. Samuel Champlain noted Huron tribes eating the fruit in 1616, and shortly thereafter it was collected and cultivated in gardens in Europe. Linnaeus gave the plant its official scientific name, *Podophyllum peltatum*, in his 1753 publication *Species Plantarum*. A perennial herb native to moist woodland edges from southern New England south to Georgia and west to Texas, mayapple became popular not just for its beautiful flower, edible fruit, and horticultural novelty, but also for the medicinal properties of its root.

Medical theory of the 17th and 18th centuries relied on balancing the “humors”, or secretions of the body, to treat disease. Purgatives, bloodletting, sweating, and vomiting were general remedies for all types of illness. The dried or roasted rhizome and roots of mayapple were used by some Native American tribes as a purgative, and the medicine was quickly adopted by early American doctors to treat various types of fever, dropsy, rheumatism, and syphilis. As an indigenous herb, mayapple could replace expensive foreign remedies, such as ipecac (*Cephaelis ipecacuanha*) and jalap (*Ipomoea purga*) and also avoid the deleterious side effects of mercury (Barton). In the 19th century Eclectic practitioners developed disease-specific remedies and began using mayapple as a low-dose alternative for glandular disease, rheumatism, chronic hepatitis, and atonic conditions of the digestive system. They also used the compound resin derived from mayapple as a stimulant to the sympathetic nervous system of the solar plexus, to normalize secretions in such afflictions as diarrhea, constipation, gallstones, and gastric catarrh (Felter).

This compound, popularized as podophyllin, became the first commercially produced botanical medicine (Haller).

Along with other herbaceous members of the Berberidaceae found in Eastern North America, mayapple was for many years believed to be the sole member of its genus. In 1824 a second species of mayapple was discovered growing in Asia. *Podophyllum hexandrum* syn. *P. emodi*, the Himalayan mayapple, grows in small, widespread populations in the alpine regions of Northern India, Pakistan, Bhutan and western China. Like American mayapple, it has a single flower, ranging from white to pink, born between two lobed and peltate leaves. Both produce an edible fleshy fruit, the American most often yellow, the Himalayan red. Unlike the American species, which varies in both petal and stamen number, Himalayan mayapple consistently has six petals and six stamens and blooms before its leaves are fully open. And while American mayapple grows in large, clonal, generally self-incompatible colonies, spreading by its stoloniferous rhizomes, the Himalayan species is self-pollinating. This characteristic is believed to have evolved when the Himalayan Mountains lifted the mayapple into an alpine zone depauperate in spring pollinators. An effective reproductive strategy for the long-range dispersal of fruits eaten by birds and herbivores, it has also created the great morphological variation documented between the Asian populations (Xiong, Nag).

The two mayapples, one Asian, one American, are part of what is known as the Eastern Asian-Eastern North American Floral Disjunction. In the 1800s, as Western explorers gained greater access to Eastern Asia, their botanical collections displayed a stunning similarity to the flora of Eastern North America. The two regions share more closely related species and genera than either does with Europe, Western North America, or Western Asia. Based on collections made in Japan, botanist Asa Gray outlined the first theory of the EA-ENA Disjunction in 1849. The theory continues to be refined to present day through interdisciplinary research in botany, paleobotany, phytogeography,
geology, chemistry, and palynology. Generally it is believed that beginning around 50 million years ago a vast, deciduous boreo-tropical forest spread across the Northern Hemisphere, utilizing land bridges across the North Pacific and the North Atlantic Oceans. During subsequent climatic periods of cooling and glaciation and geological shifts, such as the collision of India with Asia and the rise of the Rockies in America, the forest shifted its range, changed, diversified and, in some places, went extinct (Tiffney, 1985). Eastern Asia and Eastern North America remained relatively hospitable to these ancient plants and hundreds of closely related taxa, now isolated from each other, continued to evolve and grow in these regions. The two mayapple species, called “sister species”, are believed to have diverged from one another around 6 or 7 million years ago, concomitant with the rise of the Himalayan Mountains (Xiong). Many of the plants that are part of the EA-ENA Disjunction have been used similarly in the traditional systems of medicine in their regions (Duke). Himalayan mayapple is called “bakra” in the vernacular and is thought to be a traditional bile-expelling plant of Sanskrit writings; its fruits are eaten as a mild laxative and for female reproductive issues (Arora). In the 1890s colonial administrators and pharmaceutical companies in British India began exploring the economic possibilities of Himalayan mayapple, hoping to supplant the American domination of the European market for podophyllin. Chemical assays of the Asian root were promising, reporting two to three times the amount of podophyllin as compared to the American mayapple (Thurston). But the remote, mountainous habitat of Himalayan mayapple made the cost of harvest and transport too high to be profitable and the market for it was slow to develop (Chatterjee).

Mayapple is not a medicine to be used without caution. The fresh root is a violent, sometimes fatal emeto-cathartic, used among some Native American peoples for suicides and poisonings (Erichsen-Brown).

Even dried, a large dose can be fatal. In early American medicine its purgative or cathartic doses were usually modulated by the addition of such botanicals as hyoscyamus (Hyoscyamus niger) and belladonna (Atropa belladonna) to dull the pain of intestinal griping (Felter). The Physio-Medicalist William H. Cook came to eschew the use of mayapple almost altogether. He describes it in his 1869 Dispensatory as a powerful stimulant to the secretory organs, useful perhaps in moderation for atony of the digestive organs, but exacerbating and debilitating even in small amounts to disease states. It is escharotic to the skin, and workers with the powdered drug have reported severe inflammation in mucous membranes and other sensitive areas. This property has been put to use both historically and contemporarily as a topical treatment for various types of skin lesions including genital warts (Hartwell). In 1947 mayapple was investigated for its anti-cancer properties and was found both to be anti-tumoural and to cause toxic side effects in the patient. By the late 1960s, semi-synthetic drugs, such as etoposide and teniposide, were being derived from podophyllotoxin, one of the lignans found in podophyllin and mayapple. These anti-cancer drugs have mitigated some, but not all, side effects. In addition to possible gastrointestinal distress, studies have shown that podophyllotoxin is damaging to the bone marrow, liver, and central nervous system, as well as tetragenic and detrimental to the development of the fetus. Still, these drugs are being used extensively and effectively against cancers of the lymph, lungs, brain, breast, and testes (Arora).

Anti-cancer drugs are now the driving force behind the wild harvest of mayapple. In 1970, 130 tons of American mayapple were dug from the wild (Meijer). The higher amounts of podophyllotoxin found in the Himalayan species, however, quickly shifted pharmaceutical manufacturers’ interest to Asia.

Today, far from being the “abundant” and “plentiful” plant promoted by British colonial administrators, Himalayan mayapple is an endangered species. It is listed in the Convention on International Trade in Endangered Species Appendix II, along with goldenseal (Hydrastis canadensis) and American ginseng (Panax quinquefolius) (both of which are also part of the EA-ENA Floral Disjunction). These plant species may not be immediately threatened with extinction, but it is feared they soon may be if their trade is not closely regulated. Despite this status, Himalayan mayapple’s dwindling wild populations continue to be the main pharmaceutical source of podophyllotoxin.* Harvest data are difficult to obtain, as the market from digger to buyer is secretive, but Asian Internet wholesalers offer supply abilities of Podophyllum extract of up to 10 tons per month. With 50 plants of Himalayan mayapple required to make a single kilogram of dried root, the harvest rates are “well over natural regeneration” (Rai, Nadeem).

One recent author lamented the disappearance of plants from their Himalayan study populations: in the area of Prashar the average number of plants per

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Some 450 miles long and kept humid by the ocean on either side, the state of Florida supports plant species from temperate to tropical, coastal to wetland to upland. Boasting a melting pot of exotic plants naturalized from far away, this region also features an impressive array of native medicinal species. The climate variations of Florida support rare habitats of tropical and subtropical plants found nowhere else in North America.

For this reason, when one wanders into a bookstore and picks up an average book on herbal medicine, many of the temperate herbs featured within the pages will only survive in Florida in a controlled garden. Conversely, few of these herb books cover the vast array of tropical medicinal plants found in the Sunshine State, which weave together a rich tapestry of culture, heritage, and tradition from across the globe.

Practicing bioregional herbalism in Florida is a trailblazing craft. Many temperate plants such as mullein (Verbascum thapsus), pleurisy root (Asclepias tuberosa), lobelia (Lobelia inflata), and skullcap (Scutellaria lateriflora) have tropical cousins with similar, if distinct, medicinal actions to their temperate counterparts. Much of our apothecary is a cobbbling together of various cultures; a veritable melting pot of materia medica with herbs ranging in origin from the Caribbean to South America to Asia.

Resourceful herbalists can find granny healers in the nooks and crannies of immigrant sections of towns in Florida to share personal experience about these plants, but many rely on tropical ethnobotanical books from the likes of James Duke and Julia Morton to gain an introduction to these medicinal plants. We also take cues from the plants themselves, which even in their relative anonymity will often call to us from backyard gardens and nature trails, begging us to grab our botanical key, confirm an accurate identification, and begin to dig to discover any historical evidence of medicinal use. Even still, many herbalists – myself included – go so far as to travel to other countries to learn the traditions of these species from an unbroken lineage and begin to lay a foundation for a new bioregional practice in the sunny south, rooted in the rich history from where these plants come.

Only two of the United Plant Savers “At-Risk” herbs – Virginia snakeroot (Aristolochia serpentaria) and sundew (Drosera spp.) – occur in Florida. (Eight others can also be found – but only at our northernmost border with Georgia.) Partridgeberry and pleurisy root from the UpS “To-Watch” List also make their way down to Florida, but none reach past subtropical zones.

Pine rocklands is a biome of moist tropical and subtropical broadleaf forests atop limestone substrate that occurs in southern Florida, the Florida Keys, and the Bahamas. The unique combination of limestone ridge and ocean breeze creates a habitat that supports diverse plant life. The pineland forests, interwoven with hardwood hammocks, once covered 185,000 acres of south Florida’s Miami area. Thanks to the rampant development of this region for urban and suburban settlement, only about 20,000 acres remain, and much of what remains is largely within the protective border of the Everglades National Park. Over 225 types of native plants occur in the pine rocklands ecosystem, and more than 20% of the plant species are found nowhere else in the world.

This sensitive habitat came under even greater threat from development last summer, as the University of Miami has sold 80 acres of pine rocklands to a developer to launch a multi-use complex including a Walmart, apartment complex, and various retail establishments. A few months later, an additional 60 acres of this threatened biome was sold to a developer to build a theme park called “Miami Wilds.”

Thankfully, US Department of Fish & Wildlife has stalled development plans, pending proper surveys of the area for endangered flora and fauna, but the pressure of cancerous rates of urban sprawl continue to threaten this rare ecosystem. Florida herbalists are currently cataloging the medicinal uses of some of these rare species, in hopes that by lifting up their medicinal virtues, we can lend to the voice of support and protect this exquisite habitat and its unique medicinal herbs.
Tropical Medicinal Plants with Florida Endangered Status

Adiantum spp. – Maidenhair fern
Alvaradoa amorphoides – Alvaradoa
Canella winterana – Wild cinnamon
Cyperodium punctatum – Cowhorn orchid
Guajacum sanctum – Lignum vitae
Polycarya smallii – Tiny polycarya
Pseudophoenix sargentii - Sargent’s cherry palm
Spiranthes spp. – Ladies’ tresses
Stachys tenuifolia – Narrow-leaved betony
Thelepterus spp. – Creeping star fern
Torreya taxifolia – Florida torreya
Vanilla spp. – Vanilla orchid

Emily Ruff is Director of the Florida School of Holistic Living and organizes the Florida Herbal Conference. You can connect with her work in Florida at HolisticLivingSchool.org or EmilyRuff.com

Cited References:


Cook, Wm. H. 1869. Physio-Medical Dispensatory. Wm. H. Cook

Cincinnati OH.


Felter, Harvey Wickes and Lloyd, John Uri. 1909. King’s American Dispensatory. Vol. 2. The Ohio Valley Company, Cincinnati OH.


Xiong, Ying-Ze, Fang Qiang, Shuang-Quan Huang. 2013. Pollinator scarcity drives the shift to delayed selfing in Himalayan mayapple Podophyllum hexandrum (Berberidaceae). AoB PLANTS 5:pl037; doi:10.1093/aobpla/plt037.

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quadrant decreased from 2 to .6 over the course of two growing seasons (Nag). Attempts at cultivation of this alpine plant have been hampered by poor seed viability and germination, as well as a maturation time of anywhere from 6 to 12 years from planting to harvest of marketable rhizomes (Krishnamurthy, Troup). The uses of tissue culture and fungi to synthesize podophyllotoxin are still in early stages of investigation (Chaudhari).

Possibly, what may save Himalayan mayapple is the American mayapple. Recent assays on the leaves of the American species report levels of podophyllotoxin in some populations equal to or greater than the amounts found in the Himalayan roots. Growers are finding American mayapple does not require the use of shadecloth and that it thrives under cultivation (Moraes). Thus, it could provide a renewable source of podophyllotoxin and allow for the recovery of the Asian species. Simultaneous to cultivation efforts, the restoration of savanna and fire-dependent woodland ecosystems would also ensure that wild American mayapple populations have ideal habitat, increasing fruit set and genetic diversity (Erichsen-Brown, Crants). Mayapple has graced the earth for millions of years. If protected from overexploitation, these sister species, one of alpine meadows, one of open woodlands and savannas, will continue to give us powerful medicine.
I landed in Spain for the International Congress of Ethnobotany, and as serendipity would have it, the hotel I had booked was in a small square located in what was once the Jewish/Arabic part of Cordoba. Next to my hotel was the only remaining synagogue that was not destroyed when the Jews were forced to leave around 1200. This particular square was dedicated and named after Maimonides, a Sephardic Jewish philosopher, who was also a famous doctor and wrote several herbal treaties on Greek and Arabic medicine. He was also famous for his writings on the afterlife and resurrection.

In regards to my state of consciousness, I now felt connected to the ancient scholars of regional medicinal plant knowledge that were influenced by the convergence of many cultures—Roman, Arabic, Jewish, and Christian. Among the orange trees (Citrus spp.), geraniums (Pelargonium spp.), and aromatic plants Cordoba is a labyrinth of narrow streets that are reminders of over 2000 years of cultural history reflected in the architecture, art, and archeology. Maimonides had now become my spiritual guide through this maze from which to tap into the complexity of plant alchemy and philosophy. Being of Jewish heritage on my father's side, I seemed drawn to the archeological remains of the synagogue as a moment in time when Cordoba was a thriving vortex of plant exchange, because even though it was under Muslim rule, it was at one time tolerant of minorities and therefore a very thriving free thinking society. Cordoba in the 10th century was the center of trade as the most populous city in the world, and famous for its libraries, botanical gardens, medical schools, and philosophers.

In 1992 the first Ethnobotanical Congress was organized at the Cordoba Botanical Gardens, which also contains an impressive Ethnobotanical Museum, the School of Ethnobotany, a seed bank, a phenomenal Paleobotany Museum, and an overwhelming collection of living plants—all found in one inspiring location. Now the conference had returned here with topics such as biological and cultural diversity to face global change; traditional knowledge as world heritage or legacy; international framework of transfer of species and popular knowledge among cultures and continents; recovery of knowledge and plant germplasm through historical documents; role of neglected and underutilized crops; role of cultural landscapes and agroforestry systems in the conservation of the ethnobotanical heritage; and plants used as food and medicine. I enjoyed reuniting with the founders of the Institute for the Preservation of Traditional Medicine, meeting many Spanish ethnobotanists working hard to reverse loss of local ecological knowledge, and connecting with Jose Farjardo, the founder of the Rock Rose Ethnobotanical Tours and local expert on esparto. El esparto (Macrochloa tenacissima), is an endemic grass found in Southern Spain and Northern Africa that has a human history of 7,000 years of use. This unique grass has found its way into every aspect of human use, and in return it was consistently replanted, keeping the desert at bay and exemplifying human, plant, and ecological interactions. The Congress itself was stimulating in regards to important research being presented and further signifies the important role ethnobotany serves in addressing critical environmental challenges, such as the loss of local ecological knowledge.

Leaving Cordoba was difficult, but I was on a mission headed north to meet Rosa Boyero, an herbalist that Rosemary Gladstar had recommended I visit. Natalia Fernandez had agreed to host me and introduce me to Rosa, so I took the train north to Girona. After listening to many talks at the Ethnobotanical Congress, I was anxious to meet a practicing herbalist, visit her botanical sanctuary, and to get a sense of the current state of herbalism in Spain.

We arrived at the 500-year-old stone farmhouse that had been inhabited by a known herbalista and that had then sat vacant for years before Rosa and her family began to re-inhabit the space. Breathing life back into the house is symbolic of the revival and interest in medicinal plants that is taking place in Spain. Rosa, a self-taught herbalist, talked about going to the local fairs and markets with her oils, creams, salves, and tinctures and sensing the people’s apprehension about her remedies. The once popular Boticas (herb shops) have the bones of the old apothecaries but are now filled with pharmaceuticals that have replaced the formerly common herbal remedies. Rosa, like many of us back in the States is a witness to and participant in the revival of local herbalism.
As I sat in Rosa’s herbal workshop, her love for the healing plants from the steep hillside behind her house was as intoxicating as the aromatic plants that hung from her ceiling. This forest was once an olive grove that has now reverted back to a diverse landscape. Wild rosemary (*Ledum palustre*) and thyme (*Thymus serpyllum*) were abundant underneath a canopy of very old olive (*Olea europaea*) trees and oaks (*Quercus spp.*), most notably the cork oak (*Q. suber*).

Personally there was a bit of disbelief in a forest thick with wild rosemary that she described. I had arrived at Rosa’s home as the sun was setting, so instead of wandering up into the mountains, we went to see her essential oil workshop. Rosa talked about the ideal time to harvest the rosemary for distillation, when the sun has drawn the oils to its peak. Spain is known for its concentration of aromatic medicinals, and this is why it has been a dream of mine to experience this aromatic landscape first hand. For an herbalist of this area the medicine is hidden in the oils extracted as hydrosols and essential oils to then make salves, sprays, or, in the case of the thymes the simplicity of tea or soup. The thyme soup is what saved the people after the Spanish civil war. Its simple ingredients fed many in time of great need. Water warmed with olive oil, and then combined with toasted old bread, thyme, and eggs made for a nourishing traditional food I was delighted to experience.

Late into the evening after soup Rosa told me the history of the Trementinaires. These were the women who would collect pine resin and other medicinal plants of the forest in the winter. They would often leave their families behind taking with them a daughter to teach not only the collection but also the routes. After making various medicines from the collected resins, they would take long journeys to various regions, visiting towns and trading the resin-based medicines. These preparations would be used for inflammation, as expectorants for winter colds, and a cure-all for farm animals as well. Rosa talked about how she learned these stories from her grandmother, who told her how wintertime is when we will see the Trementinaires visit. This was a way for these women to make money in the winter to support their families and to trade for other important household needs. This history is rich in the herbal tradition of Northern Spain and speaks to the role of women in the traditional ecological knowledge of native plants.

Women who become immersed in the history of Spain cannot escape the time of the inquisition. It is a painful history, where the most horrific torture devices were designed specifically for women, especially those who practiced with rituals and had a deep relationship with nature. It is in many ways incomprehensible what this time period was like for those who had to live through it. Rosa told me that the iconic concept of the black pointed witch’s hat perhaps has its roots in the women who wore tall hats that depicted the mountain formations from which they came. Even today, despite this horrific history, there still survives the ancient celebration of the Day of San Juan, June 23rd, near the equinox. This is a day when people would burn the herbs that had not been used in the previous year. It is also a time when people go out into the countryside to engage in the collection of over 100 different herbs to make the traditional Catalanian Ratafia. This is an anise-based liqueur with many wild herbs to which a few green walnuts is added for color. This digestive aid and overall tonic is then consumed throughout the year. This practice also reminds me of the Dominican Republic’s Mama Juana, another famous regional herbal elixir made with rum, red wine, honey, and several medicinal tree bark and herbs.

Rosa, who is also a beekeeper allowed me to taste two unique honeys. The first was made of the green pine cone that had been sliced and soaked in honey for many months. This honey, used to treat coughs and colds had a unique citrus taste. The second honey was made with the “oreja de oso” (*Ramonda myconi*), a wild herb of the forest that is also used to treat coughs and colds.

The one plant that I work with intensively on my farm in Virginia that is also found in this area of northern Spain is elderberry. In Spain black elder (*Sambucus nigra* is the native species, and they use primarily the flowers to make various remedies and the bark for teas. Though I know the flowers are medicinal as well, I primarily use the berries to make syrup from American elder (*S. canadensis*). The berries of *S. nigra* are only used to make jams and not perceived as medicinal. It is always fascinating to learn how similar species from various regions are perceived and to think about how European and American herbalism have cross-pollinated not only in the sense of which parts of the plant are used but also how they are used in various cultural contexts.

The next day we wandered up into the hills behind Rosa’s house, and it turned out to be true that a wild forest of rosemary did indeed exist. We foraged for wild chanterelles, found an old abandoned...
stored foods. The recent increased interest in wild foods has created an unsustainable demand on a vulnerable native medicinal species that is being predominately harvested from the wild. Lawrence Davis-Hollander, ethnobotanist wrote back in 2011 that at least two million plants of wild ramps were harvested that year based on average harvests of various ramp festivals and online sales through wholesalers. Many botanists and ecologists from various conservation organizations and state and federal agencies were reporting on the declining population of ramps. These concerns prompted the New York State Department of Environmental Conservation back in 2012 to work on a plan that would monitor wild ramp populations, develop guidelines for plant conservation practices and further fund initiatives that would find solutions to ramp conservation to ensure protection from over-harvesting and also work to develop a supply for restaurants and festivals.

The following recommendations were made after the completed study: that the harvesting of wild ramps should be limited through a harvesting permit program, cultivation should be encouraged, and educational programs must be put in place to make people aware of the issues created by over-harvesting and to expose them to the basics of plant conservation. Thus, it makes sense that the Ramp Fest of the Hudson has pioneered a wonderful solution – it is the first leaf-only festival, meaning that only the ramp leaves, not the bulbs are sold and cooked at the festival. This ensures the most sustainable harvesting method possible. If other ramp festivals were to also take notice of the success of the Hudson Ramp fest, this effort could have a huge impact on ramp conservation while still supporting rural economic benefits.

United Plant Savers supports three key components to protect ramps and ensure future viability of populations that the Hudson Ramp Festival has pioneered.

Sustainable harvesting Practices:

1) **ONE LEAF PER PLANT**: Harvest only the leaves, and leave some ramps fully intact. Rather than cutting off all the leaves from a bulb, take only one leaf per plant. This will leave a leaf for photosynthesis, allowing the plant to continue to grow and reproduce (without any leaves, the plant could go into dormancy). Digging up whole ramps not only reduces ramp population and prevents reproduction, but a disturbance to the soil disrupts its ecology and lets invasive plants become established.

2) **LEAVES ONLY PLEASE**: Maintaining our ramp supply will require a transition to a “leaves-only” approach. Ask your ramp vendor to consider changing their practices to those described above so that ramps will grow for years to come.

3) **GROW THEM**: We can continue to enjoy ramps while allowing them to proliferate in the wild. Ramps can be cultivated, either by growing plants from seed or by transplanting bulbs.

It is important to highlight that the Cherokee have used the method of only harvesting the leaves for centuries and that it has been documented that Europeans also use this method of only harvesting the leaves for the *Allium ursinum* native to Europe and Asia. Native Americans used the leaves to treat colds and only used the bulbs as a purge, and a tonic was used to treat intestinal worms.

In New York *Allium tricoecum* var. *burdickii* is listed as endangered, and harvesting is forbidden. The status of ramps in Tennessee is that they are of special concern and considered commercially exploited. In Maine and Rhode Island they are also given the status of special concern. Ramps are protected in Quebec and are legally protected in Gatineau Park since 1980; they even have a toll-free hotline for people to report theft of ramps. In spring of 2002 the Great Smoky Mountains National Park banned the collection of ramps after a 5-year study indicated a decline in the park’s ramp populations. The study provided insight that once a patch was extensively harvested it could take up to 20 plus years to recover. The observations from the study documented that ramp harvesters collect their quotas from one patch, leaving a few individuals to provide seed to regenerate the patch.

Last year United Plant Savers used its “At-Risk” Tool to evaluate the conservation concern in regards to ramps.
Dr. Lisa Castle receives the 2014 Medicinal Plant Conservation Award in recognition of her work in launching the United Plant Savers “At-Risk” Assessment Tool.

Dr. Lisa Castle, a plant ecologist, currently teaches biology at Southwestern Oklahoma State University. A lifelong lover of plants, her official interest in medicinal plants started in fifth grade when she wrote a school research paper on “Medicinal Uses of Herbs in Colonial America” at about the same time she planted a perennial herb garden in her parents’ backyard. Her work with United Plant Savers began in 2000 when she started working with Dr. Kelly Kindscher at the University of Kansas to develop an assessment tool used to compare medicinal plants based on their vulnerability to overharvest. Over the next fourteen years, she worked with herbalists, herb growers, the UpS board, biology students, and other ecologists to create, test, refine, and publicize the tool.

The tool, now called the UpS “At-Risk” Assessment Tool, is a way of “comparing echinacea to dandelions” with a numerical score indicating how vulnerable a species is to overharvest. Scores are based on answers to questions about a plant species’ life history traits, reaction to harvest, population size, as well as distribution, habitat, and demand. The United Plant Savers will use species’ scores to update the “At-Risk” and “To-Watch” lists. The tool is transparent, making it easy to learn why a plant is vulnerable and to make appropriate conservation measures (e.g. a species with an unusually high demand will require different strategies than one with a particularly imperiled habitat). The tool is adaptable, and scores can be modified as conditions change or new information is learned. Other users can use the tool to assess local vulnerability or to model how a species score might change if demand, habitat, or land use changes. Working with scientists from the University of Kansas and United Plant Savers, Lisa Castle authored the paper describing the tool, reporting the scores of the first forty plants scored, and describing case studies of plant scores, published in May 2014 in Ethnobiology Letters. We encourage you to view and download the free PDF of the publication and visit the interactive tool and documents online: www.goldensealsanctuary.org

Beyond helping UpS and other conservation organizations set priorities, Castle sees great value in using the tool to raise awareness about medicinal plants and plant conservation and as a teaching aid. Over 60 undergraduate students in her Botany and Plant Taxonomy classes at Glenville State College and Southwestern Oklahoma State University have individually scored plants using the tool. They’ve reported being surprised at how many plants are used medicinally, about how little is known about basic population biology of many plants, and about how much craziness they can find on the internet. The students have gone on to create scientific posters presented at West Virginia Academy of Sciences, Oklahoma Research Day, and Society of Ethnobiology Annual Conference. Lisa has presented about using the tool to teach botany at meetings of The Society for Economic Botany, The Society of Ethnobiology, and Planting the Future: Prairie Medicine and Botany 2014. Some of the education posters continue to circulate, having been seen at the American Council for Medically Active Plants Meeting and at the 11th International Herb Symposium, as well as the walls of the Kansas Biological Survey and webpage of UpS.

Outside of the tool, Lisa Castle’s interest in plant conservation is both academic and personal. She has studied population dynamics of prairie turnips, a native edible legume, in order to determine a sustainable level of harvest. She’s helped count Echinacea angustifolia following harvest and has introduced students to the under-studied world of plant populations as they monitor populations of invasive trees and native vines with medicinal potential. She spent four summers on the Crow Reservation in Southern Montana helping Crow Healer Alma Hogan Snell write her plant use book, A Taste of Heritage. Castle believes strongly that increased awareness will lead to better information and knowledge, which can lead to better decision making that helps both plants and people.

UpS is honored by the commitment to medicinal plant conservation as demonstrated by Lisa Castle and her work on the “At-Risk” Assessment Tool, and we are grateful for her citizenship to the community of medicinal plant conservationists.
Ramps scored a high 50 (see our master score sheet in the article on the “At-Risk” Tool). Because ramps are a long-lived perennial that is slow to reproduce from seed, taking more than seven years to reach maturity, their life history makes them extremely vulnerable. The effect of harvest is also high because when harvesting the bulbs, you are taking the entire plant out of its population and creating fertile ground for invasive species. The abundance of ramp populations is unknown in most areas, but its range is wide, spanning throughout Appalachia, and therefore they received a moderate score on our Tool.

Although in the wild they are mostly found in damp wooded hollers among other sensitive at-risk plants, they do have the ability to grow in a variety of soil conditions, therefore the habitat and abundance scores were relatively low. The final category that looks at demand in the marketplace was high since we can track the increase in demand from the festivals, farmers markets, grocery stores, and restaurants. In June 2015, United Plant Savers Board of Directors voted to place ramps on our “To-Watch” List, and we will continue to gather additional data and then re-evaluate for potential listing on our “At-Risk” List.

Most evident in using our assessment tool is that we can greatly reduce the vulnerability of ramps being overharvested if we use the leaves instead of harvesting the entire plant. We cannot change the life history of ramps, but we can change the way we harvest them, and we can support those land owners who would like to grow ramps in their woods. Forest farming ramps to sell seeds, harvesting the greens, and selling the bulbs in small quantities for specialty foods and for replanting stock could make a huge difference in ensuring a rich cultural and ecological heritage is preserved for future generations.

REFERENCES
1. Report submitted to Police by Diane DonCarlos Spring 2014, even though the ramps were returned the Police did not press charges.
6. Hudson Ramp Fest- www.ramplifesthudson.com

UpS Welcomes Two New Board Members!

United Plant Savers is very pleased to welcome two new members to our Board of Directors. Todd Lynch of Ecotropy LLC and Melanie Carpenter of Zack Woods Herb Farm.

Todd Lynch is the principal of Ecotropy LLC, a design studio that integrates medicinal plants, ecology, and art to create outdoor healing spaces in order to strengthen and illustrate the connections shared by human and ecological health, and to empower people to take a more active part in their surroundings and their own well-being. Todd has collaborated on health and landscape restoration projects across the US and Canada, has won several design competitions and grants for environmental art installations, and is trained in landscape architecture, health care garden design, and community herbalism. He blogs about landscape, wellness, and medicinal plants on his website, www.ecotropy.net, and his Twitter feed @ecotropy.

Melanie Carpenter is the co-founder and co-owner of Zack Woods Herb Farm, a 10-acre organic medicinal herb farm in central Vermont. Melanie grew up at Sage Mountain. It was there with Rosemary Gladstar that Melanie started her first business, Sage Mountain Herb Products. Over the last 25 years she has continued her work as a medicinal herb farmer, mother, educator, and community healer. After serving as teacher and principal in the public school for the last 15 years, Melanie now applies her background in education, administration, and farming to develop and lead workshops on medicinal herbs and their production. With her husband Jeff Carpenter, Melanie is co-authoring The Organic Medicinal Herb Farm to be published by Chelsea Green Publishers in the spring of 2015. To find out more about Melanie and Zack Woods Herb Farm check out their website: www.zackwoodsherbs.com
You can also follow them on Facebook: www.facebook.com/zackwoodsherbs.
“I was born on the prairies where the wind blew free and there was nothing to break the light of the sun. I was born where there were no enclosures.”

– Geronimo

United Plant Savers couldn’t have asked for a better venue to hold our Summer 2014 Planting the Future event. Hosted by the incredible efforts of the Kansas Biological Survey and the University of Kansas Field Station in Lawrence, Kansas, we were surrounded by innovation and dedication not only to preserving an ecosystem that is rapidly going extinct, but to a tradition of medicine that is also struggling to stay alive.

The University of Kansas Field Station, the biological field station of the University of Kansas, was established in 1947. The field station is composed broadly of 3400 acres in ten tracts that represent diverse habitats, such as tallgrass prairie, forests, and wetlands. Laboratories, gardens, and large-scale field studies on field station land provide the platform for research and educational programs. Large tracts of native tallgrass prairie are being managed by fire, grazing, and haying that provide an interesting contrast of cause and effect, a mosaic of management outcomes. These tallgrass prairies support many prairie obligate species that also have a long history of medicinal use, such as Asclepias tuberosa and many Echinacea spp. To learn more about the Kansas Biological Survey and the University of Kansas field station and how you can support their critical research, please visit: http://kufs.ku.edu

We were fortunate to invoke the wisdom and whimsy of Steven Foster, whose talk on the Human Impact on Medicinal Plants was wonderful and inspiring as usual. It had been many years since Steven had taken part in a United Plant Savers event, so we were more than thrilled to have him attend. In line with the topics of habitat and human impact, there were presentations on creating pollinator gardens (Jennifer Hopwood), prairie plant walks (Kelly Kindscher and Frank Norman), and a wonderful historical lecture on the pioneer gardens in Lawrence, Kansas (Laurel Sears).

Rosemary Gladstar’s keynote speech, regarding honoring traditions and maintaining a voice for traditional herbalism, rang the bell of a common theme for the event. Herbal medicine is ‘the people’s medicine’, but it has also become ‘the people’s responsibility’. Where there is demand for medicinal plants, there will always be pressure on viable wild populations, and as consumers we must always be mindful and vigilant. She also spoke of preserving habitat and United Plant Savers Botanical Sanctuary Network Program.

There was a splendid component of local knowledge from presenters who have endowed themselves to the greater Lawrence, Kansas community as leaders in traditional medicine. Frank Norman, Ocoee Miller, Kahla Wheeler-Rowan, and Mehdi Khosh all presented on the medicinal use of prairie natives and invasives. There was also a brilliant and thorough lecture on medicinal plants of the prairie by Bevin Clare of the Maryland University of Integrative Health.

With over 200 participants, miraculous yet windy weather, and the steadfast support from our sponsors, Frontier Natural Products Co-Op, Herb Pharm, The Merc Co-op, and Lawrence Integrative Health, we could not have asked for a more fun, engaging, and fulfilling event. Photos have been posted on our Facebook page. We encourage you to check them out.
The weather was literally 20 degrees warmer with full sun the day before our big event at the Goldenseal Botanical Sanctuary in Rutland, Ohio. We were still in set up mode the evening before as the grumpy cumulus clouds moved in and hoarded the sky, vowing cold, hard rain. But all hope was not lost on the incumbent weather, for when the temperature and rain both began to plummet, interspersing promises of sunshine were also breaking through, highlighting the autumnal mosaic like flecks of gold in stone and lifting our sense of hope with arching rainbows across the hollow.

The morning of the event brought our first hail of the season, but that was no match for the steadfast queue of visitors lining up at the registration table. One can only apologize for the weather so much, until it becomes clear that weather has never really stopped those who want to learn from the fields and forests (albeit it can be quite the deterrent).

Our morning session began with classes covering myriad topics including cultivating ramps (Allium tricoccum) with Tanner Filyaw of Rural Action and Herbal Beer Brewing, Medicine Making, and Landscape restoration with Todd Lynch of Ecotropy, LLC. One of the highlights of the morning was the ‘Big Herbs Expedition’ with Paul Strauss of Equinox Farm, who journeyed the meandering trail system of the Goldenseal Botanical Sanctuary with attendees to practice identifying trees by their winter characteristics and learning about their wildlife value and traditional medicinal uses.

Tim Blakley of Frontier Co-op was our keynote speaker and presented the most fascinating photographic narrative of his journeys around the planet in search of sustainably sourced raw materials for the herbal products industry. We learned so much about what ‘sustainability’ really means within the international marketplace, how to ask the right questions in regards to sustainable sourcing, and how to think critically about the products that we purchase as well as the ingredients within those products.

Our afternoon session was dazzled by a workshop on growing American ginseng (Panax quinquefolius), led by Eric Burkhart of Shavers Creek Environmental Center and Penn State during which attendees had the hands-on opportunity to learn about ‘wild-simulated’ American ginseng and how to grow the species by identifying proper planting sites and planting techniques. While planting ginseng in our woods, they were also able to discuss some of the larger issues within the industry in regards to disease and pests, return on investment, trade regulations, and even illegal harvest. American ginseng seed used in the workshop was donated to United Plant Savers by Larry Harding of Harding’s Ginseng Farm.

Ian Caton of Enchanter’s Garden, a native plant guru based out of West Virginia, also led an incredible workshop on seed collection, seed saving, and preparing seed for overwintering and spring propagation. Ian led attendees around the prairies of the property teaching them native plant identification and seed collection techniques. Participants of this workshop were able to collect seed to save and plant on their own properties in the spring.

The afternoon also hosted workshops from Dawn Combs of Mockingbird Meadows; Eclectic Herbal Institute presenting on sustainable herbal medicine and rediscovering common native medicinal plants; and Amanda Duren of Ohio Bird Conservation Initiative who presented current research regarding forest management techniques for improving habitat conditions for native forest birds of Ohio. Attendees listened to bird song recordings and then toured through the woods to explore prime bird habitat at the Goldenseal Botanical Sanctuary.

United Plant Savers would like to thank our gracious and generous sponsors: Herb Pharm, Frontier Co-op, American Herbalists Guild, LearningHerbs.com, Rural Action, and the National Forest Foundation. We would also like to thank Chelsea and crew from Chelsea’s Real Food of Athens, Ohio for the amazing lunch, dinner, and breakfast and for having hot tea and coffee on a cold, dreary morning. We would also like to thank The Hammond Trio of Athens, Ohio for enchanting our campfire with lovely and uplifting melodies of good ol’ Appalachian bluegrass music! We would also like to thank Chip Carroll, our intern coordinator, and our Fall 2014 interns for their incredible support and assistance in preparing for and coordinating the event.
UpS Botanical Sanctuary Interns
Creating Change Throughout the World
submission from UpS Fall Interns, 2014

We came from Savannah, Philadelphia, New York City, and Texada Island, BC. We brought with us some knowledge and basic experience in the making of herbal medicines. Most importantly, we all came with a keen desire to absorb whatever the Sanctuary had in store for us. Almost by definition, one needs to be at a crossroads in life to embark on an adventure such as the six-week United Plant Savers internship program: to take time off work schedules and rent payments, or to leave loved ones and brimming gardens in the August harvest. There are times in life that avail themselves for such things. As the continent from where we each came is wide and varied, so were the sights, sounds, and feelings we were to share in for the next six weeks.

Each of us, in one way or another, had a deeply meaningful experience at the Goldenseal Sanctuary. We learned about plants and plant conservation; about community through working with and depending on one another; and about ourselves by indulging our curiosities and embracing individuality. The “green spark”, acceptance, and gratitude were the underlying themes of the transformative time we spent in Rutland, Ohio.

The Sanctuary is a truly awesome landscape of hills and hollows, meadows, gardens, and ponds. Having rebounded from years of strip mining and extractive practices due to the vision and hard work of Paul Strauss and others, the land has a particularly special resonance due to this community of folks dedicated to preserving the indigenous flora and fauna, which make the region unique. The Sanctuary, laced with trails that wind around and even through a great variety of deciduous trees, also boasts a fabulous, diverse understory of plants. We spent many happy hours wandering with teachers, each other, or simply ourselves, occupied with identifying, learning from, and listening to the life all around. We had the good fortune to learn from several members of the community, but especially from Chip Carroll, the intern coordinator of UpS and our leader, who is both a kind person and natural teacher. He brought us through the trails of the Sanctuary, led work projects, introduced us to the community, made sure that we were taken care of, and encouraged us to try new things—always with a story to tell or something to teach us.

We learned that jewelweed (Impatiens capensis) blocks the receptor sites for poison ivy (Rhus toxidendron); that buckeyes have “plaity” bark, and shagbark hickory is a home of bats. Black cohosh (Actaea racemosa) has a three pronged stem and can tolerate some sun if there is lots of water; the yellow stem of blue cohosh (Caulophyllum thalictroides) persists after she has found her way back to ground. The red oak family boasts pointy leaves while white oak leaves are round; the tulip tree is the straightest tree in the woods, and peanut butter removes sap. We learned that it takes seven to ten years until wild ginseng (Panax quinquefolius) can be harvested and about the large amount of fungicides needed to maintain the intensive ginseng monocrop operations in North America. Hornbeam is a lever wood used to yoke oxen together. Pawpaw (Asimina triloba) leaves smell like diesel and look like a dog tongue; and slippery elm (Ulmus rubra) has hairy Velcro leaves. There is a ghost hiding in the bloodroot (Sanguinaria canadensis). We learned about wide vision and how to fox walk in the woods and to put passionflower (Passiflora incarnata) in our red wine and the intense relationship one could have with a single herb.

We watched the beauty of a percolation cone and the “setting up” of salves. We learned glycerin keeps some phytochemicals from precipitating; we weeded, raked, dug rocks, planted flowers to be, and harvested food the spring interns had planted. We collected seeds of ramps (Allium tricoccum), Indian grass (Sorghastrum nutans), rattlesnake master (Eryngium yuccifolium), and grey coneflower (Ratibida pinnata). We walked in the Hocking Hills caves and planted goldenseal (Hydrastis canadensis) in Wayne National Forest. We collected leaves, dug roots, and dried herbs. We learned that we are responsible to the plants we use and to share their teachings with our own communities.

Because of our mutual respect, flexibility, patience, and non-verbal agreement to share in the responsibilities of cooking, cleaning, and “taking care of business,” the four of us formed a unique
bond throughout our time together. With the motto “You can do whatever you like” established early and repeated daily, we shared delicious food, assisted each other in learning, worked on the Sanctuary, swam in Heart Pond, and laughed a lot together. We built trust, which enabled us to have passionate and controversial discussions without taking offense at the differences in our opinions. We all felt that the opportunity to live well together was every bit as valuable as all of the many other things the Sanctuary had to teach and share with us.

Plant conservation is an important consideration of our time. Raising awareness, spreading education, and supporting conservation groups and botanical gardens are all great ways to participate. Everyone can create his or her own way to play a part. For us, our internship at the Goldenseal Sanctuary was a deeply meaningful experience that has encouraged us to both keep learning and to keep doing what we can to enrich our lives – directly or indirectly, large or small – through plant conservation work.

We take with us a wide description of herbalists and healing, an encouragement to be playful with knowledge, an increasing ability to be patient and to listen carefully with an open heart. We offer so much gratitude to the many teachers who gave so willingly and unselfishly of their time and knowledge, and to Susan and Erika for all of their work and magic behind the scenes. Thank you all.

We are most grateful to Chip Carroll, the intern program manager for his gentle and playful stitching together of the multifaceted quilt of plants, people, and community beside this small rural Ohio town of Rutland. With his gracious help, we are all now an intimate part of the web of life at this special Sanctuary. Not only has it woven its way into each of our hearts, it has bound us all together in a unique experience we will forever treasure.

Katelyn Melvin, Leslie Goresky, Carly Amarant & Jessica Finizio

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Application available online at www.unitedplantsavers.org 740-742-3455 office@unitedplantsavers.org
Meet Some of our New BSN Members!

United Plant Savers' vision is to see UpS Botanical Sanctuaries established in people's backyards, farms and woodlands, creating a living greenway of native medicinal plants across the landscape of America. A sanctuary isn't defined by size or magnitude, but as sacred space, a place where one can find protection and the peace and renewal of nature. Nor is a sanctuary necessarily designated or defined by government agencies or large organizations, though often we think of it as such. We can all create sanctuary on the land we care-take. As our Sanctuary Members are demonstrating, Botanical Sanctuaries can be created in small backyards as well as on large plots of wilderness, in towns as well as in the country. As you well know, it takes attitude, willingness, and a desire to transform the way we value land, our assumptions about land use, and the way we design our gardens and farms. If we want to preserve wilderness and the wild populations that thrive there, we can't look to others to do it for us. We need to be willing to actively participate in the preservation and restoration effort, and as good a place to start as any, is in our backyards. And that is what you're doing. That is what the Botanical Sanctuary Network program is about.

Thank you to all Botanical Sanctuary Network members for being part of this vision and for your efforts to help preserve and restore the native landscape and our treasured medicinal herbs.

MAGMELL FARM
Landrum, SC
Sanctuary Stewards: Alison Strever & Lindsay Strever

Forests are the focus in landscape management at MagMell Farm. Located in the gentle foothills of the botanically rich Appalachian Mountains, MagMell is currently a 57-acre mixture of forest, fields, wetlands, creek, and river. However, invasive non-natives, the innately high maintenance and low sustainability of mowing, and erosion issues from pummeling rainfall led us to decide this year to "let" much of the fields "go". With the exception of small areas where pleurisy root (Asclepias tuberosa) and passionflower (Passiflora incarnata) still maintain the upper hand, we are selectively allowing reforestation.

The old gardeners joke, "Q: When is the right time to plant a tree? A: 20 years ago" also applies to this more passive approach. It is rewarding to know that the emerging seedlings and saplings will make a forest in a couple of decades, providing a sheltering home for many creatures - and shade loving medicinals!

For although we have been inundated by noxious field invasives, our native and planted populations of endangered medicinal herbs have taken off with equal fervor! Pipsissewa (Chimaphila umbellata), partridgeberry (Mitchella repens), and rattlesnake plantain (Goodyera pubescens) have doubled in a year, while plantings of goldenseal (Hydrastis canadensis), bloodroot (Sanguinaria canadensis), stoneroot (Collinsonia canadensis), Virginia snakeroot (Aristolochia serpentaria), and wild yam (Dioscorea villosa) have acclimatized nicely.

Studying the plants' natural processes of regeneration—where they self-sow, which ones seem to thrive together, etc.—has helped immensely. We follow their lead at every opportunity.

Our propagation areas and approaches reflect our focus upon the forest medicinals. The little greenhouse is now a shade house with new areas for cuttings and transplants, and we are experimenting with semi-raised beds by the creek. In a few very shady places we have thinned saplings and reduced understory for more light.

Similarly, we are tweaking our fertilization/composting methods to be more made-in-the-shade, with less emphasis on animal compost and more emphasis on composted forest material, such as leaf mold, composting leaves, and woody debris. Our two worm bins, however, remain pots of gold!

Finally, our year's goal of creating medicinal paths through MagMell is complete with very little human effort. We merely followed the paths the deer have made! Natural river stones bearing the names of the medicinal herbs are now along the paths, awaiting our spring workshop visitors!
In June of 2014, a very dear friend of mine and I had a drive near my sanctuary through a recent selectively logged woods. To our delight and amazement we came upon a patch of 23 pink lady’s slippers (Cypripedium acaule) in bloom! They were gloriously reveling in the wonderful sunlight let in from the thinning of the forest canopy. I had noticed in Eden Hyll how these flowers in bloom always seemed to be in a spotlight of sun. It is no accident. These particular members of the orchid family can live to be a hundred years old and only ever flower five or six times. It all depends on the light.

For the past few years I’ve been diligently and carefully weeding out the tree saplings and seedlings in my woods, leaving the mature ones, thus opening up the forest floor. I’m thrilled by the results. Where I had maybe five trilliums in total when I first bought the property, in just seven years I now have three species of them blooming all across the slopes leading down to the pond. I did not plant them; they just came. The trident broom (Mitchella repens) has spread, goldthread (Coptis trifolia) thrives everywhere, wild sarsaparilla (Aralia nudicaulis) abounds, and my imports of bloodroot (Sanguinaria canadensis), goldenseal (Hydrastis canadensis) and black cohosh (Actaea racemosa) are holding their own and starting to spread. Elder (Sambucus spp.) bushes have arrived and are already producing fruit. I noticed a staghorn sumac (Rhus spp.) down by the water this past year, and the blackberry (Rubus spp.) patches are thriving. Where I had only two mature cedars, I now have many four-seven foot cedars. The babies were there all the time, gasping for breath and struggling to find light. Luckily, I found them and gave them the room they needed. Oak trees are also appearing and growing quite quickly.

Seems like a small thing, sunlight and space, but it is quite a lot of work which requires persistence and diligence. Trees such as white pine, yellow birch and maple are bound and determined to have all the light and all the room. It’s amazing what I find every spring as I do my few days of tree weeding and pruning, which I do again midsummer, as the suckers appear from the cut off trunks.

With this simple method I’m inviting more diversity of plants, shrubs, and trees into my sanctuary. I leave brush piles for the critters and I try to work within the rhythm of what is happening naturally. A human with tools, eyes to spot what needs to be done and a stubborn, persistent nature can fast forward many good things. Gaia is always the master gardener. I’m the minion, paid in the beauty we are creating together. Being only 67 years old, I have many great years left to enjoy my sanctuary, but let’s face it. Mother Nature can work faster with a little help from her friends, the two-leggeds. What a great team!

Diane Seufert Tait is the steward of Eden Hyll Sanctuary in Natural Bridge, New York. She has been a practicing herbalist since 1997 and also has extensive herb gardens, growing over 60 different medicinal plants, at her home in Greenwood, Ontario. Diane grew up in New York State and is very pleased to be back in the North Country, working and learning at the sanctuary. Diane can be reached at dianeseuf@rogers.com

The Goldenseal Sanctuary (GBS) in Rutland Ohio has launched a unique website (www.goldensealsactuary.org) and Facebook page.

This website features information about how to plan a visit and has information on the herbs, birds, trees, and trails; the internship program; news and events. The website is highlighted by two amazing short videos. The first is by Ryan Gebura of Canopy Creations, a Senior at Ohio University who filmed and edited this overview of the GBS. The second video is a look at our Internship/Medicinal Plant Conservation Certificate Program that was created by Genn and Marjolaine Axford of www.our-common-roots.org. We are hosting two programs with Rural Action: Birds and Herbs, May 9th and Growing American Ginseng: Insights, Methods, & Opportunities with Bob Beyfuss on August 8th. We will be doing a fall event TBA as well, so stay informed through our website and Facebook page.
I am Blair and I am rooted in Iowa City, Iowa in the heartland of the USA. I am married to Mary, who has visited Findhorn, Scotland—a place of beauty and enchantment that has deeply influenced Gaia’s Peace Garden. Gaia’s Peace Garden has unfolded from the inspiration of Mary’s visit to Findhorn in 2008.

Gaia’s Peace Garden is a member of United Plant Savers and designated as a Botanical Sanctuary and Monarch Way station. We are also so very happy to recently receive Herman’s Garden Seed from Seed Savers in Decorah, Iowa. We envision Gaia’s as a safe place for plants and people of all ages. This magical space allows visitors and co-creators to reconnect and learn about Gaia (mother Earth) as we learn to live sustainably and regeneratively with her. Mary and I live about 2 miles away and call our home the Rainbow Urban Homestead with gardens in front and back.

Presently at Gaia’s there are medicinal and culinary herbs and flowers, indigenous prairie, annual vegetable areas, and a small orchard with berries and nuts and about 26 fruit trees. I am inviting people from a variety of backgrounds with an array of transition and co-creative gifts and talents to lead workshops for people of all ages.

There are several herbalists beginning to hold Herb Walks, and we intend to have regular fire pit gatherings to build community in 2015. A new community-building set of workshops entitled “Growing Food, Growing Together” will also be offered. We will begin to participate in Seed Savers Community Seed Resource Program and use their K-12 Lesson Plans!

Gaia’s Peace Garden includes several benches and seating areas with a picnic area, a children’s area with many rocks and crystals, a 5-circuit labyrinth, and a fire pit. There are bluebird and bat houses that will soon be joined by our first bee hives this spring. There are many critters who are finding Gaia’s to be a safe place for them. We operate on a sacred economics and gift resource economy with no commoditization or monetization of resources there. We are open for donations, and it is our intention to become a nonprofit organization.

We are happy to have a pre-school garden within our larger garden, and this has made our garden known to many local schools. The children are able to develop a personal, intimate relationship with growing food and herbs in a natural, playful setting. They experience great joy when biting into a snap pea or strawberry they grew with their own hands.

We use organic and permaculture gardening principles in all we do. I especially enjoy integrating healing with our gardens and co-creating gardens and alternative energy systems in urban areas. Come visit Gaia’s Peace Garden sometime...where healing happens.

We were excited to join the United Plant Savers Botanical Sanctuary network in the fall of 2014. Although the school has been in existence for almost 12 years, we joined the network only 6 months after acquisition of our new property for the school. The Wildflower School Botanical Sanctuary is situated on 8.5 acres, 30 minutes east of Austin, Texas. Rapid development in the area and use of surrounding land for ranching make the protection and stewardship of this particular property even more important for all of the wild creatures that now have safe harbor.

While we are still in year one, we have already implemented many plans and can begin to see the Earth responding to us. Director Nicole Telkes has a formal background in Environmental Resource Management she is eagerly applying. The plan for the sanctuary is to increase native biodiversity, construct permanent paths, and create permaculture zones of various activities from the house outwards. We are also creating some limited gardens using many bioregionally relevant techniques to deal with the 8 months of sun, heat, and regular drought. Another factor is the pumping of groundwater away from the area.

The property consists of .5 acre or so developed and about 8 acres raw and wild which open like a fan.
south of the homestead. The land has a pond-like area near the houses that currently struggles to hold water in the sandy loam soil. There wild area drifts between open prairie and wooded areas mainly dominated by blackjack oak, elms, and some cedar, as well as lots of mesquite. Some of the interesting understory natives include holly, beautyberry and agalta. Interestingly, there is not much in the way of non-native invasive weeds, though some native plants like greenbrier, dewberry, cactus, and mesquite can be quite "weedy". Again, the plan with the wild area is to increase diversity, to hold the weedier species in check. So far I have spread seed this winter of native chile peppers (Capsicum spp.), prickly ash (Zanthoxylum americanum), poke berry (Phytolacca americana) (limited areas), beautyberry (Callicarpa americana), goldenrod (Solidago spp.), gumweed (Grindelia spp.), horsemint (Monarda punctata), violet (Viola spp.), nettles (Urtica spp.), and a pound or more of native wildflower seeds into grassy disturbed areas. We are about to tag some of the natives and do species counts and pressings with students this spring.

On the developed area my husband and I have planted about 7 fruit trees so far and installed about 500 square feet of gardens. The gardens are both raised beds and sheet mulched. This spring we will be adding in wicking beds and bees. Our first gardens - winter ones consist of poppies (Papaver spp.), carinatro (Coriandrum sativum), sage (Salvia spp.), basil (Ocimum spp.), rosemary (Rosmarinus officinalis), tills (Poeniculum vulgare), honeysuckle (Lonicera spp.), passionflower (Passiflora incarnata), calendula (Calendula officinalis), thyme (Thymus officinalis), dill (Anethum graveolens), many types of food, and much more to come this spring. It is an exciting first year, and we will share photos as it develops.

Our little family friends and students happily share this space with owls, hawks, songbirds, woodpeckers, deer, raccoon, possum, armadillos, hogs, roadrunners, scorpions, walking sticks, frogs, toads, wild turkeys, rabbits, bobcat, coyote, and snakes. A mountain lion was also spotted in the area last summer.

WINDSONG FARM
Honor, MI
Sanctuary Steward:
Cindra Moore

My land is family land. Acquired over 150 years ago, it sits high on a hill overlooking a lake in the Sleeping Bear Dunes National Lakeshore, one mile away.

I am the land steward of this very special and spiritual piece of property, once a native summer encampment. Honoring the land and its history, I am of Anishinawbeg descent and am the keeper of root medicines (badger medicine) that I grow on my farm.

I named my farm Windsong after an ancient native grandmother, who traveled from village to village and healed with her voice. Her presence is in the wind that comes over the farm every day.

I live comfortably in the house my great grandfather built, and in 2012 I turned a 100+ years old building into a rural clinic where I practice healing arts in the summer. (www.joiedevivrearomatherapy.net)

In 2014 I received a LLC for my farm as a center for learning (www.windsongcenter.net) and held the first year of Medicine Women Gather circles/meetings, May thru October. We gathered on
the new moon or the Wednesday prior to share seeds, plant knowledge, wisdom, medicines, and stories. I have created an information guide (www.medicinenomengather.net), and my dream is to have Medicine Women Gather circles all over the world.

Being a medicine man or woman is a gift from spirit. Like being a natural born leader or teacher, one is born a healer and it’s natural to live this truth. It’s time to unite, support each other, our sacred Mother Earth, and her medicines.

I am honored to have my farm and work recognized and chosen as a valuable tool for learning through United Plant Savers as a Botanical Sanctuary.
Nature Cares Botanical Sanctuary is located at the foothills of the Cascade Range near Mt. Hood National Forest. The property is bordered by Canyon Creek, which drains the green mountain slope to the south. Bee Creek intersects the northeast corner of the property. This 40-acre, square shaped piece of land originally was a private timberland, which was being clear-cut a few years ago. It was surrounded by rural residential development and Christmas tree farms. Despite its recent traumatic experience, this corner of the planet just became a living laboratory of building and learning the diverse and symbiotic relationships between plants, microorganisms, insects, animals, and people. We are thrilled to be a facilitator and an integral part of that interaction. It is a place to respect, honor, appreciate, reconnect, and savor nature.

As a small tract timberland, Douglas fir seedlings have been replanted on most parts of the Sanctuary. But nature has put bandages on this new wound with Scotch broom (Cytisus scoparius), blackberry (Rubus fruticosus), St John’s wort (Hypericum perforatum), mullein (Verbascum spp.), burdock (Arctium lappa), wild carrot (Daucus carota), plantain (Plantago spp.), and cleavers (Galium aparine). These invasive medicinal plants will not only heal the earth but also humans. We are planning to teach workshops regarding identifying and use of these plants as food and medicine so that we could efficiently and effectively manage these species without using chemical and mechanical interventions. A small patch of mature forest was not logged, probably due to its aesthetic shapes. We rejoiced for their precious shade under the blazing summer sun. The shade is also appreciated by native species such as native elderberry (Sambucus spp.), huckleberry (Vaccinium spp.), trillium (Trillium spp.), Oregon grape (Mahonia aquifolium), and salal (Gaultheria shallon).

In order to control erosion and reduce soil compaction caused by prior heavy logging equipment, we are allowing weedy pioneer plants to grow on sites prone to erosion. Small scale swales are dug and logs are strategically located to lessen the impact of heavy runoff from the steep slope. We plant all our plants in fall and early winter to reduce transplant shock. After planting, we start composting with dead plant material on site around each cultivated plant. This practice will last from winter to mid-spring. Weeds are then cut from mid to late summer again to mulch cultivated plants. The goal of this practice is to reduce the need for irrigation as well as eliminate fire hazard during late summer to early fall. We are also inoculating the soil around plants with a diverse mix of bacteria and fungi, which will naturally help the plant to develop a strong root system, just like fermented food for our digestive systems. With the help of these beneficial microorganisms, just as for humans, these plants will strengthen their immune systems and increase nutrient uptake and ability to resist diseases and various stressors.

In conjunction with weed control, we have been planting native species, such as western red cedar (Thuja plicata), Oregon ash (Fraxinus latifolia), Oregon white oak (Quercus garryana), Pacific dogwood (Cornus nuttallii), red elder (Alnus rubra), blue elderberry (Sambucus cerulea), evergreen huckleberry (Vaccinium ovatum), salmonberry (Rubus spectabilis), and Oregon grape. We plan to add more native medicinals in our landscape next year, such as cascara sagrada (Rhamnus purshiana), kinnikinnick (Arctostaphylos uva-ursi), tall Oregon Grape, yanow (Achillea millefolium), and yellow monkey flower (Mimulus guttatus). We will also add American ginseng (Panax quinquefolius), goldenseal (Hydrastis canadensis), slippery elm (Ulms rubra), and trillium as the first group of “At-Risk” herbs in our Sanctuary. We will keep working on increasing the biodiversity with a focus on introducing “At-Risk” North American native medicinal plants. We want to gradually introduce in our Sanctuary all “At-Risk and “To-Watch” North American herbs that will adapt to our climate. Our goal at the Sanctuary is to establish a seed and plant depository for our nursery and UPS, as well as a local resource for our line of nutritional, medicinal, and functional produce and products.

As a Chiropractic and Clinical Massage clinic, the main focus of our practice is manual therapy. Through practicing, we noticed that our current scope of practice is so limited. Most of the time, we
are treating symptoms instead of the source of the problem. We started realizing that human health is the reflection of the health of our ecosystem. As Gaia theory has suggested, the forest (lungs of earth), the wetland and bogs (liver of earth), and the springs, streams, and rivers (circulatory system of earth) are under serious attack with modern industrial, agricultural, and forestry practices. Now, the lungs of earth are weakened by diseases, the liver of earth is loaded with toxins and slowly disappearing, the circulatory system of earth is clogged and contaminated, and the body of earth is suffering. We see the same thing happening with ourselves as the result of practices of modern medicine, as well as the explosive expansions of modern industrial and agriculture activities all over the world. By implementing responsible plant medicine such as conservation through cultivation, we believe that we are not only taking care of our patients, but also taking care of the planet as well, as all living beings call her home. Nature cares about lives big or small as well as ecosystems with plant medicine, and so do we. We have faith that with efforts guided by the wisdom of nature, we can remedy the continuous destruction of our own health and the health of our planet.

We are planning to provide workshops at least once a month either through our clinic, our nursery, educational institutions, community center, library, or field trips to the Sanctuary. We plan to add our own line of herb products in the future, and provide educational workshops on the conservation and use of native medicinal plants, use of invasive medicinal plants, natural health, nutrition, permaculture, organic gardening, etc. When opportunity arrives, we would like to collaborate with educational institutions on research regarding cultivation of “At-Risk” native medicinal plants in the manner of providing a field laboratory and necessary resources. Since the Sanctuary will be managed based on permaculture principles, we are hoping that the resulting growing conditions will mimic that of wild population. We hope that the plants growing on the Sanctuary will be able to serve as a repository for native plant germ plasma.

Eventually, we would like to see our Sanctuary, nursery, and clinic spread the seeds, plants, knowledge, and philosophy of rebuilding the ecosystem of our planet and in our own bodies. We will strive to be a testimony that we and everything else in our perception are just one being, and we can only be healthy when our planet is healthy.

When we found the UpS Botanical Sanctuary network, we felt that we found a group of sensible, thoughtful individuals who are willing to make a difference. We are so proud to become part of the team. We have innately known for a long time that there is an intimate connection between nature and ourselves. However, we have been pulling further and further away from the sacred connection by a force called modern life. For a certain period in our life, we can only vaguely feel this longing deep in our heart. The calling from nature seems buried deeper and deeper in the noisy life. By joining the UpS Botanical Sanctuary network, we felt that longing and the calling are finally touchable again. The vision of UpS Botanical Sanctuary network provided us a sound framework for our lifelong passions in this transitory life of ours.

We believe as BSN members of UpS, we are little green sparks that will eventually produce a momentum of real change. These changes will serve the only viable medicine for our sickening planet and all the living beings depending on her including ourselves. We are always intrigued by a quote from eastern philosophy, “The cosmos encompasses one seed. One seed encompasses the cosmos”. Maybe by starting a seed, and caring for a plant with a kind and pure heart, we can finally behold cosmos without illusions. That must be a beautiful moment.

“To sit in solitude, to think in solitude with only the music of the stream and the cedar to break the flow of silence, there lies the value of wilderness.”

~ John Muir
Eight miles from the sea, in the small town of West Rockport Maine, is the 30-year-old herbal apothecary Avena Botanicals. Situated on a south-facing ridge, Avena’s thirty-two acre farm borders 6000 acres of land that is undevelopable. In summer the farm is home to dozens of birds including rufous-sided towhees, six to seven species of warblers, and several rambunctious ruby-throated hummingbirds. In 2014, we hand-harvested over 1200 pounds of medicinal herbs from Avena’s farm. These herbs are either tinctured immediately in Avena’s certified kitchen or dried for later use in our salves, oils, crèmes, and tea blends.

Twenty years ago I began designing and planting Avena’s medicinal herb gardens, incorporating the old New England stone walls and hedgerows of the farm into my design. In amongst the production gardens we planted various native medicinals, including black cohosh (Actaea racemosa), true Solomon’s seal (Polygonatum biflorum), wild ginger (Asarum canadense), maiden hair fern (Adiantum pedatum), pleurisy root (Asclepias tuberosa), bloodroot (Sanguinaria canadensis), spikenard (Aralia racemosa), and slippery elm (Ulmus rubra) trees. In 2001, with the help of permaculturist Julia Yellen, we planted a woodland garden with over 100 goldenseal (Hydrastis canadensis) plants, 30 blue cohoshes (Caulophyllum thalictroides), and 20 black cohoshes. Today a lovely bench in the woodland garden invites visitors to pause, observe, and consider the significance of these “At-Risk” medicinals and their eco-systems.

Black cohosh is the main herb we have begun to plant in different shade gardens and hedgerows around the farm. All of these plants are thriving, and many are reseeding and creating young seedlings. We are expanding our black cohosh beds in the woodland garden with these young seedlings. In late July the flowering black cohosh plants are covered with at least 4-5 different species of native bees and an occasional honeybee. Black cohosh appears to be happiest when planted in community with other black cohosh plants. It is both a “community-minded” plant and an essential flower for pollinators.

I am very fortunate to be working alongside Denise De Spuitto, who was a United Plant Savers intern four years ago. She has a great love and devotion for the “At-Risk” medicinals and enjoys sharing her knowledge with visitors and students. In the next two years we are planning to expand our goldenseal and true Solomon’s seal beds and create a garden for a few dozen false unicorn (Chamaelirium luteum) plants, something I have wanted to do for years.

Avena’s gardens and herb shop are open year-round, Monday-Friday from noon-5 pm. The mission of the garden is to be a sanctuary for pollinators, birds, and native medicinals, a peaceful and healing garden for visitors, a living classroom for students, and a production garden for Avena Botanicals apothecary. At the entrance to Avena’s garden is a UpsBotanical Sanctuary sign, a pollinator habitat sign from The Xerces Society, a large map of the garden, and information about biodynamics. Avena’s gardens are the first in Maine to be certified biodynamic by Demeter. We are also certified organic by the Maine Organic Farmers and Gardeners Association.

“When one tugs at a single thing in nature, [s]he finds it attached to the rest of the world.”

~ John Muir
American Herbal Pharmacopoeia in Collaboration with UpS Embarks on Osha Monograph & Therapeutic Compendium

by The American Herbal Pharmacopoeia (AHP)

The American Herbal Pharmacopoeia (AHP), in collaboration with United Plant Savers (UpS) as well as noted research botanist Kelly Kindshcer of the University of Kansas and other acknowledged experts, is in the process of developing an AHP Monograph and Therapeutic Compendium for the North American native botanical osha (Ligusticum porteri). A historically important and environmentally sensitive plant, osha has been one of the most neglected in terms of research without any known monograph. As with all AHP monographs, a suite of scientifically valid identification tests will be provided, which is critical as adulteration with potentially deadly species from the Apiaceae family can occur. Furthermore, as the use of osha as a dietary supplement is trending upwards, a delicate balance must be struck between commercial use and conservation.

According to AHP President Roy Upton, “We are hoping the monograph, which will address identification, adulteration, and sustainable harvesting practices, along with formal population studies, will help strike an appropriate balance between its use and availability so we may approach the use of this plant safely and very consciously.”

The genesis of the monograph arose from prior studies partially funded by the American Herbal Products Association (AHP) & the United States Forestry Service. So far, AHP has received positive response from industry regarding the development of the monograph, along with initial seed funding even before formal announcement of the project. According to Upton, “We hope this will underscore the importance of this monograph to other industry members and encourage future financial support for this important work.”

For further information or to download an Osha Monograph and Therapeutic Compendium sponsorship form please contact: Roy Upton herbal@dot.net 831-461-6317


United Plant Savers Partners in Education program is designed to enrich school programming and students’ education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted “student-friendly” price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: www.unitedplantsavers.org. United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating 2014-2015 schools and programs:

ArborVitae School of Traditional Herbalism
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Willits, CA
Entirely South of the Pleistocene glaciation, the humid, temperate-to-subtropical southeastern United States is a hotbed of biodiversity, with high levels of endemic plant species throughout. Florida, including many unique ecotypes such as the Florida sand hills and coastal hammocks, is especially rich, boasting at least one endemic plant species in every county of the state, with 155 endemic to Florida alone!

In the southern part of the state, the Florida Magrove ecoregion consists of three main species of mangroves, *Rhizophora mangle* L. (Rhizophoraceae), *Avicennia germinans* L. (Acanthaceae), and *Laguncularia racemosa* (Combretaceae), also known as the red, black, and white mangroves. This ecoregion in turn hosts many native and some endangered animal species such as the Eastern indigo snake (*Drymarchon corais*), the smalltooth sawfish (*Pristis pectinata*) and the key deer (*Odocoileus virginianus clavium*).

In recent centuries, agriculture and urban expansion have already led to the loss of around half of Florida’s wetlands, and conservationists in the state struggle with a constant onslaught of invasive species. In inland waterways, aquatic floating plants like the water hyacinth (*Eichhornia crassipes*), once and still imported (*O’Hara*), the smalltooth sawfish (*Pristis pectinata*) and the key deer (*Odocoileus virginianus clavium*).

Mangroves, forming a complete ecotype from above and below the high and low tide lines along coastlines, provide a protective coastal barrier and have been shown to help lessen the effects of climate change on coastal communities. Many are also medicinal. Species like the red mangrove (*Rhizophora mangle*) serve as a model of adaptation from a part of the world facing the drastic ecosystem change, where the harvest, subsequent valuation and expansion of this species go hand in hand, while providing a source of natural products for lung, joint, and skin care.

**Figure 1. Image showing the human influence on the landscape o Southern Florida. Image:NASA ©nasaimages.org (Maps adapted from data provided by Lou Steyaert, USGS and NASA GSFC)**

**historic Observations**

The earliest literature reference to *Rhizophora mangle* or red mangroves may come from Nearchus, who was commander of Alexander the Great’s naval fleets and who subsequently was sailing from the Indus delta to Susa, Persia in 325 BC. In his log book, he notes “Wherever the floodtide reaches, there are these trees... and the tree has a leaf like a laurel, but a flower like a violet both in color and in odor, and a fruit the size of an olive, and this fruit is also fragrant.” He goes on to describe the characteristic prop roots, “Some have their roots always flooded by the sea as many as grow in hollow places whence the water does not flow away and nevertheless the tree does not perish at the hands of the sea.”

In 1526, the explorer Oviedo gave the first account of red mangroves observed by European botanists in the western hemisphere. Due to the location, these red mangroves are thought to be synonymous with *Rhizophora mangle*, the original and dominant species in Florida and the Caribbean to this day.

Taxonomically speaking, the true species documented by early observers of the mangroves is difficult to impossible to decipher. The color-specific designations seem to wander from one true species to another, each being variously described as white, red, black, or orange. In this article, and consistent with common usage today, red mangroves will refer to species of the Rhizophora. Carl Linnaeus categorized mangroves of the genus of Rhizophora as having seven distinct species, condensing the more than 20 documented species of earlier description. The genus was later condensed again, only to be split again back into seven species, with only *Rhizophora*...
mangle maintaining the Linnean designation. A thorough history of the taxonomic treatment of this genus can be found in H. Bowman’s *Ecology and Physiology of the Red Mangrove*, available online at archive.org.

**Botany & Physiology**

The habit of Rhizophora is a tree, up to 30m tall, with characteristic aerial stilt roots, highly branched, and in marginal habitats (Tomlinson 1994). The Rhizophora are viviparous, producing live offspring that develop into independent plants while still attached to the ends of the parent’s branches. In 596, the Moorish botanist, Abou’l Abbas en-Nebaty while undertaking long expeditions to Arabia, Syria and Iraq, used in his journals the Arabic word kendela (candle) to describe the red mangrove, referring to the prolonged hypocotyl, which appeared like candles hanging from the ends of the branches of the trees. The seedlings are salt-water tolerant like their parents, accounting for the widespread occurrence of mangroves along tropical and subtropical coastlines thousands of miles from the species origin, with or without human aid in travel.

The salt-water tolerance of the mangroves beguiled many early observers, who conjectured about the chemical make-up of these strange plants.

In 77 A.D., Pliny the Elder wrote of the red mangroves, saying, “The trees in these regions are of a marvelous nature, for, corroded by the action of the salt, and bearing a considerable resemblance to vegetable substances that have been thrown up and abandoned by the tides, they are seen to embrace the arid sands of the seashore with their naked roots just like so many polypi. When the tide rises, buffeted by the waves, there they stand, fixed and immovable, nay, more, at high water they are completely covered, a fact which proves to conviction that they derive their nutriment from the salt contained in the water.”

More recent science describes the mangroves along the lines of adapting to tolerate salt water by excreting it from their leaves, rather than relying on it for nutriment, but perhaps there is more similarity to the older descriptions than symantics first suggest, as recent research uses an “assimilation and excretion” model to describe the flow of sea salt through mangrove tissues.

**As a Source of Natural Products**

The extreme characteristics of the mangrove’s environment (especially the red mangrove) also includes anaerobic soils, for which mangroves have evolved pneumatotrophic roots, high-force waves from ocean storms, which they withstand by their strong stilt roots, and shifting coastlines, which their viviparous, water-dispersed propagules are perfectly suited to colonize.

Mangroves, in general, have also been a subject of interest in recent research into endophytic fungi and bacteria as potential sources of novel medicinal compounds, including some chemotherapeutic agents. In general, plants which are known to be useful medicinally, and which grow in extreme environments are prime candidates for novel endophytic relationships. This group is likely to include plants that depend on their symbiotic relationships for survival. Indeed, many species of mangroves have already been shown to house endophytes that produce compounds with in vitro cytotoxic/anticancer properties, as well as other, well-known and more common phenolic compounds. Chemical constituent profiles, indicate the presence of gallic acid, catechins, chlorogenic acid, ellagic acid, and quercitin, phyllosterols, and long chain saturated and unsaturated fatty acids in *Rhizophora mangle*.

Red mangrove bark is also very rich in tannins, which explains the plant’s widespread traditional uses in tanning leather and healing abscesses, ulcers, and diarrhea. Abu Hanifa, Ibu el-Beithar, described the red mangroves thus, “It is a plant that grows in the country of the Deibol (on the Sea of Oman) and which springs up in the sea. In that country it is employed in the tanning of hides, known under the name of leather of Deibol, which is red and thick. It furnishes also a red bark, which is used as part of medicaments for the mouth and those which are used to stop hemorrhages.”

John Ray, in 1693, also wrote of traditional use of the bark. “The roots of the tree, which is soft and moist, is split and peeled and applied warm to the poisonous wound of the fish, Niquus. It quiets the pain and restores the injured member, but although it may provoke pain in the forehead, it is really a splendid remedy first discovered by the fishermen and given to use by them.” In 1678, Van Rheede documented the use of the bark in Malabar as a cure for diabetes.

**Red Mangrove in Fiji**

In Fiji, the red mangroves (Titi or Tiri in the native dialects) are made up of two to three species (or subspecies) of Rhizophora, depending on whose designations are currently the taxonomical standard. *Rhizophora samoensis* (Hochr.)
Salvoza is accepted to be synonymous with *Rhizophora mangle* by many botanists, and is used to describe the subspecies or populations of *Rhizophora mangle* that exist in Fiji and the South Pacific, far removed from the North American groves on which the species type was first based. Tomlinson (1994) describes this species as “scarcely distinguishable in its morphology from *R. mangle*, but it has blunt (not pointed) flower buds and obscure (not obvious) bracteoles.” He goes on to suggest that much of the impetus for retaining the distinct species is based on geography, with *R. samoensis* being most aptly applied to species in New Caledonia, Fiji, Samoa, and Tonga.

*Rhizophora stylosa* Griff. is similar to *R. mucronata* which some older records may report being present in Fiji; however, slight differences in flower morphology have led to the taxonomic distinction between these species. *R. stylosa* produces typical Rhizophora-style prop roots, and may grow along shore-lines, estuaries, or in the ocean near a coastline, between China and Australia.

*Rhizophora x selala* (Salvoza) Tomlinson, a sterile hybrid of *R. stylosa* and *R. samoensis* that was first recognized by the botanist Guppy in 1906 in Fiji, is present where its parent species are also present.

*Rhizophora mangle*, whether from western genetic origin, or native to the islands, is also present. The red mangroves are an established traditional medicine in Fiji, the preparation of which is known, maintained, and practiced by the women in traditional village social structures. Today, in Fiji, naturally occurring Rhizophora species are being cultivated to support the needs of an increasingly urban global population, including respiratory support, anti-inflammatory joint relief, topical antioxidant and anti-inflammatory support for UV exposed skin, and diabetes treatments.

Nature’s Nurse International, led by a partnership between American psychologist, Dr. Ted Anders, and native Fijian researcher, Resina Koroi, has been working with native Fijian islanders to simultaneously cultivate, harvest, and protect red mangrove stands on the Fijian island of Viti Levu, with extensive and culturally sensitive methods of exchange.

As red mangrove stands spread outward, new drop roots can be seen descending from the lateral branches of mature trees. These soft, dangling appendages are carefully harvested by the islanders, beaten by hand on large stones, and dried to a light, fluffy mulch-like mass, which is used both traditionally and commercially to treat respiratory ailments to great effect. The harvesting techniques used by the islanders have been observed to actually increase the spread of these mangroves, as from many drop roots that are clipped, multiple meristems emerge.

Bent Creek Institute, the US Botanical Safety Laboratory, and The North Carolina Germplasm Repository, in Asheville, NC, have been working closely with Nature’s Nurse International to commercialize extracts created from these harvests for global markets and to expand on the existing research into the unique chemistry of the Rhizophora.

Nature’s Nurse’s product, RespiGard, having already received world-wide acclaim for its ability to rapidly relieve the symptoms of and onset of upper respiratory ailments, is one of a short list of products being prepared for internet sale directly from the US to China, where urban populations are under deadly assault from air-borne pollutants. The adaptive nature observed in practice with RespiGard is similar to the innate immune response stimulated by other well-known botanical medicines, being very useful in early-onset of respiratory symptoms. As a result of these observations, the extracts are also currently being screened in cellular assays to determine if there is immune adjuvant potential in the extract. With pneumonia as the number one cause of infectious disease in many developing countries, and vaccine supplies lagging and expensive, vaccine adjuvants are recognized as a vital component of emerging strategies for counteracting infectious disease. Other plants have already yielded natural medicines that have been identified as capable of filling this role. Will mangroves, in their abundance, also have some role to play?

**Medicine for the Anthropocene**

As with most species, human competition for resources represents the most pressing threat to mangrove habitat survival. In many parts of the world, the resource-intensive practice of shrimp mariculture, for which inexpensive tracts of mangroves are widely sought, is a short-term use of mangrove ecosystems, creating so much toxic silt that the large ponds must soon be abandoned. We believe there is a better way. Mangroves are one of the few plant species that are well adapted to rising ocean levels, and rising temperatures. They are protective against high winds and storms. They provide medicine.

The innate biological value of a species, while very real, is difficult to quantify, and difficult to weigh against the short term “profits” that are derived from its destruction, yet people are trying. With red mangrove, however, there is an example of potentially yet another economic model, where a harvest leads simultaneously to (a) an adaptive natural medicine, (b) the expansion of wild source populations, (c) growth of local economies, and (d) global ability to adapt to change. As we humans emerge from the dream of separation from our environment and into a period of healing, adapting, and damage control, species like the red mangrove may represent the new holy grail: a marriage of ecosystem services with human health. The sooner more of these species are recognized, the sooner we can get on in earnest with the work of intentionally adapting both ourselves and our planet.
as I listened, observed, tasted, and inhaled the aromas, it deepened my ecological understanding of medicinal plants from various regions. Though I grow rosemary, lavender, and other aromatics in my garden in the eastern temperate forest, they do not have the same vitality as those growing in the wild. There is a certain mystery and magic about the wild plants from each region. I am from the land of wild root medicine: blue and black cohosh (Caulophyllum thalictroides; Actaea racemosa), American ginseng (Panax quinquefolius), bloodroot (Sanguinaria canadensis), wild ginger (Asarum canadense), wild yam (Dioscorea villosa), goldenenseal (Hydrastis canadensis), lady’s slipper (Cypripedium spp.), trillium (Trillium spp.), and sassafras (Sassafras albidum). In Spain it is the oils and resins, the land of the olive, pine sap (Pinus spp.), saffron (Crocus sativus) and the plants that cover the hillside and fill the air with an aroma that is intoxicating as well as deeply healing. In the tropics it is the high concentration of medicinal trees and vines. Traveling is a window into patterns of medicinal plant concentrations. Each bioregion seems to highlight how the bioactivity finds its way into the tree bark, roots, leaves, and oils depending on the environmental energies of geology, climate, altitude, and latitude. This concept finds overlap with the work of Leslie Holdridge, who in 1947 classified the systems of natural vegetation patterns, that are applicable to tropical, Mediterranean, and boreal zones. One can imagine how this concept expresses itself in the alkaloid magic of plant medicine, and further makes us appreciate the bioregions of herbalism and the diversity of medicinal species.
As rates of Attention Deficit Disorder, Childhood Anxiety, and Childhood Depression soar in the U.S. population, so does the rate of Nature Deficit Disorder among youth, which makes one wonder if this is related. At an APA conference in May 2014 it was stated that approximately 26% of American teens play video games for six hours or more per day. A research study of male adolescents in China revealed those students with an Internet Addiction had atrophied gray matter in the brain and prefrontal cortex abnormalities. Another study at UCLA revealed frequent computer usage changes the neuro-circuitry of a brain to consume imagery and does not promote the usage of imagination.

On a positive note numerous research studies have demonstrated ADHD symptoms diminish, anxiety and depression are decreased, and creativity and working memory are increased when students are outside in nature. One study indicated when hyperactive students walk in a forest for five minutes their ADHD symptoms significantly decrease. Research in England demonstrated the mental health benefits of being outside are enhanced when there is a greater biodiversity in the area.

Therefore, with the help of a generous grant from United Plant Savers, Northwest Middle School Students are creating a Nature Trail that will showcase medicinal plants at risk of extinction. In August 2014 a group of middle school students, the school psychologist, and the school art teacher collaborated to create a nature trail. However, they learned the proposed trail location was not on school grounds. The groundskeeper pointed out another wooded area even closer to the school that could be used for a nature trail. To get to the proposed area involved traversing through four foot tall thistle plants. Additionally the proposed trail was covered with a thick healthy mat of poison ivy! The groundskeeper used a skidster to bulldoze a trail through the thistles/poison ivy, but due to the thick underlying root structure from various trees and poison ivy, the students decided to build raised beds from cinder blocks that were donated by Fleming/Schubert Nursery.

The students learned that when native plants were reintroduced into an area in locations like Indianapolis and other cities, a greater variety of birds and amphibians emerged. Therefore, On October 11th five students participated in a Bird Sit In, which required students to record the different types of birds they saw over a 3-hour period. The students are eager to participate in the 2015 Audubon’s Bird Sit-In with the hope of observing a greater diversity of birds within their nature trail. The sixth grade students were astonished at the weight of the cinder blocks, so to ease the transport of the cinder blocks they took turns using a sled to slide them from the school parking lot down to the center of their nature trail. The cinder blocks and topsoil did not arrive until mid-October, and therefore the students were only able to build two of their five raised beds by December. Thank goodness there was a warm day in December so they could plant blue cohosh (*Caulophyllum thalictroides*), black cohosh (*Actaea racemosa*), ginseng (*Panax* spp.), goldenseal (*Hydrastis canadensis*), lobelia (*Lobelia inflata*), bloodroot (*Sanguinaria canadensis*), and wild yam (*Dioscorea villosa*) within these two raised beds. In the spring and fall of 2015 they will proceed to build the additional raised beds. While creating this trail it has been inspiring to see how much calmer, focused, and enthusiastic these students have become.

The unexpected high cost of buying topsoil used up most of the grant money which was slated to purchase additional plants. However, this group of resourceful students organized a Plant Sale to raise funds to purchase more seeds/plants and to pay the $100 application fee to be considered by United Plant Savers as a Botanical Sanctuary. A local greenhouse, Barco Son’s Inc. in Medina donated a couple dozen poinsettias. The students rooted dozens of baby spider plants and then transplanted them, as well as some aloe plants. Their Holiday Plant Sale generated $155! The students are looking forward to sharing their newly developed nature trail with the United Plant Savers staff and are hoping to be the first public school grounds in the U.S. established as a United Plant Savers Botanical Sanctuary.
The Vermont Center for Integrative Herbalism (VCIH) is a nonprofit herbal school and sliding-scale herbal clinic located in Montpelier, Vermont. In the summer of 2014, VCIH received a grant from United Plant Savers to create a medicinal herb display garden at the entrance to our clinic.

With funding from UpS and the help of experienced gardener and herbalist Joann Darling, VCIH was able to purchase plants for the project. Along with additional assistance from community members and VCIH students, VCIH converted two shaded, mulched beds adjacent to our clinic entrance into rich garden beds. Together, we weeded, added compost and soil and planted witch hazel (Hamamelis virginiana), bloodroot (Sanguinaria canadensis), blue cohosh (Caulophyllum thalictroides), maidenhair fern (Adiantum spp.), partridge berry (Mitchella repens), mayapple (Podophyllum peltatum), wild ginger (Asarum caudatum), wild yam (Dioscorea villosa), uva ursi (Arctostaphylos uva-ursi), trillium (Trillium erectum), Solomon’s seal (Polygonatum multiflorum), Oregon grape (Mahonia aquifolium), and some other medicinal shade-lovers.

Our beautiful sanctuary for “At-Risk” medicinals, highlighting Vermont natives, is highly visible and accessible. The plants greet each person who walks through the door, thus enriching the sliding-scale herbal clinic experience. Through the display garden, clients have tactile experiences with the plants and have also found inspiration to grow these “At-Risk” plants in their own backyards. The garden also serves as an outdoor classroom for VCIH students and community members, highlighting plant conservation and sustainable herbal practice.

In the future, the herb garden will also contain an informational plaque detailing the importance of protecting native medicinal plant species and their habitat. This year, seeds will be harvested from the garden and given to students, community members, and UpS.

VCIH is so grateful for this opportunity made possible by United Plant Savers!

Turtle Mountain Herbs began as a dream, twenty plus years ago. I was privileged to grow up in the beautiful mountains of southwest Virginia in the shadow of Mount Rogers. My earliest memories are of being toted all over the Appalachian Trail, learning the plants, trees, and animals from my Dad. After finally finishing college in 1994, we struck out to find “our” land. Work brought us to Tennessee, and that is where we found our little mountain. Being fresh out of school, there was no bottomland within our reach.

Our first peek at our mountain was bleak. She had been bulldozed, filled with trash, and left to flounder. Not accustomed to resisting a challenge, we took her on. We started growing and selling medicinal plants on the mountain. Since there was no market back then here in Knoxville, we trekked across the mountain to Asheville. With the coming of our first baby and three more to follow, we had to give up. We continued to clean, plant, and nurture our little mountain. We begin to see natives return: black cohosh (Actaea racemosa) and partridge berry (Mitchella repens), as well as box turtles to name a few. Just last year, we reopened to the public at the urging of our children. This past year has been a wild ride here on the mountain, but we are looking forward to many more and watching our mountain grow and flourish.

We were honored to be awarded a Community Grant through United Plant Savers this past summer. Our vision was to plant Granny’s Garden – a place where local people could see, touch, taste, smell, and learn about their medicine, Appalachian medicinals. Not only is the knowledge of these plants disappearing, but also the plants themselves. We chose a fairly level area deep in the woodlands. We cleared brush and undergrowth and laid out a trail. Our vision was to create a trail where the plants were laid out according to a key. Our intention was to give visitors a key with common names and botanical names of the plants, in hopes this would further engage them.

Once the trail was completed the last of August, the fun began. We ordered the following plants to be included in the garden: Panax quinquefolius, Dioscorea villosa, Hydrastis canadensis, Actaea racemosa, Caulophyllum thalictroides, Sanguinaria canadensis, Podophyllum peltatum, Ulmus rubra, Sassafras albidum, and Lindera benzoin. We chose
GREEN THANKS & GRATITUDE

Thank You For Your Generous Contributions & Support

We extend a special thank you to all members of UpS who continue to support us with memberships and donations. Your support, efforts and concern are the only thing that can really make a difference in the protection and conservation of our important medicinal plants. All donations and help, whether it be organizational, cultivating, educating or choosing medicinal herb products more consciously are appreciated. Great gratitude goes to the many in-kind donations of goods and services from companies and friends that support our work. Thank you to all our supporters and members who continue to rally for the plants.

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Corporate members have a unique opportunity to educate their customers about issues surrounding the sustainable supply of our native medicinal plants. More information about the corporate member program is on our website.

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Loess Roots
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MIDWEST WOMEN’S HERBAL CONFERENCE
Almond, WI
www.midwestwomensherbal.com

June 6th-7th
HERB STALK
Somerville, MA
www.herbstalk.org

June 12th-14th
INTERNATIONAL HERB SYMPOSIUM
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www.internationalherbsymposium.com

August 27th-30th
NORTHWEST HERB SYMPOSIUM
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UpS Provides Cost Sharing for Ginseng

Lee Rinehart, Director of Education & Outreach, Pennsylvania Certified Organic

Sustainable harvesting of wild-grown medicinal plants is becoming a major concern to reduce the threat to forest plant biodiversity. Wild ecologies can be fragile, and given the demand for medicinal plants, the industry is looking for ways to verify the conscientious production and harvest of wild-grown products.

In response to this demand Pennsylvania Certified Organic (PCO) has established a voluntary Forest Grown Verification Program for forest grown products that are sustainably and legally produced and harvested. The program currently focuses on American ginseng (*Panax quinquefolius*) products from private land, and PCO is currently working to add several other forest products to the list including black cohosh (*Actaea racemosa*), goldenseal (*Hydrastis canadensis*), false unicorn root (*Chamaelirium luteum*), slippery elm (*Ulmus rubra*), forest-farmed mushrooms, and forest-farmed leeks. The program standards for ginseng were developed by PCO through research of federal and state regulations, consultations with industry professionals and PCO members, and information from scientific publications.

Getting more forest grown producers on board is the principle focus of UpS and PCO, evidenced by a new program designed to incentivize verification by reducing the costs to producers. The Forest Grown Cost Share program is a joint effort between UpS and PCO to offset verification fees for PCO Verified Forest Grown production operations. UpS has dedicated funds specifically for the program that will be administered by PCO, with the potential to continue the program on an annual basis.

"PCO is excited to work with United Plant Savers to encourage forest grown verification," says PCO’s Director of Education and Outreach, Lee Rinehart. "The funds provided by UpS for the cost share program help reduce the financial burden of growers who harvest forest products with careful attention to the sustainability of forest ecologies. Third-party verification communicates to consumers that the products they purchase were stewarded and legally harvested in a manner that does not degrade the long-term regenerative capability of the wild population.”

Interested producers and handlers of forest grown products can contact Adam Seitz, PCO Certification Specialist at (814) 422-0251 to obtain a Forest Grown System Plan, or visit www.pcoorganic.org/forestgrown for more information and a downloadable PCO Forest Grown Verification Program Manual.

Lockn’ 2014 & UpS’ Ultimate Tea House

Arrington, Virginia

United Plant Savers embarked upon the most epic experiment in publicity and raising awareness for our mission, most specifically our American Ginseng Petition on Change.org (www.change.org/p/save-american-ginseng-panax-quinquefolius). We attended the Lockn’ 2014 Music Festival in Arrington, VA to set up the ‘Ultimate Tea House’ serving iced tea during the hot days, talking to people about our organization, and having them sign our American Ginseng Petition. What a huge success! Thank you to our Tea House Sponsors: Herb Pharm, Mountain Rose Herbs, Mockingbird Meadows, Mountain Mel’s Essential Goods, Sacred Moon Herbs, and Herbs America. We would also like to thank Peter Shapiro and the Lockn’ Music Festival (www.locknfestival.com) for supporting non-profits, all the cool cats at Gello (http://gello.com) for sponsoring Participation Row, the lovely ladies of HeadCount (www.headcount.org) for organizing us so well, and most definitely Peggy Schadler of 1000 Faces Mask Theater (www.1000facesmasktheater.com) for loaning us those amazing masks to draw in the crowd! We had a blast...and we definitely left a lasting impression! We even made it into the Festival Newspaper a few times.

United Plant Savers would also like to thank Angel, Laura, Randy, Lisa, and Jim for all of the support, laughs, and hard work to pull it all together. We couldn’t have done it without you! #lockn2014

TURTLE MT. continued from page 39

an October planting date, as this is optimal for these plants. The plant sites were marked with local slate and painted numbers. This proved to be the best option, as this created the least environmental intrusion possible.

The morning of planting day proved to be a wet one with unrelenting showers and threatening thunderstorms. With the help of my herbal apprentices, we pressed through and got every single plant in the ground. A valuable lesson was learned that day: plant keepers do not get holidays or days off for inclement weather. Being a plant guardian requires commitment.

In two short weeks after planting, we hosted our first group at Granny’s Garden. It was a homeschool group of children of various ages. Since the plants were “sleeping”, we talked about how the plants had been used in Appalachian culture and read the story: “When I Was I Young in the Mountains”. We ended our hike with some sassafras tea sweetened with local sorghum.

We are excited for spring and the first glimpses of the plants. We intend to build a shelter from downed trees at the trails end to function as an outdoor classroom. We have many classes we plan to offer to the community at Granny’s Garden: My Daughter’s Garden, Planting by the Signs, and Music in the Trees are just a few. We are so grateful to United Plant Savers for this opportunity.
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A United Plant Savers' Publication

Spring 2016

Slippery Elm in the Herbal Marketplace

Framing a Domestic Market for American Ginseng

Conserving & Popularizing Wild Fruits in Sri Lanka

Tafi Atome Sacred Grove

The Original Wild Plant Gatherers

Lessons from the All Mighty Shorea faguetiana Tree

Two Sides of Chaga

The Complicated History of Smilacaceae
Greetings from UpS President

Sara Katz, Herb Pharm co-founder & UpS board president

A theme that characterizes the activities of United Plant Savers over the past year is connectivity and collaboration, and this issue of the Journal exemplifies that clearly.

UpS’s mission is to "protect native medicinal plants of the United States and Canada", yet it goes without saying that plants and the people who appreciate them are not bound by geography.

Notably, Sacred Seeds, a global network of botanical sanctuaries preserving biodiversity and plant knowledge, has recently come under UpS’s oversight. In this Journal issue are superbly interesting contributions from Sacred Seeds member sanctuaries including the Native Forest Foundation, which is conserving and popularizing wild fruits in Sri Lanka; Tafi Atome Sacred Grove, a "community-managed natural area" in Ghana; and a fascinating discussion about the Smilacaceae family from Rachel Thomas of Hidden Garden Ethnobotanical Sanctuary in Puerto Viejo, Costa Rica.

UpS’s “At-Risk” Assessment Tool has also gone international. Quickly gaining notice by plant conservation agencies around the globe, the Tool has proven to be easily adapted to usage in other countries.

Within these pages are a myriad of articles from members doing purposeful and interesting plant work, sharing ideas, challenges, and successes. Debbie McSweeney intelligently and passionately pleads the plight of bees and offers real ideas on how we can help. Robert Dale Rogers explains the demand for chaga as medicine resulting in feverish harvesting from the wild. Camille Freeman creatively discusses how to encourage and nurture a deep love of the environment in the very young. And Eric P. Burkhart, Ph.D., describes the diseased plight of slippery elm trees and the role United Plant Savers members and herb businesses could play in conserving and making wise use of this important North American medicinal tree.

In an effort to encourage cultivation of forest botanicals, UpS is collaborating with the PCO Forest Grown Verification Program to establish branded third-party verification for non-timber forest products, including American ginseng. Erika Galentin discusses the potential of such efforts to create sustainability in the highly nuanced American ginseng industry.

And certainly not least or last, our Botanical Sanctuary Network continues to grow. Eight new members joined in 2015 representing Light Footstep Herb Farm in Ohio, Florida School of Holistic Living, Cedar Mountain in Washington State, Hootenanny Hill in New York, Luna Farms Herb Farm in Illinois, Well Spring Mountain North Carolina, Ginseng Sanctuary in the Arkansas Ozarks, and Walker Mountain in Virginia. Three of them tell their inspiring stories within these pages.

I want to take a moment to thank our amazing and generous contributors to the Journal of Medicinal Plant Conservation over the years. The quality of the information, the manifest love and devotion for the plants, people’s experiences and stories…all shared freely and in the spirit of hope.

In gratitude,

Sara Katz,
UpS board president
Medicinal Plant Conservation
2015 AWARD
Recipient
Leigh-Wai Doo

“The Plant of Aloha” is the title of a short video interview highlighting 2015 Medicinal Plant Conservation Award winner, Leigh-Wai Doo. The award honors Leigh-Wai for his continued tenacious dedication to conservation and restoration of Hawaiian sandalwood (Santalum paniculatum). In the interview Leigh-Wai explains the history and culturally significant meaning of sandalwood, also known as iliahi in Hawaiian. This interview highlights the symbolic nature of sandalwood, as the ultimate plant of Aloha, because of how its symbiotic nature symbolizes the importance of working together. Leigh-Wai Doo, long time sandalwood activist has applied his passion by being a proponent of sandalwood legislation. He has tirelessly been proposing and supporting various bills at the state legislature over the last five years. There has been fierce opposition from the logging industry, and the state has been reluctant to follow through on conservation funds directed at studying the current sandalwood populations. There continues to be a standoff, but Leigh-Wai Doo’s persistence continues to educate legislators about the issue and bring awareness to the plight of sandalwood.

One of the most moving moments for me getting to work with Leigh-Wai was at the Sandalwood Symposium that UpS co-organized in 2014. The first evening after dinner was when the children of the Ilihi Elementary School danced and sang. Before they danced, Leigh-Wai Doo, who had arranged for the students to perform, came in to give the students a pep talk about the role of iliahi in their Hawaiian culture. He looked out over the large glass windows where you could see the beautiful Japanese garden at the East-West center, and he said to them, “You might look out and see a spectacular garden, but none of these are native plants; they are brought in from other countries. The iliahi is a native tree from your culture that is sacred. The native plants are disappearing at an alarming rate, and preservation of your heritage and your culture is intimately linked to the native plants of your Hawaiian Home”.

Saving sandalwood is no easy task; there are layers of environmental and cultural tragedy that create obstacles to implementation conservation efforts. UpS is continuing to work on bringing awareness toward the issues surrounding sandalwood. Go to our sandalwood page linked to our “At-Risk” List for further information; and a link to the recent Herbalgram article featuring sandalwood; and to watch a series of short videos featuring key sandalwood activists. Do your part and refrain from using Hawaiian sandalwood, and be cautious when using plants that are being sourced from the wild.
Slipping Away?
Slippery Elm in the Herbal Marketplace - Past, Present & Future
by Eric P. Burkhart, PhD

Slippery Elm (Ulmus rubra Muhl.) is one of the most well-known, and widely used, medicinal tree barks native to the United States. It is currently included on the United Plant Savers “At-Risk” List due to concerns over the continued industry dependence on wild harvested material to fill market demand. The name slippery elm refers to the texture of the inner bark, especially when moistened. The dried bark has historically been mixed with water and applied topically to treat wounds and skin irritations, and internally for sore throat, coughs and gastrointestinal conditions. It contains a complex assortment of chemical and nutritional compounds including mucilage (hexoses, pentoses, methylpentoses), glucose, polyuronides, tannins, starches, fat, phytosterols, and various nutrients (calcium, iron, zinc, magnesium, potassium) (Braun and Cohen, 2010).

Native Americans utilized a variety of tree barks in their pharmacopoeia (Moerman, 1998). Slippery elm was one of a few (including sassafras and black cherry) to be accepted by European settlers. It has subsequently become a commonly traded bark in the US herbal marketplace. Surveys by the American Herbal Products Association (AHPA) provide a glimpse into the volume of slippery elm bark traded in recent years: Between 1999 and 2010, the total quantity of wild harvested dried bark handled was 78,000-353,000 pounds annually (AHPA, 2012).

Slippery elm is a medium-sized tree (60 to 70 feet in height and 24 to 36-inch in diameter) of moderately fast growth that may live to be 200 years old (Cooley and Van Sambeek, 2016). Bark harvesting is usually done on trees or branches greater than one-inch in diameter to ensure a reasonable yield from the effort. A study of one-inch diameter wild slippery elms showed age to be 7 to 18 years old depending on severity of competition (ibid). Published studies show a growth rate of around one-half to one-inch increase in diameter over an 8 to 10-year period (ibid).

In the nineteenth century, the de-barking of slippery elm in the eastern United States for medicine was apparently commonplace. In his published profiles of American Forest Trees (1913), for example, Henry H. Gibson wrote:

“The inner bark has long been used for medicinal purposes. It is now ground fine and is kept for sale in drug stores, but formerly it was a household remedy which most families in the country provided and kept in store along with catnip, mandrake, sage, dogwood blossoms, and other rural remedies which were depended upon to rout diseases in the days when physicians were few.... The supply is rapidly decreasing. The cut for lumber is the chief drain, but a not inconsiderable one is the peeling of trees for bark. This goes on all over the species’ range and much of it is done by boys with knives and hatchets. It is often hard to find slippery elms within miles of a town, because all have succumbed to bark hunters.” (page 391-2)

The stripping of live trees for bark continues today in parts of Appalachia. Disappointingly, there have also been a number of visible “poaching” incidents reported during the past decade (e.g., Associated Press, 2006, Crawford, 2007, Toncray, 2012, USFWS, 2016).

Attempts to cultivate trees for bark have been sporadic and inadequate. The amount of cultivated material reported in AHPA surveys is a small percentage of the overall trade volume (e.g., generally less than 10,000 pounds) (AHPA 2012). Moreover, there have been no published scientific growing trials to guide slippery elm plantation establishment and management nor to provide insights into any differences in bark yield, quality, and chemistry as a result of tree diameter. Any transition to cultivated sources has undoubtedly been
hindered by the long time horizon involved until crop ‘maturity’ coupled with a relatively low price offered for raw product. In recent years, the price paid per pound of slippery elm bark has ranged between $1.00-$5.00. There are reports that suggest that one dozen trees are needed to yield fifty pounds of fresh bark (Associated Press, 2006, Toncray, 2012); however, tree diameter and age are not provided in these reports, and both would clearly influence yields.

Despite the long history of exploitation, slippery elm is considered ‘secure’ or ‘un-ranked’ within its native range of the central and eastern United States (NatureServe, 2016). However, there are additional threats beyond bark harvesting which are rapidly inflicting havoc on wild populations and ultimately threaten wild abundance and supply to the herbal trade. It is well known that slippery elm succumbs to many of the same diseases as American elm–most popularly Dutch elm disease (Ceratocystis ulmi). Increasingly, however, slippery elm is also being killed by ‘elm yellows’ or ‘elm phloem necrosis’ (Candidatus Phytoplasma ulmia, a wall-less bacteria called a phytoplasma). These two diseases are so virulent and widespread that slippery elm seldom reaches commercial size and volume today.

As the ‘newcomer’ of these two elm diseases, the origin of elm yellows remains a mystery. It was first described in the Midwestern United States in the 1930s, but it may have been present much earlier (Sinclair, 2000). The only known host of elm yellows is elm (Ulmus spp.). There is no known resistance in North American native elms, but some Eurasian species appear to be tolerant or resistant. In the United States the disease is transmitted by the white-banded elm leafhopper (Scaphoideus luteolus) (and possibly other insects) that feed on the sap. Slippery elm usually dies within a year or two after symptoms appear (U.S. Department of Agriculture, 2012).

Foliar symptoms of infected trees usually appear from mid-July to mid-September in the United States and include yellowing, drooping, and premature leaf drop. Symptoms may resemble those caused by water stress or nutrient deficiencies and generally affect the entire crown. An odor of wintergreen oil (methyl salicylate) is often noticed when the moist inner bark of an infected elm is exposed; placing freshly exposed inner bark into an airtight container often serves to concentrate the wintergreen scent. Dying slippery elm may sometimes also emit an odor similar to maple syrup (Gibson et al., 1981).

Trees diagnosed as having elm yellows should be removed promptly because there is no practical control available. From a bark harvesting perspective, it may already be too late to salvage the bark from infected trees by the time symptoms become obvious. The reason is that the bark may be of lowered quality, especially if the smell if “off” (i.e., smells like wintergreen or maple syrup) and/or is discolored. This underscores the need for proactive monitoring of wild or cultivated trees, and timely harvesting of tree bark once elm yellows is detected in the region or area.

In coming years, there will be an urgent need for herbalists, bark harvesters, herb traders, and academia to work together to observe, gather and share information about elm yellows throughout the eastern United States. There is little awareness or effort being directed around this developing problem, with the dire possibility that slippery elm may soon be reduced to seedling/sapling stature across its range. If or when this happens, the ability to procure raw materials will be severely curtailed with a likely spike in demand (and price) resulting in increased harvest pressure on remaining large healthy trees. Grass roots cooperative efforts might include proactive monitoring networks, seed distribution from possible resistant trees (if/when they are found), and cooperation between buyers and harvesters to more closely examine questions regarding differences in bark quality as a function of degree of disease infection symptoms. The United Plant Savers member and business network could potentially play a bridging role in these efforts.

Slippery elm is a tree with a long tradition of use and exploitation in the United States. Despite historical harvest pressures, recent poaching incidents, and a lack of widespread cultivation, the species is presently considered “secure” within much of its range. This conservation status may change in coming years with the spread of diseases such as elm yellows, and highlights a real need for the herbal community to proactively work together to thwart any possible supply crisis. The future of slippery elm may be slipping away if we as a community of plant stewards don’t begin to pay attention to what is happening with slippery elm in the wild and work together to conserve, and make wise use of, this important North American medicinal tree.

Eric Burkhart, PhD, is an ethnobotanist interested in the husbandry, conservation and supply chain aspects of native Appalachian medicinal forest plants. His work and research program (at Penn State University) is focused on developing sustainable medicinal crop management and production systems in Pennsylvania and the mid-Atlantic region through agroforestry and plant husbandry practices.
Slippery Elm Harvest
Stewardship Guidelines

Remarkably given its commercial importance to the herbal industry, there are no published studies to help guide ‘sustainable’ slippery elm harvests. The following suggestions are therefore based on available publications, information, and common sense:

There is no accepted season for harvesting slippery elm bark. Some bark harvesters will peel bark anytime of the year. It tends to peel easiest from late March to early June while the sap is flowing. This makes sense because sap and bark harvested in the spring should be especially full of mucilage, sugars, and nutrients as the tree prepares to break bud.

Diameter is a better indicator of bark yield than age. Some bark buyers claim that ten-year-old bark is the best. Keep in mind that the diameter of a tree is not always strongly correlated with age. Trees that are “open grown” often increase in diameter more rapidly than trees under competition or on poor sites.

Slippery elm bark is used most often in rossed form. Rossed means that the rough outer bark is removed by scraping or peeling it from the inner bark while the bark is still fresh. High quality, rossed bark will be smooth, leathery, and creamy white in color. The following video of elm bark stripping shows how skilled and labor intensive this process of rossing elm bark can be: https://www.youtube.com/watch?v=N-Gx8348JiA

Only remove thin vertical strips from live trees. It is possible to harvest the bark of slippery elm by removing only segments of bark at any given time. However, when one girdles the tree, it is likely to die. The inner layers of the bark provide for the flow of water and nutrients throughout the tree, and this process is cut off when the bark is completely or mostly removed. From a commercial perspective, it will take more time and effort to harvest only thin sections of live standing trees.

Choose dying trees for harvest. Unfortunately, an increasingly common site in the landscape are losses due to Dutch-elm’s and Elm-Yellows. Keep an eye on local slippery elm trees and watch for signs of disease. The bark should be harvested before or soon after symptoms are first observed. Infected trees will decline rapidly, and the inner bark quality will as well.

Choose ‘over stocked’ locations to harvest from. Thinning a forest stand by removing trees that appear to be less vigorous or closely spaced together can help the residual trees by reducing stress due to competition. This will not only help improve the future elm stand, but a product can still be harvested on an annual basis.

Bark drying requires heat and airflow. If you choose to dry the bark, lay strips of bark flat and separated in a dry area and turn daily to prevent molding. Hanging strips of bark from building rafters also works well. Depending on the drying location and weather conditions, slippery elm bark should be dry in less than a week. Once the bark has dried, fold it into strips for storage or sale.

References


UpS Kicks Off Forest Grown
by Susan Leopold, PhD.

Forest Botanicals: Working Together to Build a New Supply Chain was a “first of its kind” event that United Plant Savers held this past November with support from Mountain Rose Herbs, Penn State, PCO, and Virginia Tech.

How much longer can the ecosystem support the constant wild harvest of native woodland botanicals? Do we know who is harvesting and where forest botanicals are being harvested? The new PCO forest grown verification program encourages “conservation through cultivation” as a solution of sustainability, quality, and ethics. The new PCO program that allows woodland farmers of medicinal plants to be verified seamlessly with another new project, “Appalachian Beginning Forest Farmer Program: Growing Opportunities Beneath the Canopy”. United Plant Savers is one of several collaborators that will be a part of a 3-year funded USDA program to train future forest farmers in how to become growers of native medicinal plants within the Appalachian region. For those who attended and for those who are interested you can locate the power point presentations from the workshop in PDF format on the UpS website under recent news articles.

The workshop kicked off with Jeanine Davis from North Carolina State University who presented Lessons Learned: A Historical Perspective on Buying and Selling Forest Botanicals. Eric Burkhart of Penn State University presented Native Medicinal Forest Plant Supply Chains in the Eastern United States: Opportunities, Challenges and Third Party Verification. Leslie Zuck, President of PCO presented on the new ‘Forestgrown’ Producer Verification Program. For those who were interested in joining the program UpS had set up a cost share program to help with enrollment costs.

The one-day workshop ended with a presentation by Jennifer Gerrity, Executive Director of Operations and Jacob Lauch, from the procurement department of MRH on the Buyer Perspective on a Forest-grown Supply Chain: Needs, Pricing, and Expectations. Folks came from southern Virginia, the mountains of Tennessee, Maryland, Pennsylvania, and North Carolina to engage, network, and discuss how to move towards a more sustainable forest herb supply that encourages stewardship of the region these plants call home. We must address the root of the issue if we are to truly ensure the conservation of these important medicinal plant species.

Those that attended are working hard to support a shift—a new paradigm for Appalachia, one that conserves the forest and the plants while providing quality herbal products. Thank you to all that attended to make this event a success!

If you are interested in learning about forest farming, find out about upcoming workshops funded through the USDA grant: Appalachian Beginners Forest Farming Program. To join the network and for direct inquires, contact Holly Chittum at hollykc@vt.edu.

One-Day Introduction Events (register on the UpS website for the one-day events)
June 4: Growing Ginseng & Appalachian Forest Botanicals for Market, Pine Mountain, KY
June 8: Growing Ginseng & Appalachian Forest Botanicals, Robertson Station, KY
June 25: Growing Ginseng & Appalachian Forest Botanicals for Market, Rutland, OH

Weekend Intensives
August 5-7: Blue Ridge Woodland Growers two-day training in Floyd, VA
August 26-28: Appalachian Sustainable Development two-day training in Mountain City, TN
September 24-25: Rural Action two-day training at the UpS Sanctuary in Rutland, OH

Trees are sanctuaries. Whoever knows how to speak to them, whoever knows how to listen to them, can learn the truth. -Herman Hesse

Spring 2016
Endangered Medicinal Plants of the Driftless Region

by Lora Krall

Tucked in the corners of the four states of Minnesota, Wisconsin, Illinois, and Iowa along the upper Mississippi River valley, lies the Driftless Region. Eight-five percent of this area is within Wisconsin. Escaping the last glacial age some 300 million years ago, the Driftless is an island of untouched land characterized by steep slopes and cliffs called the “algific talus slopes.” These slopes become Mother Nature’s natural air conditioning in the summer months as air is drawn through sink holes over frozen beds of ground water to be released through vents in the slopes. It is this unique area that is home to some of our most “AT-Risk” and “To-Watch” listed plants, such as bloodroot (Sanguinaria canadensis), lady’s slipper (Cypripedium acaule), lobelia (Lobelia inflata), spikenard (Nardostachys jatamansi), maidenhair fern (Adiantum pedatum), mayapple (Podophyllum peltatum), ramps (Allium tricoccum), echinacea (Echinacea spp.), and slippery elm (Ulmus rubra) in addition to northern blue monkshood (Aconitum noveboracense), a plant that only grows in this region. This plant life within an equally endangered and unique geographic region offers a new arena for United Plant Savers. The Driftless region is challenged by three primary factors. First, though an especially fertile and pristine area for farming, this area is threatened by poor farm management that has contributed to erosion of slopes, pesticide runoff into fresh water streams, and overgrazing of land. The US Department of Agriculture, as well as many other groups, has developed several incentives to reeducate farmers supporting organic farming methods, decreasing pesticide runoff, and reestablishing native prairies for soil and habitat stability.

A second and potentially more devastating threat to the region is the frac sand mining industry. As large corporations remove topsoil, stripping away the fine grained sand used for hydraulic fracturing in oil production, they also disturb many of the algific talus slopes. This adds to erosion issues in addition to air quality concerns as fine sand particles are released into the air. Local groups in the area are working hard to keep frac sand mining out of the region.

Finally, the weather cannot be underestimated as another potential threat. With variable weather patterns assisted by man’s disturbance of the land, otherwise manageable weather events can tip the fragile balance of the Driftless. Flash floods or heavy rains can remove slopes in a matter of minutes and with it the plants and animals unique to this area. Excess heat and drought conditions deplete frozen ground water stores in turn reducing the cool air needed to maintain the algific slopes.

Despite these threats many are working to protect this unique area. US Fish and Wildlife, US Department of Agriculture, and Land Stewardship Project are three large organizations working hard for land management, safe farming practices, and wildlife/habitat protection. The Driftless Area National Wildlife Refuge located in McGregor, Iowa is a sanctuary within the area. Established in 1989, it is focused specifically on research and preservation. Beginning in 2016, United Plants Savers local members in southeast Minnesota and western Wisconsin will begin offering educational presentations specifically about the plants “AT-Risk” or “To-Watch” bringing yet another voice to the preservation of the Driftless Region. Together we can preserve this unique region of our country.

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The Peace of Wild Things
by Wendell Berry

When despair for the world grows in me and I wake in the night at the least sound in fear of what my life and my children’s lives may be,
I go and lie down where the wood drake rests in his beauty on the water, and the great heron feeds.
I come into the peace of wild things who do not tax their lives with forethought of grief.
I come into the presence of still water. And I feel above me the day-blind stars waiting with their light.
For a time I rest in the grace of the world, and am free.

In this election year, think of voting for the PLANTS!

Thanks to all of the UpS members that voted last winter in the Sugarlands $5,000.00 non-profit giveaway for the top ten non-profits with the most votes! UpS received the funds and put 100% towards plant conservation efforts providing critical matching funds to support ginseng, ramps, and goldenseal conservation in the Wayne National Forest in collaboration with Rural Action and the National Forest Foundation. Our interns also assist in this project by monitoring plant populations and planting seeds!
A Golden Opportunity
A workshop exploring the Sacred Seeds
and the Botanical Sanctuary Network
by Emily Cook

On October 1st and 2nd, 2015 experts, academics, artists, and land stewards convened at Goldenseal Sanctuary in Rutland, Ohio, which is headquarters of the United Plant Savers (UpS) network. Their uniting force was Nurturing Your Botanical Sanctuary, a workshop focused on sanctuaries, sacred natural areas, and the conservation and cultivation of medicinal and rare plants.

Nurturing Your Botanical Sanctuary had 33 attendees representing eight states and Canada, making this a dynamic, international debut event. So moved by the work being done by UpS and Goldenseal Sanctuary, as well as the lore of the sanctuary land itself, many described their journey to the sanctuary as a pilgrimage. Some were former Goldenseal Sanctuary interns, and most have sanctuaries of their own or recently acquired land they wish to nourish with native, rare, and medicinal flora. The goal of the event was to create dialogue to improve the reach of UpS and Sacred Seeds Network, to serve as a potential model for future workshops at other locations, and to facilitate start-up sanctuaries. UpS is partnering with the Sacred Seeds Sanctuaries network, which has 35 members in 17 countries. UpS and Sacred Seeds are hoping to hold a similar workshop in the future overseas, possibly in Ghana.

In its own words, the mission and work of UpS is “to protect native medicinal plants of the United States and Canada and their native habitat while ensuring an abundant renewable supply of medicinal plants for generations to come…. To this end, United Plant Savers established one of our most important projects: the Botanical Sanctuary Network. As we became more deeply involved in the complexities of medicinal plant conservation, we realized that one must first preserve and protect the habitat in which our native plant communities thrive.”

Goldenseal Sanctuary was the first UpS Botanical Sanctuary.

This sanctuary is unique in two important ways. It was the first botanical sanctuary in the U.S. dedicated to the conservation of “At-Risk” medicinal herbs. It is also speculated that the area may be home to the largest single population of wild goldenseal on the planet.

Goldenseal Sanctuary’s commitment to the land extends from its mission statement down to the interpretive signs stationed around the property. The official sanctuary sign is carved from a white oak tree that was felled by a tornado. Located in the Appalachian foothills of southeastern Ohio, near the West Virginia state line, the panorama of the sanctuary is quintessentially pastoral. Country roads wind by fields that are dotted with barns and bordered by forests. Within these forests is where people turned for medicine. However, the property and surrounding land has not always been one of a peaceful sanctuary.

In more recent times, people have turned to the forest for money. Considered one of the most impoverished areas in the nation, the monetary incentives of mining were quickly undertaken. Today the sanctuary has been restored but still bears scars from where the land was exploded to collect coal.

Goldenseal (*Hydrastis canadensis*) is used to treat inflammation, digestive woes, respiratory troubles,
immune system weakness, and support a healthy mucous membrane. It has also been shown to have antifungal and antibacterial properties. It is popularly used in medicinal remedies.

The sanctuary takes a multidisciplinary approach to its management. This is showcased in its onsite educational and research center, repository of native medicinal plant germplasm (seed or tissue that is maintained for the purpose of breeding, preservation, and research use), propagation facility, sustainable land use model, and status as an ecotourism attraction. Sessions at the conference addressed many topics, including mapping and organizing tools, place-based art education and observation, sacred area management around the world, and of course, ethnobotany. One attendee said of many presentations, “Topics were well ordered and the presenters were skilled. It was a good balance of multiple areas, so that there was enough diversity in the content to really walk away with enough resources to define my interests and have the ability to start pursuing them.”

Ethnobotany, as defined by one workshop presenter, is considered the study of the interface between people and plants. The inescapable reality is that people and plants are connected. In Goldenseal Sanctuary’s case, both rely on each other.

Healing the land after exploitative mining and facilitating responsible use of goldenseal and other medicinal plants are still only part of the solution. The sanctuary is bordered by private land. Many landowners are working together and with the sanctuary to link hiking trails, management practices, and community ties. However, the mining industry is still present in the area. It would only take one person to allow mining on their property, and the stability of the entire area ecosystem could be compromised. More than 500 species of plants and half of the designated UPS “At-Risk” native medicinal plants are found in the sanctuary.

Challenges that attendees mentioned facing in their own endeavors were informing people about their sanctuary, gaining support, and how to legally (and most beneficially) establish their sanctuary. The vast majority of participants left the workshop inspired and better prepared to grow. In their own words:

“I really felt a green spark from this conference, and I will take a lot away from this that will help inspire my future endeavors. I very much felt a great, intimate vibe from this gathering…. Thanks!”

“I’m inspired to continue involvement with environmental education in my community; also use federal and state resources!”

When asked what they will do differently as a result of the workshop, impassioned participants said they would: “Pursue designation as a botanical sanctuary. It now seems both realistic and achievable,” “Grow more “At-Risk” medicinals, and forage wild edibles,” and, “How do I help UPS?”

How can you help UPS? Spread the word. Visit their website and donate. Join the botanical sanctuary global network.

Currently, there is a project to build a visitors center at the United Plant Savers headquarters. Donations are being accepted to aid this project. Become a “Partner in the Green.” This small group is doing great things: protecting plants, creating multidisciplinary solutions to environmental challenges, and blending science and art in education. I do not doubt that they are changing and healing our world. Through your support, you can, too. www.unitedplantsavers.org

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Thank you New Chapter for your support of Sacred Seeds and the Sanctuary workshop

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Goldenseal (Hydrastis canadensis) Artwork by Shay Clanton www.shayclanton.com
Restoration of the Heart, Lessons from the All Mighty Shorea faguetiana Tree
by Susan Leopold, PhD

Tamara Negara
Nearly twenty-one years had passed since I had cast my wish at Kanya kamayi into the visual well of both the sun setting and moon rising at the tip of southern India. The next place I landed after my pilgrimage travel adventure was Malaysia. Back then no one had cell phones, my Nikon camera used film, and backpackers relied on guidebooks and talked to strangers to navigate unknown terrain. It was a flyer at a hostel in Penang that would lead me on an ethnobotanical trip to the Malaysian rainforest to visit a community of Orang Asli. This opportunity was with a guide who was a Malay linguist and anthropologist. We would go where the wild elephants roamed the rainforest, along with mouse deer, millions of tiny leaches and stay in the forest as guests of the talented nose flute players and dance with them on bamboo platforms that bounced like a trampoline into the night. Now I had returned with a smart phone in hand as my digital camera and operative guidebook. Once I landed a reality check set in, I saw a landscape that was once forest now converted to a sea of palm plantations—unsustainable farming practices resulting in erosion of the mountains, population explosion, and the expansion of the sleepy town of Penang into a metropolis city.

My journey back to Malaysia seemed like opening a personal time capsule, but it is nothing compared to the long journey of how what has been claimed to be the oldest rainforest on the planet came into being. Estimated to have been in existence for more than 130 million years it is an ancient rainforest kin to the Daintree Rainforest in Australia. Upon arriving we traveled by bus and then by boat up river into Tamara Nagara. Here we climbed a gigantic Koompasia excels, a towering tree with large buttress and smooth bark known for the wild honeybees (Apis dorsata) that make their nests high in its branches. The Tualang Honey, as it is called, is highly valued and symbolizes the sweet interconnected journey into the living pulse of the rainforest. Tamara Nagara is Malay and literally translates into National Park. According to the World Wildlife Fund, from 1983-2003 4.9 million hectares of forest were lost due to deforestation in Malaysia. Without these fragments of “parks” humanity could have wiped out 130 million years of life in just a few 100 years of deforestation fueled by irresponsible land use practices. It’s hard to really wrap one’s head around the rate of deforestation and the impact to biodiversity, since numbers cannot quantify what has been destroyed. Its something you feel deep in your heart that is undeniable.

The connection between palm oil and coal extraction, feeding off each other
As we drove past the barren landscape that was once forest, watching it burn and then be re-graded for roads and palm plantations, I thought of how coal is the fire that fuels the factories, and the palm oil is the main ingredient in these factory products. From nutella to shampoo, palm oil is the cheap filler ingredient in everything, and coal/fossil fuels feed the never-ending production of material matter that fills the market place. It’s practically impossible for anyone to avoid these two cancers on the planet, yet we seek to find a balance between habitat destruction and industrial demands of resources. Perhaps they felt so intricately linked because of my personal connection to witnessing the devastation of mountaintop removal on my drive to the United Plant Savers Botanical Sanctuary through southern and western Virginia and Ohio. Then to arrive in Malaysia having heard of the deforestation issues and palm plantations, but to witness it was true devastation on such a scale it tore my heart apart.

Merging my passion for plants and a deep love for tree climbing, I set out on this personal journey to climb a tree that had been measured as the tallest tropical tree, Shorea faguetiana of the Dipterocarpecea family reported to be over 260 feet tall. My personal intention was to connect with a tree so magical that it could renew my sense of place in my own life. The Dipterocarps are the gentle giants of the tropical rainforests of Asia; growing straight like tulip poplars and then branching like broccoli at the crown makes them ideal for timber. Tragically the diptocarp tropical forests are also the hot spot of deforestation and thus all the species that call this forest home are in peril. These trees are windows into the past—they
are storytellers of Gondwana and are our ancestral beings, and I was on a quest to meet one individual magnificent Shorea.

**Dipterocarpaceae Family**

Dipterocarpaceae (Latin for two-winged fruit) has a wonderful spin as it circles and falls to the forest floor. The two-winged flyer took on a mor symbolic connection, the fruit representing the once super continent of Gondwana and the two wings representing the dipterocarps still found in South America and the ones that now flourish in tropical Asia. Going back to the super continent of Gondwana, the dipterocarps are thought to have arrived an estimated 45 million years ago, when a moist corridor between India and Southeast Asia resulted in a major influx of plants with Gondwana affinities, such as tree ferns, arums, orchids, lychnophytes, and hornworts.

After this arrival the dipterocarps underwent a massive evolutionary radiation that resulted in the explosion of biological diversity within this family of trees that is unlike any other family of trees, with over 500 documented species throughout Southeast Asia. The rainforests of Asia are unique in this respect, and we have no real understanding of how and why the dipterocarps came to be the diverse dominating giants of the Asian tropics, just observational theories. Living dipterocarps are spread over the tropical belt of three continents of Asia, Africa and South America but in Asia they dominate with diversity, and the ecosystems reflect their strength.

**Just as the coal and the palm oil seemed intricately connected so are the oaks and the dipterocarps**

I sat at the base of the tallest giant tropical tree reading several scientific papers downloaded on to my iPhone. Amazed at what I was reading and that I could be in Malaysian Borneo with better and cheaper connectivity to the web than from my mountain home in Virginia near Washington DC., I sat on the forest floor among the centipedes and reflected on the irony of our modern world and the knowledge of others at my fingertips. I was reading about the complexity and similarity of the oak/Fagaceae forests of my home to the mighty dipterocarps. The mycorrhizea are the real links in the mutualistic relationship between the roots and fungi in which plants receive minerals and water from the fungus in exchange for carbohydrates. Almost all plants have mycorhizal connections but unlike most other rainforests trees, dipterocarps are ectomycorrhizal trees, and their seedlings are linked by a network of fungal hyphae that transfer nutrients from decaying organic matter to seedlings. As soon as the two winged seed germinates they can instantly plug into the existing resources from its nearby parent/mother tree. What is mind blowing is that this is the same fungal association that occurs in the Fagaceae family.

It is striking to see the connection of how trees with ectomycorrhizeae have thus chosen the evolutionary strategy of mass fruiting at multiple year intervals, satiating seed predators and ensuring a large genetic seed bank with its abundant seedlings. These wise ancient trees have chosen a unique path to reproduction via synchronizing a massive flowering event that will happen “randomly” every 2-7 years. This prevents animals from going from tree to tree for an annual food source, and it allows for mass cross pollination resulting in a successful seed bank for the future. The tree puts so much energy into making this mast year happen when the time is just right that it will stop growing during this phenomenon. These seedlings then form a mass colonization of the forest floor around the mother tree and the ectomycorrhizeae connection sustains these seedlings. Equipped to live as small understory herbs for 15 plus years, they await the opportunity to shoot up as trees when the conditions of sunlight stimulate a massive growth spurt. The dipterocarps are essentially a unique hybrid taking in strategies associated with temperate forests such as the oaks with the mass fruiting of acorns but in a tropical climate. This is different from the Amazonian tropical forests that I was more familiar with, where trees do not grow as tall, do not live as long, and the forest thrives off of trees that fall over creating light gaps that create regenerative opportunities among a thin layer of soil and a rich canopy above. The forests Asia felt more dark and dank to me then tropical forests of the Americas that I had explored.

I sat there in the living seed bank that formed a carpet below this massive mother tree as ropes were set to be able to climb to the canopy. I became lost in the fungal forest and meditated on the concept of the collective Gaia consciousness held...
in the seed bank waiting for the right conditions for one seedling to become a tree. The role of fungi is that they transfer not only sustenance but also intelligence; the scientific study of native fungi has only begun to document the diversity that is found in these forests. At the Forest Research Institute of Malaysia they have a research program to further understand the biology, ecology and identification of dipterocarp mycorrhizae in an effort to develop inoculation for reforestation efforts.

Reaching for the canopy and the resin icicles
Hanging from the rope and making the slow ascent, climbing nearly 200 feet, I finally reached above the first layer of the canopy. It is at this point that I start to sense the trees' grounded force and what it must be like to be anchored and to serve as a home to so many species. It was at this crowning point in the unfolding of the branches that I saw the resin icicles dripping from the branches suspended in time shimmering in the sunlight. The dipterocarps produce a thick resin that hardens into the most beautiful formations. It was for me a total surprise.

In the fungal forest it makes sense that the tree would produce an oily aromatic resin that presumably aids the tree in defense against certain fungi, bacteria, and mammals. The leaves have bitter tasting tannins and are inedible to most, such as the magnificent colugos, leaf eating gliding mammals; the orangutans; and the proboscis monkeys, which are also fond of young leaves, yet do not eat dipterocarps.

Tree climbing on a personal level lifts the heavy darkness that clouds my heart. With each reach to a higher calling my perspective starts to slowly shift, and my senses realign with thoughts of grounding affirmations. The desire to go up to feel more connected to the earth is the only way to describe why I love tree climbing. It was a high for me to feel relief and yet as I felt this inner peace, I looked out into the distance to see that this tree existed within a small-forested island surrounded by a sea of palm plantations, essentially an island within an island.

How we perceive our relationship with trees is intricately woven into the restoration of our hearts and that of the planet. Andrea Wulf’s new book, *The Invention of Nature* retells the story of Alexander Von Humboldt’s extraordinary life. He was called “the great apostle” by George Marsh, author of the monumental environmental book, *Man and Nature*. Humboldt was the visionary who wrote about the deforestation taking place at the hands of colonization through his travels of South America in the late 1700s. In Ecuador he climbed the Chimborazo Volcano and had his vision of plant geography, so phenomenally illustrated and coined “Naturgemalde,” linking global connectivity between plant communities in regards to elevation and relation to the equator. His writings of concepts were critical to our understanding now of Gaia as a living being based on his observations of species survival, keystone plant species in the ecosystem, and human impact on climate change. His writings mentored Darwin, Jefferson, Thoreau, Muir, Simon Bolivar, and so many others. His greatest gift, from my perspective was his ability to connect feeling nature with his heart as he merged science, art, and poetry into a verbal well deep in knowledge and insight. Recent estimations are that we have lost 46% of forest cover since the beginning of human civilization (Pennisi, 2015). E.O Wilson’s latest book, *Half Earth: Out Planet’s Fight for Life*, interestingly enough calls for setting aside half the earth for wild nature as a solution to combat loss of biodiversity. It’s the tropics and subtropics that support 43% of the forests on the planet, and this is where we see the rapid rise in forest loss. Data is currently being gathered via satellite imagery, so we are able to visualize change like never before. In one study using this technology 2.3 million square kilometers of forest loss were documented from 2000 to 2012 with forest gain of 0.8 million square kilometers at a spatial resolution of 30 meters (Hansen et al., 2013). We are taking down forests in the tropical belt at a rate far greater than it can regenerate.

Non timber forest products
What has been very well documented is that even though dipterocarp timber is the main “value”, it has little economic contribution to local communities. NTFPs from dipterocarps such as nuts, leaves high in tannins, dammar, medicines, resin, and camphor, have a much larger impact on the economies of the rural people and forest dwellers, not to mention the many other edible herbs and ferns, medicinal
plants, and ecosystem services of the intact forest. When you compare all of this to the monocrop landscape of palm plantations, it is madness.

There are so many amazing non-profits working hard to educate the global public to curb the deforestation practices, and France has just imposed a first of its kind biodiversity tax on palm oil import as a way to combat the deforestation. Further understanding of NTFPs in the market place is the critical link in my thoughts of how we might sustain local economies, but sadly this has been overlooked in the wake of global demand for palm oil.

On the flight over from Borneo to Penang I began reliving my story in my head like a movie. I was traveling on semester at sea at that time, and we had docked in Penang. As I had just had the most magical few days of my life, I ended up returning just a few weeks later so that I could join the ethnobotanical trip. Penang flourished as a free port under the British East Indian company attracting migrants from all walks of life who brought with them a diversity of languages, cultures, religions, customs, and trades all expressed in the unique architecture and diversity of flavors, colors, and scents. There I was once again walking the same streets on a mission to visit the Goddess of Mercy Temple, to once again pay my respects to Quan Yin, whose name means one who sees and hears the cry from the human world. According to the Chinese legend, she renounced her privilege to enter eternal bliss after having attained Nirvana and chose instead to stay back and help lost souls in the world of suffering. So far from home, yet in the Chinese herb store just down the corner from the temple there was a small pyramid of American ginseng prominently displayed. This brings me full circle to the balance of how we integrate forest products into commerce, how we steward wild medicine, and how we reverse the trend of deforestation. “In wilderness is the preservation of the world”, Thoreau stated in 1851. Just a few months after Humboldt’s death, he proclaimed that every town should have a forest of several hundred acres “inalienable forever”. This one mighty Shorea is holding down her island of biodiversity in the hope of repopulating her kind if we can restore our hearts and shift the paradigm of how humanity interacts with the forests of the future.

Susan Leopold, PhD is an ethnobotanist and passionate defender of biodiversity. She is the Executive Director of United Plant Savers and Director of Sacred Seeds. She serves on the Board of Botanical Dimensions and Center for Sustainable Economy, and she is a co-founder of the Medicines from the Edge Conference. She is a proud member of the Patawomeck Indian Tribe of Virginia. She lives on and manages a productive farm with her three children in Virginia, where she raises goats, peacocks, and herbs.

References


In all areas, human impact was the dominant influence on tree density, the researchers found. By combining tree density measures with forest cover estimates for the past 12 years, Crowther, Glick, and colleagues concluded that humans are responsible for the loss of 15 billion trees a year. They think that about 5 billion new trees are planted or sprout annually, yielding a net loss of 10 billion. Since the beginning of human civilization, the number of trees has dropped by 46%, they estimate.

Framing a Domestic Market for American Ginseng: A Conversation
by Erika Galentin

“...it may also be true that ginseng gains resilience [as a species] by attracting different elements of human society—not just people involved in medicine, but also in culture and commerce.” David A. Taylor, Ginseng, the Devine Root

Evidenced by the United Plant Savers’ Ginseng Summit of 2014 and the North Carolina Natural Products Association’s International Ginseng Expo of 2015, there is a tender evolution taking place in regards to the American ginseng (Panax quinquefolius) industry. Questions relating to everything from conservation barriers, cultivation practices, federal and international regulations, economics, and genetics are steadily being discussed as even deeper questions begin to emerge. Interest in this iconic species is gently spreading, like water on fertile soil, affecting landowners, growers, regulators, law enforcement officials, ecologists, geneticists, pharmacognosists, ethnobotanists, non-profits, natural product industry leaders, and healthcare professionals in pursuit of “wildlife” conservation, market stability, economic initiatives, medical advancement, and even cultural preservation.

In these evolutionary times, two facts remain steadfast: 1) The American ginseng industry functions, as it has for centuries, on the fuel of export market trade. Like an aorta flowing from the American heartland, it is argued that this export-focused industry has paradoxically resulted in both the demise and preservation of the species. 2) Similar to the phytochemical and ecological nature of the species itself, the American ginseng industry is complex, layered, and multivariate. This latter truism is especially highlighted by the presence of federal and international trade regulations, conservation concerns, divergent cultivation and growing practices, law enforcement policies, and global-market economics.

Within these truths there appears, at first, to be little room for the discussion about the logistics of a domestic market (interstate trade within the United States). Indeed, the concept of a domestic market for the species is seemingly inconsequential due to the minimal role that it has always played in the ongoing American ginseng saga. In some cases it could even be considered improbable, if not impossible. The industry’s attention is directly deposited into the consumer demand for American ginseng in China and other Asian countries. And rightly so; there are American businesses (from individual growers, diggers, and dealers all the way up to corporate enterprises) that derive most, if not all, of their ginseng sales revenue from attending to the needs of contiguous centuries-old medical traditions and world views of the East. This is where American ginseng is most revered and valued, where consumers are willing to pay for what it is worth, where the pains and strains, yet minimal gains for the American ginseng digger or grower are most likely to fulfill a positive cost-benefit ratio.

However, within this complex environment an intriguing domestic market experiment is currently underway. Testing the soil of this potentially fertile ground, Mountain Rose Herbs of Eugene, Oregon is the first bulk herb supplier to bravely step forward to participate in the young initiatives of the PCO Forest Grown Verification Program. This voluntary program, administered by the non-profit Pennsylvania Certified Organic, has established a branded third-party verification for non-timber forest products, like American ginseng, that prescribes standards of production, harvest, and handling, which are designed to both ensure sustainability and uphold federal and international laws regarding its trade. In a recent interview with Mountain Rose Herbs regarding their participation in this rousing venture, Jennifer Gerrity, Executive Director of Operations and Erin McIntosh, Marketing Director stated,

“We avoided wild American ginseng before this Forest Grown Verification program began, because it was just too sensitive of a plant and not our typical market.... The program provides the transparency our customers expect, as well as an opportunity to work with these special plants without fear of harm to the wild populations. For us, the domestic market is growing and will continue to grow through this effort. It is happening naturally, and we are truly grateful to see it take shape.”
So, in other words, this pioneering experiment appears to be working, shedding light upon the future viability of a domestic market for American ginseng. It is also suggesting a means by which a domestic market would support forest-grown and wild-simulated growing practices—responsible and ethical sourcing combined with a permaculture-like praxis that could reduce pressure on wild populations and sustain the long-term survival of the species.

As this experiment evolves, there is a gentle conversation brewing amongst American ginseng industry gurus. When posed with the questions of why and how in regards to nurturing a domestic marketplace, various themes are beginning to emerge in regards to both barriers and viability of domestic trade for the species. These themes wax and wane in their prominence depending on which potential domestic consumer groups are being alluded to as well as what part of the plant is desired and for what purposes. The following is merely a report on a few of the more prominent theses arising from the domestic market conversation, one that is filled with a multitude of possible angles and rationalizations that await exploration.

**Theme # 1: An undervalued species**

One of the major themes that is emerging in the conversation regarding barriers to a domestic market for American ginseng lies in the overwhelming notion that Americans (non-differentiated) do not value the roots themselves, let alone their medicinal virtues, when compared to the connoisseurship found in the Asian market. In this export environment there is a significant spectrum of value, as a reflection of both a root’s appearance and taste, which is captured between cultivated versus wild roots with more than 40 different grades being recognized. This is a consumer culture that not only reveres American ginseng for its inherent medicinal properties, but also for its symbolic and artistic potencies. For example, an Asian consumer may purchase a single elaborately displayed ginseng root as a gift of respect, honor, or gratitude, or it may be placed in a home as a symbol of status. In summary, there is expressive cultural meaning placed upon the species, a meaning that is not paralleled by modern American consumer culture. There is a wide sea dividing the cultural nuances of West and East.

However, the term value in regards to American ginseng can also be tricky to define, as its meaning is dependent upon who is expressing it and how it is being interpreted. Although the average American consumer of natural products unarguably does not value American ginseng in the same ways or with the same fortitude as the Asian consumer, it does not mean that the species has gone unvalued or even undervalued throughout American history and into modern times. This is evidenced by a substantial ethnobotanical list of medicinal uses employed by various Native American tribes, curious yet informative testimonies in historical texts of Physiomedical and Eclectic botanic physicians of the late 19th and early 20th centuries, the multi-generational culture and ethos of ‘sanging’ within various Appalachian American communities, and a robust scientific fascination with the species’ phytochemical, ecological, and biological tapestries.

The value of American ginseng within the modern subculture of traditional Western herbalism and those of other traditional healers within the United States is yet another piece of the conversation. For example, one might argue that due to conservation and sustainability issues surrounding American ginseng, traditional Western herbalists have refrained from its use by primarily employing analogue species that are more abundantly available (species with comparable medicinal actions). Although this may allude to a potential lack of value for American ginseng, there are many highly respected members of this community, including the likes of David Winston, Matthew Wood, Phyllis Light, and Stephen Buhner (to name only a few) who have been steadfast advocates for its use within clinical herbal practice for decades. The value of American ginseng within the culture of traditional Western herbalism can further be supported by a modern consumer demand. Using the example of Mountain Rose Herbs and their recent adventures with PCO Forest Grown Verified American ginseng products, Jennifer Gerrity and Erin McIntosh stated,

“Our customers know what American ginseng is, and its reputation precedes it. Everyone wants high quality root—it’s just become a matter of sustainable sourcing. We have already witnessed unprecedented excitement and support from customers when we began offering the PCO Forest Grown Verified ginseng roots and leaves last year. We think the popularity stems from these botanicals being available for the first time from a sustainable forest model.”

Mountain Rose Herbs’ customers represent what some might term a niche market, catering to the needs of plant people ranging from the home herbalist making medicine in the Western tradition to clinical practitioners, including herbalists, naturopathic doctors, massage therapists, and acupuncturists. Their market also includes herbal businesses within the cottage industry, small commercial manufacturers of natural products, and independent natural grocers/co-ops throughout the United States and Canada.
However, to the average, modern American consumer of natural products differentiation of the value of ‘ginseng’ does not exist like it does across the world, regardless of whether these differences represent Korean or Chinese versus the American species, the many grades between cultivated versus wild roots that are honored in the Asian market, its symbolic cultural representations, or its medicinal potential. Ginseng as a concept within the mind of the average American consumer is perhaps lumped into one over-the-counter energy enhancer genre with value being translated only as expensive or affordable or even cheap. Although there may be a shift taking place in regards to ginseng awareness within specific American consumer populations, many American ginseng industry professionals believe there is a lack of connection to the concept of value outside of final purchase price. In fact, price is understood to be another barrier to the development of a domestic market for American ginseng.

![American ginseng roots](image)

**Theme #2: American consumers are not willing to pay what it is worth**

During a panel discussion at this past year’s 2015 International Ginseng Expo in Asheville, NC, when proposed barriers to the creation of a domestic market for American ginseng was queried, Eric Burkhardt (a well-known and respected American ginseng industry leader from Pennsylvania State University) responded confidently with one simple answer: price. This sentiment has since been additionally supported by the opinions of other American ginseng industry confidants.

It is important to remember the concept of price within the context of the spectrum of cultivation, growing, wild-harvesting, and processing practices currently employed for the species. In the export market, wild or wild-simulated American ginseng roots sell at much higher prices than those cultivated by intensive agricultural practices for a variety of reasons. This latter source of American ginseng represents the majority of what is currently available within the domestic American ginseng market, being much more widely abundant than wild, forest-grown, or wild-simulated roots and much cheaper to procure. Although the quality of the products made from cultivated roots may be questionable, this is where the price point for higher-end wild-simulated American ginseng roots simply cannot compete with either cultivated root prices or the ironically imported bargain-basement Chinese and Korean ginseng products that have dominated the American market for decades (so cheap that you can get a mighty fine dose with a $1.59 energy drink from your local gas station).

This is where the concept of value meets the concept of price within the domestic market conversation. The American consumer or natural products manufacturer might say, “You want me to pay how much for ginseng?”, and the American ginseng grower or dealer might respond, “Lots more than you are used to paying and for less quantity”. There is no deal to be made in this scenario; why would ginseng growers and dealers sell their higher-valued roots into a lackluster and low-demand American market when they can fetch a much better price in the lusty and commanding export market? Why would an American natural products manufacturer or consumer pay more for less quantity of what they perceive as just another batch of indiscernible ginseng? These are excellent questions.

This brings us back to the example being made by Mountain Rose Herbs and their participation in the PCO Forest Grown Verification program. There is an understanding that batches will be smaller and prices will be higher for forest-grown and wild-simulated roots. Higher prices are honored because these types of roots are simply more valuable (within the context of the price that can be fetched in the export market). There is respect for the unique growing practices that produce less flestry and often smaller lots of “wild-like” roots and the non-representative regulatory categories and legal paper trail they command; there is reverence for the tenacity, time, and resources required to grow these roots which yield higher levels of medicinal merits (notably ginsenoside content); there is gratitude for the reality that these wild-simulated roots are less likely to be contaminated with residues from the fungicides that are part and parcel to intensive agricultural cultivation. Mountain Rose Herbs stated.

“Before this project...our primary problem with this crop has always been fungicide residue. Most of the roots we see during sourcing get rejected because they fail chemical residue testing. Availability has always been an issue since there is so little clean material on the market. This project has helped shine a bright light on the domestic market, not only
for customers and distributors, but also for the growers and dealers. The project proves that there is a sustainable way to bring high-quality American ginseng to the domestic medicinal plant trade. It also helps growers that have dedicated decades of work to the long-term cultivation of these plants and offers them a reliable market and fair price. We want to pay a fair price to ensure availability of high-quality roots for medicine makers and encourage the growers to increase propagation of this and other sensitive forest crops.”

Theme #3: Supply and demand within different target consumer groups

Within this larger conversation the concepts of value, price, and demand are inextricably linked, and opinions regarding their balance within a domestic market firmly depend upon the relevant consumer group. An example of this has already been highlighted by statements made by Mountain Rose Herbs in regards to the successful sales of PCO Forest Grown Verified American ginseng products to their target consumer groups and the clean, sustainable supply thereof.

However, one might argue that the success of the natural products industry at-large, which caters to a much more robust population of over-the-counter consumers, is fueled by the need to manufacture new, exciting, revenue-driving formulas that can be produced in abundance. This is potentially not the marketplace of sustainability when it comes to the hard to come by forest-grown or wild-simulated roots of American ginseng. This additional reality was presented in an interview with American ginseng grower, pioneer, and activist Bob Beyfuss of New York, when he stated, “Woodland ginseng does not lend itself easily to corporate farming...it is risky, expensive, and fraught with regulatory issues.” Although perhaps one day this could become a competitive avenue for sustainably grown and harvested American ginseng, there is always the fear that such large scale consumption could lead to further pressure on already imperiled wild populations whereby the domestic and export markets become a two-headed “Appalachian Outlaw” dragon.

Additional insights regarding the nourishing potential of value-added products within a domestic market have been heralded by individuals such as Jeanine Davis, Associate Professor and Extension Specialist at North Carolina State University and co-author of the recently published 2nd edition of Growing and Marketing Ginseng, Goldenseal, and other Woodland Medicinals. In speaking of the PCO Forest Grown Verification program she states, “I think selling ginseng leaf for tea, ginseng berry juice, fresh roots for eating and cooking, seeds and planting stock, ginseng planting design, and garden installation services–can all help bring a new awareness and nurture a domestic market for American ginseng. There are so many value-added business opportunities, such as ginseng chocolates, ginseng tea, ginseng potted plants as get well gifts, ginseng planting sets with seeds and rootlets... I think the time is ripe for this.”

What this last discussion has highlighted is that there is a continual need to identify promising domestic consumer groups in regards to the form, quality, and pricing of products that they would be willing to purchase in order to support growers of American ginseng within the PCO Forest Verification Program.

The conversation continues...

This is only the beginning; a promise to the future of American ginseng as a species is clearly expressed by the potential of a tender yet thriving domestic market. However, all of the various and sundry barriers and avenues for success that could present themselves as this conversation evolves could hardly be captured in this particular dialog. There is so much left to be said and rabbit holes to investigate.

It would hardly be fair or accurate to assume that this conversation is at its end. This movement, this shift, will require time, effort, and ongoing education and outreach on a variety of fronts. However, the invitation to participate is now open, thanks to the hard work of the folks behind the PCO Forest Grown Verification program and the initiative demonstrated by herbal suppliers like Mountain Rose Herbs. Perhaps this is the future of American ginseng...right here at home.

The author would like to personally thank Eric Burkhart, Bob Beyfuss, Steven Foster, Jeanine Davis, Stephen Buhner, and Jennifer Gerrity and Erin McIntosh of Mountain Rose Herbs for their willingness to answer questions regarding a domestic market for American ginseng and their influential and insightful comments.

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The first time I met a member of the Smilacaceae family was fifteen years ago. At that time I was using Mayan medicine to destroy my ovarian cysts, with the help of Dr. Rosita Arvigo. Red China root was one of the plants she suggested because of its unique capacity to rebuild the quality of the blood when it has been weakened by toxicity, stagnation, or other imbalances. This plant, a relative of the North American greenbriers, has traditionally been used by the Mayan people for all gynecological disturbances, fatigue, acidity, and weakness (Arvigo and Balick, 1998). I have been studying this root, commonly known in Costa Rica as cuculmeca, since that time. It not only helped my body, it inspired me to learn more about the secrets of Traditional Latino Medicine.

Of all the amazing things about cuculmeca, my favorite is the story the plant has told me about its people, its land, and how a plant’s survival can be placed at risk by the species to whom it provides untold benefits. Cuculmeca has also taught me the difference between preserving ethnobotanical information and conserving the ethnobotanical experience of the plant in the context of its natural environment and a sustainable culture of respect for its stewards.

Although the Smilax family has been utilized by the medical community for centuries, its scientific exploration has been both academically neglected and pharmaceutically hoarded. I can see that its conservation is as much cultural and political as it is biological. After a decade of devoted research, the following is the story I know so far.

Cuculmeca’s genus name, Smilax, is derived from the Greek word for poison, referring to the anti-venom properties of the local Smilax aspera, as used by the Greek physician Dioscorides and the Roman naturalist Pliny almost two thousand years ago. There are more than 300 species of Smilax recorded throughout the world, many of which share similar components and therefore similar medicinal actions (Taylor, 2005). The most famous of the family is sarsaparilla (Smilax regelii), a popular alternative and endocrine tonic. It is so high in saponins that it was used early on in the industrial food revolution as a foaming agent for making sodas.

Until the spice trade of the 15th and 16th centuries, the only Smilax varieties in Europe were the native ones. It was then that eastern relatives, including Smilax glabra and Smilax china, were introduced into European botanical medicine and became known as China root in English or raiz de China in Spanish. There are references found in ancient texts from China, India, and Persia which indicate differences in the qualities and capacities of these roots (Winterbottom, 2015). These details, including those indicating the original uses of the plant, were not often transmitted in the international sale of the roots, making it difficult for physicians and herbalists to know which species were which and how to best use them.

Further complications in identity arose when Europeans arrived in the Americas and “discovered” a whole new set of Smilax species. The earliest writers appear to have given the name China root to those Smilacaceae which were tuberous, most closely resembling those of China. The name Zarzaparrilla, which translates as “little bramble vine” or “grill bramble,” was used to describe those whose roots were long and thin, along with any of the brambly Smilaxes.

The native people of the Americas had more names for the Smilaxes than we can ever know. Many of the tribal names recorded refer to the power of the plant, such as the Mayan name ko-keh-ak, which translates into blood vine (Ferrufino, 2015). One of the many names recorded by the Mexica (Aztec) people was cocolmeca, signifying a vine (mecatl) used for caregiving or sickness (cocol) in their language, Nahuatl (Siméon, 1977). This term continues to be used today throughout Central America, almost always referring to the red tuberous rhizome of Smilax domingensis, although it is also used occasionally to refer to another Smilax, a Dioscorea, or even another healing vine (Ferrufino, 2015). Cuculmeca is the only one of the native Smilax names to outlive colonization. The ubiquity of this ancient Nahuatl-based name, so far south of traditionally Mexica territories, shows us this plant’s pre- and post-colonial importance in the same category with other important plants like aguacatl and cacahuatl.
The traditional, pre-colonial systems of Native American medicine were as holistic and comprehensive as the traditional systems of China, Europe, and Africa, with which it eventually blended to become Traditional Latino Medicine. Amidst a context of violence, greed, and spiritual persecution, there were a few colonial writers that offered favorable versions of the indigenous cultures which they explored (Guzman Paredo, 1985). As I research my cherished plant ally, I find how the oldest stories hold the true magic of the plants and how they were really used by those who knew them well.

In 1829, Dr. John Hancock of the Medico-Botanical Society presented his research on sarsaparilla in British Guiana and advocated the indigenous methods of preparation over the popular European method of boiling down. Although decoction is currently considered an appropriate mechanism for cuculmecas or China roots, Hancock combined his mucilaginous, aromatic Smilax with other plants and fermented them for nine days in the sun or fireside. Meanwhile, in Mexico, the term xoocomecatl, sometimes used interchangeably with cocolmecatl, actually means “soured vine”, possibly referring to a wine made from the grape-like berries or to a fermented brew of roots similar to that cited by Hancock (Rodriguez, 1959).

Enhancing the power of herbal remedies through fermentation was one of the many complementary techniques that originally accompanied the Smilax recipes—not just how much of the plant to use but all the other details involved in using the plant correctly. Early writer Pedro Cieza de Leon wrote an entire chapter on “The Admirable Root Called Sarsaparilla, Good for all Illnesses” in 1540 in Peru. His remedy for syphilis included wrapping oneself in blankets as protection against cold and wind, taking purging laxatives, and eating lightly. He also reports that the Zarzapatilla root should be prepared as an agua, in this case meaning relating to drinks which are either cold infusions or warm infusions that have been cooled. The still common Latin American dosage, “tomar como agua” refers to how the infusion should be consumed in the place of water throughout the day (Guzman Paredo, 1985).

Hancock gives similar specifications with his Smilax remedy, including a bland diet, no alcoholic drinks, and Greek-derived humoral therapy. His thesis accuses physicians of reducing the full medicinal experience, leaving behind the holism of Galen in favor of the contemporary fashion of separating the sciences. Hancock says, “In the prevalent affection for mere descriptive botany, its more important and scientific objects have been nearly overlooked and disregarded, viz. the application of its principles to useful purposes in medicine” (Hancock, 1829).

Specialization in the sciences has resulted in a separation of medicine from botany and has led to a great loss of knowledge and the taxonomic struggle that we face today with the Smilax family. The earliest accounts of purchasing sarsaparilla, China root, or cuculmeca demonstrate what is still true today—you will be sold only the root, with no evidence of the aerial parts of the plant, possibly with a scientific name which may or may not be correct. As many of my colleagues, I have been using cuculmeca for years, accepting the general virtues of the Smilax family and the many consistent recommendations from local Costa Ricans. However, the story of this plant has convinced me of the importance of having taxonomic security. I have learned that each member of the Smilax family has unique qualities, that they should be used with discernment, and that they deserve to be taxonomically distinguished.

Twenty years after graduating, it was this plant that convinced me to reconnect with my academic roots and team up with ethnobotanists who specialize in this genus. I now understand that my responsibility to conserve this plant includes knowing all its native names and properties, as well as collecting any local relatives and learning all their names, too.

I have also had to learn about cuculmeca’s complex ways of reproducing and maturing. The plant is dioecious, which means that you need both a male and a female plant within range for unassisted reproduction to take place. It may take up to 40 years for the tuberous rhizome to be hard enough for harvest, and it requires a canopy tree to climb in order to flower!

It is impossible to know how much cuculmeca has been harvested or removed from the forests of Central America over the past 500 years. Not surprisingly, the colonizers did not plant, as much as continually reap, using slavery and their repressive position with the Native Americans to fill their pharmaceutical orders. Export records show tons of plant material per year being exported to Europe and the U.S. throughout this time (Ferrufino, 2015; Winterbottom, 2015). Simultaneously, there are very few projects currently working to promote sustainable harvesting or encouraging reproduction, despite abundant research showing the Smilax family to be a good potential non-timber forest product for conservation areas.
Sri Lanka is a country with rich biodiversity—about 3368 plant species belonging to 1294 genera and 132 families have been identified, and around 800 of these are endemic to Sri Lanka (Rajapakse, 1998). Most of these plants were utilized in building healthy rural communities under the precise guidance of traditional local healers, members of the elderly, and indigenous communities during the past. In addition, the forest played a vital role in fulfilling basic human needs such as timber, firewood, medicine, and food plants. These plant species have unique therapeutic and nutritional properties with a potential in solving acute global health problems. They are connected with ethical, cultural, spiritual, and social activities recognized from the earliest days of human history.

The childhoods of past generations were invariably journeys that introduced them to wild fruit trees that grew in abundance in their immediate environs. Madam (Syzygium cumini), himbutu (Salacia reticulata Roxb), uguressa (Flacourtia inermis Roxb), and kirilla (Grewia microcos L) to name a few, are among over 100 wild fruit varieties that were part of the process of discovering the world. Those flavors and discoveries were naturally of indelible nature. Unfortunately, these are simple childhood pleasures that generations to come will likely be denied.

The reliable elderly community has revealed that the availability of over 100 such wild fruit species are not well-known, and only a few have been domesticated and are widely focused as commercial crops. These lesser-known fruits were an integral part of the Sri Lankan rural lifestyle and have enhanced the country while providing their daily therapeutic supplement in order to lead a healthy lifestyle without any extra cost. The leaves and fruits of kovakka (Coccinia grandis) have the power to stabilize high blood pressure, while additionally known for their detoxification capability as blood purifiers (Jayawardhana, 2014b). Also, guava has been considered as a "super fruit" because it is rich in fiber and vitamins A, B, and C (Fonseka, 2008). On the other hand, the Ceylon olive (Elaeocarpus serratus) and wild olive, or weralu, are species indigenous to Sri Lanka. Rural communities have been using the fruit as a natural form of hair care for generations. Many personal care manufacturers are currently using extracts of weralu to formulate anti-dandruff shampoos (Jayawardhana, 2014a).

Unfortunately, the present generation (already accustomed to modern technology) is not prepared to carry the indigenous varieties or knowledge over to the next generation, or do not even know how to identify the basic native plants and their properties. Similarly, a wide range of lesser-known traditional food plant species are also disappearing rapidly due to continuous clearance of forest cover and are destroyed as 'weeds' due to lack of awareness.

Loss of biodiversity and diminishing plants of the country have been identified through the National Strategic Plan of Conservation of Biodiversity in Sri Lanka by well-known professionals under the Ministry of Environment and Forest resources in 1999. In addition, Sri Lanka has been designated as one of the 18 biodiversity hotspots in the world (Ministry of Forestry and Environment in Sri Lanka, 1999).

In 2002, the Native Forest Foundation (NFF) in Sri Lanka conducted a baseline survey on the availability of such species in the rural elderly community and identified that there is a wealth of information on traditional knowledge associated with plants and trees, but there has been a dramatic loss of such knowledge and species. Due to this exercise, the Founder of NFF decided to dedicate personal land for the purpose due to non-availability of resources to purchase new land and was in the process of establishing a mini-arboretum on a one-acre plot of land in 2005. This initiative was mainly to serve the purpose of recovering loss of natural resources in wild fruit and selected medicinal plant categories in collection, conservation, and propagation with the establishment of a field gene bank as a conservation and education unit with over 200 such species.

In addition, the goal is to provide a facility where people can learn, exchange, and research with hands-on experience from local traditional knowledge bearers to the next generation. Thus, NFF has selected Sunday Schools, which are places regularly visited by children and are typically endowed with sufficient space for the purpose by their local partners in order to get the young generation involved in regenerating their interest in wild fruits.
and creating wider awareness on the value of available local natural resources.

Our rationale for selecting Sunday Schools is mainly due to easy implementation at a practical level since there is extreme difficulty in entering primary schools with extensive red tape to obtain approvals and poor interest of the children during school hours as they are in a rat race to achieve their educational goals in a highly competitive environment. NFF conducts programmes irrespective of religious interests in churches, temples, and all other religious institutions where there is adequate land space available. In addition, NFF is in the process of introducing the concept of “Wild Fruits for All” in building up a small orchard with 15-20 lesser known species by incorporating traditional home remedies as a part of reawakening the ancestral wisdom amongst the young generation in the future.

Therefore, proper education that includes transmission of knowledge for attitudes and practice is a prerequisite in promoting traditional native plants. In this process, NFF promotes active participation of the present generation with hands-on exercise in a “Field Gene Bank” to collect lesser-known wild fruit plants and to propagate and popularize them to show the importance of conservation. NFF also covers sustainable utilization and creates new income avenues as a valuable resource for the benefit of the future generation of the country. Furthermore, another component of the arboretum is propagation of these species as ex-situ conservation plots in Sunday Schools, benefited with the existence of 4Bs (Bees, Butterflies, Birds, & Bats).

In 2009, the Tear Fund (UK) recognized the arboretum and its activities when selecting their inspired individual and fellowship programme (www.inspiredindividuals.org) with necessary assistance to extend the plant propagation in Sunday Schools for a period of 3 years. NFF has been able to conduct over 114 interactive awareness sessions in 62 Sunday Schools covering over 2400 students by distributing another 2500 plant species with 62 agricultural motivational kits during this period. The Tear Fund further generously assisted in putting up a building by incorporating traditional ecological architectural concepts to accommodate the volunteers, students, library, and administrative unit.

In addition, the arboretum has been assisting both local and foreign students to fulfill their academic dissertations in Anthropology, Environmental Science, Ethnobotany, and Agriculture. “The Significance of Sihaese Buddhist Cultural Beliefs and Concepts of Sacred in the Conservation of Plants in Sri Lanka” was one of the remarkable dissertations carried out by a student at the University of Kent (UK) in 2003 in association with NFF.

Furthermore, the arboretum is providing a venue for foreign volunteers who are keen on working with the younger generation in plant conservation. Over 60 foreign volunteers from different parts of the world have contributed with their resources so far. At present, NFF has a collection of over 60 species of wild fruits and another 72 species of medicinal plants; they have collected a broad spectrum of traditional knowledge pertaining to plants and trees in Sri Lanka; and joined the global network of the Sacred Seeds sanctuaries in 2013 (http://sacredseedssanctuary.org/gardens/native-forest-foundation-gampaha-sri-lanka).

The program is further expected to collect another 40 species of wild fruits, compiling and publishing the traditional knowledge booklet, to establish a plant nursery in order to propagate the plants amongst Sunday Schools; and to seek opportunities to build up partnership or collaboration to further expand the activities in a more professional manner in the future.

Damitha Rajapakse has more than 30 years’ experience in Fast Moving Consumer Goods categories with a diverse product range of pharmaceuticals, personal care, and nutrition in two large multinationals as a marketer. He is actively involved in community based initiatives to protect and conserve local cultures and native plants, particularly in the areas of ethnobotany, traditional healing, conservation, and childhood learning. He is presently in the process of building up a mini arboretum plant resource center with native wild fruits and medicinal plants and documentation of traditional knowledge associated with native plants in Sri Lanka. damilda@sltnet.lk

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Community herbalists have experiential, hands-on relationships to the ecosystems they live in and the plants they use for healing, and thus can play a critical role in protecting “At-Risk” medicinals. They also have the dual responsibility of being both educators and medicine-makers within their community. Federal GMP regulations make it difficult to operate as such, favoring big industry to small scale medicine production. This is historically a problem for industries that utilize natural resources, and much discussion is taking place around this topic online.

With the technological boom and the incomprehensible effect that the internet has on communication, demand is driven by what is trending. Successful marketing becomes an ethical question when trying to support ourselves as herbalists, growers, or wildcrafters. Herbalists notice trends in plant populations and demand, oftentimes before they are addressed by government agencies. Stephen Foster describes noticing a decline in echinacea populations along roadsides long before Fish and Wildlife addressed it (Gladstar and Hirsch, Planting the Future). Anticipating the demand of Echinacea angustifolia due to its effectiveness, Billie Potts writes “Since this herb is so effective against the contemporary resistant strains of bacteria, it is important that we do not develop resistance to echinacea, too” (Billie Potts, Witches Heal). In the wrong hands, this knowledge is dangerous.

“The promising results of...studies [regarding chaga (Inonotus obliquus)] are fueling the increasing demand for chaga and might eventually lead to even greater demand if large pharmaceutical companies come to view chaga as a resource for extraction of particular compounds.” (David Pilz, Chaga and other Fungal Resources).

Tick-borne illness and other fast-spreading infectious diseases have been a hot topic lately, woven into the fabric of climate change. Herbal antibiotics will continue to be in demand as bacteria develop resistance and adapt. Growing our own andrographis (Andrographis paniculata), for example, or bartering for Oregon grape (Berberis aquifolium) from a northwest herbalist are simple strategies to consider.

Adaptogens are in vogue as well, and we should Backyard Roots, a collective of gardeners and herbalists based out of Western Massachussets, was able to produce enough ashwagandha (Withania somnifera) for all their members, family, and friends on an abandoned urban lot. We also need more research and anecdotal exchange around potential plentiful adaptogens in our regions—for example, local abundant Aralias, as well as bull brier (Smilax rotundifolia) that thickets much of the northeast.

Of notable interest is Vermont herbalist Larkin Bunce’s claim that the pharmaceutical industry has not yet found their pharmaceutical analog to recreate the adaptogenic effect. This is concerning indicating future risk of over-harvesting. Of course, this is already well underway with American ginseng (Panax quinquefolius). Adaptogens fit the profile of the high-stress, type A lifestyle of the economically advantaged who in-turn influence demand. Strategies for “better education of herb consumers” should be a topic in this dialogue (Ryan Drum, The Ethics of Wildcrafting).

We need to grab technology by the horns in the form of social media networking, community list serves, podcasts, online periodicals such as this, and physical meet-ups that utilize the internet in order to connect and share resources and supplies under the radar of the big-wigs. A more low-tech and rewarding practice is to become pen pals with other herbalists in other regions, exchanging information as well as supplies on a peer-to-peer level. This is also a great way to form intergenerational connections. I had success with this trading Indian warrior (Pedicularis densiflor) harvested from an abundant California slope with herbalists I know and trust for Vermont chaga. We can notice and protect “trending” plants by cultivating them ourselves, identifying and researching potential analogs, and bartering with other herbalists who grow or harvest in ecosystems different than our own. Hit me up!

Atlanta Duncan is a community herbalist from Rhode Island currently living on the Olympic Peninsula in Washington. She specializes in tick borne illness and elder care, shares her knowledge and resources within her queer community, grows her own medicinal herbs, and engages with health empowerment and justice on a personal and social level. You can contact her at avantgardenz@yahoo.com or follow her on Instagram @avantgardenz.
My Smilax Conservation Project in Costa Rica is about five years old. We currently have one cuculmeca plant and a few different sarsaparillas. I planted many of which did not turn out to be tuberous and many more which did not survive the transplant. Creating an ethnobotanical sanctuary has taught me the importance of going beyond propagation, identifying the original stewards of the plants, and collecting as many details as possible about variations, environmental factors, and indications of use.

As our plants grow, our project combines scientific research with the stories still told by those local residents, who have always shared the forest with our plants. We will know our success when our grandchildren still have this plant in their gardens and still know how to use it.

Rachel Thomas teaches traditional medicine at her wellness center & plant sanctuary Hidden Garden in Puerto Viejo, Costa Rica. She works with the community to conserve local medicinal plants and provides an academic environment for the advancement of Caribbean ethnobotany. Visit Hidden Garden at http://hiddengarden.co/conservation/smilax/ to read more about the Smilax Conservation Project and to access the Online Smilax Research Library, including cited references and more.

References


Ferrufino, Lilian Dra., 2015. La Zarzaparilla y la Cucumbea y su importancia económica en el siglo XV y XVI. https://blogzamorano.wordpress.com/2015/05/26/azarzaparilla-cucumbea-plantassiglo-xv-xvi


In Dr. Quinn Medicine Woman, a television series that ran from 1993 to 1998, the Cheyenne taught a white lady doctor about various kinds of native medicinal herbs that could be used to treat human ailments in the frontier town of Colorado Springs, Colorado in the 1860s. The generosity and compassion shown by the Cheyenne made an impression on many viewers. Although the series was fictional, key elements were based on historical fact, and notable among these was the transfer of medicinal plant knowledge from Native Americans to white settlers. Not only were American Indians the first to discover the healing properties of many of the medicinal herbs native to North America that we’ve come to know so well–goldenseal (Hydrastis canadensis), echinacea (Echinacea spp.), blue cohosh (Caulophyllum thalictroides), yerba santa (Eriodictyon californicum), and cascara sagrada (Frangula purshiana)–they also passed along this knowledge to European missionaries, pioneers, and settlers, who integrated it into traditional American medical care.

In an era before antibiotics and knowledge of the causes of infectious diseases, Native American herbal wisdom provided a crucial foundation for the building of a new nation. Every American schoolchild knows that the native foods that Indians provided to early colonists kept them from starving; it is less well known that Indians also gave colonists native herbs that helped them survive disease, injury, nutritional deficiencies, complications of childbirth, and other maladies. Native plant cures for ailments such as constipation, lung problems, snakebites, burns, and rheumatism, first developed by Indians, were used very early by American doctors. Witch hazel (Hamamelis virginiana) for soothing strained muscles, salve of balsamroot (Balsamorhiza sagittata) for healing flesh wounds, red trillium (Trillium erectum) root to ease pain during childbirth, blue cohosh as an antispasmodic, and black cohosh (Actaea racemosa) as a female and pregnancy medicine are just a few of the plants the Indians gave the colonists and pioneers.

In the 1800s, as westward expansion exposed as well as the inevitable injuries and sicknesses, Native people often provided the explorers and settlers with herbal medicines that proved crucial to their survival. The journals of some of our great explorers, fur trappers, surgeons, and naturalists–such as Meriwether Lewis and William Clark, Peter Kalm, Jedediah Strong Smith, Leonard McPail, and William Bartram–contain references to knowledge of food and medicinal native plants gained from American Indians and the use of these plants to combat sickness and injury.

During the California Gold Rush, miners subsisted on diets of bacon, beans, and coffee. Thus, showing symptoms of scurvy, they were introduced by foothill tribes of the Sierra Nevada to Claytonia perfoliata, an edible plant that restored them to health. Subsequently found to be rich in Vitamin C, this plant came to be called “miner’s lettuce.” During the Civil War, native plants such as sassafras (Sassafras albidum), partridgeberry (Mitchella repens), dogwood (Cornus spp.), tulip trees (Liriodendron tulipifera), and the leaves and bark of white oaks (Quercus alba) provided field surgeons with a repertoire of remedies to treat wounded soldiers; they wouldn’t have known that these plants could be used to staunch bleeding, ward off infection, reduce fever, set broken bones, and relieve pain had Indians not shared this knowledge over the previous centuries.

European immigrants to the New World were not completely dependent on Native Americans for herbal medicines. Beneficiaries of a rich herbalist tradition in Europe and unfamiliar with the virtues of the plants native to the New World, they brought with them cuttings and seeds of favorite medicinal plants. They applied eyebright (Euphrasia officinalis) to heal inflamed eyes, treated coughs and colds with horehound (Marrubium vulgare), and used St. John’s wort (Hypericum perforatum) as an anti-inflammatory. It was this familiarity with plants’...
medicinal qualities that led them to seek herbal knowledge from Indians and to readily incorporate into their medicine cabinets the native plants about which they learned.

Just as the Old World species brought to the shores of America, both deliberately and accidentally, rapidly spread through New World ecosystems to create new ecological mixtures, so too did medicinal herbs with both native and European origins mingled together in the pharmacopoeias of the young nation. In the first U.S. Pharmacopeia issued in 1820, almost half of the substances were native plants used by American Indians, such as American senna (Senna marilandica formerly Cassia marilandica) and Canada fleabane Conyza canadensis formerly Leptilon canadense. The balance were non-native plants brought from the old European homelands or other continents.

In the early years of our nation, therefore, Americans had access to a very broad range of medicinal herbs derived from the floras of two continents and representing the combined wisdom of two distinct herbal traditions, each going back millennia. For American Indians, however, this mixing process had one unfortunate aspect: their contributions to this considerable collection of medicines were largely ignored and forgotten. This oversight continues to the present day. Over 200 drugs that have been or still are listed in the Pharmacopoeia of the United States or the National Formulary were first used by American Indians, but neither reference acknowledges this fact. Thus, the tremendous benefits we’ve derived from indigenous knowledge of native plant medicines go largely uncredited.

Many native medicinal plants have proven so valuable that they’ve been subjected to unsustainable commercial harvest for decades and, in some cases, centuries. With the added pressures of habitat destruction, fire suppression, and climate change, many of these native medicinal species—such as cascara, American ginseng (Panax quinquefolius), slippery elm (Ulmus rubra), and goldenseal–are becoming rare. Efforts to conserve such species and ensure they will be available in the future bumb up against a variety of barriers, not the least of which is a basic lack of scientific knowledge of the species involved, the ecological effects of their harvest, and the management strategies that may ensure long-term product sustainability. We really know very little about the basic reproductive biology, ecology, and habitat requirements of most of these species and have little baseline data on distribution, phenology, and population size. Without fundamental ecological knowledge of these species and no organized sustain-yield management program, it is no wonder that the growth in popularity of and demand for certain medicinal species results in population declines.

To find a way forward out of this impasse, we can look to the same people who gave us knowledge of these species’ uses and value in the first place. Besides curating tremendous knowledge about the use of native medicinal herbs, American Indians worked out sustained yield practices attuned to the reproductive biology of the plants and developed management practices that maintained their habitats. Both harvest and management were based on an ethical system founded on restraint, a long-term time perspective, and a body of ecological knowledge derived from close empirical observation. We can learn a great deal from these indigenous practices, integrating them into conservation plans and combining them with western science-based strategies as appropriate for the local context.

A specific example helps to illustrate how native management and harvest practices can be used in the conservation of a threatened medicinal plant. The bark from cascara sagrada has been used to treat constipation for millennia in the northwestern U.S., and since people of European descent learned of its qualities about 125 years ago, its use has spread around the globe. It has been called “the most widely used cathartic on earth”.

This large shrub or small tree up to 10 meters high grows as far north as British Columbia and south to California and Arizona and east into Idaho, Montana, and Wyoming. A member of the Rhamnaceae, cascara has a gray to dark reddish brown bark that is smooth to longitudinally furrowed or scaly. The glossy green, elliptic-shaped leaves are prominently veined and have finely toothed margins. It occurs below 2000 m. in multiple habitats from semi-dry to wet, including coniferous forests of Sitka spruce, western hemlock, Douglas-fir, ponderosa pine, mixed evergreen forests, hardwood forests, montane chaparral, coastal scrub, stream drainages and ravines, swampy bottomlands with red alder and vine maple, and ecotones between forest and prairie or open wetland. When growing in deep, rich soils in low river bottoms, flats, valleys, and borders of streams, it will reach tree size; on drier sites with gravelly or sandy soils it retains a shrub-like form.

Cascara bark was an important laxative for treating constipation among many tribes such as the Cowlitz, Green River, Jamestown and Port Gamble S’Klallam,
Lower Elwha Klallam, Lummi, Makah, Quileute, Quinault, Skagit, Skokomish, Squaxin, and Swinomish tribes of Washington, the Kootenai and Flathead tribes of western Montana, the Colville, Kalapuya, and Klamath tribes of Oregon and the Karuk, Maidu, Miwuk, Tolowa, and Yurok tribes of California. For some of these tribes, cascara was more than just another cathartic; it reportedly restored the bowel to a healthier tone, which made repeated doses unnecessary.

The plant was introduced to modern medicine in 1877 by a physician from Colusa, Dr. Bundy, and became official in the *Pharmacopeia of the United States* in 1890. Early advertisers touted cascara as being among “the finest medicinal herbs”. By the early 1900s cascara was being used all over the world.

Despite its long-term indigenous use, there were plenty of cascara sagrada trees when the first missionaries and non-Indian settlers tried it. Cascara remained abundant because of the way indigenous people harvested it. “Native Americans gather cascara bark by taking small strips off the main trunk or by cutting a single limb so that it doesn’t harm or kill the tree” says Linda Wiechman, Lower Elwha Klallam, (pers. comm. 2014). “It’s going to be there the next year and the year after, and the year after,” says Ken Merritt of the Jamestown S’Klallam (pers. comm. 2014). “It heals over very fast. So you can keep re-harvesting for the bark if you needed to... And it would always produce the berries. And so it’s a beautiful never ending cycle.” Another method of sustainable harvest is to coppice the tree, pruning the top to leave a tall stump about four feet high from which multiple stems will sprout, each yielding usable bark in several years.

In the early part of the twentieth century, cascara was in great demand as the active ingredient in many kinds of commercial laxatives. Many non-Indian people became cascara bark peelers, going after trees that had attained large size and ignoring those smaller than a few inches in diameter. Some learned the sustainable harvest methods of the Indians, but the windfall of a big one-time harvest often outweighed long-term considerations. Most harvesters cut the bark all the way around the tree—killing it. Even areas that were harvested sustainably were subject to “pirating,” the wasteful practice of skinning trees only as high as could be reached from the ground. Those trees died—their large amounts of remaining bark unsalvageable. After many decades of unsustainable harvest, larger and older cascara trees became uncommon. The bone-white skeletons of dead cascara trees still mark landscapes in parts of the Northwest, testimonies to the thoughtless and destructive harvesting of the trees. Today cascara sagrada is included on the United Plant Savers’ “To-Watch” list because it is “currently in decline due to expanding popularity and shrinking habitat and range.”

*Cascara sagrada* has not recovered in part because of continuing global demand for its bark, but also because the plant communities in which it grows are no longer as conducive to growth and reproduction as they once were. Cascara needs sunlight for optimum growth, and in many habitats the trees are too dense and the canopy too closed to allow for the necessary light levels. These conditions are the result of widespread fire suppression and a cessation of the regular burning of the forests, wetlands, and prairies once practiced by the tribes of the Northwest.

The Indians burned to keep the forests open and to keep the wetlands and prairies from being encroached by trees. In so doing, they maintained ideal habitats for many useful plant species, including cascara. Indian burning diversified the forest, creating a forest–prairie or forest–wetland mosaic that supported a richer variety of plants and animals than might otherwise occur. Cascara does particularly well in very open forests and in the ecotones, or edge zones, between forest and open wetland or prairie; these are precisely the kinds of habitats created and maintained by regular burning—and the ones that disappear along with anthropogenic fire. Cascara not only thrives in habitats subjected to fire, it can re-sprout from the root crown if the top is burned in a low-intensity fire—an adaptation shared by many plants that evolved in a context of frequent fire.

*Figure 3. An example of an early 20th century advertisement touting the efficacy of a medicine—in this case cascara sagrada—that in turn heightened its popularity worldwide—often without giving American Indians credit.*
will be around for future generations to use if we can begin to put Native Americans’ sustainable harvest and management methods into practice on a broad scale. Already, partnerships between tribes and public and private landowners have yielded successful conservation projects and programs. Together with tribes, we can combine Indians’ traditional ecological knowledge with Western-style scientific investigation to build the knowledge base and management practices needed to perpetuate not only medicinal plants but also other valuable cultural resources. One of the important goals of management would be to work out methods and techniques for calculating harvest regimes that lead to sustained yields of plant populations. This would focus on individual species’ reproductive biology and growth response, but it would do so within the broader context of habitat quality, the conservation of other ethnobotanically important plants, and the health of the land. Besides representing our best chance of success, incorporating Indians’ harvest and management practices into our conservation efforts will finally honor Native Americans’ important role in enriching the practice of American medicine.

Note: Plant scientific names were updated using the PLANTS database http://plants.usda.gov.

References


Medicinal Plant Conservation & Use
at Tafi Atome Sacred Grove
by Alison Ormsby & Robert Kwaku Egbeako

On the continent of Africa, it is estimated that 60 to 95% of people “depend on traditional medicine for their primary health care needs” (van Andel et al., 2012). Medicinal plants are under pressure around the world, with thousands of species in trade globally, including for example, African cherry (Prunus africana) and ginseng (Panax spp.) (Baeg and So 2013; Payyappallimana and Subramanian, 2015). Although these species do not occur in Ghana, they provide useful models to avoid similar possible over-harvesting of other highly desirable species of medicinal plants.

Sacred forests or groves are community-managed natural areas that have local cultural significance. These groves may also contain medicinal plants, with associated community rules about by whom, when, and how these plants can be harvested.

Ghana has a long history of community protection of sacred forests, which may contain burial grounds, be a source of water resources, and hold local spiritual significance (Campbell, 2005; Chouin, 2002; Lebbie and Freudenberger, 1996; Dorm-Adzobu et al., 1991). Ghana has more than 1,900 sacred groves; the size of groves ranges from less than one hectare to over one hundred hectares (Ntiamoa-Baidu, 1995). Within these sacred areas, often referred to as fetish groves, taboos on hunting or using particular species offer protection to these natural resources (Amoako-Atta, 1995).

Around the world, sacred forests have been found to contain a high diversity of medicinally important plants. India, in particular, has been the focus of numerous studies on the botanical diversity of its sacred groves. These sacred groves have been found to be especially important for medicinal plants, with almost twice the density of medicinal plant species of reserve forests in India; nearly 40% of these medicinal plant species are unique to sacred forests (Boraiah et al. 2003). Khumbongmayum et al. (2004, 2005a, 2005b) inventoried 166 sacred groves ranging in size from a few trees to 40 hectares in Manipur. In a study of five sacred groves in Kodagu (Karnataka, India), Boraiah et al. (2003) found that 60% of the regenerating species (136 of 241 species) were medicinally important.

Our research was conducted in the community of Tafi Atome in Ghana in 2006 as part of a larger study on the sacred grove at Tafi Atome (see Ormsby and Edelman 2010; Ormsby 2012a; Ormsby 2012b). This article reports on unpublished data about the medicinal plant use from the Tafi Atome sacred grove. Our analysis sheds light on the potential role of community-managed sacred groves in medicinal plant conservation globally.

Research site description
The village of Tafi Atome has over 1000 residents and is located within the Hoëhoë District of the Volta Region of Ghana (Figure 1). The language widely spoken in Tafi Atome and throughout the region is Ewe. The village is surrounded by a sacred grove of approximately 28 hectares. The grove is a dry semi-deciduous forest and lies within the forest-savannah transitional zone. Both grassland and cultivated farmland immediately surround the sacred grove.

The sacred grove is protected by a 2006 Hoëhoë District bylaw for its main value as a habitat for its sacred monkeys. The grove supports the only protected population of true mona monkeys (Cercopithecus mona mona) in all of Ghana. The monkeys are found in the lower and middle layers of the forest, usually in troops of approximately 12 monkeys, feeding on fruits and leaves. They have a reddish brown back and two white spots on their tail, with a bluish face. Unlike many sacred groves found in other countries, there is tourism to the Tafi Atome community to visit the sacred grove and see the monkeys.

Research methods
During June and July 2006, we conducted semi-structured, open-ended interviews (Figure 2) with 33 residents of Tafi Atome (17 men and 16 women). A qualitative, ethnographic research approach was
used, including interviews, participant observation, and focus groups (Creswell, 1994). In Tafi Atome, residents generally live near their family members or clan group. A stratified sampling method (by clan) was used for interviews. An attempt was made to include in the research sample representatives of each clan and an equal number of men and women. The interviewees were assured of the confidentiality of their responses upon introduction. Along with asking basic demographic information, the questionnaire consisted of open-ended and closed-ended questions. A wide variety of ages and occupations were targeted for the interviews. A group interview was conducted with the Tafi Atome Tourism Management Committee during and at the end of the research period to offer feedback. Using the approach of participant observation, guides were viewed interacting with tourists.

In addition to general information about the sacred grove, our research investigated the following questions: Do you use any medicinal plants from the grove? Which plants and for what ailment/treatment? Have you noticed any change in the availability of these materials over the years?

Results
In the small forest that is the sacred grove of Tafi Atome, medicinal plants are controlled by a local bylaw. You are only allowed to harvest a small amount of the bark of trees, and if harvesting roots, you are not allowed to cut all of the fibroid roots. Children under 20 are not allowed to harvest herbs from the forest. In general, children are not allowed access to the sacred grove, and women during their menstrual period cannot enter the grove or dig any herb in the grove. Strangers and non-residents are also not allowed to remove anything from the grove. Local men and the fetish priest are allowed to enter the forest.

During the research period in the community of Tafi Atome, 33 residents were interviewed, ranging from age 19 to age 85. The majority of residents interviewed (60.6%) were born and raised in the village. In response to the question, “Do you use any medicinal plants from the grove?” 27 of 33 interviewees (82%) said they use medicinal plants in general. Of those residents, in response to the follow-up question, “Which plants and for what ailment/treatment?” over 35 different species of plants were named, ranging from cultivated commonly used plants, including leaves from lemon and orange trees, to pineapple, African eggplant, avocado, papaya, mango (bark), and guava. Many residents described the part of the plant used—leaves, roots, sap, or bark—and how the treatment is prepared, for example, by boiling leaves into a tea. Forest species mentioned included African teak (Miticia excelsia, locally known as odum), African tulip (Spathodea campanulata, locally known as adatsigo), and Afxelia africana, locally known as papawu. The most common species mentioned was mahogany (Khaya senegalensis), by 51.5% of respondents. Those interviewed reported that mahogany bark was mainly used to treat stomach pains but also used as a blood tonic and to treat fever.

In 1997, mahogany trees were planted to demarcate the boundary of the sanctuary in order to halt encroachment of farmland upon the forest edge.

When residents were asked “Have you noticed any change in the availability of these materials over the years?”, two residents reported that it is more difficult to find larger mahogany trees now because of the high demand for them, and therefore they have planted mahogany at their personal farm. In general, many interviewees responded that they are cultivating medicinal plants on their farms. Despite the specific reduction in mahogany availability, respondents described that the sacred forest is thicker than before and has been expanded due to enforcement and reforestation efforts. Most residents are aware of the significance of using mango and other plants and herbs for medicine, so they plant these near their houses.

Discussion, conclusion, and recommendations
Using medicinal plants can reduce the cost of medication since community members do not have to buy plants that are locally grown. Many of the plants identified during our survey are diminishing in quantity, thus it would be useful to create a large community garden to grow the important medicinal plants.

Because some herbs take only three months to grow to be ready for harvest, these might be planted in home or kitchen gardens for immediate use. Others species take six months to a year, whereas the tree species take years to reach maturity and a time when they can be used for medicine. Thus, if community gardens or forest sanctuaries were to be planted and used as repositories of local resources/knowledge, then it would not take very long for
some species to grow and be ready for use by community members.

Figure 3 is a mahogany tree planted within a farm with marks on the trunk showing where bark has been harvested from the tree. This boundary demarcation idea was an effective solution to naturally mark the limits of the sacred grove and to provide a tree that is in high demand and allow sustainable harvesting of the bark of the tree.

However, it has been found that publicized knowledge of medicinal plants in sacred groves creates risk that unauthorized people (local or from other areas) enter the grove and harvest the plants, contrary to community protocols. To protect its resources, the Tafi Atome sacred grove joined the Sacred Seeds Sanctuary network in 2015 (Sacred Seeds 2015). Joining this network recognizes the medicinal plant resources conserved within the sacred grove and connects this site with a global community of plant conservation sanctuaries for information exchange and support.

Although not found in Ghana, the example of trade of African wild cherry (Prunus africana) provides a cautionary tale for species in trade in Ghana and elsewhere. Long used for traditional medicine to treat malaria, stomachache, fever, and “men’s problems,” Prunus africana is a species that has come under intense pressure in global trade (Stewart 2003; Cunningham and Mbenkum 1993). The bark of this tree is used internationally to treat benign prostatic hyperplasia, a non-cancerous enlargement of the prostate. According to Cunningham and Mbenkum (1993), all bark in trade comes from wild trees in Cameroon, the Democratic Republic of Congo, Kenya, and Madagascar and is mainly exported to Europe. Due to unsustainable trade levels, Prunus africana was listed on Appendix II of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) in 1995 (Stewart 2003). In response to the high demand and unsustainable harvest of this species, Cunningham and Mbenkum (1993) recommend cultivation in nurseries, including propagation from forest tree cuttings.

This study in Ghana, along with the case example of Prunus africana, shows that there is a general need for restoration planting and harvest limits for medicinal plants. It is very important that community members are involved in the selection of plants raised and management of plant nurseries.

Alison Ormsby has a PhD in Environmental Studies; her doctoral research focused on people/park interactions in Madagascar. Alison’s recent research has investigated the links between culture and conservation, specifically at sacred forests in Ghana, India, and Sierra Leone. She teaches Environmental Studies at the University of North Carolina, Asheville and is a graduate mentor in Environmental Studies at Prescott College.

Robert Kwaku Egbeako has a diploma in tourism. He was born in Tafi Atome and has worked for many years at the Tafi Atome Monkey Sanctuary as a tour guide in the sanctuary. He is currently studying for a degree in health care assistance.

References


Dorm-Adzobu, C., Ampadu-Agyei, O. & Veit, P.G. (1991) Religious Beliefs and Environmental Protec-
tion: The Malshegu Sacred Grove in Northern Ghana, World Resources Institute, Washington, DC.


All the flowers of tomorrow are in the seeds of today. - Anonymous

References


If we surrendered to earth’s intelligence we could rise up rooted, like trees. - Rainer Maria Rilke
“AT-RISK” & “TO-WATCH” LISTS

Statement of Purpose

For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers, and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UPS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

“At-Risk”

AMERICAN GINSENG
Panax quinquefolius

BLACK COHOSH
Actaea (Cimicifuga) racemosa

BLOODROOT
Sanguinaria canadensis

BLUE COHOSH
Caulophyllum thalictroides

ECHINACEA
Echinacea spp.

EYEBRIGHT
Euphrasia spp.

FALSE UNICORN ROOT
Chamaelirium luteum

GOLDENSEAL
Hydrastis canadensis

LADY’S SLIPPER ORCHID
Cypripedium spp.

LOMATIUM
Lomatium dissectum

OSHA
Ligusticum porteri, L. spp.

PEYOTE
Lophophora williamsii

SANDALWOOD
Santalum spp. (Hawaii only)

SLIPPERY ELM
Ulmus rubra

SUNDEW
Drosera spp.

TRILLIUM, BETH ROOT
Trillium spp.

TRUE UNICORN
Aletris farinosa

VENUS’ FLY TRAP
Dionaea muscipula

VIRGINIA SNAKEROOT
Aristolochia serpentaria

WILD YAM
Dioscorea villosa, D. spp.

“To-Watch”

ARNICA
Arnica spp.

BUTTERFLY WEED
Asclepias tuberosa

CASCARA SAGRADA
Rhamnus purshiana

CHAPARRO
Castela emoryi

ELEPHANT TREE
Bursera microphylla

GENTIAN
Gentiana spp.

GOLDTHREAD
Coptis spp.

KAVA KAVA
Piper methysticum (Hawaii only)

LOBELIA
Lobelia spp.

MAIDENHAIR FERN
Adiantum pinnatifidum

MAYAPPLE
Podophyllum peltatum

OREGON GRAPE
Mahonia spp.

PARTRIDGE BERRY
Mitchella repens

PINK ROOT
Spigelia marilandica

PPIPISSEWA
Chimaphila umbellata

RAPS
Allium trioccum

SPIKENARD
Aralia racemosa, A. californica

STONEROOT
Collinsonia canadensis

STREAM ORCHID
Epipactis gigantea

TURKEY CORN
Dicentra canadensis

WHITE SAGE
Salvia apiana

WILD INDIGO
Baptisia tinctoria

YERBA MANSIA
Anemopsis californica

Raising the Next Generation of Plant Conservationists

by Camille Freeman

Future generations will hold the fate of our medicinal plants in their hands. What can we do now to encourage and nurture a deep love of the environment in the very young?

After searching the published evidence and reflecting on my own experiences as a parent, I’ve identified four overlapping practices that encourage children to connect with and to care about the natural world (Figure 1).

Before I explain these four practices, let’s discuss what it means to connect with nature. A review on the topic defines connection with nature as “a stable state of consciousness comprising symbolic cognitive, affective, and experiential traits that reflect...a sustained awareness of the interrelatedness between one’s self and the rest of nature.” (Zylstra, 2014; emphasis mine)

Zylstra and colleagues go on to note that connection with nature is a prerequisite for environmentally responsible behavior that “manifests as a commitment to action” (Zylstra, Knight, Esler, & Grange, 2014). By nurturing a deep connection with the natural world in our children, we ensure that conditions are ripe for future conservationists to emerge.

Formal education

The first method of connecting our children with nature is through formal education, which may take the form of structured curricula or any other type of academic or theoretical lessons about natural
beings or processes. We know that teaching these lessons to children also influences their families. One study found parents of children who participated in eco-clubs to learn about wetlands knew more about the topic than parents of children who did not participate, and family water conservation increased in these families as well (Damerell, Howe, & Milner-Gulland, 2013) with the rationale that children influence the attitudes of their parents, who will consequently change their behaviour. Empirical evidence to substantiate this suggestion is very limited, however. For the first time, we use a controlled trial to assess the influence of wetland-related environmental education on the knowledge of children and their parents and household behaviour. We demonstrate adults exhibiting greater knowledge of wetlands and improved reported household water management behaviour when their child has received wetland-based education at Seychelles wildlife clubs. We distinguish between ‘folk’ knowledge of wetland environments and knowledge obtained from formal education, with intergenerational transmission of each depending on different factors. Our study provides the first strong support for the suggestion that environmental education can be transferred between generations and indirectly induce targeted behavioural changes.

Steps to Take For Medicinal Plant Conservation

- Teach children to identify native medicinal plants
- Teach children about plant habitats and the consequences of their destruction
- Cultivate curiosity and an interest in lifelong education

Time Outdoors

Children can also strengthen their connection with nature by participating in activities outdoors, surrounded by nature. In a book chapter reviewing how children develop environmental attitudes and behavior, the authors note a relationship between childhood exposure to nature and “adult attitude and behavior to natural environment,” (Wells & Lekies, 2012). A systematic review by Gill (2014) found that “spending time in natural areas as a child is associated with adult pro-environmental attitudes and feelings of being connected with the natural world, and is also associated with a stronger sense of place.” Yet another study found that taking students outside was a significant predictor of environmental literacy (Stevenson, Peterson, Bondell, Mertig, & Moore, 2013).

Steps to take for medicinal plant conservation

- Take children outdoors as much as possible!
- Host herb walks for local children
- Start a medicinal plant garden and invite children to assist
- Revisit the same piece of land repeatedly over the seasons and the child’s life. This can be a park, a playground, a small backyard, or a remote wilderness area. Observe the plants and their habitats throughout the seasons and the years.

Playful engagement with nature

Next, and perhaps most importantly, children learn to love nature through direct interaction with natural environments via unstructured exploration and play. Gill (2014) observed that “playful engagement styles” like open exploration, free play, and child-initiated learning were linked to “positive environmental attitudes”, while more structured time outdoors led to more academic benefits. Chawla (2007) posited that “positive, direct experience” in outdoor environments during childhood was one of two factors that dictate whether someone will actively work to protect the environment as an adult.

Steps to take for medicinal plant conservation

- Provide spaces and plenty of time for unstructured nature play
- Do not make every trip outdoors a lesson. You do not always need to actively teach. Do what you do; the kids will catch on. Unstructured time and play are important.
- Read Let the Kids Run Wild in the Woods (I highly recommend this article by Emma Marris in Slate)
Mentoring and community

Lastly, children learn to connect deeply with nature by observing and interacting with trusted family and community members who are connected to nature. In the previous section, experience in outdoor environments during childhood was listed as one of two factors that dictate whether someone will actively work to protect the environment as an adult. The second factor is being taken outdoors by a close family member or adult (Chawla, 2007). Some activists feel that the deepest connection with nature requires mentoring and exposure to communities that value the environment. Chawla (2007) recommends the following four behaviors when spending time with children:

1. Demonstrate your love of the land
2. Express disapproval of environmental destruction
3. Display simple pleasure derived from spending time in nature
4. Express fascination and desire to learn about other living things and/or components of nature.

Steps to take for medicinal plant conservation

- Be a lifelong learner. If you already know about plants, learn about other pieces of their environments: the fungi in the soil, the birds that eat their seeds, the other critters that use them as a food source, etc.
- Show children your own love of nature. Speak about respect for plants. Express sadness when habitats are destroyed.
- Share stories about your own connection with specific plants or pieces of land. Communicate about what happened there, as well as your own family’s traditions.
- Expose children to communities where nature is honored and valued.
- Expose children to books, songs, and stories that instill respect, love, and care for nature.

As herbalists and plant lovers, even those of us who are not parents can welcome children into our work spaces. We can teach classes specifically for children, bring them along on wildcrafting expeditions, hold space for open forest play, welcome children to events typically designed for adults or bring our work to schools or co-ops. It is important to recognize that many children have few or no role models who embody a deep connection with nature. We can fill this role simply by being in the community and expressing our deep respect for nature. Other children do not have safe spaces or the opportunity to play outdoors. Inviting children into our woods and gardens can facilitate lifelong connection with the environment. By actively including our youngest community members in our work as herbalists, we can lay the foundation for medicinal plant conservation in generations to come. I invite you to join me in thinking creatively about how to make herbal medicine more inclusive of children in your own community.

Camille Freeman is an herbalist and nutritionist specializing in fertility, pregnancy, and postpartum health. As an associate professor at the Maryland University of Integrative Health, she teaches physiology and pathophysiology to students in the nutrition and herbal medicine programs.

Resources


American ginseng (*Panax quinquefolius*) and Timber Rattlesnake (*Crotalus horridus horridus*). Artwork by Shay Clanton www.shayherringclanton.com
UpS Helps Send Kids to Camp

Sassafras Camp adjacent to the Goldenseal Botanical Sanctuary is an outdoor nature and arts camp focused on environmental and ecological education, theater, yoga, art, music, games, and play. Highlights in 2015 were studying macroinvertebrates and water quality, medicinal plant study and salve making, arrowhead class, Native American storytelling and theater performances, basket making with Japanese honeysuckle, daily yoga and meditation, fresh pasta making and healthy food education, many art projects including mask making and costume design, and cooperative games that encouraged the bonding of the entire camp family.

United Plant Savers generously gave need-based scholarships to those families who couldn't afford the full cost, enabling many new children to have the Sassafras Camp experience and expand their knowledge of local medicinal plants.

Alana Calt-thesis (known to most as Lonnie), whose mother started the concept of the Sassafras camp expresses that one of her greatest joys is to watch the children's awareness of the natural world grow over the week. Many of the children are used to spending time in the outdoors, and for others this is a new experience.

By the end of the week ALL of the children are showing excitement when they spot a cool insect, plant, or other nature find. She found that those children who had not had as much exposure to nature were even more proud and amazed by their nature discoveries or with their newfound knowledge about plants and nature. One boy excitedly brought her a hatching cicada and the whole group watched as it shed its nymph exoskeleton. The care and respect shown to this cicada and all other creatures found was beautiful to watch. It seems that by studying some of the plants and animals in our area and learning about the fragility of each ecosystem, they develop a greater curiosity in the natural world and want to treat the plants and animals with respect and care.

In one exercise the children go find a place to sit and connect with nature—a plant, animal, bird song, etc. and then draw a picture, journal, or write a poem about their experience. Here are two of the poems:

The grass on the ground and the leaves in the air. I hope I see a hopping hare. The wind on my face and the breeze in my hair, you should get out in nature no matter where. — Stanley

Dear Sassafras with a nibbled leaf, you are so wonderful to me. If I could pick some words to describe you this is what I'd say: unique and extraordinary, and not just momentarily—for even when you're old you are with your sock, mitten, and glove. — Harvest

United Plant Savers would like to thank Clif Bar Family Foundation for the generous grant to support our programs and outreach at the Goldenseal Sanctuary and to support the Sassafras Camp. Find out more at http://clifbarfamilyfoundation.org/Grants-Programs/Small-Grants

When one tugs at a single thing in nature, he finds it attached to the rest of the world.

— John Muir
The Most Precious Medicine At Risk
by Debbie McSweeney

As members of this wonderful organization that fights to preserve medicine, we know the loss we will face if we lose some of our most precious resources. We grow these plants in our backyards or the back forty, trying to bring them back from near extinction. It is the part we play—spreading the knowledge of the importance of this issue. But there is one medicine that we have not included. It is one of the strongest, most sacred of all medicines, honey.

This is not a plant. The bee is something else entirely and is so entwined with our medicine that we cannot have one without the other. Without the bee or pollinators we will not be able to protect and foster the plants we are fighting so hard to save. And, as we all know, the bees and other pollinators are in trouble. For nearly ten years now we have strived to figure out what is killing our bees, and as we do so, our losses continue to rise. While it used to be common to have 15% loss of your bee hives every year, we have watched in agony as that number has increased every year to where this past year of 2014 we had 40% average loss of colonies. I keep up with the latest data I can get my hands on, have many friends who are professors on the cutting edge of the fight, have traveled to Washington, DC and co-chaired a Task Force on Bee Friendly Farming—a certification program I work with. And with all of this knowledge, I learn more than I want to know. I see how huge the problem really is.

I think Ed Levi, an organic beekeeper and past State Inspector for Arkansas said it best, “I believe the honey bees are the canary in the coal mine.” We know what that means. They took the canaries into the mines to detect the odorless fumes that could creep in and kill them. The birds would simply stop singing or die, telling the miners it was time to leave for fresh air. But we can’t leave for fresh air. We cannot run from the insidious problem that is finally catching up with us in this country and the world.

There is still great debate over whether neonicots are killing the bees as well as the wild pollinators like the monarchs. I just came from a meeting with people from every agency tied to the environment and the protection of it to hear a professor say in his introduction of himself, “I tell people that the neonicots are not harming the bees.” The response was dead silence and no comments as we were all at this meeting to find a way to start helping the bees and wild pollinators in our state, mainly through education and increasing habitat in any way we can. This is a very caustic issue, the one of chemicals. I have been giving talks on bees and habitat and had people walk up later and hand me their business card from a major chemical company, not offering any comment, just a silent “We’re watching everything you do and say.” I’m not scared anymore. It really gets pretty laughable after a while because you know you must be saying what they don’t want said. But there are so many people in government that want to see change and help our friends the bees, including President Obama, who signed a Presidential Memorandum in 2014 demanding that every agency in our government start looking into how we fix this problem, as it is a Food Security issue. Whatever works!

So as herbalists we know that food and diet are a large part of human health. We need the essential amino acids to survive. We can help heal with wonderful plant helpers, but lifestyle changes must be made, especially in the area of diet. The bees and wild pollinators of this country are losing millions of acres a year of food sources to development and mega farming. As we so desperately try to build more habitat, even more is taken away. Today in the US almost 80% of our honey supplies are coming from other countries. There simply isn’t enough forage, bees, or the product of honey to meet the demand from the public. In America we are facing a time of not having as much honey production and just trying to keep our hives alive one more year. This was the first year we had no honey off of six hives.

Think of the lovely description that Rosemary Gladstar, my teacher, gives in the book Planting the
**Future** with the poetry of Neltje Blanchan, 1900, (You will have to pull your book out here or purchase it to read the poem!) It describes a love affair between a bumble bee and an endangered and much beloved lady’s slipper orchid, *Cypripedium* spp. The bumble bee is very important for that precious flower which is so rare now. Over 75% of all species of bumblebees in the United States are now gone. So what came first, the disappearance of the flower or the disappearance of the bumblebee? And how do you bring them both back?

In all my research of pollinator habitat and in my studies with Rosemary, I have learned a parallel issue. Pollinators lack habitat, food sources, amino acids they need for survival, and pollen as a source of protein that provides chemicals that trigger their little bodies’ detoxification process (they don’t have a liver, remember). The endangered medicine plants we fight for are pollinator plants! I’ve spoken to some of my professors about the possibility of it being a matter of their medicine being gone. Think of echinacea (*Echinacea* spp.)—an immune booster and so wonderful for our bodies when we are sick, and the bees do not have it in their banquet as often, Dandelion (*Taraxacum officinal*) which is the first plant that most creatures go to in the spring, including us, to help detox from a long winter is the most important food source for bees after the winter! I often wonder what started the whole ball rolling here. Did the decline of these most sacred medicines affect our pollinator friends’ health first, and now there are not enough of these pollinators to bring the plants back to their health? Bees got hit and took a huge dive in numbers in the 1970s with European Foul Brood. How can we say that we know we can extract medicine from these plants and not expect that a bee or butterfly isn’t getting the medicine in the pollen or nectar? We use the product of their hard work as a medicine in the form of pollen and honey. Think of all the medicine plants a bee must pollinate to make a pound of honey—over 1 million flowers are needed. What wonderful medicine all packaged and ready for us to enjoy! The Native Elders of our world learned our medicine from watching the animals and what they ate to take care of themselves. I feel so strongly that we are naive if we think the pollinators do not use these plants as medicine themselves. Look at propolis—the lovely concoction that bees seal up their hives with. It is made from gathering resins from trees and plants. In a wild hive in a tree they will coat the whole inside of the hive in this product that is very highly antiviral and anti-bacterial. We use resins in our medicine. In current research done in Minnesota, Dr. Marla Spavin and her team are looking at the health benefits of this resin for bees and are pushing beehive manufacturers to rough cut and not sand the insides of box hives, as this will cause the bees to cover it in propolis—an antiviral, antibacterial cocoon for our little friends! Do you know what surprised them? They analyzed resins in the propolis they collected to see what the makeup of species were, and cottonwood (*Populus tremuloides*) was most prevalent. Cottonwood is in the Poplar family and makes great medicine. Do you see all the dots connecting us together with our medicine and all the bees and pollinators? We cannot separate them. It is the ecology of our world, and each day we are seeing how fully we are all connected and cannot live without each other. The medicine plants need the pollinators and so do we, and the pollinators need the medicine.

So you need to know that at this time all of this research is also shedding an ugly light on the products we love most from the hive. I will not eat pollen. I would only consume it if the source is someone I know and who is only collecting in early spring when there are very few agro-chemicals being used. Remember that you might be an organic beekeeper, but bees can fly 1-5 miles in search of food and have even been recorded to fly 15 miles when desperate for forage. Unless you own sections of land or are in a very remote area with no ag production, you cannot control what comes back to your hive. They are finding 36 or more chemicals in pollen in a given hive. If it’s in the pollen, it can be in the honey as well. And the wax is actually a lipid, a fat. We know fat absorbs toxins in our body, and we are finding it is doing the same thing in the hive. Very high levels are being found in the wax, and now some European countries are demanding that their beekeepers introduce new wax every single year. The results have been healthier bees. This is not an easy process—wax building takes a lot of energy as bees sweat little plates of these lipids to build the wax with. It takes more energy, and thus more food, and thus more forage for them. The best wax to use is the wax on honey cappings as it has been there the shortest amount of time. Because you are buying something that states it is organic does not mean that there are no chemicals in it.

Bird bath fixed up for pollinators with rocks to prevent drowning and a gallon jug with drip emitter.
While testing wax and pollen chemical counts, yet another disturbing discovery was made. A chemical was found in a hive that was pretty isolated and clean as far as chemicals go. The chemical was a by-product of PVC pipe manufacturing. The closest source of that chemical being produced was over 40 miles from the beehive.

As we learned in our master beekeeping course, bees when flying produce a highly effective electrostatic charge on their body (very much like we used to do with a balloon rubbed on our hair to make it stand up as children). It is one of the wonderful ways the pollens adhere to their little hairy bodies for them to pack in their pollen baskets later for the flight home. They now suspect that bees are picking up some of these chemicals from the air as they fly. The canary in the coal mine theory has never been more evident.

Though this information might seem depressing, and truly it is, there is hope. Many professors state that in the crisis that is CCD, a perfect storm of lack of food, chemicals, viruses, and parasites attacking our very sacred friends, the crisis is producing more research and discovery on the lives of our bees and pollinators than ever in the history of mankind. We are looking through a window, and the view outside is showing us our mistakes—our overuse of chemicals, our lack of respect for and preservation of the environment, and the effects we see every day in human health. As herbalists you have seen these things increase, especially in our children. The bees are whispering to us to pay attention, to change our ways, or what is happening to them will happen to us. Isn’t it already? Look at the rise in Parkinson’s, autoimmune issues, thyroid and endocrine diseases, and liver issues in children. I’ve never seen so many traveling rashes in kids. Will we listen? Will we fight for the most important medicine and gift to mankind we have ever had—honey and the honey bee? Will you sit in your chair and say someone else will do it, or will you plant more flowers and habitat in your little space? One person can make a difference, and thousands can affect change like we never thought we would ever see. When I get overwhelmed, I often think of the day I watched the Berlin Wall fall at the hands of citizens. I never thought I would see that happen. But it did. And the world was never the same again.

If you are a beekeeper, think of changing out your wax more often. The bees do not want a toxic bed for their babies. Be aware of what is around your hives in at least a five mile radius. In planting for our friends, plant the endangered medicines they love, strong medicine for everyone. Plant trees and fruit bushes, a variety of forage for them to dine on; old varieties and wildflowers are preferred. Plant two sources of pollen and nectar per season minimally. Supply shallow water bowls filled with rocks and water. Bees need clean water, too. Don’t forget habitat in the form of open areas of dirt for ground bees and tall grassy, unmowed areas for bumblebees. You will see a remarkable change quickly when you create this little oasis. We went from two bumblebees in the first 5 years of living on the farm to now seeing hundreds at one time! Then the song birds increased in numbers and species!

Every year I witness 2 to 4 new species of birds on my little 6-acre farm. The birds start eating the bad bugs in my garden and bring in new flower species in the form of seeds dropped on the way. Mother knows how to correct the problems we face if we just get out of the way and listen. Be active in your voice for the voiceless in spreading the word of what is happening. Bee the change you want to see happen in the world!

Debbie McSweeney is currently a student of Rosemary Gladstar, a bee activist, and a pollinator habitat specialist. She is currently working on establishing a United Plant Savers Sanctuary where she will teach medicine making, growing rare medicinals, and creating pollinator habitat. She lives in Kansas on a six-acre certified Bee Friendly Farm with her husband, rare Guernsey goats, dogs, cats, chickens, and bees. She can be reached at walela13@yahoo.com.

I shall collect plants and fossils, and with the best of instruments make astronomic observations. Yet this is not the main purpose of my journey. I shall endeavor to find out how nature’s forces act upon one another, and in what manner the geographic environment exerts its influence on animals and plants. In short, I must find out about the harmony in nature.

- Baron Alexander von Humboldt
Book Reviews

The Organic Medicinal Herb Farmer
The Ultimate Guide to Producing High-Quality Herbs on a Market Scale
by Jeff Carpenter and Melanie Carpenter
Book review by Sara Katz, Herb Pharm co-founder and UpS board president

In their comprehensive, labor-of-love book, The Organic Medicinal Herb Farmer, Melanie and Jeff Carpenter provide a treasure trove of practical information on how to grow medicinal herbs, an area of increasing interest that can be challenging in all of the particulars. With fifteen years of organic medicinal herb growing experience and a palpable passion for the plant world, the Carpenters clearly and comprehensively explain all a small farmer needs to know about growing, harvesting and drying a wide variety of medicinal herb crops. Much more than a “how-to farming” manual, the Carpenters’ book offers a broad perspective on the world of medicinal herbs including wild herb conservation concerns, herb industry nuances, and business and marketing considerations. It is apparent to me that the Carpenters’ vision for this book is to seed a plethora of small, regional, organic medicinal herb farms, thereby taking pressure off of wild medicinal plant communities and cultivating healthy human, plant, and animal communities. This is a book filled with information and love of medicinal plants and deserves a special place in any herb lover’s library!

The Aromatherapy Garden:
Growing Fragrant Plants for Happiness and Well-Being
by Kathi Keville
Book review by Beth Baugh, Journal editor

Kathi Keville, long-time UpS supporter and author of fifteen plant books, gives us yet another must have herbal. The stunning photos, many taken from her spectacular herb garden of almost 500 species of medicinal herbs and fragrant plants, are so vibrant that you can almost conjure up their scents.

Keville does actually (and remarkably) describe the scent of each plant. Here is the description for rosemary: “Rosemary leaves have a powerful, herby, sharp, and slightly woody fragrance that includes a hint of freshly cut cedarwood and a good bit of camphor.”

The book includes a section about the benefits of bringing native plants into the garden to help maintain wild plant diversity and sustain wildlife and native habitats and attract birds and pollinators. Examples of popular fragrant native plants are given for different growing zones throughout the United States. She discusses the roles of aromatic plants in attracting pollinators, as well as deterring garden pests and how plants affect moods. There are sections on garden design, cultivating a fragrance garden, and preserving, storing, and using the plants.

Keville profiles over 80 individual scented plants juxtaposing modern studies regarding their medicinal benefits with interesting culture, history, and some surprising statistics. She also gives an overview of the tradition of aromatherapy and the history of gardening and shows how to make simple oils, liniments, and tonics from these scented plants. As Jim Duke so aptly put it, this book is “A breath of fresh aromatic air, artfully and tastily presented.”

The Medicinal Herb Grower
by Richo Cech. Illustrated by Sena Cech

Using personal experiences & stories that are at once amusing and instructive, Richo covers principles such as observation in nature, windows of opportunity, creating plant habitat, benefits of diversity, rules of green thumb, soil, seeds, water, sun, trees, humans, and the forest community.

Planting the Future
Edited by Rosemary Gladstar & Pamela Hirsch

Land stewardship, habitat protection, & sustainable cultivation are of critical importance to ensure an abundant renewable supply of medicinal plants for future generations.

Order these titles at unitedplantsavers.org

Isabella’s Peppermint Flowers
a book by Susan Leopold

A garden, please visit www.isabellaspeppermint.com
Meet Some of our New BSN Members!

United Plant Savers’ vision is to see UPS Botanical Sanctuaries established in people’s backyards, farms and woodlands, creating a living greenway of native medicinal plants across the landscape of America. A sanctuary isn’t defined by size or magnitude, but as sacred space, a place where one can find protection and the peace and renewal of nature. Nor is a sanctuary necessarily designated or defined by government agencies or large organizations, though often we think of it as such. We can all create sanctuary on the land we care-take. As our Sanctuary Members are demonstrating, Botanical Sanctuaries can be created in small backyards as well as on large plots of wilderness, in towns as well as in the country. As you well know, it takes attitude, willingness, and a desire to transform the way we value land, our assumptions about land use, and the way we design our gardens and farms. If we want to preserve wilderness and the wild populations that thrive there, we can’t look to others to do it for us. We need to be willing to actively participate in the preservation and restoration effort, and as good a place to start as any, is in our backyards. And that is what you’re doing. That is what the Botanical Sanctuary Network program is about.

Thank you to all Botanical Sanctuary Network members for being part of this vision and for your efforts to help preserve and restore the native landscape and our treasured medicinal herbs.

Michael is a nurse practitioner who is developing an innovative healthcare model for both People and Planet, and Christine is an herbalist and biologist passionate about sharing her love of the Earth with others. Together, the team has begun teaching classes at the farm about herbal first-aid and herbs for women’s health and celebrating Earth-based holidays. Over time, the couple hopes to host more classes and workshops focused on preserving our native medicinal species and continuing to spread the knowledge of the people’s medicine within the community. The long-term dream is of opening an integrative free health care clinic operated by their non-profit Resilient Health Network, Inc.

This coming growing season, the farm will host a natural building workshop where participants will learn about constructing benches and ovens with cob. There will be a number of plant identification walks and herbal how-to workshops, and guest herbalists will begin to teach workshops at the property. New spaces have been chosen to begin planting further permaculture guilds and to install a sun-trap forest garden.

When Christine and Michael first walked onto this land, they knew they had finally found the perfect place to set down their roots and build their dreams. Now, one year at a time, the couple is creating a homestead and place of learning where People and Planet can heal and thrive once again.

Just minutes from historic downtown Chardon and about an hour east of Cleveland, OH is a new permaculture homestead and learning center with a special emphasis on human and environmental health.

Christine and Michael, along with their daughter Cora Luna, are stewards of this land on which they hope to demonstrate a resilient, Earth-centered lifestyle in which humans are integral members of the vast polyculture we call “nature.” Light Footsteps Farm is a 23-acre parcel of land growing many medicinal herbs along with a homestead garden and orchard.

Many of the herbs grown are used to make herbal wellness products that are sold at the farmers’ market and online.

In their first full season on the farm, Christine and Michael (along with a number of volunteers) installed a 2500 sq. ft. keyhole garden, a medicine wheel garden, a hugelkultur orchard, and began planting native woodland medicinals like golden seal (Hydrastis canadensis) and ramps (Allium tricoccum) into their 20-plus acres of forest. A flock of chickens also came to the land, along with a hive of bees and several milking goats.

LIGHT FOOTSTEPS FARM
Chardon, OH
Sanctuary Stewards:
Christine Cassella & Michael Bennett

The medicine wheel garden in its first year of growth.
THE FIRST AMERICAN GINSENG SANCTUARY
Compton Gardens
Bentonville, AR
Sanctuary Steward:
Madison Woods

When I first began learning about ginseng (*Panax quinquefolius*), there weren’t any live plants to see in my area, even if I had known where to find them in a forest. At the time, I lived in southern Louisiana, and ginseng doesn’t grow there. Pictures in books (mostly field guides) were my only resource. The internet wasn’t even useful yet then, as it was in the early 1990s when I became interested.

Once I took to the woods in an area of Louisiana I thought just might have a wild population, I now know the plant I thought might be ginseng was most likely Virginia creeper (*Parthenocissus quinquefolia*). The first real, definitively identified ginseng I saw was at Ozark Folk Center in Mountain View, Arkansas. At the time I think they only had one specimen plant in the little wooded area alongside a pathway near the herbalist’s cabin. I haven’t been back there since, so I’m not sure if that plant is still there or whether they have added even more.

Luckily for me, at the same little woodland path at the Folk Center there was also a labeled Virginia creeper. I went back and forth between the two plants, which were probably 100 feet apart from each other, until I could clearly see the difference between the two.

Since moving to northwest Arkansas where ginseng grows in the shady hollers and on the north-, west-, and east-facing slopes of our Ozark Mountains, I’ve observed and documented a lot of American ginseng plants and habitats.

My husband and I started Wild Ozark, a “farm” on the books, but it’s really a wild-simulated ginseng nursery. We don’t grow the ginseng in beds but seed them directly in the ground in the forests that provide the proper habitats.

Wild ginseng also grows here, so we make a point of not planting the areas where the wild plants grow. Since it’s illegal to buy wild seed, we have to purchase our seeds, and I’m worried about genetic pollution. Separating them in this way may not be enough, but I’m hoping it is, and it’s the best we can do for a solution.

Nowadays I have a hard time imagining that I had ever confused the two. But I often get emails from my blog readers asking for help identifying plants they think might be ginseng. Almost invariably, the plants they think are ginseng turn out to be creeper or buckeye.

I remembered seeing the plant at Mountain View and began thinking what if there were somewhere on our side of the state where people could go to learn to identify ginseng. Mountain View was a good five hour drive from us and it would have been impossible for me to go out there to help anyone who wanted hands-on help with identification. I wanted to have more than one specimen plant. I wanted to showcase an entire habitat, even if we had to recreate one.

In late 2014 I approached Compton Botanical Gardens in Bentonville, Arkansas about putting in an educational American ginseng habitat in one of their shady locations. My hope was to give others a chance to see this endangered plant in an accessible area, in the same way I was able to see the plant that day in Mountain View.

The location of our habitat-in-progress with a few of the plants ready to go in.

The habitat under construction at Compton Gardens will provide the opportunity for those interested to see and watch not only ginseng, but all of the most common companion plants. The garden is open year round, so interested persons can observe and learn about the plants as they grow from seedlings all the way to maturity.

Why this precise location? Well, I had worked in Bentonville several years before leaving my job as an environmental scientist to work from home as a writer and ginseng nursery operator. On my lunch breaks I used to visit Compton Gardens. As I walked the paths there, I noticed shady nooks already housing several of ginseng’s companion plants. It wasn’t a far stretch to imagine a full-blown ginseng habitat there.

Not only did it seem to be a good location, but the gardens are housed on the grounds of a home that belonged to Dr. Neil Compton, the man responsible for spearheading a campaign to keep the Buffalo River free of dams. All along the Buffalo River are many habitats for wild American ginseng, and I thought it a fitting location for the first public
American ginseng garden, or sanctuary in northwest Arkansas. Dr. Compton was also a native plants enthusiast and collector.

After getting an encouraging response from Corrin Troutman, Compton’s Director of Operations, the plan went from an idea to a project. In January 2015 I contacted United Plant Savers about a grant to help with my expenses. It takes me about two hours to make the trip to the location from where I live, so there would be travel costs to make the frequent trips. I also wanted to make educational handouts, so there would be printing expenses. The plants were supplied by Wild Ozark (mine and my husband’s ginseng nursery) and Compton Gardens.

We began in early April 2015. Luke Davis, the Site Manager for the gardens was our partner in planning. He’s since moved on to other opportunities so this year we’ll have a new partner to work with. We planted goldenseal (*Hydrastis canadensis*), bloodroot (*Sanguinaria canadensis*), doll’s eyes (white baneberry) (*Actaea pachypoda*), maidenhair ferns (*Adiantum pedatum*), wild ginger (*Asarum canadensis*), giant Solomon’s seal (*Polygonatum biflorum* var. *commutatum*), and black cohosh (*Actaea racemosa*). Pawpaw, redbud, and maple trees were already in place in the chosen site.

At the end of April we brought in the American ginseng seedlings, a few two-year olds, and a three-year old. My hope is that especially the oldest plant survived the winter. When it unfurls this year, if it survived, it will be the first “mother plant” of the sanctuary. It’ll flower, set fruit, and drop seeds, hopefully beginning the first colony of our American Ginseng Sanctuary at Compton Gardens.

With every trip to the garden, my excitement builds. It means an outdoor “classroom” in a public and protected place where I can “show and tell” about ginseng and the habitat (and so can anyone else). It means that others having a hard time figuring out the difference between ginseng and Virginia creeper will have a place to go and see them both, with labels, in real life. It means that I’ll be able to combine my efforts with those of others to encourage stewardship and foster love of something basic to our American heritage—a plant that’s been at the heart of a tradition that spans centuries.

As with most natural resources, when there is a demand, the desire to provide a supply can cause a crisis. Digging by the traditional diggers isn’t the activity causing the concern. The traditionalists have managed their plots for generations without depleting their supply.

Newcomers to the ginseng fervor may not understand the fragility of the ecosystem that ginseng calls home, and those who aren’t considering the future or the impact of today’s behavior on tomorrow’s yield are only part of the challenges presented to the survival of this plant, but it’s a very large part.

Because it needs a specific environment to thrive, when the loss of even one tree can cause an imbalance, development and logging activity have a tremendous impact. And there are yet other reasons ginseng’s status remains endangered. Rising deer and turkey populations are a threat. Deer nibble the tops and turkeys eat the seeds (which destroys it).

Private landowners can offer sanctuary and refuge to this species, and Wild Ozark hopes that through this Ginseng Sanctuary Project at Compton we can encourage stewardship of American ginseng.

To keep up with our progress you can visit our online project journal: www.wildozark.com/compton-gardens/
The care of the earth is our most ancient and our most worthy and, after all, our most pleasing responsibility. To cherish what remains of it and to foster its renewal is our only hope. ~ Wendell Berry

We feel honored and blessed to have the land we love become part of United Plant Savers Botanical Sanctuary Network. Walker Mountain Botanical Sanctuary is in a beautiful “holler” in the Allegheny Mountains and the southern Appalachian Mountains. We are at the base of Walker Mountain, known for its sinkholes, caves, and springs. Our house was built around 1890 next to Clayton Mill Creek, a rushing spring-fed native trout stream that flows from Walker Mountain. We are in the Chesapeake Bay/James River Watershed, and the closest town to us is the small town of Deerfield, Virginia. For over 20 years we have been slowly restoring our house and discovering bit by bit the beauty and diversity of this place we call home.

We own about 40 acres, a small portion of which is open land and fields, and the rest is forest land. The George Washington National forest borders our land to the west, so we can walk out our door and into thousands of acres of public land and beautiful forest.

A big organic vegetable garden and a medicinal and culinary herb garden grow close to the house. Many native plants grow in the vegetable garden including echinacea (*Echinacea* spp.), yarrow (*Achillea millefolium*), Queen Anne’s lace (*Daucus carota*), and mullein (*Verbascum thapsus*), and they attract many native bees and butterflies. In the open fields near the house we are encouraging the growth of existing native plants, such as, bee balm (*Monarda* spp.), goldenrod (*Solidago canadensis*), mullein, native sunflowers (*Helianthus* spp.), Queen Anne's lace and milkweed (*Asclepias* spp.), and we are creating more areas for native flowering plants. We have also planted pleurisy root (*Asclepias tuberosa*).

Clayton Mill Creek flows through a hollow between Walker Mountain and Sideling Hill. Its banks are moist and rich and blessed with a diversity of native medicinal plants. Many of them are on United Plant Saver’s “To-Watch” and “At-Risk” lists, including ginseng (*Panax quinquefolius*), black cohosh (*Actaea racemosa*), bloodroot (*Sanguinaria canadensis*), mayapple (*Podophyllum peltatum*), Solomon’s seal (*Polygonatum biflorum*), wild ginger (*Asarum canadensis*), stoneroot (*Collinsonia canadensis*), and wild yam (* Dioscorea villosa*). We have planted more ginseng, goldenseal, and ramps (*Allium tricoccum*) and continue to add to our plantings every year.

We are careful to buy plants from our bioregion, and every fall we also plant a few seeds gathered sustainably from ginseng plants that we have found in the woods around us. This place has a long history of digging for ginseng, and we have enjoyed the stories told to us by the elders who still live nearby. This land was farmed and selectively logged over the last century. Some of the original fields are now returning to woodland, and there are many slippery elms (*Ulmus fulva*) growing along with black walnuts (*Juglans nigra*) and redbud (*Cercis canadensis*) in those areas. We share the woodlands with wild turkey, ruffed grouse, foxes, black bear, bobcats, whitetail deer, raccoons, and opossums, as well as the Eastern woodrat and many species of migratory birds. A pair of ravens returns every February to their nest in a rocky cliff to the west of our house. Turkey tail (*Trametes versicolor*) fungi and many other mushrooms grow abundantly in the woodlands, and we are also growing some medicinal and edible mushrooms on logs in the sanctuary.

Our goal for the next year is to continue with planting more native medicinals, especially ramps, ginseng, and goldenseal. To enrich the earth where they grow, we are making compost with leaves and woody material from the forest. Last summer we began creating a medicine trail along a beautiful part of Clayton Mill Creek where there are many native medicinal plants, and this year we plan to finish the medicine trail and identify the plants and trees using old salvaged slate roofing tiles. We are working on a flyer that describes the plants and their uses in herbal medicine.

continued on page 47
Over the past decade, herbalists have increasingly embraced the use of medicinal mushrooms in clinical practice. These members of the Fungi Kingdom offer many health benefits, and there remains much to be learned about them.

Some mushrooms, such as reishi (Ganoderma lucidum), turkey tail (Trametes versicolor), and maitake (Grifola frondosa) have undergone numerous in vitro, in vivo, and assorted human clinical trials.

These involve studies on the benefits of the fruiting body and mycelium, largely involving commercially-produced extracts.

Chaga (Inonotus obliquus), a sterile conk wildcrafted from birch trees, has gained increasing popularity over the past five years. The internet is replete with stories of incredible harvests, as well as numerous multilevel marketing companies claiming outrageous medicinal properties. It should be noted that there is not one human clinical trial yet published on this medicinal mushroom.

This demand for chaga has led to a feverish state of over-harvesting that may prove to be the ruin of an important health product. What is generally not appreciated is that the sterile conk, or living organism, is only found on one in 20,000 birch trees. Some readers will immediately react in denial, but the reality is chaga where found in a birch stand will often inhabit several trees in only that specific area. Other birch stands, infected with different medicinal mushrooms, such as tinder conk (Fomes fomentarius) and birch polypore (Polyporus betulinus), will not have populations of these valuable sterile conks.

Overharvesting chaga stands means that when the birch finally succumbs and falls down, the microscopic fertile fruiting bodies may not present themselves to release spores and infect another tree. This occurs during a short one- to two-day period of time and has rarely been witnessed. Without a source of the ability to reproduce, the chaga may quickly enter into a period of scarcity or extinction. Many herbalists will be thinking to themselves that they harvest sustainably and see so much chaga that this will never happen. I wish I shared their confidence. My herbal friend, Michael Vertolli has noted that over the past decade the chaga in forests of south and central Ontario is becoming a scarce commodity.

Another aspect about chaga is its widespread misuse in the natural health community. Ground chaga powder is found in nearly every health food store, raw food establishment, and new age café throughout North America.

The idea that this medicinal herb should be used as a general daily tonic has no validity in medicine or science. Like many herbs, it should be used when required, especially for difficult to treat auto-immune and cancer conditions, as well as adjunct therapy.

Traditional recipes for chaga involve a decoction, or slow boil, for a period of one to two hours or more followed by a twenty-four hour fermentation at a lower temperature. Why? We really don't know, but I suspect that readers who do fermentation will surmise what may be involved. This liquid can be preserved as a tincture so its efficacy remains for an indefinite period of time. It could well be that the optimal extraction of the medicinal properties of chaga involves a conversion of some compounds into others that are either more easily absorbed or increased in efficacy.

Chaga is being touted as a cure-all for various health conditions, including hormonal cancers, diabetes, and numerous conditions with minimal proof.

As an herbalist for over forty years, I have long used plant medicine successfully with little biomedical endorsement. In fact, I consider empirical evidence to be highly underrated in the scientific world, but can millions of people over thousands of years be misguided over herbal medicine?

Dubious claims abound about the anti-oxidant properties of chaga. This is based on the ORAC scale, or Oxygen Radical Absorbent Capacity test, a measure of the capacity of any food to measure the amount of free oxygen radicals they can absorb. More than one advertorial site on the web suggests one gram of chaga has an ORAC score of 36,557, compared to blueberries at only 24.5. This is
highly misleading and is simply a marketing tool. The values indicating anti-oxidant capacity have no relevance to the effects of specific bioactive compounds, according to a statement by the USDA.

Wild and cultivated chaga extracts vary a great deal in their chemical composition at the present time. I believe over time this particular issue will be addressed, and we can all benefit from sustainable, factory-produced extracts that undergo double-blind, placebo-controlled trials, thus placing chaga in its rightful place as an important natural medicine. Until that day I urge everyone to respect and appreciate this valuable resource and ensure its sustainability for now and the generations to come. I would strongly suggest chaga be placed, as soon as possible, on the United Plant Savers “To-Watch” List.

Robert Dale Rogers has been an herbalist for over 45 years and is a professional member of the AHG. He is an assistant clinical professor in family medicine at the University of Alberta and teaches earth spirit medicine at the Northern Star College.

He has authored over 40 books on plants and fungi of the boreal forest including The Fungal Pharmacy; The Complete Guide to Medicinal Mushrooms and Lichens of North America. His newest contribution, Mushroom Essences: Vibrational Healing from Kingdom Fungi will be released in July 2016 by North Atlantic.

Walker Mt. continued from page 45

Our two-year plan is to be open to the public at specific times throughout the year and to be a place of peace and sanctuary and of joy and learning for people of all ages—but especially for children. This land and its trees, creeks, and rivers are the inspiration for my own work as an artist, and I look forward to teaching both nature journaling and watercolor painting classes with the sanctuary and the plants as inspiration.

I am grateful to live among the plants that I study in my classes in herbalism and use as medicine. In creating a place of sanctuary and a protected place for the plants to grow undisturbed and honored, I sense that we are cultivating a deeper relationship with the land and with the plants themselves. It is our hope that a reverent and personal connection with the natural world will blossom in all who visit here.

As I write this, sitting close to the woodstove on a cold February day, an icy mist is drifting in the trees on the top of Walker Mountain, and snow is falling. I think of the ginseng and black cohosh and the bloodroot close by beneath the snow, full of the promise of growth and bud and leaf, waiting for the light and warmth of spring. I am filled with the anticipation of seeing the plants emerge, and by the promise of seeing our plans for Walker Mountain Sanctuary begin to take root and unfold.
Spring Grant Recipients

Many United Plant Savers members do not realize that not only do we seek out grants, donations, and other forms of funding, but we are also the source of funding for several community replanting projects each year in the form of The United Plant Savers Community Grants.

In order to qualify, grant proposals must come from a current UpS member, be community oriented and educational in nature, and there must be some return to United Plant Savers and our mission. This can be in the form of seeds, research results, or reporting of the project that could be of value to UpS and our members. For more specific guidelines please visit our Community Grant page.

United Plant Savers is grateful to have the opportunity to provide grant funding to these worthy projects, and we look forward to the 2016 Community Grant Program. Anyone interested in submitting a grant proposal for 2016 should visit the Community Grants page. And please consider becoming a member of United Plant Savers. These grants would not be possible without the generosity of our members.

This spring we are pleased to announce the recipients of our 2015 United Plants Savers Community Grants...

Luna Farm Herb Gardens and Botanical Sanctuary
www.lunaherbco.com

Krittine Brown, along with her partner Greg and their children will be using the UpS Community Grant to help fund the creation of a medicinal woodland native garden. They intend to use the garden to teach their community about the importance of sustaining and creating more woodland habitat and saving threatened native plants from extinction.

Herbstalk
www.herbstalk.org

Herbstalk is envisioning a garden project through which they create small urban container plantings of herbs in the Boston, Cambridge, and Summerville, MA region. These containers will serve aesthetic and educational purposes with the specific goal of building more awareness around medicinal plants. They will function as an extension of Herbstalk’s educational mission and will offer learning opportunities for the community.

Three Leaf Farm
www.threeleaffarm.com

Sara Martinelli’s Three Leaf Farm Nature Trail is used for teaching purposes in the many workshops and classes held at the farm. In 2013 Boulder County experienced one of the most damaging floods in recent history. The nature trail was completely wiped out, and Three Leaf Farm intends on using their UpS Community Grant to purchase medicinal plant material and seeds to reestablish the trail and the herbs they lost.

Old Ways Herbal
https://oldwaysherbal.wordpress.com

Juliette and Henry Carr intend to use the UpS Community Grant to create an educational botanical sanctuary to further their stewardship and preservation goals. The educational botanical sanctuary will be an important illustration of stewardship for their herbal and homesteading classes, farm education with local schools, and other community groups that use their classroom.

Great Parks of Hamilton County
Ohio/Glenwood Gardens Scent Garden
www.greatparks.org

Doug Stevenson and his staff at Glenwood Gardens had been searching for ways to improve the Scent Garden within its Highland Discovery Garden. Improving the Scent Garden will be an excellent opportunity for children to learn about plants for the first time and to have experiences that could instill a lifelong appreciation for the world around them.

Wild Ozark, LLC
www.wildozark.com

Wild Ozark is a newly-licensed ginseng nursery and information resource. They are working in conjunction with Peel–Compton Gardens of Bentonville, AR to install an instructional ginseng habitat. The project will benefit the community by offering a hands-on outdoor and indoor classroom experience for learning how to grow and steward American ginseng and its indicator plants. Wild Ozark’s owner, Madison Woods, looks forward to teaching people how to manage and tend virtually wild and wild ginseng in a sustainable, responsible way.
United Plant Savers Partners in Education program is designed to enrich school programming and students’ education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted 'student-friendly' price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: www.unitedplantsavers.org.

United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating 2015-2016 schools and programs:

**SAGE MOUNTAIN**  
East Barre, VT  
sagemountain.com

**MAGNOLIA CHILDREN’S SCHOOL**  
Glouster, OH

**FLORIDA SCHOOL OF HOLISTIC LIVING**  
Orlando, FL  
www.holisticlivingschool.org

**TWIN STAR HERBAL EDUCATION**  
New Milford, CT  
www.twinstarherbal.com

**MOCKINGBIRD MEADOWS ECLECTIC HERBAL INSTITUTE**  
Maryville, OH  
mockingbirdmeadows.com

**BOTANICA**  
New River, AZ

**HEARTSTONE CENTER FOR EARTH ESSENTIALS**  
Van Eten, NY  
www.heart-stone.com

**ARBORVITAE SCHOOL OF TRADITIONAL HERBALISM**  
New York, NY  
www.arborvitaenyc.com

**HERBAL ACADEMY OF NEW ENGLAND**  
Bedford, MA  
herbalacademyofne.com

**SACRED PLANT TRADITIONS**  
Charlottesville, VA  
sacredplanttraditions.com

**BASTYR UNIVERSITY HERBAL SCIENCES**  
Kenmore, WA  
www.bastyr.edu

**OWL CRAFT HEALING WAYS**  
Scottsville, VA  
owlcrafthealingways.tumblr.com

**SWEET HERB MEDICINALS**  
Ben Lomond, CA  
sweetherbmedicinals.com

**YERBA WOMAN HERBAL APRENTICE PROGRAM**  
Willits, CA  
motherlandbotanicalsanctuary.com

**NORTHWEST SCHOOL OF BOTANICAL STUDIES**  
Mckinleyville, CA  
www.herbaleducation.net

**HOCKING COLLEGE SCHOOL OF NATURAL RESOURCES**  
Nelsonville, OH  
www.hocking.edu

**VERMONT CENTER FOR INTEGRATED HERBALISM**  
Montpelier, VT  
www.vtherbcenter.org

**BLUE OTTER SCHOOL OF HERBAL MEDICINE**  
Fort Jones, CA  
www.blueotterschool.com

**GREENWOOD HERBALS**  
Limerick, ME  
www.greenwoodherbals.com

**CHESTNUT SCHOOL OF HERBAL MEDICINE**  
Weaverville, NC  
www.chestnutherb.com

**GREEN TURTLE BOTANICALS**  
Nashville, IN  
greenturtlebotanicals.com

**GREEN COMFORT SCHOOL OF HERBAL MEDICINE**  
Washington, VA  
greencomfortherbschool.com

**DANDELION HERBAL CENTER**  
Kneeland, CA  
www.dandelionherbs.com

**WINTERGREEN BOTANICALS EDUCATION CENTER**  
Allenstown, NH  
www.greengreenbotanicals.com

**HERBAL CONSERVANCY**  
**GREEN GIRL HERBS**  
Hopewell, NY  
www��ngirlherbs.com

**OMNIGREEN**  
Port Clinton, OH  
www.omnigreen.com

**MARYLAND UNIVERSITY OF INTEGRATIVE HEALTH**  
Laurel, MD  
www.muih.edu

**DAVID WINSTON’S CENTER FOR HERBAL STUDIES**  
Washington, NJ  
www.herbalsudies.net

**THYME HERBAL**  
Amherst, MA  
www.thymeherbal.com

**MISTY MEADOWS HERBAL CENTER**  
Lee, NH  
www.misty Meadows.org

**MILAGRO SCHOOL OF HERBAL MEDICINE**  
Sante Fe, NM  
milagroschoolofherbalmedicine.com
There is a strong message conveyed by plants interfacing with people where the extreme challenges of life necessitate clarity of purpose. Each plant has a reason for being here, like we do. Beacons of hope and sanctity in times of social and ecological distress, the plants continue to grow in the most difficult circumstances. They often show up to help at just the right moment, as evidenced in the following examples from my life with plants.

Dark fatty seeds from the cavernous pods of the cacao (*Theobroma cacao*) tree, prepared for women after childbirth and convalescing patients to restore blood and strength.

Moringa (*Moringa oleifera*) trees in Port Au Prince, Haiti still producing verdant, nutritious leaves despite the surrounding rubble from the earthquake. Rich flavored rosehips and still rampant juicy nettles of late November which fed me while I wandered my paternal ancestors’ village in Slovakia.

The tart and sweet combination of raw, local apple cider vinegar and honey, known for the energy it imparts to the mountain people of Vermont. Fresh neem (*Azadirachta indica*) leaves we farmworkers mashed into a compress for our co-worker’s severe midsummer sunburn in Puerto Rico. Bright colored turmeric (*Curcuma longa*) and cayenne (*Capsicum frutescens*) powder paste spread across my forehead lump, and the fresh harvest of dark purple grapes I chewed simultaneously, after sustaining a mild concussion. Smokey-scented datura (*Datura* spp.) leaves Maya healer Ms. Beatrice applied to my lower back with castor oil to soften the injured muscles.

Eucalyptus (*Eucalyptus* spp.) branches we used for bathing one another after a long day of treating lung infections in the mobile naturopathic clinic in Haiti. The eucalyptus leaves my granny used when she cupped her children in Nairobi, Kenya, and Goa, India. Eucalyptus facial steam administered to me in Giza, Egypt after coming in from the cold desert wind.

Using traditional knowledge in our everyday life is so easy. Yet there are so many barriers in Western culture that divide us from our bodies and from nature.

In the words of Susan Leopold, “If we protect areas that are intact, then that vitality can spread out and heal those areas that have been damaged.” I love this statement and believe it applies to every ecosystem: a body, a neighborhood, our planet.

How does social justice relate to plant healing, conservation, and gardening? Plants teach me to decolonize. They show me how to be in solidarity. I am conscious of leveraging my unique set of privileges for social justice and ecological restoration. We can support movements for peace and justice as human allies with herbal allies. We are botanically minded ambassadors in the community taking action. By contributing even in the smallest of ways, the accumulative power we have creates hope and becomes unstoppable.

The plants need us to safeguard their homes and invite in more stewards. Let’s find sacredness in asphalt or a toxic spill-covered shoreline. Each place has a spirit and an essence. Many places of pollution are home to people surviving systematic oppression and environmental disasters.
We members of UpS know that preserving our native and medicinal plants has a meaning and outcome that is more than meets the eye. From new sanctuaries, ancient ways are remembered, pollinators return, wildlife is fed, soil is replenished, and community is nourished. Sanctuary can be cultivated absolutely anywhere. Close your eyes and envision a place in your community where you can see the potential for healing force awakening. Let the spirits of the plants flow through you to manifest something beautiful. Go for it! It’s the one-on-one connections that make big powerful changes in subtle ways.

The outcome of medicinal plant projects at the community level can be much greater than we might imagine. They are a gesture of peace and an act of healing we can’t contain. There is a ripple effect that is beyond any one of us but is part of each of us.

Add pollinator herbs to your office’s corporate landscaping. Start a first aid garden at your city park or public school. Educate Main Street merchants and their customers by planting a native medicinal trail downtown. Bring an anti-stress tea blend to share at your work place. Create sanctuary in the neighborhood by letting a shared area go wild again. Pass around rose elixir at your dear one’s funeral. Bring lavender spritzer to your friend’s room at the hospital. Offer garden space to a refugee family. Give herbal support to the local #BlackLivesMatter group. Find out which plants your own ancestors ingested and prayed with, and integrate them into your life. The small things are the big things.

Sandra Lory has explored grassroots activism for 15 years through photography, community gardens, food, natural farming, traditional healing, and folkloric medicine. She was a chef at Sage Mountain Herbal Retreat Center for a decade. Currently she is a clinical herbalist, cupping therapist, and food justice educator, who co-stewards a ten-acre family farmstead in Orange, Vermont. MandalaBotanicalsVT.com

We inter-breathe with the rainforests, we drink from the oceans. They are part of our own body.

-Thich Nhat Hanh
GREEN THANKS & GRATITUDE

Thank You For Your Generous Contributions & Support

We extend a special thank you to all members of UpS who continue to support us with memberships and donations. Your support, efforts and concern are the only thing that can really make a difference in the protection and conservation of our important medicinal plants. All donations and help, whether it be organizational, cultivating, educating or choosing medicinal herb products more consciously are appreciated. Great gratitude goes to the many in-kind donations of goods and services from companies and friends that support our work. Thank you to all our supporters and members who continue to rally for the plants.

Founding Donors: $50,000+

Judy & Michael Funk
Aveda
Paul Strauss

2015 Donations of $5,000+

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Sara Kalz
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International Herb Symposium

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Vincent Franco
Corporate Members Program

I Corporate members have a unique opportunity to educate their customers about issues surrounding the sustainable supply of our native medicinal plants. More information about the corporate member program is on our website.

21 Drops
Delray Beach, FL
www.21drops.com

Alchemists Lab
Costa Mesa, CA
www.alchemists.com

Ancient Order of Druids in America
Cumberland, MD
www.aoda.org

Aspen Herbals
Baker, MI
www.etsy.com/shop/AspenHerbals

BioPharm Herbal Lab
Bensalem, PA
biopharmherbaltesting.com

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www.bluebirdherbal.com

Botanical Plantations
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botanicalplantations.com

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www.extension.ohio-state.edu

Health & Wisdom Inc.
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Angelina Organic Skincare
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angelinaorganic.com

Boline Apothecary
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bolineapothecary.com

Jade Bloom
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www.jadebloom.com

Johnston Chiropractic Health & Wellness
Hot Springs, AR
www.thebackninja.com

Mountain Run Farm
Big Island, VA
mountainrunfarm.com

Kroeger Herb Products Company
Boulder, CO
www.kroegerherb.com

LearningHerbs.com, LLC
Carnation, WA
www.learningherbs.com

Loess Roots
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loessroots.com

Mama Jo’s Sunshine Herbs
Indian Harbor Beach, FL
www.mamajos.com

M & J Dog Essentials
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www.mjdog.com

MoonMaid Botanicals
Cosby, TN
moonmaidenbotanicals.com

Mountain Rose Herbs
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mountainroseherbs.com

New Chapter, Inc.
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www.newchapter.com

Northica Media
Winnipeg, MB, Canada
www.northican.com

Oliver Shores Company
Santa Ana, CA
www.olivershores.com

Oshala Farm
Grants Pass, OR
www.oshala.com

Red Moon Herbs
Ashville, NC
redmoonherbs.com

Sacred Moon Herbs
Dripping Springs, TX
sacredmoonherbs.com

Sacred Plant Traditions
Charlottesville, VA
www.sacredplanttraditions.com

Sage Mountain Retreat Center
F. Barre, VT
www.sagemountain.com

Starwest Botanicals
Sacramento, CA
www.starwestbotanicals.com

Sunflower Natural Foods
Laconia, NH
www.sunflowernh.com

The Kelly Gallery
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thekellygallery.com

Traditional Medicinals
Sebastopol, CA
www.traditionalmedicinals.com

Urban Moonshine
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www.urbanmoonshine.com

Vitality Works, Inc.
Albuquerque, NM
www.vitalityworks.com

Way Out Wax
North Hyde Park, VT
www.wayoutwax.com

West County Herb Company
Occidental, CA
www.westcountyherb.com

Wild Carrot Herbals, LLC
Enterprise, OR
www.wildcarrotherbals.com

Wise Woman Herbals
Creswell, OR
www.wisewomanherbs.com

WTS Med Inc.
Montpeller, VT
www.wtsmedinc.com

Zack Woods Herb Farm
Hyde Park, VT
zackwoods.com
Herb Events 2016

Brewing with Non-Timber Forest Products with Marc Williams
May 7
UpS Sanctuary Rutland, OH

Birds & Herbs: Forest Walk
May 14
UpS Sanctuary Rutland, OH

Appalachian Beginning Forest Farming Program Events
Growing Appalachian Forest Botanical for Market
June 4 in Pine Mountain, KY
and
June 8 in Quicksand, KY

Planting the Future
Seven Arrows Farm
June 18
Seekonk, MA

Growing At-Risk Appalachian Forest Botanicals for Market
featuring Mountain Rose Herbs
June 25
Rutland, OH

29th Annual New England Women’s Conference
August 26 – 28
Newfound Lake, NH

Chesapeake Herbal Gathering
September 24 – 25
Waldorf, MD
www.centroashe.org

American Herbalists Guild (AHG)
27th Annual Symposium:
Connecting to Our Roots
September 29 – October 3
Seven Springs, PA

6th Annual Mid-Atlantic Women’s Herbal Conference
October 1 – 2
Kempton, PA
www.womensherbal.com

Southeast Wise Women Conference
Oct 14 – 16
Black Mountain, NC

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Feb 24 – 27, 2017
Camp La Llanada
Lake Wales, FL

Please Save the Date
13th International Herb Symposium
June 9th – 11th, 2017
Wheaton College, Norton Massachusetts

WITH KEYNOTE SPEAKER
Wade Davis, Anthropologist/Ethnobotanist
Wade Davis is a Professor of Anthropology and the Leadership Chair in Cultures and Ecosystems at Risk at the University of British Columbia. He served as Explorer in Residence at the National Geographic Society and was named as one of NGS’s Explorers for the Millennium. He has been described as “a rare combination of scientist, scholar, poet and passionate defender of all of life’s diversity.” Davis has authored 19 books, including The Serpent and the Rainbow and One River.

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American Ginseng

Trillium

Osha

Slippery Elm

Goldenseal

Bloodroot

Lady’s Slipper

Wild Yam

Frontier Co-op

Sage Mountain

Black Cohosh

Echinacea

New Chapter

Sandalwood

Our Newest Member!

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Adopting an “AI-Risk” healing herb is your five year commitment to sponsor your adopted herb’s page on UPS’s website. The web page will include your logo, a brief description of your organization, and any relevant information you provide. The web page will be regularly updated with current research towards the conservation and propagation of your adopted healing herb. Your adoption fee also helps fund the many programs which fulfill the mission of United Plant Savers.

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PLANTING THE FUTURE

Conference

Seven Arrows Farm
Seekonk, MA

Saturday
June 18, 2016
9:00 am – 4:00 pm

Workshops Include:
Growing “At-Risk” Medicinals & Their Analogs in the Northeast with Jeff Carpenter
Connecting with the Spirits of the Plants with Melanie Carpenter
Traditions not Trademark, Get Fired up with Fire Cider! with Mary Blue

Local Invasive Plants as Valuable Allies with Susan Clements
Restoration for Yourself & the Landscape with Todd Lynch
The work of United Plant Savers and how we source our Medicine!

Please Register at www.unitedplantsavers.org

Cost
UpS Member: $45
Non-Member: $65
Ticket plus a UpS Membership: $70
Lunch is extra & ordered at registration

United Plant Savers
PO Box 776
Athens, OH 45701
www.unitedplantsavers.org
Journal of Medicinal Plant Conservation
A United Plant Savers Publication

Saving a Sacred Fertility Herb...
False Unicorn Root

How We Protect Trillium

The Yerba Mansa Project

Community Herb Clinics

Distinguishing Black Cohosh
from Look-alikes

Race, Rights and Research
in Caribbean Ethnobotany

IUCN Meeting

Ethnobotany in Laos,
the Roots of Culture

Chamaelirium luteum
WE HAVE LOTS OF WORK TO DO!

By Susan Leopold

This year’s Journal cover featuring false unicorn (Chamaelirium luteum) comes with a very important message. The herbal industry can reformulate, but plants cannot. Currently false unicorn root is selling for $277.83 a pound on Bulk Apothecary, and it even graces the shelves of Walmart. This spring advertised paid prices to diggers are around $30 green/wet and $90 for dried false unicorn root. This is a plant that we do not know how to cultivate to meet commercial demand at this time. The seeds can be germinated, and plants can be purchased from reputable native plant nurseries, but attempts to grow false unicorn root on a commercial scale have failed thus far. This is a very slow growing plant, and there is still much to learn about the plant’s current populations in the wild and its reproductive biology. The alarming concern is that diggers are being paid $5 per pound for green goldenseal root and $26 for dried root (advertised on Facebook). I share this as a means to compare the current value of another wild harvested root known to have declining populations. The only other plant being paid more to diggers is Virginia snakeroot (Aristolochia serpentaria) at $100 per pound dried weight. Compare this to trillium (Trillium spp.), which diggers sell to dealers for around $3.50 per pound for dried root/bulbs and black cohosh (Actaea racemosa) root at the same price. My point is that false unicorn is sold for such a high price because it is not easy to find, and it is not abundant when you do find it. I can only wonder if this red flag is our last warning sign that our most sacred fertility herb is disappearing from our forests. We hope that by sharing our concern we can bring awareness to how we can use the “At-Risk” Tool, as well as the network of United Plant Savers to curb the demand and bring awareness to natural product companies that they can reformulate, but once false unicorn is gone, that is it!

We are working towards refining our “At-Risk” Assessment Tool to bring more clarity to the consumer and the herbal industry. We plan to include a “No Pick/No Use” third category, hoping to send a clear message to the herbal industry to lay off these plants unless they are cultivated. We have also identified those plants on the “At-Risk” and “To-Watch” list that are now tagged to be reviewed and rescued. These plants have further been rated by highest priority, top priority, and mid priority and are now listed in our Journal next to our “At-Risk” and “To-Watch” plants on page 9. These plants have been tagged for review because we are concerned about their increased use in the herbal trade and/or decline due to disease. We are looking to inform the scoring of the plants by gathering the most current data on wild populations and tonnage in trade. We are also intending to score a list of plants that have come to our attention. We are also setting a clear...
protocol for an annual review process and a way to be more timely and effective when reviewing plants. We encourage our membership to share concerns with us, and if you are interested in helping us conduct research or review plants, reach out to us.

The herbal industry is growing at a rate much faster than the slow growing forest botanicals. And only a handful of companies are conscientious about the conservation of wild plants. In each state where the Department of Natural Heritage monitors rare plants and reports to Nature Serve and where plants are ranked at a state and global level. In most cases they are a decade behind in reporting. A ranking of a medicinal plant that is in high demand such as false unicorn based on data that is over a decade out of date can be extremely misleading to the realistic stability of its future in the wild.

Two international plants featured in this Journal, hombre grande (Guassia amara) and bitter kola (Garcinia kola) also represent forest botanicals that are in high demand both as folk medicine and in the international market place. Garcinia kola of the Guttiferae family was listed as vulnerable under the IUCN redlist in 1998 and evaluated again in 2004. Found in the rainforests of West Africa and used extensively in folk medicine, as well as to inhibit the growth of Ebola, bitter kola is an immune booster and antiviral. Maurice Iwu of the Bioresources Development and Conservation Program in Nigeria, who has won awards for his research on bitter kola states, "When the healer does not know what is wrong, the drug of choice is an extract of Garcinia kola". One can imagine the increase in its popularity among the general population in Africa. How do we keep up with conservation work in regards to important medicinal plants in times of crisis as Nigeria and many African nations are in the midst of conflict, famine, and massive migration of refugees? Harvesting the fruit of bitter kola is very sustainable—its limitation is that it is very tricky to germinate, which is the focus of the article in the Journal. Quassia amara, also known as strong man, can be very sustainably managed, as you can coppice the understory shrub. This is an amazing plant to grow in a permaculture setting and an extremely relevant medicinal that is for the most part harvested from wild populations. Spreading the word on how to encourage the forest farming of this critical forest medicinal demonstrates not only economic opportunity but also forest conservation.

The two most significant stories to emerge this year that I want to share with our membership are the State of the World’s Plants, produced by Kew Botanical Gardens and The Great American Stand: US Forests and the Climate Emergency, produced this year by the Dogwood Alliance. These two studies combined provide the most updated perspective on what is happening both on a global and local scale in regards to plant biodiversity. The big message is that we need to take action in how we manage our botanical resources, not just to curb the rapid rate of biodiversity extinction, but also to see the forest as our best solution to carbon storage, essentially the solution to the climate crisis that we are facing.

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The Kew’s State of the World’s Plants released in 2016 is now going to be annually reported and in collaboration with a global network of researchers to continue to track and provide up-to-date botanical data. This is a huge and vital undertaking. The report cites 391,000 vascular plant species known to science, and reports on the 2,034 new plant species that were discovered in 2015. The red flag in the study is that 21% of global plant species are threatened with extinction at this time according to the IUCN red list criteria, in large part due to loss of habitat.

We can look outside of our own geopolitical borders and feel helpless about the rapid conversion of wild lands in the tropics especially, but the Dogwood Alliance’s study on American forests points out a very real global double standard.

“When farmers burn forests for palm plantations in Indonesia, it is deforestation—but when landowners clear-cut forests in the U.S. for pine plantations, it is sustainable? Somehow, crossing country lines changes the meaning of landscape-wide degradation.”

(Moomaw and Smith, 2017)

The study is extremely important because it points out the dramatic conversion of biodiversity-rich forest ecosystems that were once large carbon sinks and providing important ecosystem services due to our outdated forestry practices and management protocol of our most treasured and important resource. The study further points out that “Protecting mature, high-biomass forests and remaining old forests, allowing young forests to mature, and halting the conversion of natural forests to plantations may solve many of our current forest carbon problems” (Moomaw and Smith, 2017).

What is most important to understand from the study is that not only are the old-growth and mature forests the keepers of the highest densities of carbon, they are also where our most “At-Risk” forest dwelling medicinal plants call home. Essentially saving “At-Risk” medicinal plants by protecting their habitat is also the most critical solution to our climate crisis; sadly it is the old growth and more mature forests that are most vulnerable to logging.

We can shift this paradigm and change the way we perceive and manage our forests. Richard Evans Shultes’ monumental book, The Healing Forest has taken on a new meaning for me. As we face our most serious global crisis, not only are the forests our solution, but also the source of our medicine. We have work to do!

United Plant Savers is now an official voting member of the IUCN, which has been the international voice for conservation and manages the RED LIST. We attended, presented, and participated in the Conservation Congress that happens every five years.

This year I spoke at the Free Herbalism Project, hosted by Mountain Rose Herbs. I spoke about the deeper message that medicinal plants bring to us through their stories. I shared the importance of sacredness in regards to sandalwood (Santalum album), the ecology of osha (Osha spp.) and other high altitude medicine, and the teacher of bringing back balance through our most valued adaptogen, ginseng (Ginseng spp.). This talk is a podcast you can listen to from the Free Herbalism website. I also gave a talk at the Center for Agroforestry at the University of Missouri. Tom Newmark provided the keynote talk, Health Planet, Healthy Lives: Making the Case for Medicinal Plants in Agroforestry, and I presented on Medicinal Plant Conservation: Sanctuaries, Outreach, and Forest Farming. You can watch both these talks featured on the center’s website.

I traveled to Standing Rock, and for me it was a reminder of how sacred landscapes have guided humanity. We are living in a time when nothing is sacred anymore. It is no coincidence that the Cannonball River, home to the naturally formed spherical balls, became the location for the largest gathering of native people to happen in recent history. The land is sacred, and Standing Rock is now the birthplace of bringing the sacredness back. The herbal clinic at Standing Rock and the outpouring of the herbal community to rise into action in the midst of activism speak to the power of plants to show up and bring us all together.

This year’s Journal signifies the role of medicinal plants in healing the landscape through the ever-growing network of Botanical Sanctuaries both here in the U.S. and the Sacred Seeds international network. We are observing the rapid growth in the natural products industry, but we are not witnessing a rapid growth in consciousness when it comes to conservation. We need to work together to ensure that herbalism is not just about healing ourselves, it’s also about building a community of activism and raising consciousness in these critical times. We need all hands-on deck. We have work to do!


Full report www.dogwoodalliance.org/forests-climate
www.stateoftheworldsplants.com for full Kew report and updates
www.centerforagroforestry.org
http://www.centerforagroforestry.org/events/symposia.php for video of presentations
https://info.mountainroseherbs.com/free-herbalism-project-fall-2016 for podcast link
DISTINGUISHING BLACK COHOSH FROM LOOK-ALIKES
by Karen Johnson Heeter1, Laura Price2, and Sunshine Brosi, PhD3,
1Graduate Student, 2Undergraduate Student, 3Associate Professor
Ethnobotany Program, Frostburg State University, Frostburg, Maryland, USA

Figure 1. Leaves of black cohosh (Actaea racemosa) on the left and two look-alike species, mountain bugbane (Actaea podocarpa) (middle) and doll’s eye (Actaea pachypoda) (right) for comparison. A. racemosa: Leaflets do not overlap each other and terminal leaflet sinus is approximately ½ the length of the entire terminal leaflet. A. podocarpa: Leaflets, with cordate bases, overlap one another and terminal leaflet sinus is greater than ½ the length of the entire terminal leaflet. A. pachypoda: Leaflets do not overlap one another and terminal leaflet sinus lacking or is less than ½ the length of the entire terminal leaflet.

Black cohosh (Actaea racemosa L., Ranunculaceae), is an herbaceous, medicinal plant found within the understory of rich, moist woods throughout North America (Foster, 1999; Strausbaugh et al. 1978). Its native range runs from Maine to Florida to as far west as Iowa. As an endemic species, it contributes to the richly diverse ethnobotanical history of Appalachia, being used for a broad range of ailments. The Algonquians, Cherokee, and Iroquois used the rhizome for hives, kidney troubles, backaches, constipation, colds, and rheumatism (Hamel and Chiltoskey 1975; Mooney & Olbrechts 1932; Speck 1917). Today, the rhizomes are primarily harvested for their commercial value as dietary supplements, which are typically used for menopausal complaints, such as hot flashes (Chamberlain et al., 2013; Verbitski et al., 2008; Shou et al., 2011).

Annual market values establish black cohosh as one of the top ten selling herbal supplements in the U.S., and such high demand raises concerns about the sustainability of massive-scale wild harvesting (Blumenthal et al., 2011; Qiu et al., 2014; Foster, 2013). Annual harvests of black cohosh can equate to as much as 500,000 pounds in dry weight per year, 97% of which is being sourced from wild habitat (Greenfield & Davis, 2003; Davis & Persons, 2014; American Herbal Products Association, 2000, 2003).

Black cohosh is critically imperiled in Mississippi, Massachusetts, and Illinois, where it is also state listed as endangered (NatureServe, 2017; Massachusetts List of Endangered, Threatened and Special Concern Species, 2015; Checklist of Illinois Endangered and Threatened Animals and Plants, 2015).

Wild harvesting proposes a particular health threat as supplements may be cross-contaminated with other species. For instance, DNA sequencing used to analyze black cohosh supplements found that 3 out of 7 capsules tested did not contain any black cohosh DNA (Hamly et al. 2015). One supplement contained a species native to China (Actaea brachycarpa (P.K. Hsiao) J. Compton), while another contained only rice DNA (Hamly et al. 2015). In addition, several species of North American Actaea are easily mistaken for black cohosh. These include mountain bugbane (Actaea podocarpa D.C.), Appalachian bugbane (Actaea rubifolia (Kearney) Karstesly), doll’s eye (Actaea pachypoda Elliott), and red baneberry (Actaea rubra (Aiton) Willd) (Upton, 2002).

Mountain bugbane has a native range that runs from Pennsylvania to Georgia to as far west as Illinois. It is typically found at high elevations on western slopes of the Allegheny Mountains (Strausbaugh et al. 1978). It is listed as endangered in Illinois, imperiled in Maryland, and vulnerable in Pennsylvania, West Virginia,
and Georgia (NatureServe, 2017; Checklist of Illinois Endangered and Threatened Animals and Plants, 2015). Mountain bugbane is often found under eastern hemlock (Tsuga canadensis L. Carrière), which is facing declines due to the hemlock woolly adelgid (Adelges tsugae), an invasive insect (Evans & Gregloire, 2007). This poses an additional threat of overstory habitat loss.

Appalachian bugbane is also typically confined to western slopes. Its native range runs from Illinois to Alabama to as far east as Virginia (Strausbaugh et al. 1978). This species is imperiled in Illinois, Kentucky, and Virginia and critically imperiled in Indiana (NatureServe, 2017). Appalachian bugbane is also experiencing declines throughout its ranges due to habitat fragmentation (NatureServe, 2017).

The native range of doll’s eye, a look-alike that is toxic, runs from Minnesota to Florida to as far west as Nebraska. It is listed as imperiled in Louisiana and critically imperiled in Delaware, Oklahoma, Kansas, Nebraska, and Florida (NatureServe, 2017). The unintentional harvest of doll’s eye is concerning because all parts of the plant are toxic when ingested and can cause vomiting, diarrhea, and seizures (Dirckx, 1991).

Red baneberry has an expansive range and is found in many of the western, lower 48-states. It is listed as vulnerable in Pennsylvania and Illinois and imperiled in Ohio and Indiana (NatureServe, 2017). Red baneberry is also toxic, especially for children, and ingestion can lead to severe gastroenteritis or death. (Dirippo 1987; Johnson et al. 1995; Turner, 1997).

Florals focus on separating these species based on reproductive characteristics which may not be present on every plant or at the time of harvesting. Vegetative characteristics separating these species can be found on Figure 1 and Table 1. Black cohosh has the distinction of non-overlapping leaflets, unlike mountain bugbane. The terminal leaflet sinus of mountain bugbane is also greater than ½ the length of the terminal leaflet, unlike black cohosh or doll’s eye. Black cohosh also has a smooth basal stalk, without the groove found in mountain bugbane. The ability to distinguish these species from leaf characteristics may aid in the conservation of species of concern as well as benefit public health due to reducing contamination.

Works Cited
Table 1. Distinguishing Characteristics of Black Cohosh and its Look-Alikes

<table>
<thead>
<tr>
<th></th>
<th>black cohosh</th>
<th>mountain bugbane</th>
<th>Appalachian bugbane</th>
<th>doll's eye</th>
<th>red baneberry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Height with racemes</strong></td>
<td>up to 8 ft.</td>
<td>up to 6.5 ft.</td>
<td>up to 5 ft.</td>
<td>up to 2.5 ft.</td>
<td>up to 3 ft.</td>
</tr>
<tr>
<td><strong>Basal Stalk</strong></td>
<td>no groove; slender; terete;</td>
<td>grooved; deep, broad, sometimes darkened along groove</td>
<td>no groove; stout at base, becomes narrower towards the summit</td>
<td>terete; no groove; narrow</td>
<td>no groove; usually branched 2-3</td>
</tr>
<tr>
<td><strong>Leaflets</strong></td>
<td>20 or more leaflets; cuneate, rounded, or subcordate base; 3 prominent veins arising from base; leaflets do not overlap and terminal leaf sinus is about 1/6 length of entire terminal leaflet;</td>
<td>20 or more leaflets; deeply cordate base; 3 prominent veins arising from base; leaflets do overlap and terminal leaf sinus is more than 1/4 length of entire terminal leaflet;</td>
<td>3-5 leaflets; maple-like, deeply cordate base; 5-9 prominent veins arising from base; leaflets do not overlap and terminal leaf sinus is more than 1/4 length of entire terminal leaflet;</td>
<td>20 or more leaflets; cuneate, rounded, or subcordate base; major veins arising from base; leaflets do not overlap and terminal leaf sinus is less than 1/2 length of entire terminal leaflet;</td>
<td>generally cuneate, rounded, or subcordate to cordate base; leaflets may or may not overlap; terminal leaflet sinus is less than 1/2 length of entire terminal leaflet;</td>
</tr>
<tr>
<td><strong>Flowers</strong></td>
<td>racemes elongated, ovate; ovate; over 1/2 ft. long; 12-35 in.; stamens present; 1-2 carpels, sessile; 1 pistil, sessile</td>
<td>racemes elongated, 6-12 in. long; stamens present; 1 carpel, sessile; 1 pistil, sessile</td>
<td>racemes compact; less than 1 ft. long; stamens present; 1 carpel, sessile; 1 pistil, sessile</td>
<td>racemes compact; less than 1 inch long; stamens present; 1 carpel</td>
<td>racemes compact; ovate; 2-4 in. in length; stamens present; 1 carpel</td>
</tr>
<tr>
<td><strong>Flowering Time</strong></td>
<td>May-Aug</td>
<td>July-Sept</td>
<td>Aug-Oct</td>
<td>Apr-May (Early bloom)</td>
<td>May-July</td>
</tr>
<tr>
<td><strong>Fruit Type</strong></td>
<td>Dry; ovate, firm-walled follicles; pale green to dark brown, dehiscent, 1/4 to 1/2 in. long</td>
<td>Dry; flattened, papery follicles; pale green to light brown; &quot;beaked&quot;; 1/2 in. or longer</td>
<td>Dry; thin-walled, follicles; pale green; &quot;beaked&quot;, 1/4 to 3/4 in. long</td>
<td>Fleshy; globular berries, white; attached to thicken, red pedicels; 1/4 to 1/2 in. long</td>
<td>Fleshy; ovate, glossy berries; attached to slender, pale green pedicels; 1/10 to 1/2 in. long</td>
</tr>
<tr>
<td><strong>Rhizomes</strong></td>
<td>vascular tissue in a central 3.4, or 5 armed cross or star</td>
<td>lunate bundles of vascular tissue with circular arrangement</td>
<td>vascular tissue lacks thickly knotted structure</td>
<td>vascular tissue in a central 3.4, or 5 armed cross or star</td>
<td></td>
</tr>
</tbody>
</table>

Information from (Rhoads & Block, 2007, Strausbaugh et al., 1978, and Weakley et al., 2012)
Tessa’s work focuses on the interpretation of the botanical world. As a naturalist, wildcrafter, and horticulturalist, she is inspired by both the living wild and the lovingly cultivated. Taking form as an illustration, a basket, or a landscape, plants may be both the subject and object of her work. Illustration is one medium for her to tend her native curiosity and connection. She finds that in the process of translating morphology onto paper, a particular kind of familiarity becomes available with the characters and patterns of the natural world.

Tessa has a BA in Natural History from Sterling College and is a past intern of United Plant Savers. She currently lives in central Vermont, where she works in horticulture and native plant conservation and studies at the Vermont Center for Integrative Herbalism.
“AT-RISK” & “TO-WATCH” LIST

STATEMENT OF PURPOSE

For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers, and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UPS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

“At-Risk”

AMERICAN GINSENG
Panax quinquefolius
BLACK COHOSH
Actaea (Cimicifuga) racemosa
BLOODROOT
Sanguinaria canadensis
BLUE COHOSH
Caulophyllum thalictroides
ECHINACEA
Echinacea spp.
EYEBRIGHT
Euphrasia spp.
FALSE UNICORN ROOT
Chamaelirium luteum
GOLDENSEAL
Hydrastis canadensis
LADY’S SLIPPER ORCHID
Cypripedium spp.
LOMATIUM
Lomatium dissectum
OSHA
Ligusticum porteri, L. spp.
PEYOTE
Lophophora williamsii
SANDALWOOD
Sanalum spp. (Hawaii only)
SLIPPERY ELM
Ulmus rubra
SUNDEW
Drosera spp.
TRILLIUM
Trillium spp.
TRUE UNICORN
Aleuris farinosa
VENUS’ FLY TRAP
Dionaea muscipula
VIRGINIA SNAKEROOT
Aristolochia serpentaria
WILD YAM
Dioscorea villosa, D. spp.

“To-Watch”

ARNICA
Arnica spp.
BUTTERFLY WEED
Asclepias tuberosa
CASCARA SAGRADA
Rhamnus purshiana
CHAPARRO
Castela emoryi
ELEPHANT TREE
Bursera microphylla
GENTIAN
Gentiana spp.
GOLDTHREAD
Coptis spp.
KAVA KAVA
Piper methysticum (Hawaii only)
LOBELIA
Lobelia spp.
MAIDENHAIR FERN
Adiantum pendants
MAYAPPLE
Podophyllum peltatum
OREGON GRAPE
Mahonia spp.
PARTRIDGE BERRY
Mitchella repens
PINK ROOT
Spigelia marilandica
PIPSISSEWA
Chimaphila umbellata
RAMPS
Allium trioccum
SPIKENARD
Aralia racemosa, A. californica
STONEROOT
Collinsonia canadensis
STREAM ORCHID
Epipactis gigantea
TURKEY CORN
Dicentra canadensis
WHITE SAGE
Salvia apiana
WILD INDIGO
Baptisia tinctoria
YERBA MANSAS
Anemopsis californica

“In-Review”

HIGHEST PRIORITY: RESCORE NOW
SLIPPERY ELM
Ulmus rubra
GOLDENSEAL
Hydrastis canadensis
FALSE UNICORN
Chamaelirium luteum
BLACK COHOSH
Actaea racemosa
TOP PRIORITY: IN THE NEXT YEAR
SPIKENARD
Aralia racemosa, A. californica
CASCARA
Frangula purshiana
BLOODROOT
Sanguinaria canadensis
VIRGINIA SNAKEROOT
Aristolochia serpentaria
TRILLIUM
Trillium spp.
BLUE COHOSH
Caulophyllum thalictroides
WILD YAM
Dioscorea villosa
MID PRIORITY: IN THE NEXT 2 YEARS
LOMATIUM
Lomatium dissectum
OSHA
Ligusticum porteri
ECHINACEA
Echinacea spp.
BUTTERFLY WEED
Asclepias tuberosa
STONEROOT
Collinsonia canadensis
YERBA MANSAS
Anemopsis californica
MAYAPPLE
Podophyllum peltatum
PARTRIDGE BERRY
Mitchella repens

Requested To Score

INDIAN PIPES
Monotropa uniflora
CHAGA
Inonotus obliquus
WILD CHERRY
Prunus serotina
SOLOMON’S SEAL
Polygonatum biflorum
YAUPON
Ilex vomitoria
WILD GERANIUM
Geranium maculatum
SAVING A SACRED FERTILITY HERB...
FALSE UNICORN ROOT

Dalene Barton-Schuster, CH, Doula

One of the most popular fertility herbs we are asked about is false unicorn root (*Chamaelirium luteum*). I think it is now time to highlight false unicorn root’s healing powers, but shed light on why we do not promote use of this herb.

Both Native Americans and skilled midwives have used this herb for hundreds of years. It is native to North America, but grows best in eastern Canada and the United States. Because of its popularity and the human desire to profit, this herb is now threatened. In fact, wild harvesting of this herb is pushing it ever closer to the endangered list. This herb goes by many names; Helonias (more popular in Europe), blazing-star, devil’s bit, and sometimes fairy wand.

Out of all of the North American territory where false unicorn root grows, the southern area from Florida to Mississippi has the greatest potential for cultivation of this herb. As this herb became marketed and sold in greater quantities, it began to rapidly decline. This plant is prized for the rhizome (root), that once harvested does not grow back. Cultivated false unicorn beds across the U.S. have shown little to no results in regrowth of the rhizome, which despite great effort is a little discouraging for potential marketing. One farm that has had some good results in cultivating this plant is Horizon Herbs in southern Oregon.

In 2001 alone, wildcrafted (harvested from the wild) false unicorn root sold for $35-$50 a pound, with annual sales of $700,000. That was 13,500 pounds of the rhizome wild crafted in one year. In 2003, this herb was selling for up to $65 a pound. As demand grows, so does the price. The continued decline of this herb drives the price up as well, making the herb more and more difficult to find. Today most medicinal botanical companies have stopped purchasing this herb for their products.

**Actions As A Fertility Herb**

False unicorn root has been touted as the perfect herb for helping to regulate menstruation, as well as prevent miscarriage; this may have been what has contributed to its decline. This herb is mentioned regularly across many forums for women’s fertility health. It is an herb frequently asked about in online communities which makes me wonder where women are even hearing about it. I am part of many forums on women’s fertility and in spite of this plant’s fate, I still see women not only asking about it, but recommending it, or suggesting that other women learn about it. We need to be clear up front that while this herb may have beneficial healing properties for fertility issues, it is a plant that is struggling.

For hundreds of years this herb has been used for women with recurrent miscarriages related to uterine and cervical weakness. It has also been used to heal women with uterine prolapse (where the uterus comes through the cervix into the vaginal opening). There was a case report that showed that when given a tincture of false unicorn root every hour during threatened miscarriage, bleeding and cramping were stopped, while human chorionic gonotropin (HCG) levels rose. False unicorn may also be valuable in aiding women with low to no cervical mucous, as well as women with amenorrhea (absent menstruation). It is very helpful when there is stagnation of the uterus or ovaries present; some signs of this can be dark, sluggishly, clotty menstrual blood.

This root has been shown to work in the body by interacting with estrogen receptor sites of the hypothalamus. It is said to increase estrogen, aiding the ovaries in releasing a mature egg at ovulation. False unicorn root overall has not been studied that much. It may seem that this herb sounds perfect for you, but in reality there are a variety of other wonderful herbs with similar actions that may be just as effective. *Tribulus* (*Tribulus terrestris*), vitex or chastetree berry (*Vitex agnus-castus*) and *dong quai* (*Angelica sinensis*) are some examples of fertility herbs with similar actions. As for aiding in prevention of recurrent miscarriage, partridge berry (*Mitchella repens*) is a great alternative.

**Making Smart Choices When Choosing Herbs for Healing**

False unicorn root should only be used under the supervision of a skilled herbalist, naturopathic physician, or midwife. It also should only be chosen when all other herbs have failed to produce desired results and has been prescribed by a qualified herbalist, ND, or midwife. If one of these practitioners suggests you use this herb or a formula containing this herb, be sure to ask them...
where this herb was sourced, meaning where did it come from? If they say it was wildcrafted, ask if there is another herb that could be used in place of this plant.

I am proud to say that Vitanica, makers of Pregnancy Prep and Fern Rebalance, which is formulated by Dr. Tari Hudson, ND, has modified those formulas that once contained false unicorn root. They now contain maca (Lepidium spp.)

Our world is always changing. Modernized societies are taught to consume all resources available, without much understanding about balance and sustainability. Because of over harvesting of false unicorn root and many other popular medicinal herbs, the threatened plant species list is growing. Before choosing any medicinal herb or herbal blend, first research each individual herb. Be sure that the plants were ethically wildcrafted or grown organically. As I said before, if an herb that you use often or are interested in is on the threatened, “At-Risk”, or “To-Watch” list, ask an herbalist or ND in your area for good alternatives.

Dalene Barton-Schuster is an herbalist residing in Marble, Colorado. She started her herbal medicine journey in the year 2000, under the guidance of Lynn Albers at Yarmony Mt. Herbal College. She was Senior Herbalist for The Natural Fertility Company for seven years, after which she became the creative inspiration behind her own herbal medicine practice and Earth Medicine Collective. Dalene has a deep connection to plants and their medicine.

References
THE YERBA MANSA PROJECT: COMMUNITY-DRIVEN NATIVE PLANT RESTORATION IN THE RIO GRANDE BOSQUE

By Dara Saville

Riparian habitats are among the most altered and endangered ecosystems (Brinson et al., 1981; Crawford et al., 1996), creating concern for native riparian plant communities. This is particularly true in the arid American West, where water is carefully allocated, rivers often run dry, and floodplain vegetation is disconnected from water sources. Additionally, flood control measures, modern development, invasive non-native plants, and climate change converge to threaten native plant populations. The Rio Grande Bosque is one such mosaic of ecosystems, home to a diverse collection of native medicinal plants, including the iconic yerba mansa (Anemopsis californica) and matriarchal cottonwood (Populus tremuloides) trees. Watson (1908 & 1912) noted that yerba mansa and cottonwoods alternated as the dominant plants, and yerba mansa created an expansive “turf”. Currently, these plant communities are in decline as cottonwoods relent to more drought tolerant species such as salt cedar (Tamarix spp.) and Russian olive (Elaeagnus angustifolia), and yerba mansa’s wetland habitats become scarce. During the last 150 years the Rio Grande Bosque has seen a 60% replacement of the entire system with agriculture and urban development, river flows decreasing to 1/6 of their historic levels, large-scale reduction in channels and wetlands, the invasion of many non-native species, increased wildfires, and dramatic decline in the reproduction of native keystone species (USACE, 2003).

In areas where large-scale restoration work is underway, there are opportunities for native plants to rebound. Many of these projects, however, do not engage in effective replanting of native species or long-term monitoring of vegetation recovery (Follstad-Shah et al., 2007). I saw an opportunity to restore yerba mansa and other native plants in the Rio Grande Bosque where large-scale restoration work to create new wetland habitat was completed by the US Army Corps of Engineers (USACE) years earlier. Native plant diversity was, nevertheless, low in the new wetlands, and non-native plants covered significant areas of prime habitat. This is how the Yerba Mansa Project (YMP) was born. The YMP is an all-volunteer, community-driven native plant restoration and education project undertaken with the support of managing government agencies (City of Albuquerque Open Space and USACE) on public lands within the Rio Grande Valley State Park. In order to sustainably implement such a project it has been essential that we engage in efforts that identify, organize, and enact change in collaborative and replicable ways. The following methodology used by the YMP provides one example of a citizen-driven restoration project on public lands.

1. Evaluate habitats
Choose a place you love that is a reasonable distance from your home and visit it often. Find out what research or restoration work has already been done and consult with knowledgeable people in the area. Document observations about the plant communities and compare to historical surveys.

2. Outline a problem
What specifically can be done to make a difference for the native plants in the selected habitat? Will the existing conditions (e.g., amount/proximity of water) allow for viable restoration?
3. **Engage with management agencies**
Identify and establish relationships with individuals at managing government agencies. There may be multiple agencies with which contact should be made.

4. **Collect data**
Identify what plants could be successful additions to the existing native plant community and specific locations where they are most likely to thrive. Collect baseline data to enable periodic evaluation and long-term monitoring of your work.

5. **Form a plan and write a proposal**
Write a plan outlining specific methodology and goals. Submit to the appropriate agencies for approval.

6. **Organize volunteers and cultivate partnerships**
Reach out to your community through like-minded businesses, organizations, institutions, or environmental groups to recruit volunteers. Form supporting partnerships by becoming more actively engaged where you live. Make a website so people can learn about your project and progress.

7. **Enact your plan**
Start doing what you planned to do. Plan and promote your first event.

8. **Collect more data and evaluate your work**
Return regularly to the restoration site. Document observations, collect new data, and compare results to the baseline.

9. **Adjust your plan based upon results**
What have you learned from your work so far? Revise your plan as needed to overcome unexpected problems or improve methodology.

10. **Repeat this process**
Restoration of native plants is a long-term experimental process. Continue to learn, increase community outreach, and conduct careful fieldwork.

If we dream of living in a place with healthy plant communities, we can actively make that happen. Community-driven restoration projects are one way to protect and revive the native medicinal plants we love. The first two field seasons of the YMP (700 field service hours) have produced a dramatic reduction in non-native ravenna grass (Sacccharum ravennae), recovery of native plants, reestablishment of yerba mansa through live planting, reseeding native grasses and medicinal forbs, collection of baseline GIS data, ongoing educational outreach, and the establishment of a collaborative community project.

*Dara Saville is the Founder of the Albuquerque Herbalism bioregional herbal studies program and the Director of the Yerba Mansa Project, an all-volunteer organization to restore native plants and provide educational outreach. She has a Bachelor’s degree from New York University, a Master’s degree specializing in Geography of the Southwest from the University of New Mexico, and is a graduate of Dr. Tieraona Low Dog’s Foundations of Herbal Medicine Program. Dara is also a regular columnist for Plant Healer Magazine, a board member of the Native Plant Society of NM Albuquerque Chapter, and has many years of resource management and fieldwork experience for the National Park Service.*

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**References**


HOW WE PROTECT TRILLIUM
by Susan Leopold, PhD

The adoption of trillium (Trillium spp.) by Mountain Rose Herbs is wonderfully symbolic of the power of the triad found in the leaves, petals, and sepals of the wildflower loved by so many. On a personal level the trillium links the conservation passion of yet another three entities that have deeply touched my life and so many other plant lovers: Mountain Rose Herbs, United Plant Savers, and Rosemary Gladstar. Rosemary founded Mountain Rose Herbs to supply the California Herb School and is also the inspirational force behind United Plant Savers. As a guiding light of herbalism, she reminds us all to think of how we can return the favor to help the plants that endlessly help us.

Medicinal Use
Trillium, most commonly known as bethroot, has been used historically for helping bring on contractions to aid in birth and as a uterine tonic to help stop bleeding. Trillium erectum is the species that is historically referred to for medicinal use. It has a dark red flower and a unique smell that attracts carrion flies as its pollinator. There is also its rich folklore as a love potion, which makes sense for the passion it elicits in plant lovers. Wake-robin and whip-poor-will flower are also wonderful common names that came about because the trillium bloom with the return of the birds and the peak time for the sound of the whip-poor-will call into the dusk. Trilliums are an essential and iconic spring ephemeral.

Conservation Insight and Overview
When I first moved to my farm 17 years ago, I researched what endangered plants were near me since I was at the time interning at the Virginia Department of Natural Heritage. I learned that there was a documented population of Trillium cernuum, listed as Imperiled in the state of Virginia, and I was eager to find it and protect it. (Imperiled = At high risk of extirpation from the state due to very restricted range, very few populations, often 20 or fewer, steep declines, or other factors.) Later I discovered that Trillium cernuum was the first trillium specimen sent to Europe, and in 175 Linnaeus named the genus Trillium (trilix, Latin for three). Linnaeus would also name T. erectum and T. sessile. Various botanists would name the remainder of the genus, but certainly T. catesbaei would be attributed to my favorite plant explorer and botanical artist, Mark Catesby. We take for granted these early plant explorers that documented medicinal plant uses and natural history knowledge through their connections with native people. It is this knowledge that would inform the eclectic herbalism movement based on the rich native medicinal species found so abundantly during the 1700s and into the 1800s. The flora of the Appalachian region was noted back then and confirmed today as biodiversity hot spot (the most diverse temperate region found on the planet) and uniquely rich in a plethora of medicinal plants. Trillium represents that diversity once you dig into how its genus is expressed in its various forms; thus you gain a deeper understanding of what trilliums can teach us about endemic populations and awareness for critical conservation.

Alan Weakly, Director of the UNC Herbarium prepared a lecture for the Mt. Cuba Symposium entitled “Ecology and Biogeography of Trillium in Eastern North America: Where are the Trillium and Why are they there?” It provides an excellent overview and is available online.


Noted from Weakly’s research is that the Eastern U.S. is the mecca in regards to Trillium diversity with endemic regional species representing relictual populations; this refers to populations that presently occur in a restricted area but whose original range was far wider during a previous period. With that in mind there are currently 65 taxa globally recognized; 53 are in North America (42 in the east and 11 in the West), and 12 are found in Asia. It is clearly remarkable the diversity found in the southern Appalachian region with Georgia being the most blessed state with 22 species of trillium.

As the south has an abundant diversity of these small endemic populations, the northeastern region has
fewer population but with much larger distribution, such as the T. grandiflorum. This species I know well because just a few miles from my farm is the G.R. Thompson Wildlife Management Area. This is the largest and densest population found in the United States. It is the premier wildflower destination for native plant enthusiasts who travel to see the spring display that has been estimated to have 18 million individual trilliums within two square miles along the famed trillium trail that is adopted by the Virginia Native Plant Society. Near the preserve there is constant development taking place, and I have organized several plant rescues of trillium, cohosh (Actaea spp.), bloodroot (Sanguinaria canadensis), yellow lady’s slipper (Cypripedium parviflorum), wild ginger (Asarum canadensis), wild yam (Dioscorea villosa), and other natives that I have then brought back to my farm and planted. Each time I see the orange marking tape I am deeply saddened that there is little to no process for ecological assessments when developments are considered and that the value of these sensitive disappearing native plants is often overlooked. This is compounded by the fact that states have few resources to fund botanical fieldwork to even accurately document or monitor plant species. Each state has a Department of Natural Heritage, which then collectively shares data with Nature Serve, a national database for biodiversity and endangered species. You can search the Nature Serve website by species to see its conservation status at the state and global level.

Deep Disconnect Between the Medicinal Plant Trade and Native Plant Nursery Trade

I see a deep disconnect on so many levels when it comes to plant conservation of native medicinal plants from Appalachia, and trillium particularly. I have painstakingly dug trillium’s small rhizomes/bulbs. It takes time and care as they are very small (the size often of a gumball), and that bulb could easily be older than I am at 42. In Appalachia root buyers pay .60 cents a pound for fresh root and 4.00 dollars a pound for dry bulbs cut down the middle (noted advertised spring 2016 prices). Who would dig these precious bulbs for so little? It must take around 50-75 bulbs to make a pound. Can you imagine what a wild population being dug to make up say even 10 pounds looks like? That would be nearly 500 wild trillium, and this is being sold for $40.00. Then you have those in the native plant community that propagate these plants via seeds/divisions and sell trillium for around 5 dollars for an individual plant. This is the paradox that plants harvested from the wild for the medicinal plant markets have little to no value, but yet in the native plant nursery trade for the home gardener they do. These two cultural contexts operate in two completely different paradigms within the same region. I further want to make the point that it is in the southern Appalachia region where these trillium are still dug for the medicinal plant trade, and this is also where there is the southern sessile (without stem) species, especially those of limited distribution, that are the most vulnerable. Our duty is to ensure the perpetuation of these plants in the wild by minimizing collection from the wild. Commercial production via seed is making propagated plants available, and tissue culture is just around the corner, but the price points will never compete with wild collected plants sold at pennies on the dollar. Though historically it is T. erectum most notable for medicinal value, it seems trilliums are dug indiscriminately in the wild trade from the region with the most vulnerable species.

Though the wild harvesting is an issue, it is drastically compounded by the loss of habitat to development and resource extraction that is devouring our native plants, and in the case of trillium, the over-population of deer also deeply impacts the plant’s populations. The threats are coming from all angles, and I would like to highlight those efforts towards conservation and research.

Trillium Conservation and Gardens


Mount Cuba, located in Delaware is a public garden and research center for native plants. They have a trillium trail with a diverse collection and conduct research on propagation, seed dispersal and ecological relationships of native plant communities.
A book is available online that covers the trillium collection and research. [http://www.mtcubacenter.org](http://www.mtcubacenter.org)

Cottage Lake Gardens in Washington State is a repository of trillium diversity, as they have 48 species, nearly every species found in North America. This is the passion of one dynamic couple’s vision, Kevin and Susie Egan. You can visit the gardens or stay at their B&B that they operate. [http://cottagelakegardens.com/thegarden.aspx](http://cottagelakegardens.com/thegarden.aspx)

**How to Be a Plant Saver**

What can we do? Trillium should not be used in the commercial medicinal plant trade and for this reason Mountain Rose Herb does not sell trillium and has partnered with United Plant Savers through our Adopt an “At-Risk” Plant Program. The financial support from Mountain Rose Herbs helps UpS continue our outreach and educational efforts. I also encourage you to become a member of United Plant Savers. We are a membership organization, and it is our membership fees that allow us to continue this work.

If you have land and want to grow trillium, learn about your regional diversity and buy from a reputable native plant nursery that sells propagated plants. United Plant Savers has a Botanical Sanctuary Network that anyone who is passionate about native medicinal plant conservation can join. You can go online to our interactive map to read about sanctuaries in your region. One such sanctuary is the Trillium Center in Ohio ([www.trilliumcenter.org](http://www.trilliumcenter.org)). I have watched this sanctuary grow in its mission over the years. I love their logo as it shows the ant dispersing the trilliums seeds, noted for the seeds that have an alisome (a small fatty food that the ants love to eat). To stop and think about a fly or a bee pollinating the flower and a single ant carrying a trillium seed just a few feet and that seed germinating over the next two years, and then seven years before it flowers, eventually creating a trillium population over the next 100 years, and that population having its own variation perhaps taking a 1000 or so years, leading to a region where you can now find over 40 different species going back in time to 11,000 years ago when parts of the region were covered in advancing glaciers and species were forced into refuge, that has left us these pockets of unique diversity.

Meditating on the thousands of years of ecological interactions that create the composition of native plant communities places our role in this moment in time as vitally important. Right now we are holding the future of these fragile plants in our hands and, as Rosemary reminds us, they are asking for our help; they are asking for us to give back; and we need to be a collective voice for the love potion. So aptly named bethroot, its medicine for me is now a deep metaphor for birthing a movement of plant conservation. As herbalists we need to be healing the earth as we heal ourselves.

**ANALOGUES:** Wonderful alternatives to trillium as an astringent for the female reproductive system are raspberry leaf and motherwort.

**Resources:**

- [http://www.goldsword.com/sfarmer/Trillium/](http://www.goldsword.com/sfarmer/Trillium/)

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**AMERICAN TRILLIUM SPECIES LISTED AS ENDANGERED, THREATENED OR VULNERABLE**

**SESSILE:**

- Trillium decumbens — Tennessee
- Trillium discolor — North Carolina
- Trillium lancifolium — Florida, Tennessee
- Trillium parviflorum — Washington
- Trillium recurvatum — Michigan
- Trillium reliquum* — Georgia
- Trillium sessile — Michigan, New York
- Trillium viride — Illinois, Michigan

**Pedicillate:**

- Trillium cernuum — Illinois, Indiana, New York, Ohio, Virginia
- Trillium erectum — Illinois, New York, Rhode Island
- Trillium flexipes — Maryland, New York
- Trillium grandiflorum — Maine, New York
- Trillium nivale — Kentucky, Michigan, Pennsylvania, Wisconsin
- Trillium persistens* — Georgia
- Trillium pusillum — Kentucky, Maryland, North Carolina, Tennessee
- Trillium rugelii — Tennessee
- Trillium undulatum — Kentucky, Michigan, New York, Ohio

*Trillium persistens and T. reliquum are both listed as endangered under the Endangered Species Act. This is the most critical designation, meaning the plant is in danger of extinction.
PROFILE OF COMMUNITY HERB CLINICS

By Atlanta Duncan

Community herb clinics are spaces of resilience, resistance, and support in a bleak and tumultuous climate. Herbalists are standing up to give support for direct action at Standing Rock and during Black Lives Matter demonstrations, as well as in the wake of tragedies like the Pulse nightclub massacre and the Ghost Ship fire in Oakland.

I spoke with several inspiring herbalists and organizers who create and participate in grassroots systems of healthcare.

FARMACY HERBS

Mary Blue is an herbalist/social justice activist based out of Providence, Rhode Island.

Blue’s work includes organizing Radical Herb Gatherings in the northeast, running the community apothecary and farm at Farmacy Herbs, speaking on a panel at the UN on women’s health, doing plant walks at the prison, running a sliding scale herbal clinic, and putting together a health justice training program for herbalists and alternative healthcare providers.

During our conversation, Blue discussed the benefits of staying in one place in order to build cross-cultural connections within the community, doing one thing well before moving on to the next, and giving generously through free classes and herbal donations.

How do you support your community through herbalism?

BLUE: “Herbs are a non-toxic preventative way of healing. Herbs are cheap; you can grow them yourself, creating more accessibility for pretty much anybody who wants them. It’s choosing medicine that supports my health but also planetary health.”

“There is a lot more than just herbs. If your community is a diverse community, you need to learn different skills to interact with that community, and that is understanding where other people are coming from, language, understanding history, and generational trauma. We weave that kind of stuff into the program. You can’t be a community herbalist for a diverse community without at least thinking about those ideas. It’s about building trust in a community—staying in one place, being consistent, doing free classes, the sliding scale clinic that’s on an honor system, neighborhood discounts. We offer services that are accessible. It’s all through word of mouth.”

How have you been taking action this year in supporting various communities in resistance?

BLUE: “Pretty much if we hear a call for herbs we send it immediately. We sent a ton of stuff to Standing Rock. It’s big boxes of herbs that you send out in the world and hope it gets used and doesn’t get confiscated. We had a couple people come back who had been at Standing Rock and had gone to the clinic and used our herbs, and an herb student came back with a photograph of our herbs in the clinic. We did a fire cider action, trying to get folks to send fire cider to Standing Rock. We sent herbs to Ghost Ship and to Black Lives Matter [demonstrations]. There has been a great outpouring of support from the herbal community.”

Blue uses social media, Facebook, and Instagram to keep current on calls for donations. Blue recommends checking lists of needed supplies on social media before sending odds and ends from the apothecary.

Blue is currently working with Tradition Not Trademark, which aims to protect commonly owned herbal names and recipes from trademarking, and is working with Lauren Giambrone of Good Fight Herbs on an up-to-date Health Justice training manual for herbalists and healthcare providers.

FUNDRAISING

Grassroots fundraising gets money and supplies to support community and pop-up clinics, with money going directly into the hands of the people that need it most. Fundraisers have taken the shape of community events such as concerts, poetry readings, film screenings, dance parties—some with large turnouts and generous donations. It’s not a revolution if you can’t dance.
Jessaca Ann, a social justice organizer and co-founder of the Racial Justice Collective in Port Angeles, Washington, put on fundraisers in our area after the Pulse shooting and to raise funds to support a caravan of indigenous activists traveling to Oceti Sakowin to participate on the ground at Standing Rock.

Can you speak to fundraising on the Olympic Peninsula?

ANN: “Fundraising is something that I learned to do out of necessity. It has been a lot of trial and error, especially living in a small community. One thing that I have learned is that small town folk have big hearts and tend to show up in a face to face way that is sometimes harder to get in a city setting (though you might have more turnout in general in a city, it’s about the proportion). Having that face-to-face interaction seems to be important.”

“When fundraising this year for the Pulse Orlando shooting victims and families, I organized a poetry reading and music show. These were special events where the community came together to support folks far away and ended up supporting themselves in the process. People were able to gather in a room, in safe space and see the faces of their community, and it was really special. My expectations were exceeded both in warmth and support as well as financially. I was surprised to see that not only was the collective sum of funds raised more than I had expected but individuals were making donations larger than I had anticipated folks would give.”

Can you tell us about your experience working with the healers at Standing Rock? What were some of the challenges in organizing support and getting donations of supplies?

ANN: “I was moved to raise funds and gather donations after seeing volunteers working tirelessly, literally around the clock, at this very important protest/protector camp. Herbalists had come from all over the country to keep people well. Some were doctors, nurses, massage therapists, energy healers, and more. Some stayed for months on end, making a temporary home and some came for short visits at a time.”

“There was an overwhelming amount of herbal donations. There was an abundance of common herbs like nettles, chamomile, lemon balm, etc. and sometimes shortages of the less common medicinal. One of the biggest challenges in getting donations for the Wellness tent was just getting the most current supply lists out to the greater public. It was difficult for those on the outside to know what the current needs were because the needs fluctuated, and communication between camp and the outside is challenging due to lack of phone service, electricity, and time to make such communications. One of the biggest needs was actually for glass jars! Herbalists were making individualized decoctions and teas for people, and they just needed something reusable to drink out of. They also needed (still need I’m sure) glass jars of varying sizes to safely store the herbs, as some donations were coming in paper bags and such. Another need was dropper bottles so that they could make bulk glycerites (no alcohol at camp) and give them out in individual bottles.”

“The herbalists were able to support protectors in a way that many people were coming in for ailments they had not had access to care for outside of camp. It was really cool to see people getting that care, having someone listen and take care of them in a way that our western system does not allow for (assuming the person had access to healthcare at all in the first place). The most common issues people were getting care for were stress and anxiety, colds and flu, maintenance of chronic conditions, minor injuries, and then as time went on, injuries as a result of police violence: pepper spray, trauma from rubber bullets, hypothermia, etc.”

COMMUNITY CLINICS ON THE ROAD AND IN THE SOUTH

Larkin Diem has been traveling with an apothecary in her backpack, offering herbal medicine to communities around the country, including at the Stone Cabin Collective that supports the Dine (Navajo) and with the Healers tent at Standing Rock. Larkin bases out of the South, also working at free herb clinics in Atlanta and rural Tennessee.
DIEM: “There was an overflowing abundance of herbs donated to the Standing Rock movement. It was really beautiful to see all the donations pouring in daily. I ended up working the herbal medic space at Red Warrior Camp, an indigenous direct action group that formed together during the Standing Rock movement. Once I introduced myself and made myself available for herbal support at Red Warrior Camp, I was non-stop busy blending and brewing. There had been a big need for herbal medicine, and there were a lot of herbs available in the main camp; they just weren’t all getting to the people. People expressed their enthusiasm and gratitude to connect with the plants, and also gratitude for a non-white space to seek medical attention. It’s important to remember there’s a lot of serious trauma around the colonization of medical care, and we need to prioritize creating spaces that feel comfortable for the people we are offering services to.”

Describe your work with the Stone Cabin Collective. What services do they provide?

DIEM: “The Stone Cabin Collective is another all-volunteer group of herbalists, massage providers, acupuncturists, energy workers, and lay people that offer free health services in the Big Mountain/Black Mesa area of Arizona. This started as a solidarity-not-charity project in support of the Dine (Navajo) people of tilaback Mesa as they continue to resist massive coal and uranium mining operations and for those affected by the forced relocation policies of the US government. We organize two Elder Wellness Weeks a year, in the spring and fall offering foot baths, acupuncture, herbal consultations, and body work each day at a different Chapter House or Senior Center in the Big Mountain/Black Mesa area.”

How is the collective working to break down colonial models in healthcare?

DIEM: “The Stone Cabin Collective aims to break down colonial models by following indigenous leadership and taking time before clinics to learn some of the local protocol and etiquette to show respect to the hosts. The group holds space outside of clinic for collective discussions on decolonization and what it would look like for the clinic to shift into a majority or all indigenous-run clinic if that was locally desired. It’s important to make time between all the clinic work to prioritize discussions on decolonization and what that looks like in the work we provide.”

What’s going on with the Herbalista Free Clinic in Atlanta?

DIEM: “The Herb Carl project is going on its 3rd year now. We have been providing holistic health services for people who don’t have great access to healthcare in the Atlanta area. We have held pop up clinics alongside Food Not Bombs in Woodruff Park, as well as at the local Catholic Worker House during the hours they open for free meals and showers. We didn’t have to put the word out about our services so much; we just showed up where people already gathered around food. We also host the Herbalista Community Health Fair once a month, offering free herbal consultations, body work, acupuncture, classes, and tea throughout the day. The free clinics are partially fueled by Herbalista’s Grow-A-Ro project and Pay it Forward Medicine Making Workshops. The Grow-A-Ro project hooks up with local farmers to provide the clinic with donations of sustainably grown local herbs, while a lot of the medicine used in the free clinics is prepared in the Pay it Forward Medicine Making Workshop and all funds go right back to operating clinic.”

Can you talk about the Med Shed at Ida, a queer land project in rural Tennessee?

DIEM: “The Med Shed itself was built at a work party a couple of years back, and now it serves as a medic station for Ida’s gatherings. Ida is home and refuge for the radical queer community, and it feels good to run a free clinic for queers, by queers. In the queer community, like in black, indigenous, and people of color communities, there has been a lot of trauma around getting medical care. It feels good to be able to create a safer space to share medicine and empower one another.”

Atlanta Duncan is a community herbalist from Rhode Island currently living on the Olympic Peninsula in Washington. She makes herbal medicine and shares her knowledge and resources within her queer community, grows medicinal herbs, and engages with health empowerment and justice on a personal and social level. She studied at The Evergreen State College and at Farmacy Herbs in Rhode Island and is largely self-taught. She is also in a punk band called Johnny Ointment. You can contact her at avantgardens@yahoo.com.
Appalachia is the hot spot for medicinal plant diversity – yet our botanical wealth is disappearing. The history of folk medicine in Appalachia has taken many twists and turns. Once a sacred tradition, the respectful harvesting of medicinal plants has now evolved into a dire situation for many species due to habitat loss, over-harvesting of remaining populations all compounded by the economic challenges of the region.

Our 360-acre botanical sanctuary, the first center to be placed under state and federal conservation easement for the protection, research and education of at-risk medicinal plants of the Appalachian region, is host to one of the richest concentrations of native medicinal plants in Appalachia. It is the destination for teaching best practices in plant conservation, land management, and community action for environmental and social causes.

With education and outreach at the core of our mission, the United Plant Savers board recognizes the need for a center at our Botanical Sanctuary in Rutland, Ohio that can host small conferences and have a resource library, teaching kitchen, herbarium, and office.

United Plant Savers is the only organization of its kind advocating for the conservation of native medicinal plants and a model for Native Medicinal Plant-based economic redevelopment. The UpS Sanctuary is a sister sanctuary to Finca Luna Nueva and a part of the Sacred Seeds Sanctuary Network.

The forest floor cries for the bounty that once blanketed it and yearns for the love of its keepers. Stand with us for the plants that heal the land and heal the people as we grow the forest farming collective of native Appalachian medicinal plants, and build The Center for Medicinal Plant Conservation.

The Medicinal Plant Conservation Center is to be dedicated to Jim and Peggy Duke, a couple that has touched the lives of many in the herbal community and who have each in their own way given endlessly to further our collective knowledge of our green pharmacy.
Some of the key building features:

- Expandable classroom for our wide variety of educational programs.
- Commercial kitchen for use as a teaching apothecary.
- Medicinal plant library for use by interns, the local community, and visitors.
- Herbarium for the historical, scientific, and cultural preservation of this very diverse native flora.
- Historical educational display of the region’s rich history of wild botanicals.
- United Plant Savers office.
- Eco-designed at every turn, including roof-mounted solar panels, and structural lumber salvaged from dying ash trees on the Sanctuary.
- Culturally complementary: design is based on the vernacular of the country store, typical of rural Ohio.

A few of the many benefits:

- Increase visitor access and programs.
- Create financial sustainability at the sanctuary.
- Supply forest farmers and sanctuaries with native medicinal plants propagated on site.
- Gift shop featuring locally made botanical products.
The mission of United Plant Savers is to preserve, conserve and restore native medicinal plants and their habitats of the USA and Canada while ensuring their abundant, renewable supply for future generations. To this end, United Plant Savers established one of our most important projects: the Botanical Sanctuary Network. As we became more deeply involved in the complexities of medicinal plant conservation, we realized that one must first preserve and protect the habitat in which our native plant communities thrive.

Benefits of becoming a member of the Botanical Sanctuary Network include:

- A beautiful sign (metal w/yellow and green lettering) with the UpS logo on it to place at the entrance to your Sanctuary signifying this as a UpS Botanical Sanctuary
- Priority Consideration for UpS Community Grants. Our Community Grants award $200-$500 dollars for community projects involving at-risk plant restoration and preservation. Sanctuary members are given first priority.
- Two weatherproof signs that designate the property as a Sanctuary being used for plant research and educational purposes.
- Botanical Sanctuary Resource Guide which includes where to order botanical signs for medicine trails, sources of grants and funding raising, useful books and information sources, etc.
- Listing on the UpS Website and social media channels.
- Opportunities to promote classes and workshops at your Sanctuary on our website and social media channels.
- Opportunities to publish your Sanctuary story on our website and in our annual Journal of Medicinal Plant Conservation.

WASABI SPRINGS
BOTANICAL SANCTUARY
Barnardsville, NC
Sanctuary Stewards: Jennifer Bass and Jon Hampton

Four years ago in the evening’s darkness, we ascended a frighteningly steep driveway on the search for land and home to buy. Our truck’s headlights skimmed across magnificent white umbels, and I declared to my husband, Jon, “There’s angelica growing all along the driveway! This house might be the one!” Indeed it was. Later we would find a dense patch of goldenseal (Hydrastis canadensis) just five feet off the driveway and a couple of four prong ginseng (Panax quinquefolius) plants growing out of gravel just a foot from the pavement. We would discover next spring that the bloodroot (Sanguinaria canadensis) unfurls and flowers through the gravel that sits alongside our paved driveway, extending up our north facing mountain throughout the rich, wet, shady coves. These plants called us here to help them flourish, to spend days hiking all over the mountain, filling our pockets with juicy red ginseng berries to eat, stratify, and plant. We enjoy harvesting the above ground parts of the sang after the berries have ripened to hide the plants from poachers and to enjoy the leaves and stem as tea. Our plan is to never dig the roots of our preexisting or planted sang, but to instead enjoy the above ground medicine. The multitude of gifts our forest sanctuary provides is the
center of our daily tasks. It is a tremendous journey to share together a lifetime of enhancing, caretaking, and learning from our land. Four years in, I have never felt so content with the way my life unfolds each day.

Named “Wasabi Springs”, our Botanical Sanctuary resides twenty-five minutes north of Asheville, NC and a couple minutes to the east of the small and magical town of Barnardsville. We named our land for our ongoing project of planting wasabi (Wasabia japonica) in our natural cold mountain springs. Our twenty-five acres are all forested except for approximately an acre that was all grass yard around our home. What was once grass is now organic guilds of fruiting trees and bushes, medicine, flowers, and vegetables. Some of my favorite plants we grow in the garden include Tibetan gentian (Gentiana tibetica), sea kale (Crambe maritima), sea buckthorn trees (Hippophae rhamnoides), aronia (Aronia melanocarpa), Chinese licorice (Glycyrrhiza uralensis), New Jersey tea (Ceanothus americanus), codonopsis (Codonopsis pilosula), false unicorn root (Chamaelirium luteum), grindelia (Grindelia robusta), and gourni (Elaeagnus multiflora). The forest was last logged about 75 years ago, and the very top of the land was never logged. Those ancient old growth trees call us to make the trek to the top to celebrate birthdays and anniversaries while marveling at the large patches of ramps (Allium tricoccum), trilliums (Trillium spp.), blue cohosh (Caulophyllum thalictroides), and black cohosh (Actaea racemosa) with many sightings of wild yam (Dioscorea villosa) and stoneroot (Collinsonia canadensis). The majority of our property boundary is with Pisgah National Forest, and the Big Ivy River flows below our home. Mount Mitchell, the tallest mountain east of the Mississippi River, is six miles away as the crow flies, and our homestead is around 3,000 feet in elevation.

While most homesteaders seek out bottomland that is south facing, we continue to revel in the gifts of north facing forest. The list of benefits is long for us, but it includes mind-blowing biodiversity, perfect cool summer weather, the ideal habitat to grow goldenseal, ginseng, and so many other “At Risk” medicinals and long lasting snow to go tracking in. We do have an unusual northern situation because our house and garden sit almost at the top of a ridge and receive full sun, with an open western view extending for thirty miles. To the north, Tharp Mountain looms large above, sheltering us from the northern winds. Our land extends onto the southern facing side of our ridge, which we explore, finding very few of our favorite rare medicinals. North facing mountains are so under-appreciated!

As I write nestled between our Maine Coon cats, pregnant with our first child, snow is moving sideways across the sky, and my husband is finishing up collecting the fourth cord of firewood for next winter, our heat source for the house and the hot tub. During the winter months, I like to create paintings of the plants and sit around the wood stove with dear friends, sewing brain tanned buckskin into backpacks and purses. We discuss our gardens for next year, swap forest management strategies, and share seeds; these connections inspire each other. Being in a community of other land stewards, herbalists, and homesteaders is a deep gift Barnardsville, NC holds.

As we pass by our botanical sanctuary sign each time we return to our home, gratitude for all those who have worked to create and support United Plant Savers, preserve our “At-Risk” medicinals, and teach future generations flows from our hearts. The community that is created in our lives by sharing our medicinal plants as they multiply, teaching and learning the intricacies of these plant beings, and celebrating the seasons together continues to expand my hope for the future of our species. The healing we receive from humble years of weeding, mulching, planting, chopping wood, digging out the springs, and making medicine is a source of power, fulfillment, and endless good times. I must say that life has never been as satisfying as these last four years together on Wasabi Springs.

“”

We need the medicine; it’s part of our ecosystem.

—Lori Quesinberry,
Bearz Mountain

“”
The UpS mindset changes everything. It all starts simply enough. And since you’re reading this journal, you know what we mean. One day, you make a straightforward statement like, “I want to grow and source plants ethically.” And the next day, you’re making a hundred choices about how to make that happen.

At Herb Pharm, we’ve been tackling these issues for almost 40 years. What started in the soil with sustainable growing practices has spread all over the farm. Because once you’ve decided to preserve valuable plant species for generations to come, it’s natural to look at the rest of your ecosystem with the same point of view.

We started with some of the smallest things on our farm, the pollinators. Herbs co-evolved with the creatures that pollinate them. Indeed, each of our herbs has a specific pollinator that helps it propagate—skipper butterflies for our yarrow, swallowtail butterflies for our echinacea, etc. So we decided to do what we could to support these insects, bats, and birds on our farm.

Nature thrives on diversity. So we make our farm as diverse an ecosystem as we can. Depending on the year, we grow 70-75 species of herbs. As you walk through our fields, you can hear the buzz and see the tiny movements in the soil, up the stem, along the leaves, and in the air around you. A single plant may create a habitat for three or five or eight different insect species.

We increase that diversity by growing an additional 500 species in a garden on our farm. We make sure to include night-blossoming plants to support moth and bat populations. We even have bat houses on our property to create a safe habitat.

Our harvesting methods change as well. We cultivate all our crops through the flowering stage to provide food to the pollinators. Our plants go through the full cycle from seed to flower. Yes, we harvest many flowers for our products. But many others, like angelica or marshmallow, we cultivate solely for their root. For those, we maintain their floral growth, rather than mow it to the ground. We let our pollinators eat all summer then we harvest the roots in the fall.

One thoughtful choice leads to another. Once you start treating your farm as an ecosystem, it’s only a short step to making that ecosystem a sanctuary to species under threat. That’s what we’ve done with local bees, butterflies, and salmon.

**Calling the bee rescue squad**

Ninety to ninety-five of the plants on our farm are reliant on bees to do the work of reproduction. No bees, no reproduction. We have 10 or more local bee species on our farm. And they share a basic life cycle with the plants they support. The population spikes when more food is available. Then it crashes when the weather cools for the winter. Honeybees are the only bees we have that store food for the winter (their honey). The rest decline down to just eggs or a queen. As some of you may know, bee populations nationwide are pretty fragile right now, even in the summer.
So we take an active role in maintaining local bee populations. First, we provide diverse food sources. This habitat step alone has earned us the Bee-Friendly certification. But then we keep going. Next, we keep bee houses. We help them breed for pest and disease resistance. We even feed them if their honey runs low in winter months.

Last, we rescue threatened bees from the wild. Many of our bees started their tiny lives feral. But then life intervened. Local loggers call us when they’ve felled a tree with a hive. Without a hive, the bees don’t have long to live. A cold night could be devastating.

So Matt Dybaa, our head farmer, will drive out into the woods with a spare bee box. When he arrives, he usually finds the bees clustered around the queen in a big ball, using their body heat to keep her alive. Slowly, Matt inches his bee box near the branch where they’re clustered. Carefully, Matt picks up the branch and shakes it over the box, letting the swarming ball of bees fall in. Then he waits.

The bees have to make a choice. Their broken hive with a familiar branch in unstable, often worsening weather—or a strange wooden box like nothing they’ve ever seen. Unfortunately, bees aren’t great at quick decisions. The move can take hours.

But anything worth doing is worth doing right. Those once-feral honeybees are basically the most efficient pollinators we know. They’re up to three times faster than some of our other bees and butterflies.

**Improving the butterfly survival rate**

Monarch butterfly populations are under threat due to loss of habitat. So we’ve done our part to become a certified Monarch Butterfly Sanctuary. Again, the solution starts at the seed. We grow the milkweed that Monarchs need to lay eggs and survive to adulthood.

Monarchs don’t just hatch under the milkweed leaves. Monarch larvae sequester milkweed’s toxic steroids and use them as defense against predators. The milkweed toxins give them a bad taste and a toxicity that predators come to associate with the Monarch’s distinctive coloration.

But we don’t stop at habitat. We had entomologists come to our farm and study our Monarchs. Their research suggested our Monarchs would have a higher survival rate if we raised some of them to adulthood ourselves. Since then, we’ve collected a portion of our Monarch eggs off the milkweed leaves, raised them through larvae and pupae stages, and then released them into the wild.

**We all live upstream from somebody**

Our fields and gardens are not the only habitats on our farm. Here in the Pacific Northwest, salmon swim upstream to spawn miles and miles from the ocean. And the salmon too, like the bees and butterflies, suffer from habitat loss.

So we retrained our eyes to see beyond our plants to the water dripping off their leaves and the dirt running off into the brooks and creeks across our property. We took steps to limit runoff. Then we planted trees along the shallow banks of the narrow waterways. As they took root and grew, the trees stabilized the banks to limit erosion. As they soared higher, the trees provided shade and lowered water temperatures to protect delicate salmon eggs.

We brought in help from our local Williams Watershed Council to begin in-stream restoration. Together, we placed pea-sized gravel and tree-sized logs at strategic points in the streams. Behind the logs, silt and debris pooled up with the gravel at just the right depth for salmon to feel comfortable laying their eggs. All this earned us a Salmon-Safe certification.

One thoughtful choice leads to another. We are a charter member of United Plant Savers. It’s what drives us to make sure that anything and anyone that interacts with our farm is better off for the encounter. These steps may be invisible to our customers. But we see them. And the bees and butterflies and salmon and bats and birds and endless tiny insects see them. So for our farm in Oregon, there’s no choice too small to make an impact.
ENDANGERED PLANTS THRIVE IN UNLIKELY ZONE IN SUPPORT OF HEALING

ALBERTA, CANADA
Sanctuary Steward: Samantha Orthlieb

Tucked into a quiet 10 acres northwest of Cochrane, Alberta, Canada, four at-risk species of medicinal plants have found a place to call home. Senses of the Soul Botanical Sanctuary and Farm specializes in propagating at-risk medicinal plants and herbs to educate and facilitate healing on all levels. This year, goldenseal (Hydrastis canadensis), stoneroot (Cimicifuga racemosa), and blue cohosh (Caulophyllum thalictroides) decided to make an appearance—a timely appearance, in fact, when one considers their medicinal properties and the needs of the collective consciousness at this time: a shift into a more fluid, compassionate, and co-creative way of being.

At an elevation of roughly 1,159 m and a climate ranging in Zone 7b, the Senses of the Soul Botanical Sanctuary and Farm is an unlikely growing place for these four plants. Goldenseal typically prefers Zones 5-8, stoneroot likes Zones 4-8, and blue and black cohosh thrive in Zone 5. Senses of the Soul owner and herbalist Samantha Orthlieb decided to take a chance at growing this unique combination in part because she knew the healing offered by these particular plants matched the needs of what was showing up in her clients and in the world. Her strong conviction and faith in the need for these plants combined with her special green thumb (like any successful botanist, she talks to them every day) has resulted in nothing short of a botanist's miracle.

Goldenseal, stoneroot, black cohosh, and blue cohosh all have a unique role to play in Samantha's psycho-spiritual healing practice and the needs of her clients. Those familiar with blue and black cohosh know that they support female reproductive and endocrine systems, and from a psycho-spiritual perspective, they support the rising of the feminine. "We need feminine values to hold strong and bring in more peace, love, and compassion into the world." The values of the feminine include forgiveness, love, acceptance, compassion, mindfulness, and peace. Black and blue cohosh help individuals incorporate these values to heal deep inner wounding.

Stoneroot is commonly used for treating ailments in the urinary tract and respiratory system, as well as venous problems. On a deeper level, Samantha uses stoneroot to help break apart toxic thoughts and emotions that have accumulated in the lower extremities and lymph system. This stagnation, which can lead to feeling burdened by the weight of the world, is then released thereby restoring one's sense of purpose and joy.

Strengthening the feminine also requires the healing of the feminine's own wounding: that's where goldenseal comes in. "While most people associate goldenseal with respiratory issues and common colds, from a psycho-spiritual perspective goldenseal is about dropping victim-mastery. There is a great need for all of us to take responsibility for our self and for us to join together in co-creative partnership," explains Samantha.

When the plants reach maturity and are ready to harvest, Samantha will create tinctures and teas for use in her Senses of the Soul product line. She will also sell seedlings and rhizomes to encourage the propagation of at-risk plants in the area. As well, part of her relationship with this plant group and all of her plants is to educate people about their healing qualities and the contribution of at-risk plant species to our planet. To do so, Samantha holds regular walking tours of the Senses of the Soul Botanical Sanctuary and Medicine Man/Woman courses where people can come to experience the healing energy of the plants firsthand and learn about the preservation and sustainable
A view of the garden.

black cohosh (Actaea racemosa)

goldenseal (Hydrastis canadensis)

stoneroot (Collinsia canadensis)

growing of their own gardens. According to Samantha, it is these at-risk plants that the world needs most right now. "Plants have so much to offer us. If we believe in them and support them to thrive, they will serve us in ways we can't even imagine." Her success with growing goldenseal, stoneroot, and blue and black cohosh in the dry and chilly Alberta climate is a testament to that!

Samantha is the author of Opening the Senses of the Soul: Healing into Wholeness with Nature's Vibrational Medicine (2011) and is currently working on her second book expected in Spring 2017. For more information or to donate to the Senses of the Soul Botanical Garden and Farm, please visit sensesofthesoul.ca.
SHAW BLACK FARM
NORTHERN KENTUCKY Sanctuary Stewards:
Terry Black & Courtney Shaw

Shaw Black Farm is a family-owned Botanical Sanctuary located in Northern Kentucky, just across the Ohio River from Cincinnati. Run by Terry Black and Courtney Shaw, we grow wild-simulated ginseng (Panax quinquefolius) and goldenseal (Hydrastis canadensis) on our property, along with several other threatened native medicinal plants, such as black cohosh (Actaea racemosa), bloodroot (Sanguinaria canadensis), and trillium (Trillium spp.).

Terry’s family background got him interested in wildcrafting and native medicinal plants at a young age when his great-grandma told him stories about “digging sang” and collecting other herbs as a child in Appalachia. We knew that we wanted to start a forest farm and especially wanted to grow American ginseng and goldenseal. We started out looking for a property where we could grow wild-simulated ginseng for local markets and create value-added herbal products to help people stay healthy naturally. After almost two years of searching, we finally found this space, a lovely 32 acre, mostly wooded piece with a little house. The trees were indicative of a good ginseng growing area, with lots of sugar maple, oak, beech, hickory, and ash and a few redbud and pawpaw trees. There were indicator plants growing throughout the woods, which made us think that we had a good site for planting and growing American ginseng.

Our woods were a good place to start, though we knew they needed some restoration. The previous owners had selectively logged the forest before we got the place, so we decided to go back into the logged areas and replant trees. We put in a lot of poplars and oaks, especially in places where the tree canopy was too thinned out to have enough good shade to support ginseng. Where the trees were too little to provide ginseng enough shade to grow, we planted goldenseal. We are growing goldenseal in these areas until the trees are mature enough to grow ginseng in their shade.

We have a few acres of open pasture beyond the woods where the house is located. We use this open space to put in our large annual vegetable and culinary herb garden, as well as a few young fruit trees and bushes. This spring we are working on putting in a perennial Medicinal Herb Garden. In this garden, we plan to have areas that focus on herbs used to treat specific ailments. For example, one section will contain herbs useful in treating skin issues, another section will have plants used for coughs and colds, and so on.

The rest of the pasture area has been left fallow, and there is plenty of wild yarrow (Achillea millefolium) and milkweed (Asclepias syriaca). We planted other pollinator-friendly flowers and plants and became a monarch butterfly way station. This helps us maintain healthy native pollinator populations, such as native bumblebees. This is helpful in maintaining a healthy ecosystem and ensures pollination for our forest gardens and trees as well as the herb gardens. Our own honeybees definitely also appreciate the extra flowers growing all around.

After growing these native medicinal plants and learning more about them, we created an American ginseng tincture. We work with the professors at the University of Cincinnati’s Chemistry Department, who test our tincture in a high-pressure liquid chromatography system to ensure that it is in the range of potency that has a real therapeutic effect. For those who are interested in learning how to grow ginseng on their property, we also offer a Ginseng Consulting Service. All our products and services are available on our website www.ShawBlackFarm.com. We truly enjoy working with such an incredible medicinal plant that has so much interesting history around it. We hope that others will also consider growing native medicinal plant species to preserve them for future generations.
2016 was a great year for Eagle Feather Organic Farm.

Our farm is nestled in a rare hardwoods cove, northwest of Asheville, far enough from Asheville for people to think it’s really isolated and close enough to occasionally go into the big city.

WHAT A YEAR!

We were blessed with a producing spring during the bad drought while springs to the north and south dried out. Our talked to and prayed over main spring’s reservoirs were full, and our rain barrels were extensively used. The rain barrels were a backup for plants — we even had one rain barrel left over! Yes, we had a lot more Japanese beetles on the raspberries and the beechnut tree, but this is permaculture, and we just pick them off in the morning. We were remarkably protected from the drought around us and also protected from the fires.

We hosted our well attended annual spring and fall classes, and the biggest new thing was that we helped produce the first Organic American Ginseng Marketplace in November here in Madison County. We worked hard to make that happen and are really proud of the seven episodes of this event on... Yes! We now have a Facebook page — the North Carolina Ginseng Association [www.facebook.com/NCGinsengAssoc](http://www.facebook.com/NCGinsengAssoc) and on our YouTube channel: PlantFriends. This medicinal plant haven has branched into cyberspace.

We had four interns: Ed from Richmond, VA, Steve from Hickory, NC, Amanda from Greenville, SC, Jessica and Michael from Virginia Beach. Our most exciting birthing was that the goji berry bush actually produced berries, and the native passionflower for the first time produce abundant fruit. We sold over 350 ginseng plants, 35,000 stratified ginseng seeds, and 1,000 goldenseal planting rhizomes. We did tree removal for future solar panel solar access, increased our shiitake log production, put in rock stairs, had a great garlic harvest, and learned a lot about bird netting (the cinder blocks need to be buried and the bamboo needs angle bracing).

Our farm has been part of the Botanical Sanctuary Network since the late 1990s, almost 20 years. We are preparing to offer a 5-acre plant/tree nursery for sale to a new partner(s). This will allow a rare opportunity to own and continue the historic work of spreading the plants and educating the people in the southern Appalachian region. From the beginning, Eagle Feather Farm has been a champion for ginseng and goldenseal through the N.C. Ginseng & Goldenseal Co. However, we now have over 45 medicinal plants and trees as well for sale.

The farm will host the annual spring and fall classes on growing both ginseng and goldenseal as well as Jiaogulan in 2017 we are also hosting a Fall Ginseng Hunt on Sept. 3rd. More events can be found at [www.ncgoldenseal.com](http://www.ncgoldenseal.com)

This coming year will see the construction of the Garden Cabin and the Cabin in the Woods, expanding the housing options for interns and guests. This year an electric vehicle charging station will be installed with the help of an energy farm grant.

~ In the spirit of the plants
SACRED MOTHER SANCTUARY

PEABODY, KS
Sanctuary Stewards: Debbie and Noel McSweeney

When we think of the word Sanctuary, it brings to mind many different things for different people. For me, personally it brings to mind hope. When I was a little girl, my grandfather, Ben Avery, a conservationist, gave our family the gift of a Sanctuary in the Northern White Mountains of Arizona. It was a place where we could escape the craziness of the city of Phoenix. No cars, no sirens, just a one-room humble cabin and the occasional thunderstorm over the valley chasing the cawing crows. It was a powerful place for me, as it was my first strong connection with Mother Earth. I was taught there to care for the land, to be aware of the impacts I have on it, and most importantly I was set free from a very early age to wander the woods on my own. The connection to that Sanctuary saved my life many times when life got difficult.

For us here at Sacred Mother Sanctuary, it offers many different things. We are a Certified Bee Friendly Farm where for 5 years we have created habitat for all pollinators and tried to figure out the answers to the very difficult question of how to save them. We are sanctuary to a rare breed of dairy goats, the British Guernsey, which we nurture as we are gifted with wonderful milk for cheese and soap making. Ancient seeds of corn, beans, and squash, gifted from elders, have a place here as our food and a different kind of medicine. The Medicine Garden, the center of the Sanctuary, contains a diversity of close to one hundred medicine plants, including many “At-Risk” and “To-Watch” plantings.

One very special planting of Echinacea laevigata, a federally listed Endangered Species, is the center of a growing project with the local high school horticulture department. A student there is attempting to grow out seed that we were blessed with this last summer for his horticulture project. Whether it works or not, the seed has been planted in a young person of the very reality of conservation and its necessity. Hope is planted in the young—the most precious planting we can ever tend to.

We are also blessed with an ancient Native site, which is cherished, honored, and blessed with the prayers of many Native Elders from around the world, and humbly we are caretakers. Mother is very sacred in that area, and so the name of our sanctuary was born out of that space—Sacred Mother Sanctuary. We welcome all of our relations and are blessed with a diversity of wildlife from birds such as hawks, bald eagles, falcons, pheasant, quail, dove, and prairie chickens to turkey, deer, coyotes, bobcats, and mountain lions. The air is always filled with the sound of birds singing, and the nights are full of several different owls and the calls of coyotes, while no lights obstruct the breathtaking night sky. Many feel like they have come home when they stand here and feel at peace. If I can give that gift to one person, the gift that was given to me long ago from my Cherokee Grandfather, well then, we have achieved our goal of Sanctuary.

May all of you reading this create Sanctuary, sacred space for those whose hearts are heavy, in despair, and in need of healing. It is now needed more than ever in our current situation. May you open the door for those who seek the Mother and bring them home to who we all really are.
SPIDER WOMEN
By Marguerite Uhlmann-Bower

It’s those quiet moments in the garden, when there’s no other human but just you and the whole outside world, where our greatest gifts and shifts occur. Spring time for me is that special time of the year when I so look forward to just touching the sweet scented cold soil, swirling it around with the tips of my cold fingers... just because. It’s simply too early to plant. Too early to uncover the beds, but just being there with all the early spring scents to relish in our dynamic relationship with all garden beings. One never knows what experience lies ahead.

Well, this one happened to me some years ago when I was doing my usual early spring garden stroll through the shaded UpS protected beds, taking notice of who might be sending up it’s first spring shoots so that I could be the first to say hello. I was sitting down on the stone wall that my friend Yeman and I built to get a closer look at the wild ginger patch and, you know, to just touch and swirl the soil around. No words are necessary here—I just surrender my wants and needs to the needs of the Nature outside of me.

As I sat on this cold, damp stone wall, I touched the leaves that covered the soil and began moving them aside to see who I might find under their cover. Slowly and methodically, I gently moved the leaves and maybe a little too quickly, too, as before the next stroke of my hand. I stopped because my eye caught the movement of a tiny rolling white spider egg which belonged to a garden wolf spider. And there the spider went, scurrying in the other direction, surely wanting to save herself from my clumsy freezing hand. But then, she stopped. Turned around and looked right at me! She said to me, "give me my egg", or maybe she said "that’s my family there", or maybe even, "I need my egg," Whatever she said, I knew that she wanted her egg.

She looked at me, then at her egg, and then back at me again. Yep, she wanted her egg.

Okay, well I did not doubt any of what I heard. So, I followed her requests and did what she asked. Here’s how it all unfolded. I slowly moved my hand over to carefully pick up the white egg, holding it carefully between my thumb and forefinger, and then I slowly moved towards her, stopped, and showed her that I had her egg between my fingers. First from a long distance so that she could see what I was doing, and then I got a little closer. She then walked a little closer to me. My hand advanced a little closer to her. She advanced a little closer to me. Gradually we both got closer and closer.

Now my giant hand approached her tiny body, my hand on top of the soil now with my fingers carefully holding her egg. Cautiously she came up to my two fingers holding her egg. She reached up and clamped onto her egg with her front legs. I didn’t put it down on the ground; I actually gave her, her egg! She let me hand it to her! Spider picked up the egg right out from my fingers.

And then, she scurried away. I don’t think she was too fearful of me. We both followed and trusted our instincts—mother to mother, creator to creator.

This was about us knowing our place in the garden. We are from the same mold, somewhere in our distant connections. Mothers. Both givers of life, dynamic forces in deep mutual relationship.

Marguerite Uhlmann-Bower
R.N., Herbalist, Wild Forager

Plant Pioneers
Weeds, Leaves, Seeds & Shoots™
East Meredith, NY 13757
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www.PlantPioneers.org

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Paper Birch (Betula papyrifera) by Tessa Scheele
UPS BOTANICAL SANCTUARY NETWORK: ACTIVE MEMBERS

7 Acre Wood Farm
Burnsville, VA

Appalachia Ohio Alliance
Logan, OH

Ata'gi’ “The Healing Lake of the Cherokee”
Marengo, IL

Avena Botanical
Rockport, ME

Bartram’s Garden
Philadelphia, PA

Bastyr Herb Garden
Kenmore, WA

Bean Tree Farm
Tucson, AZ

Bee Fields Farm
Wilton, NH

BeeGood Gardens
Columbus, OH

Bluebird Botanical Plant Sanctuary
Eureka Springs, AR

Broadwell Hill
Stewart, OH

Buck Mountain Botanicals
Miles City, MT

California School of Herbal Studies
Forestville, CA

Catskill Creek Native Plant Nursery
Greenville, NY

Cedar Mountain Medicinals
Newport, VA

Cherokee Medicine Woods
Bloomington Springs, TN

Diana’s Garden Herb Farm & Sanctuary
Sturbridge, MA

Dandelion Herb Center
Kneeland, CA

Desert Canyon Farm
Canon City, CO

Dibble Hill Native Plant Sanctuary
Saegertown, PA

Dragonfly Medicinal
Vashon Island, WA

Eagle Feather Farm
Marshall, NC

Earth Remedies
New Hartford, CT

Earthcrafts Botanicals
Uxbridge, MA

Eden Hyll Botanical Sanctuary
Natural Bridge, NY

Equinox Botanicals
Rutland, OH

Fern Hill Nursery
Cottage Grove, OR

Fire Om Earth
Eureka Springs, AR

Florida School of Holistic Living
Orlando, FL

Gaia’s Peace Garden
Iowa City, IA

Garden Farme
Ramsey, MN

God’s Gardens
Robbinsville, NC

Goldenseal Botanical Sanctuary
Rutland, OH

Green Comfort Botanical Sanctuary
Washington, VA

Green Farmacy Garden
Fulton, MD

Green Turtle Botanicals
Nashville, TN

Hawthorne Way Botanical Sanctuary
East Meredith, NY

Healing Wheel Sanctuary
Hancock, NY

Heartmoor Farm
Kents Store, VA

Heartstone Herbal School
Van Etten, NY

Herb Pharm
Williams, OR

Herb Mountain Farm
Weaverville, NC

Herbminde's of Maine
Lubec, ME

Hidden Garden
Etnobotanical School
Brooklyn, NY

Highwoods Heaven Botanical Sanctuary
Yacolt, WA

Hootenanny Hill
Avoca, NY

Idlewild Native American Plant Sanctuary
Wilburton, OK

Indian Pipe Botanical Sanctuary
Linden, VA

Knowlton Farms
Sebaspol, CA

Labyrinth Gardens
Mulberry Grove, IL

Light Footsteps Herb Farm and Learning Center
Chardon, OH

Luna Farm Herbal Gardens and Botanical Sanctuary
Troy, IL

MeadowSweeT Botanicals
Shepherdstown, WV

Mequon Nature Preserve
Mequon, WI

Mill House
Arrington, VA

Mockingbird Meadows Eclectic Herbal Institute
Marysville, OH

Morze Tree Farm
Canaan, VT

Millhouse Sanctuary
Arrington, VA

Motherland Botanical Sanctuary
Willits, CA

Mycoevolve
Burlington, VT

Nature Cares Nursery and Botanical Sanctuary
Portland, OR

Native Earth Teaching Farm
Chilmark, MA

Oak Creek Botanical Sanctuary
Corvallis, OR

Perry Hill Farm
Millbrook, NY

Peterman Brook Herb Farm
Porterfield, WI

Phoenix Farms
Augusta, ME

Plattsburgh Botanical Sanctuary
Plattsburgh, NY

Restoration Herbs
Franklin, PA

Sacred Mother Sanctuary
Peabody, KS

Sacred Plant Traditions
Charlottesville, VA

Sacred Plant Sanctuary at Seattle School of Body-Psychotherapy
Seattle, WA

Sage of the Woods
Cedar Falls, IA

Sage Mountain
E. Barre, VT

Seeds and Spores Family Farm
Marquette, MI

Seven Arrows Farm Botanical Sanctuary
Seekonk, MA

Shindagin Hollow Woodland
Willsieyville, NY

Singing Brook Farm
Worthington, MA

Sister Sanctuary
Guilford, VT
UPS BOTANICAL SANCTUARY NETWORK: ACTIVE MEMBERS

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Cannon Ball, ND

Stark Natural Herb Farm
Salt Spring Island, BC, CAN

Soulflower Farm
Asheville, NC

Sweetwater Sanctuary
Danby, VT

The Green Spiral
Middleburgh, NY

The Herb Crib
Blairsville, GA

The Rare Seed Sanctuary
New Gloucester, ME

The Trillium Center
Conneaut, OH

The Wellspring Valley
Stahlstown, PA

Three Leaf Farm
Louisville, CO

Three Springs Farm
Waiting, VT

Two Creeks Organic Farm
Shiloh, GA

Vajra Herb Farm
Oscolaosa, KS

Walker Mountain
Botanical Sanctuary
Deerfield, VA

Wasabi Springs
Barnardville, NC

Weeds For Wellness LLC
Nescoteck, PA

Wellspring Mountain
Loragap, NC

Wellspring Valley
Stahlstown, PA

Wildcraft Hollow Botanical Sanctuary
Amerst, VA

Wildflower School of Botanical Medicine
Cedar Creek, TX

Windsong
Honor, MI

Wise Woman Center
Woodstock, NY

Woodlands Medicinal Sanctuary
Cosby, TN

A GREAT BIG WELCOME TO OUR NEWEST SANCTUARIES!

= recently joined

REGISTERED SANCTUARIES THROUGHOUT THE US & CANADA
As a member of UPS you can experience the power of our botanical sanctuary yourself. Along with your Journal of Medicinal Plant Conservation, sticker, and discounts to United Plant Savers events, UPS members have special privileges at the United Plant Savers Botanical Sanctuary.

The UPS Botanical Sanctuary is the exact location where, 23 years ago, Rosemary Gladstar, Paul Strauss, and a few others first began to talk about the idea of conserving these plants that were providing medicine and income to an ever-growing population of people.

Members are invited to hike the Medicine Trail, where, if your timing is right, you will see American ginseng, black cohosh, bloodroot, blue cohosh, false unicorn root, trillium, one of the largest patches of goldenseal anywhere in the world, and more. Beyond the Medicine Trail lie The Main Hollow Trail, Oak Walk, Reclama Trail, Heart Pond, and miles of additional paths to explore.

Come for the day or spend some extended time with us and really allow yourself to fall in pace with the plants. We have overnight lodging including The Yurt, which offers kitchen, bathroom with shower, and gas heat; Barn Rooms with two single beds, electric heat, and shared bath; the rustic Tornado Cabin nestled in the middle of the forest with two single beds; and in addition we have plenty of primitive camping sites. For more information visit www.goldensealsanctuary.org. If you would like to visit, just email office@unitedplantsavers.org or call 740-742-3455 to get on the calendar. I look forward to sharing this sanctuary with you!

**PRICING**

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<th>Cost</th>
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<tr>
<td>Hike the sanctuary as a member:</td>
<td>no charge</td>
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<tr>
<td>Guided herb walk (approximately 2 hours):</td>
<td>$100 for up to 10 people, then $10 each additional person</td>
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<tr>
<td>Yurt rental:</td>
<td>$75 first night, $50 each additional night</td>
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<tr>
<td>Tornado Cabin:</td>
<td>$50 first night, $25 each additional night</td>
</tr>
<tr>
<td>Barn Rooms:</td>
<td>$50 first night, $25 each additional night</td>
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<tr>
<td>Primitive camping:</td>
<td>$10 per person per night</td>
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*For non-member pricing add $35.
Medicinal Plant Conservation Certificate Program

Hard Working?
Motivated to learn about medicinal plants?
Want to experience United Plant Savers’ 360-acre plant sanctuary in Ohio?

FALL 2017 SESSION:
September 5 - October 13

~ & ~

SPRING 2018 SESSION:
Mid-April to May

Apply now for early acceptance!

A HANDS-ON PRACTICAL APPROACH
Interns work 30 hours per week doing a variety of medicinal plant conservation & cultivation projects. Classes & opportunities to work with Chip Carroll, Program Manager, as well as UPS staff teachers. Interns learn general plant propagation techniques working with “At-Risk” and endangered species, general farm upkeep and maintenance, landscape care and maintenance, greenhouse work, medicinal plant identification, sustainable wild harvesting principles and practices, medicine making & more!

Application available online at
www.unitedplantsavers.org
office@unitedplantsavers.org
740-742-3455

New for 2017-2018

DEEP ECOLOGY ARTIST FELLOWSHIP PROGRAM

We are seeking artists looking to spend time at the sanctuary to explore their artistic perspective in regards to the role of native medicinal plants in the ecosystem through photography, writing, and mixed media. We will accept applications throughout the year on a rolling admission basis. Applicants can apply for up to four weeks. We will provide free lodging to those who are accepted. To apply please submit a one-page description of what your interest is in applying for the fellowship and an example of your art work along with a CV.

We also ask that those who are accepted to participate in the artist fellowship to share their work in our annual Journal of Medicinal Plant Conservation. We hope that this fellowship will offer an opportunity for those seeking sanctuary for artistic inspiration to have the time and space to connect with the healing plants. We look forward to attracting a diverse range of individuals who will explore the meaning of sanctuary and share their artist experience with our membership and the broader plant community.

***

Deep ecology is an ecological and environmental philosophy promoting the inherent worth of living beings regardless of their instrumental utility to human needs, plus a radical restructuring of modern human societies in accordance with such ideas. Deep ecology argues that the natural world is a subtle balance of complex inter-relationships in which the existence of organisms is dependent on the existence of others within ecosystems. Human interference with or destruction of the natural world poses a threat therefore not only to humans but to all organisms constituting the natural order.
**PARTNERS IN EDUCATION (PIE)**

United Plant Savers Partners in Education program is designed to enrich school programming and students' education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted ‘student-friendly’ price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: [www.unitedplant savers.org](http://www.unitedplantsavers.org). United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating 2016-2017 schools and programs:

<table>
<thead>
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<th>School/Program</th>
<th>Location</th>
<th>Website</th>
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<td>New York, NY</td>
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<td>Wintergreen Botanicals Education Center</td>
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<td>Yerba Woman Herbal Apprentice Program</td>
<td>Willits, CA</td>
<td>motherlandbotanicalsanctuary.com</td>
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2016 MEDICINAL PLANT CONSERVATION AWARD
— Recipient —
MARC WILLIAMS
By Helen Lowe Metzman

United Plant Savers is pleased to have selected ethno-botanist Marc Williams as the recipient of the 2016 Medicinal Plant Conservation Award. Marc is a modern day itinerant preacher of all kinds of plant knowledge from his hands on experiential workshops to his philosophical discussions of human and plant interactions. When first encountering Marc, one might notice him toting a well read and tattered Botany in a Day by Thomas Eipel while donning a Green Man T-shirt with the words “Eat something wild everyday.” Everyday with his encyclopedic botanical knowledge and wisdom, Marc inspires people he encounters to examine and look deeper into the plants around them, whether it is in a magical climax forest or a city sidewalk. Marc teaches about plants with a taxonomic family perspective. He encourages all who are accustomed to modern cuisine to taste wild roots, shoots, and ferments and to simply use the local plants for medicine. Marc asks his students to think in terms of a “cultural topsoil” with layered stories of how plants and people twine together and to always act in regard to the importance of plant conservation. Marc will be one of the speakers at the United Plant Savers “The Future of Ginseng and Forest Botanicals Symposium” this July in Morgantown, West Virginia.

Marc is the executive director of Plants and Healers international (www.plantsandhealers.org/about-phi/ph-executive-director), where he is carrying on the mission of the late Frank Cook. Both Frank and Marc have inspired many folk to walk the Green Path in a sustainable manner. Botany Everyday www.botanyeveryday.com

Erika Galentin, Marc Williams and Susan Leopold

LESSER KNOWN FACTS ABOUT THE SANCTUARY

• The sanctuary is the heartbeat of United Plant Savers.

• In 2015, the movie The Sanctity of Sanctuary (www.sanctityofsanctuary.com) was released, highlighting the life of Paul Strauss and the story about how the Sanctuary was conceived. The Sanctuary and the surrounding community are now known globally for herbal biodiversity, conservation, and entrepreneurship.

• Our 360-acre Sanctuary in Rutland, Ohio, gifted to us in 1996, is home to the largest wild population of goldenseal ever to be documented.

• United Plant Savers is part of a consortium awarded a three-year USDA grant to train future Forest Farmers.

• United Plant Savers was awarded a grant from the Ohio EPA to develop an interpretive trail highlighting the reclamation of the Sanctuary from strip mining.

• Many of the hundreds of interns and visitors who go through programs at the Sanctuary have gone on to become leaders in the herbal community.
It was almost twenty years ago when I first arrived in Costa Rica. Already a student of herbalism in a classroom setting, I was attracted to the possibility of learning about plants directly from those who used them ancestrally. Lucky for me, and many others like me, Costa Ricans tend to be open in sharing stories about their botanical allies. I was in herbalist heaven.

Over time, I have come to see the other side of that heaven. I started to realize that while my knowledge was increasing, the general population was losing its traditional wisdom. The easy part has been finding ways to conserve the medicinal plants. The real challenge is to help community elders to conserve the traditional ways of life that are interdependent with the natural world, the living context in which their herbalism thrives.

I share this story to raise consciousness and encourage advocacy of the survival of traditional wisdom amongst any peoples who are practicing their culture in the face of modern life and assimilation, and especially those peoples who have been forcibly separated from their traditions or their homelands.

When I settled in the remote fishing village of Puerto Viejo, I was hoping to find a local healer to study with.
I learned that there were a few Caribbean women in town and a few Indigenous men in the nearby mountains, but that none of them were taking on students or apprentices. In the decade that it took me to find a Caribbean Herbalist teacher, my research came from the local population’s knowledge about basic self-care using plants. Although many Caribbean people now go to the doctor in the case of extreme pathology, a majority continue to use herbal and other wellness traditions for prevention and basic health maintenance (Picking et al. 2011).

Unlike in a structured environment, learning folk medicine in the field meant that not all of my teachers were shamans, granny healers, or ethnomedical experts. My research has relied on a healthy combination of quality (a well-known healer giving advice) and quantity (10 non-experts all giving similar advice). For example, we can validate the use of lemon grass (Cymbopogon citratus) for fever reduction in the Caribbean without an expert, simply by learning its local name, fever grass. This methodology allows ethnomedicians to do research in communities where there are no longer traditional healers practicing or teaching, and to harvest important remnants of ancestral knowledge in situations where significant loss of cultural practice has occurred.

Despite the ubiquity of home remedies in modern Caribbean homes, academia has traditionally neglected the ethnomedicine of the African Diaspora of the Americas (Voeks & Rashford, 2013). The largely untold story is that Africans brought their wellness traditions with them to the Americas, including their herbal medicine, food preparation, permaculture, spirituality, music, dance, and their sacred relationship with nature. These were the healing tools that facilitated the survival of Africans and their descendants in the Americas (Carney & Rosomoff, 2009).

To what extent are these survival tools still available in the African Diaspora of the Americas? There are only a few areas where remote communities have conserved large amounts of their original African culture. There are, for example, villages in Surinam and Brazil where African descendants have lived almost independently for centuries (Van Andel, 2015). A classic ethnomedical goldmine, these villages maintain language, agricultural, cultural, and medicinal practices that can be traced directly back to Africa. However, as in many parts of the Americas, these African-descendants are still in a struggle for land rights and political representation.

The complicated history of Costa Rica’s Caribbean coastal areas has also resulted in a land rights struggle and a lack of cultural protection for African descendants. The majority of Afro-Costa Ricans and their ancestors came from the Caribbean islands, where centuries of slavery had institutionalized a lack of respect for native African cultures. Interestingly, although customs such as dress and language were targeted for assimilation, Africans were not uniformly discouraged from using their wellness traditions, including their knowledge of plants, to stay healthy (Carney, 2003). These practices reduced the amount of “medical” attention required by slaves, and therefore would have been seen as advantageous. There are many examples, in fact, of Africans using their plant wisdom to help their captors. The most legendary is the 18th century African man known as Quasi, for whom the powerful bitterwood, Quassia amara, was named. Although he was abducted into slavery as a child, Quasi was an herbalist and healer, whose plant medicine brought him his freedom and helped him live for almost a full century (Carney & Rosomoff, 2009, p.90).

In addition to the wellness traditions that Africans brought with them from Africa are those which they learned from the Indigenous people of the Americas. These cultural exchanges have been poorly documented for centuries. Up until recently throughout the Caribbean, Indigenous people have been incorrectly portrayed by academia as having been annihilated. Anthropological and ethnomedical studies, as well as DNA testing, now tell a different story. In Jamaica, many scholars believe that Taino people living inland had integrated with escaped slaves, intermarrying as well as sharing tools of medicine that still exist in Maroon communities today.

Centuries later, this process repeated itself, when Jamaican immigrants in Costa Rica intermixed with the local Bri Bri people of the Caribbean coast. From my personal experience, ethnomedicine has been the primary form of sharing between these two groups, more than their other cultural practices such as food preparation, music, or dress. It is very clear when studying Afro-Caribbean herbalism that many important Indigenous remedies have been adopted. In remote areas and under difficult conditions, interdependence
and wisdom-sharing helped both of these groups to survive.

In the 1980’s the coastal communities of the Caribbean Costa Rica received electricity, tourism bloomed, and in the common fashion, a slow but steady decline in wisdom-sharing began. Before then, most health care took place at home, with a rare visit to the village healer or midwife when necessary and the even rarer visit to the far away hospital in Limon. As roads were built, government clinics were installed and health regulations from the far away capital started to be enforced.

By the time I arrived in the village two decades later, there were two granny healers left, but neither woman had an apprentice to pass their knowledge on to. The modern cultural and political climate of Costa Rica would make it difficult for their grandchildren to become financially successful as herbalists. Although local village elders still practice many of their ancestral herbalism and home remedies, community dynamics have changed, and younger generations are no longer seeking ancestral wisdom as they did in the past.

From an ethnobotanical perspective, the village of Puerto Viejo is still traditional enough that there is useful information to be harvested. Local friends who are my age were born into a time when subsistence living, permaculture and fishing were survival skills that they inherited from their grandparents. Living in harmony with nature was an ancestral mandate and botanical medicine was the only option available. Academically, we know that we can trace these practices back to those of Africa, as well as Native America. The question is, do these practices qualify as indigenous, enough to be promoted by the government and protected by the law?

A number of international agreements address the rights of different groups to practice their traditional cultures, some of them referring specifically to the use of medicinal plants. In 1992, the Convention of Biodiversity even went so far as to include the promotion of widespread practice. It recognizes that cultural practices must be encouraged proactively and re-institutionalized if they are going to survive. To what extent this Convention and other treaties are implemented into practice depends on the country, local politics, economics, and more.

In 1994, Costa Rica ratified the Biodiversity Convention and has since been known as a leader in biodiversity. Over the past quarter century, Costa Rica has focused its conservation efforts on environmental protection more than on the protection of cultural diversity. So far, there has been no government mandate to study, document, promote or implement the ethnomedicine of Costa Rica. In addition, it is unclear whether Costa Rican law protects the cultural practices of those who are non-Indigenous, or whether health code regulations are legally superior to cultural practice rights.

There are a number of academic, non-profit, and Native groups who work on documenting and passing down traditional knowledge, including medicinal plants. Other more corporate efforts, such as those funded by the pharmaceutical industry, may harvest their information less sustainably. This means that information that is collected might be hidden or not intentionally shared back to the communities from which it was collected. Many traditional peoples are more likely to have their wisdom stored in an inaccessible library or laboratory than have it passed down to future generations.

Since the invention of the internet, I have had the luxury of access to information about plants. Even mainstream search engines and online sites provide traditional uses of plants in addition to allopathic analyses. How many times have I accessed ethnobotanical research so as to increase my potential benefit from a plant? How can I give something back to help to ensure the survival of the peoples and their cultural practices which have fed my research?

After almost two decades, my desire to collect information about Caribbean medicinal plants has shifted to a desire to conserve anything and everything that I can about the cultural practices that have stewarded these plants. This includes creating safe spaces for wisdom-sharing, promoting wellness traditions, practicing sustainable eco-tourism, advocating for Afro-Caribbean rights and envisioning a new health care system in which traditional knowledge is respected and even integrated.

As a student of herbalism, I absorbed information without considering its origin or the people who originally shared the information with ethnobotanists. But the truth is that every plant that we learn to use for
healing has a community with whom it has evolved. As a teacher and conservationist of herbalism, I feel a sense of responsibility to these wisdom carriers. Everyone can find their own way to contribute, and mine was creating Hidden Garden’s Ethnobotanical Sanctuary. In addition to protecting the plants themselves, we are also digitalizing as much information about the plants as possible, so that the community can have free access to our research results. This year we are going a step further, installing a botanical collection of the ethnomedicine of the African Diaspora, rooted in African botanical traditions and incorporating transformations created by the migrations and settlements of African people around the world.

Now we are propagating the plants so as to give them back to the community that they once served. We are creating opportunities for elders to share their personal experiences with younger generations who are seeking plant wisdom. We are helping the community to access information collected by our students and others around the world using modern communication technology. All of the research that we produce is for sharing with the community and we join with other groups who are advocating for the rights of our plant stewards.

As we re-awaken and enhance our connection with the healing power of nature, may we remember those who fought to carry plant medicine through into this century. May we share back and conserve as much wisdom as we collect.

Rachel Thomas teaches internationally and at her Ethnobotanical Sanctuary in Puerto Viejo, working on plant collection, documentation, dissemination, advocacy and wisdom sharing. Using her combined degree in Africana and Education Studies from Brown University, and two decades of field research, Rachel creates educational opportunities for students of all ages and backgrounds to explore, study and defend the magic of ancestral plant medicine. Visit Hidden Garden’s website for more information or to get involved!

References


en.wikipedia.org/wiki/%C3%A9tnicos_Quispis
en.wikipedia.org/wiki/Indigenous_peoples_in_Americas
en.unesco.org/decade-people-african-descend/why

Puerto Viejo de Limon, in relation to the slave trade
**QUASSIA AMARA; STRONG MAN OF THE TROPICAL FOREST**
by Susan Leopold, PhD

Enjoy reading the foreword to the newly published and updated English version. Contact United Plant Savers if you wish to purchase the book.

Quassia amara is a member of the Simaroubaceae family, which consists of 19 genera and 95 species of trees and shrubs that are mostly tropical in distribution. Folks in the temperate region may be familiar with the Tree of Heaven (*Ailanthus altissima*), which is also in the Simaroubaceae family. It is known as an invasive to eastern North America but a native medicinal to those in China. Quassia, with 40 species in the rainforests of tropical America and Africa, contains trees and shrubs. Quassia amara is the source of bitter-tasting compounds and is used currently in commercial products as a vermifuge and as an insecticide. Among those in Costa Rica it is known commonly as Hombre Grande, translated as the strong man, to make a tea that can cure pain in the stomach, rid parasites, help with diabetics, and treat fever.

As folklore goes Gramman Quacy or Kwasi (1692-1787) was a slave brought to Surinam from Ghana, who had earned a reputation as a powerful medicine man. He helped the Dutch fight the maroons, earned his freedom, and traveled to the Netherlands. One of his famous remedies was a bitter tea used for internal parasites and made from the bark of mysterious shrub. Linnaeus (1707-1778) named the mysterious medicinal shrub after the famous healer, Quassia amara thus meaning the bitter Quassia. John Uri Lloyd wrote about the species in 1897 in the *Western Druggist* regarding how it was being used in the European pharmacopeia as early as 1788. Quassia amara, being a smaller tree/shrub, was quickly over harvested in Suriname, and a larger tree found in Jamaica that has similar properties quickly became its substitute. It was commonly called Jamaican quassia (*Picrasma excelsa*). Though it is a larger tree, its range is much smaller and due to deforestation it was added to the IUCN redlist in 1988.

and to date, *Picramnia excelsa* is an endangered species (Areces-Mallea 2009). There is also a related plant, *Picramnia antidesma* that is a smaller shrub and known medicinally with similar distribution as *Quassia amara*. In Argentina Quassi amara has been confused with *Picrasma crenata*, another species of bitter wood. Interesting to note that in Brazil Quassia amara is known as false quinine (Ocampo and Balick 2009). The common names can be confusing within the historical context of Quassia amara use and demand in trade over the last 300 years.

In 1994 I transferred from Boston University to Friends World College in Costa Rica. I was a Geography major, but my passion was to study ethnobotany, and relocating south allowed me to pursue this path. It was not long after arriving in Costa Rica that I learned of Rafa Ocampo’s work as the preeminent and pioneering ethnobotanist. I also became intrigued with the Caribbean/Limon region of the country, known as the wet side with its Amazonian feel, as river tributaries flow from the Central and Talamanca Mountains down through tropical wet rainforest. The Limon region is a mix of indigenous cultures such as the BriBri and Cabekar with the Afro-Caribbean people, who have a long history of respectful co-existence resulting in a rich and dynamic ethnobotanical reservoir of knowledge. It is in this region that Rafa Ocampo has his research farm, Bougainvillea, where he has meticulously studied agro-ecological/forest systems of important native species, one of those being Quassia amara. In this book he has gathered his knowledge and that of others to concisely describe critical data that is useful in the transition towards intentional management and cultivation of an economic and medicinally important species whose wild populations are under threat due to overharvest and loss of habitat.

Rafa Ocampo is one of the founding members of the Sacred Seeds Sanctuary located at Finca Luna Nueva Eco Lodge and certified biodynamic farm near the majestic Arenal Volcano. Rafa is co-author (with Michael Balick) of the Sacred Seeds book that highlights the collection of 300 medicinal plants that are tended to in the garden. The Sacred Seeds garden sparked the establishment of an international network of gardens located around the world that share in
the same mission — conservation of biodiversity and cultural knowledge of sacred plants.

United Plant Savers is a non-profit organization founded just around the time I set off on my journey to Costa Rica. UPS is the umbrella organization to the Sacred Seeds Network of Botanical Sanctuaries. It is with deep respect and admiration that I write the foreword to Rafa’s English version of his book “Bitter Wood: Cultivation, Conservation, and Commerce”. We are in a time of rapid changes to the landscape with unprecedented global and local demands on important medicinal plants, the majority of which come from complex forested ecosystems. Agroforestry is critical because we can more intentionally cultivate and manage for economic and medicinally important species, instead of unsustainable harvesting from wild populations. Rafa Ocampo is a pioneer in the field of ethnobotany taking on the challenge to conserve native medicinal plants while also providing viable incentives to those living in the forest, embodying UPS mission of conservation through cultivation. Quassia amara is just one example of his many scientific contributions to the field of tropical ethnobotany. This book will serve as a valuable resource to those looking to weave Quassia amara into the disturbed wet tropical forest. It is the perfect addition to a tropical permaculture/forest garden with its use as an important natural pesticide, de-wormer for animals, medicine for fevers and stomach ailments. In a time when mosquitoes are carrying multiple tropical diseases it’s an easy preventive to add the bark to water to eliminate larva in stagnant water. It is a plant with an important conservation story and a timely medicinal with unique chemistry that provides tangible solutions to important needs.
GERMINATION OF GARCINIA KOLA, A HIGH VALUED NON-TIMBER PRODUCT OF NIGERIA

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Garcinia kola (Heckel) belongs to the Guttiferae (Clusiaceae) family (Geeta et al., 2006). The tree produces edible and medicinal seeds, which are widely consumed (Okigbo, 1997). Its distribution ranges from West Africa to Central Africa, extending from Sierra Leone to Congo, (Gledhill, 1977). Garcinia kola is endemic in the humid lowland rainforest vegetation of the West and Central African sub regions. It is found in coastal areas and lowland plains up to 300m above sea level with an average of 2000 - 2500 mm rainfall per annum and temperatures ranges from 21.4°C to 32.15°C and a minimum relative humidity of 76.34% (Ntamag, 1997). Garcinia kola (Heckel) otherwise known as ‘bitter kola’ is one of the several non-timber forest products that are of socio-economic importance in Nigeria with high consumption rate (Okafor, 1980). Its economic contribution to both domestic and national markets raises the standard of living of those involved in its trading activities, both in the rural and urban centers (Yakubu et al., 2014).

Okoro (1993) stated that Garcinia kola seeds are used as extractive in dietary food supplement while the FDA, 1995 reported that they are used as a flavor enhancer in the beverage industry and also as a hop substitute in several indigenous alcoholic drinks. Medicinally, the seeds are used as an antidote for Strophantus gratus infection. The seeds are used for the treatment of bronchitis, throat infections, anti-purgative, and anti-parasitic (Madubunyi, 1995). Other known uses include guinea worm remedy, anti-atherogenic effects, and anti-lipoperoxative effects (Adaramoye et al., 2005). According to lwu et al. (1999), Garcinia kola is known to exhibit a complex mixture of phonetic compounds including anti-inflammatory, anti-microbial, anti-diabetic, and anti-viral properties. The indigenous practices used by farmers to protect the species include selective clearing, during land preparation for cropping sustainable bark, harvesting of stands in wild populations and recognition of individual property ownership on certain wild of the tree.

Garcinia kola is safe consumed with or without other foods. Its consumption an hour before or after meals may help to increase the absorption of key ingredients. Food does not affect the metabolism of Garcinia kola and may suffer the effects of mild indigestion (Iwu, 1986). Kolaviron does not appear to have a pronounced effect on drug metabolizing enzymes (Farombi et al., 2000) and no known interaction with orthodox medications has been reported (Okoli, 1991). Garcinia kola seeds are recalcitrant seeds; however, it is unlikely that rural farmers would plant G. kola on a large scale because the untreated seeds are difficult to germinate. Due to dormancy, Garcinia kola seeds can take 18 months to germinate.

Despite its socio-economic importance, the cultivation of the plant is very much limited. Factors that have discouraged farmers from growing Garcinia kola include difficulties encountered in the germination, which reduces the availability of seedlings in the nurseries for possible plantation establishment (Yakubu et al., 2014). The natural regeneration of the species is poor, and seedlings are uncommon and slow-growing (Gyimah, 2000; Abbiw, 1990), making the species now close to commercial extinction (IUCN, 2004; Hawthorne, 1995). Most of the productive trees are those which were left in the wild when farm plots were cut out of the forest (Adebisi, 2004). In Nigeria, low populations of G. kola are found in home gardens, and few stands are found in the wild due to rapid deforestation and heavy exploitation in the natural forests. These factors seriously deplete the populations of the species. But demand for G. kola is currently very high in Nigeria and though few seeds are available in the markets, production of the species is limited due to problem of seed dormancy (Yakubu et al., 2014). The seeds need to be treated to enhance germination.

A study of germination was conducted and it was concluded that duration of soaking and packing seeds in significantly affected the

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number of days to germination, number of germinated seeds, and length of plumule. It was recommended that; *Garcinia kola* seeds should be soaked for 72 hours and packed in dark polythene bags as this medium proves the method for successful germination.

The results were determined by a study on “effect of seed soaking and light intensity on the germination of *Garcinia kola* (Heckel) seeds” that was carried out at the green house of the School of Agriculture and Agricultural Technology, Federal University of Technology Owerri, Imo State, Nigeria. The research aimed to determine the effects of light intensity on the germination of *Garcinia kola* seeds. The experiment was laid out in Complete Randomized Design (CRD) with four replications. Different seed parts (whole seed, head part and tail part) were packed in transparent polythene bags (TPB) and dark polythene bags (DPB). The seeds (collected from the trees at Ozara village in Ngor/Okpara LGA of Imo State, Nigeria) used for the experiment were de-coated and subjected to different soaking regimes (12, 48, 72 and 96 hours), while the un-soaked seeds formed the control experiment. The soaked seeds were placed in the transparent and dark polythene bags. Data were collected on the following parameters; number of days to germination, number of germinated seeds and the length of plumule measured at 14 days’ interval. Results showed that germination was first recorded in both seeds soaked for 72 hours and the control with the tail part germinating in 10 days after bagging for seeds packed in transparent polythene bag and seeds soaked for 92 hours from the whole seed and the tail part germinated in 5 days for the seeds in dark polythene bag. Germination was delayed and scanty in the control with seeds soaked for 12 hours compared to other treatments. The germination period ranged between 5 to 26 days for seeds parked in dark polythene bag and 9 to 30 days for seeds parked in transparent polythene bag.

Please see the United Plant Savers website for the full article of this study.

Dr. A.E Ibe traveled from Nigeria to attend the United Plant Savers internship program. He touched all of our lives in his brief stay in Ohio. His research includes climate change, soil nutrient dynamics in agroforestry systems, and work with Moringa olifera and Jatropha spp. He has also written an amazing chapter “Sustainable systems, and work with Moringa olifera and Jatropha climate change, soil nutrient dynamics in agroforestry lives in his brief stay in Ohio. His research includes Plant Savers internship program. He touched all of our

Please see the United Plant Savers website for the full article of this study.


Okafor, J.C. (1980): Edible indigenous woody plants in the rural econo-


If you want to practice herbalism, really practice, the first thing you need besides an herbal education, whether it is a class or direct mentoring, are sick people to practice on. Many herbalists are well read and studied, but few have practical on-the-fly skills in the instance where someone hurts themselves or needs immediate medical attention. These skills include cleaning and bandaging wounds, lancing, bracing or treating acute inflammation. Some herbalists have taken Wilderness First Responder Courses, CPR or EMT trainings, and many just have wild children, nieces/nephews or neighbors. Herbalists are not always thought of as the initial responders in acute situations, but with the proper training, herbalists can actually be your community’s best first line of defense and relief.

There are few educational scenarios offering these types of classes and trainings. Often, when students have the opportunity to practice in a clinic, they are dealing with chronic conditions, acute flair-ups of chronic disease and/or offering preventative medicine. In these situations, the herbalist becomes sleuth, seeking the cause and formulating a series of protocols: herbal, nutritional, lifestyle and psycho-spiritual for the patient to follow in the hopes of a healthy outcome, with protocols being adjusted over various spans of time.

In acute care, the process of diagnostics is much shorter, with a focus on outward appearance of imbalance, rapid reference to patient history and aggressive treatment protocols that can last anywhere from a few minutes to hours or over the course of days, if the patient stays in your vicinity and has good compliance.

The idea to offer a training course in acute care began with my time in the jungle at a Semilla Segrada sanctuary garden, the Punta Mona Center for Regenerative Design and Botanical Studies, on the southern Caribbean coast of Costa Rica, treating everything from staph infections to weird rashes, insect bites, parasites, machete wounds and digestive disorders, as well as common colds, flu, dengue fever, menstrual pain, lice, homesickness and bad dreams—even treating chickens, ducks, cats, dogs and the occasional wild animal. Being a hive for plant lovers, earth lovers, botanists, biologists, eco-tourists and volunteering hippies, it was my best training as an herbalist in my 16 years of practice and study. In 2014, I had the opportunity to work with 7Song, director of the Northeast School of Botanical Medicine and the Ithaca Free Clinic, and in Nicaragua at the free Natural Doctors International Clinic on the island of Ometepe, where we treated patients with urgent and chronic needs from the immediate community. There I also learned how to work in a busy, fast paced practice and how to operate an apothecary in a clinical setting. This volunteer job helped me to solidify my belief that as herbalists, we are the best situated to be the first responders in our communities in times of trouble. Whether it is a flu epidemic or an earthquake, when it happens to our community, we are the ones who live there, first on the scene, with an arsenal of plant medicines, backyard crafting skills, knowledge of the local terrain and personal relationships with our neighbors.

My passion is to get more herbalists on-the-ground learning skills for community resilience and ecological wellbeing, so I created an opportunity to practice and learn acute care. For the past two years, we have hosted an Herbal First Aid Clinical intensive workshop at Punta Mona followed by a clinical immersion at the annual arts and cultural event, Envision Festival also in Costa Rica. At Punta Mona, students are living off-the-grid in the humid rainforest, surrounded by dense flora and abundant fauna. Participants of all skill levels are mentored by 7Song and yours truly. During the one-week training at Punta Mona, students learn on-the-fly diagnostics and formulation, triage skills, identification of red flag symptoms, taking vitals and how to work with a stocked apothecary of a global materia medica of teas, tinctures, glycerites, powders, pills, oils, salves and
sprays. We travel to Envision Festival, with some fun excursions along the way, to the Kekoldi Indigenous Reserve and the Ark Herb farm. On site at Envision the students set up the clinic and get ready to receive patients over the course of seven days. With support sponsored by Gaia Herbs, we also wildcraft and cultivate a fair amount of our stock that 7Song, myself and the crew at Punta Mona harvested and processed months ahead of time. Many of our temperate herbs were purchased from Mountain Rose Herbs, an ethical bulk herb supplier, and a supporter of United Plant Savers.

What did we treat?
We saw around 800 patients with acute bacterial and viral diarrhea, constipation, bacterial skin infections, such as staph, strep throat, swimmers ear, female reproductive distress, ringworm and other weird rashes, colds and soft tissue wounds. We worked adjacent to the conventional medics and the Zendo (psychedelic harm reduction services) to provide a truly integrated offering for all in attendance. Students communicated and worked fluidly with the other modality’s practitioners, providing the most well rounded care to those in need. The environment is harsh, equatorial hot and stimulating with music and entertainment all night and a population of 7000 people from around the globe. Above the clinic was a rain shower of orange flowers from the Poro (Erythrina fusca, Fabaceae), epic Pacific beach sunsets, inspirational classes all day long, sunrise howler monkeys at the Luna Stage, many new friends and insights. Students left really inspired and ready to keep working! We plan on offering this same experience each year.

Resilience training can start in many places, often from necessity or fear of the future, do people decide to get into this. Myself, being a permaculture educator, one of our most critical units is design for disaster. In this unit, we explore all the possible natural and human made scenarios that we would have to deal with as a community from landslide, agricultural collapse, epidemic and war. We explore strategies to put into place and ways to prepare ourselves without being fatalists. Herbal First Aid and kitchen remedies are always one of the topics people are most interested in during our “People Care” unit of the Permaculture Design Course. In light of that, I am writing curriculum for “Permaculture for the Herbalists Path”. This is a merging of two vast multidisciplinary studies that will take in review the interconnection between the wellbeing of the planet and the wellbeing of individuals and communities. Hosting this 120+ hour training in March, 2018 is very exciting and is an expanding endeavor. Students will get a 75-hour Permaculture Design Course with 40+ hours in herbal medicine, focusing on planetary materia medica, regeneration strategies for the internal and external ecosystems and community building, as well as basic anatomy, biology, botany and ethnobotany. In permaculture, we say that we look to the past to design for the future. In herbalism, we study the past, learn from our elders and try to reclaim what has been lost. While witnessing the current collapse of our healthcare and ecosystems, the herbalist’s practice looks to the future to help people awaken to their memory of the time when they too once knew how to care for themselves by working with the living plants. Learning herbalism is empowering and brave and an integral piece of human survival. I suggest all who are reading this article, look to their yard and their nearest woods/meadows/parks for their herbal allies that will be with them through hard times. Look for the people in your community who also love plants and talk to them. Keep the memory alive, and get skills.

Sarah Wu is a practicing herbalist of 16 years, working with plants from the Tropics and Temperate regions, living full time in Costa Rica. She is the co-director of the Punta Mona Center for Regenerative Design and Botanical Studies, where she teaches Permaculture Design Course and Workshops in Herbal Medicine and eco-lifestyle. She is one of the co-founders of both Envision Festival and Medicines from the Edge: A Tropical Herbal Convergence.

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ETHNO-BOTANY IN LAOS, THE ROOTS OF CULTURE

By Biba Vilayteck

PTK Ethnobotanic Garden

Man lived first of all in, on and with nature, and to forget this is dangerous. The goal of ethno-botany is to show how plants have always been faithful companions to man. It inventories and examines the vast collection of knowledge, which different cultures have developed across the millennia to tame and master the plant world. Laos remains a plant-based society, and we want to preserve that. The plant wisdom of Laos is a part, albeit a small one, of Laotian heritage. Though new techniques and new materials are employed, in the villages people still live “in nature” and with nature.

Our ethnobotanic garden, artificial though it may be, is necessary to show the plants utilised by the Lao today and these number approximately a thousand, but the floristic wealth of Laos is much larger and should comprise, when fully inventoried, more than 12,000 different species.

Showing always involves choosing, making categories where none existed, eliminating details and not considering the complexity, the variability and the spirit of invention of individuals. Food plants are too numerous to present on such a small scale, but here you can admire some specimens of traditional plants, such as those used to colour various fibres, of which we have several examples.

Not every plant is good for humans or animals; you will see some in our garden, which you should be careful of. Others are reputed to coax or repel spirits, and should be approached with caution. Like us, animals are part of nature, and one of the largest – the elephant – finds its food and medicines from the same plants as we do.

Nature has provided us with a certain number of plants which are useful for humans. These are important for a healthy lifestyle, life philosophy and are sometimes considered mystical.

In Laos a large part of the population has no choice other than plants to treat ailments, and the effectiveness of these treatments is directly linked to animist or Buddhist beliefs. Each village has its mò ya, the plant specialist, but also a mò môn who knows the mantras, and most times it is the same person who performs both roles. Medicinal plants can also be purchased in the marketplace: dried leaves, brown bark and twisted roots of mysterious origin (which are not easily identifiable).

Like many other traditional medical practices, Lao medicine is preventative rather than for healing.

You dì mi hêng, “being in good health, having strength”, is its basic principle. This condition of well-being depends on good circulation of the internal breath, lôm, which passes through all the organs; its disturbance leads to disorders called padong. Some illnesses have external causes – natural or supernatural – that are called sannibot. Another source of problems is not respecting the cold/hot equilibrium, which governs living beings.

A human being is made up of 32 elements, or khouane, which must be maintained in harmony by rites that are renewed when anything dangerous occurs.

These rites are called soukhoun (or baci), which can be translated as “attachment of souls”.

You will see several small medicinal gardens here, each devoted to a particular type of problem: those experienced by women; those of the skin (which envelops the body and so requires continual care); those of injuries to the arms and legs, which are numerous due to the hard agricultural work undertaken by most Lao people; those related to the stomach and the whole digestive system.

Ethnobotanic Garden at Pha Tad Ke

The spirits are among us. Mankind is not alone in nature. Many spirits, called phi in Lao, surround us. The term phi is very general and encompasses several categories of genies and supernatural beings who can be either well-intentioned or evil.
Ethno-botany in Laos, the Roots of Culture
(Continued from page 47)

Good phi are generally found in particular locations. They are guardians of places, like the phi ban, the phi muang, the phi heun – spirits of the village, of the city, of the house. They are honoured with offerings of candles, incense, flowers or fruits. Spirits inhabit the great and beautiful trees. The ton phi (Ficus religiosa) represents Buddha in the pagodas, but in the forest other trees are honoured. They preside over certain curative rites such as “the propelling up of the fig”, during which a branch of the tree is held up by a stake so that the sick person (the subject of the rite) is supported as well. Supporting the tree is supporting the person.

Evil phi are everywhere. There are the phi phet, phantoms of people who have accumulated bad karma. Particularly frightening is the spirit of a stillborn child or that of a person killed in an accident. The phi kong koy walks backward to hide its tracks, and the phi pop possesses its victim, who then becomes in turn a phi pop. Fortunately, we can protect ourselves against these intruders by nailing a branch of gna kha (woolly grass, Imperata cylindrica), or a leaf of lep nguak (Euphorbia antiquorum) onto the door of the house, or by burning an irritating wood like that of ton mi (Schima wallichii).

In the courtyard in front of the house we can plant spiny cactuses, which frighten spirits. It is also helpful to wear beneficial leaves like phi seua noy (Vitex trifolia) on one’s body, keeping evil at bay. If a sorcerer has already attacked someone, the sick or possessed person can be struck with a whip made of the leaves of cardamom, kavan (Amomum spp.), to break the spell.

Enjoy a visit to our Ethno-botanical garden to learn more!

Biba Vilayleek is an ethno-linguistics and author of several publications on ethno-botany. She lived in Laos for over ten years and now visits every year as resident ethno-botanist at Pha Tad Ke. As a regular contributor to the French/Lao magazine Le Renovateur she wrote a weekly column that published over 600 plant descriptions. She wrote “Fleurs de la Devotion” with Baj Strobel, published by Pha Tad Ke in 2011 as the first book in our ethno botanic series, followed in 2014 by “Jauer la nature”, illustrated by Tao Someanith Nithakhong.

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PANEL DISCUSSION ON CONSERVATION, MANAGEMENT, AND POLICY

PANEL DISCUSSION ON LAW ENFORCEMENT

EVENING DINNER AT HOTEL AND SPEAKER: “Ginseng in Appalachian Folk Medicine” – Phyllis Light

JULY 13, THURSDAY

Appalachian Forest Botanicals

HIGHLIGHTS
PRESENTATIONS:
CURRENT RESEARCH ON APPALACHIAN FOREST BOTANICALS AND CONSERVATION/ MANAGEMENT OF WILD POPULATIONS

Topics include:
• Current research on Appalachian forest botanicals
• Conservation/management of wild populations
• Sourcing/cultivation/forest farming presentations
• Market/trade and roundtable discussion
• Policy input/next steps/recommendations

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FOREST FARMING FOR NEW FARMERS

By Holly Chittum

Forests represent 65% of the land base within the Appalachian region. Along with timber production and harvest, farming of non-timber forest products provides a potential income source for Appalachian forestland owners. There is a long history of the sale of wild harvested forest edible, medicinal, and decorative plants in the Appalachian region. As consumer knowledge of and demand for these products has grown in recent years, forest cultivation has been considered an economically viable option and sustainable alternative to wild harvest. This increased demand has piqued the interest of new farmers who are looking for ways to either diversify current production or make better use of wooded land that requires minimal site preparation and keeps the forest ecosystem intact.

The Appalachian Beginning Forest Farmer Coalition (ABFFC) is a project dedicated to increasing opportunities for farmers and forestland owners in Appalachia and beyond who are interested in starting or expanding/diversifying a forest farming operation. Funded by NIFA under the Beginning Farmer and Rancher Development Program (BFRDP), the ABFFC is the first of its kind within the BFRDP program to focus specifically on forest farming. The ABFFC promotes and expands cultivation and conservation of native non-timber forest medicinal products. The Coalition helps prepare forest farmers to supply a forest grown verified and certified organic raw material to nutraceutical and herbal product industries. This is done by providing technical, administrative, and market sales training, and opportunities for farmer-farmer and farmer-industry representative networking. The Coalition also improves access to farm resource inventory and plant habitat management support services by training extension and other agency personnel. Additionally, opportunities are provided to link them with forest farmers in their area in order to learn more about these enterprises.

The project is a collaboration across multiple academic institutions, governmental and non-governmental organizations including the USDA Forest Service, Virginia Tech, Penn State, North Carolina State, United Plant Savers, Appalachian Sustainable Development, Rural Action, the Blue Ridge Woodland Growers, the USDA National Agroforestry Center, the Pennsylvania Department of Conservation and Natural Resources, and the Southern Regional Extension Forestry Network.

Year 1 wrapped up in December 2016 at the ABFFC and much was accomplished. The Coalition website is rolling at www.appalachianforestfarmers.org. It includes a substantial and growing collection of forest farming resources and learning tools, as well as social media forums for connecting coalition members. ABFFC membership is now almost 1000 strong and growing. Two newsletters have been published with a third on the way this spring 2017. Eight forest farmer training events and two external training sessions took place at multiple locations across the Appalachian region in year 1 including locations in Virginia, Tennessee, Ohio, Kentucky, and Maryland.

For the first events in November 2015, people gathered together from across the forest medicinal products supply chain to discuss new opportunities for growers and buyers in collaboration with United Plant Savers, Mountain Rose Herbs, Pennsylvania Certified Organic, North Carolina State, and Penn State. Summer 2016 events took place in Kentucky and Ohio for the United Plant Savers 1/2-day and 1-day introductory forest farming workshops with collaborators from the Kentucky Department of Agriculture, Pine Mountain Settlement School, and Mountain Rose Herbs. Attendees got an introduction to the forest botanicals market and supply
All ages participated at the UpS Forest Farming event in Kentucky.

chain and learned about a Forest Grown cost-share program funded by United Plant Savers. The Blue Ridge Woodland Growers hosted their ABFFC event in late summer in Floyd, VA. Attendees got a glimpse of the grounds and drying facilities at the of the Appalachian Herb Growers Consortium at the Blue Ridge Center for Chinese Medicine during a field trip. They learned about different aspects of production from site selection and propagation to post-harvest handling and value-added production.

In late August the coalition joined forces with Appalachian Sustainable Development in the forests of northeastern Tennessee near Mountain City. Participants dove into a diverse set of topics from how to make value-added products like wild cherry bark syrup to forest farm management and budgeting strategies. In September, the ABFFC presented forest farming sessions at the Small Farms Conference in Virginia Beach and the International Herbal Association Conference in Columbia, MD. Finally, the coalition journeyed up to Rutland, Ohio and the United Plant Savers Goldenseal Sanctuary in late September with Rural Action. The weekend was full of events in the classroom and in the field. Some attendees spent time in the wood discussing site selection and related topics while others learned the process of tincture making with a local herbalist. Evening found everyone around the bonfire sharing thoughts about valuable things gleaned from the event and sharing excitement for what is to come.

Results are in from the events, and attendee feedback showed much was learned and that understanding of the opportunities and challenges related to forest farming increased substantially. Many also felt they were highly likely to use the information gained during the trainings in their forest farming endeavors. Venues used for the trainings and catering were also rated as excellent!

Planning for year 2 of the project is well underway. In addition to offering several trainings that give a detailed survey of forest farming industry and practices, the ABFFC also plans to offer next-step curriculum. Participants will zoom in on specific, important forest farming topics from propagation and seed sourcing, to harvest and post-harvest processing, to business planning and more in order to build depth knowledge and offer opportunities for specialization. Information about the early 2017 events is available on the ABFFC website calendar with more to follow as events are confirmed for future dates. Along with second year program events, the Coalition has partnered with other organizations to offer trainings and programs earlier this spring including conference sessions at the CASA Future Harvest Conference in College Park, MD in January and the PASA Farming for the Future Conference in State College, PA, and a one-day introductory training at the Organic Growers School Annual Spring Conference in Asheville, NC. The list of 2017 events is growing, so be sure to check the ABFFC website calendar often for updates at www.appalachianforestfarmers.org.

Elwood Jerome “Bud” Carr’s Appalachian medicinal plant collection housed Pine Mountain Settlement School.
Eastern White Pine

Pinus strobus
UNITED PLANT SAVERS AT THE IUCN WORLD CONSERVATION CONGRESS

By Alison Ormsby

Susan Leopold and Alison Ormsby from United Plant Savers/Sacred Seeds attended the 2016 International Union for the Conservation of Nature (IUCN) World Conservation Congress in September in Honolulu, Hawaii. The World Conservation Congress is only held every four years. This year’s gathering brought 9,000 people from around the world together to discuss conservation successes and challenges and set goals for the future. The IUCN is a well-known global conservation organization, based in Switzerland, that sets international conservation policy and produces the Red List publication that assesses that status of species.

United Plant Savers became an official member of the IUCN this year. As an official voting member of the IUCN, UpS was able to take an active role in the WCC as part of the Members’ Assembly, where only members can vote on motions put forward during the Congress. For example, UpS was able to vote in favor of motion 48, support for “Protection of primary forests, including intact forest landscapes.”

In addition, Susan and Alison helped facilitate a workshop, “Better Deals for Nature and People: Collaborations for Responsible Sourcing of Wild Plant Ingredients.” This workshop was a collaboration of UpS/Sacred Seeds, TRAFFIC, Traditional Medicinals, AERF, and FARM. Susan and Alison gave a talk, “Conservation Through Cultivation: A Focus on American Ginseng” (see photo). Details about the workshop are available online at https://portals.iucn.org/congress/session/10224

Outcomes from the Congress include a fruitful collaboration with the IUCN’s Medicinal Plant Specialist Group (MPSG) (see photo). Susan and Alison will be helping to re-launch the MSPG newsletter that has a global readership.
GREEN THANKS & GRATITUDE

THANK YOU FOR YOUR GENEROUS CONTRIBUTIONS & SUPPORT

We extend a special thank you to all members of UpS who continue to support us with memberships and donations. Your support, efforts and concern are the only thing that can really make a difference in the protection and conservation of our important medicinal plants. All donations and help, whether it be organizational, cultivating, educating or choosing medicinal herb products more consciously are appreciated. Great gratitude goes to the many in-kind donations of goods and services from companies and friends that support our work. Thank you to all our supporters and members who continue to rally for the plants.

2016 DONATIONS: $5000+

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Rosemary Gladstar, Women’s Herbal Conference
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ORGANIZATION/COMPANY 2016 DONATIONS: $100 - $4,999

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Gaia Herbs
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gaiawaystore.com

Golden Needle Acupuncture
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goldthread-herbs.myshopify.com

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grdhealth.com

Green Girl Herbs & Healing
Hopewell Junction, NY
greengirtherbs.com

Greenstar Farm and Apothecary
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greenstarfarm.com

Guayaki Sustainable Rainforest Products
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loessroots/loess_roots.html

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Indian Harbor, FL
mama-jos.com

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TFS Ltd
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vitalityworks.com

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wisghardenherbs.com

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woodlandessence.com

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Hyde Park, VT
zackwoodsherbs.com

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Corporate members have a unique opportunity to educate their customers about issues surrounding the sustainable supply of our native medicinal plants. More information about the corporate member program is on our website.
Adopt an “At-Risk” Plant Program

Adopting an “At-Risk” healing herb is your five-year commitment to sponsor your adopted herb’s page on UpS’s website. The webpage will include your logo, a brief description of your organization, and any relevant information you provide. The webpage will be regularly updated with current research towards the conservation and propagation of your adopted healing herb. Your adoption fee also helps fund the many programs which fulfill the mission of United Plant Savers.

To learn about how to adopt and the benefits of adopting an “At-Risk” healing herb, download our PDF brochure from our website www.unitedplantsavers.org.
2017 HERB EVENTS

JUNE 9 - 11
International Herb Symposium
Wheaton, Massachusetts
www.internationalherbsymposium.com
Keynote speaker: Robin Wall Kimmerer

JULY 12 - 4
The Future of Ginseng and Forest Botanicals Symposium
Morgantown, West Virginia
www.unitedplantsavers.org

AUGUST 3 - 6
AIA International Aromatherapy Conference
Rutgers University - School of Plant Biology
New Brunswick, New Jersey
www.alliance-aromatherapists.org
Susan Leopold, PhD will be speaking

AUGUST 12
Medicinal Plants of the Driftless Region
United Plant Savers Event
Kickapoo, Wisconsin
www.unitedplantsavers.org

AUGUST 17 - 23
The Oregon Eclipse: a total solar eclipse gathering
Summit Prairie, Oregon
www.oregoneclipse2017.com
Susan Leopold, PhD will be speaking

AUGUST 25 - 27
The 30th Anniversary Celebration of the New England Women’s Herbal Conference
Hebron, New Hampshire
www.womensherbalconference.com

SEPTEMBER 30 - OCTOBER 1
MidAtlantic Women’s Herbal Conference
Kempton, Pennsylvania
www.womensherbal.com
Keynote speakers: Rosemary Gladstar and Susan Leopold, PhD

OCTOBER 5 - 9
American Herbalists Guild 28th Annual Symposium
Silverton, Oregon
www.americanherbalistsguild.com

FEBRUARY 23 - 25, 2018
Florida Herbal Conference
Lake Wales, Florida
www.floridaherbalconference.org
Keynote speakers: Linda and Luke Black Elk

CHRISTMAS FERN

Tessa Scheele

Spring 2017
Medicinal Plant Conservation in the Driftless Region

A full day of informative talks & herb walks with Sam Thayer, Matthew Wood, Jess Krueger, Jim McDonald, Linda Conroy, Erin LaFaye, Jane Stevens, Lora Krall, Kathleen Wildwood, Wayne Weiseman and others.

PLANTING THE FUTURE conference

SATURDAY
August 12, 2017
Kickapoo Valley Reserve, WI

Aconitum noveboracense, also known as northern blue monkshood.
KAT MAIER ELECTED BOARD PRESIDENT OF UNITED PLANT SAVERS

by Sara Katz

United Plant Savers is a unique organization in many ways. We are the only organization in the U.S. whose mission is to protect indigenous medicinal plants. We are a very small budgeted organization with an outsized voice. We have a board comprised of some of our country’s most passionate medicinal plant conservation advocates who travel all year long to attend UpS board meetings, herbal conferences and symposia, and participate in plant population studies and plant rescues. UpS strives to respect, support, and find common ground with all individuals and groups in the medicinal plant community.

I think perhaps no one is more archetypical of these combined qualities than UpS’s third and current board president, Kat (aka Kathleen) Maier. A practicing herbalist for over twenty years, Kat is founder and director of Sacred Plant Traditions in Charlottesville, Virginia. Many of you know Kat through her educational programs, clinics, and community herbalist training programs. She is a founding board member of Common Ground Healing Arts, a collective of practitioners that offers their services on a donation basis. Kathleen has served on the UpS board since 2011 and was the recipient of UpS’s very first Medicinal Plant Conservation Award in 2005.

UpS has had only three board presidents in its almost 25 years of existence. Rosemary Gladstar, visionary and founder of United Plant Savers, became the first board president at the organization’s inception in 1994. During Rosemary’s tenure as board president, United Plant Savers birthed a plethora of unprecedented programs and initiatives. The UpS “At-Risk” List was conceived and developed early on, along with Partners in Education, the Journal of Medicinal Plant Conservation, the Botanical Sanctuary Network, UpS’s acquisition of the Botanical Sanctuary in Rutland, Ohio, and many more!

A few times during her busy 14 years as board president Rosemary tried to pass on this leadership role, but every time was assured by the board she was doing a fantastic job and no rest for the excellent, or something like that, so Rosemary led on. She served as President until 2008, when I relieved her of that leadership responsibility. I was completely honored to be asked to fill this role of humble servant to the plants and to this organization, which has
absolutely been the most rewarding time and experience of my life.

During my decade as President, UpS continued to grow programs and expand our reach. We held an "At-Risk" List Summit, inviting experts from around the country to take a fresh look at our "At-Risk" List; we developed plans and funding for the Center for Medicinal Plant Conservation, which is breaking ground this Spring; The Talking Forest Medicinal Trail at the Sanctuary in Ohio was inaugurated and opened to the public; UpS took over Sacred Seeds, a network of sanctuaries dedicated to preserving biodiversity and plant knowledge around the globe; and we perfected two Conservation Easements on UpS’s 360 acre Sanctuary in Ohio. But my single greatest pride and accomplishment during my years as board president was to hire Susan Leopold as UpS’s third Executive Director. Susan, a force for the plants, was recommended for this position by none other than Kat Maier.

Kat totally fell in love with the UpS Sanctuary in Ohio such that from the very first time she walked its forest and meadows, her heart was committed to taking care of that place forever more. It is this absolute dedication, her overflowing nurturance and love for plants and their people, along with a brilliant mind and rooted heart that assure me that, in Kat Maier, United Plant Savers has the best possible leadership to carry us forth as we enter our second quarter century of wild medicine plant stewardship.

WHEN THE MUSIC GOES SILENT
by Susan Leopold, PhD

“Every species has a song”, is a quote from Kathleen Harrison, founder of Botanical Dimensions. Brazilian rosewood (Dalbergia nigra) has a rare songful story that plant people should know because this species has played music for the masses as the main source of tonewood used in classical instruments and most notable guitars.

In July of 2017, I attended the CITES Plants Committee meeting in Geneva, Switzerland. The most active discussion that took place was from instrument manufacturers and orchestra groups, who were presenting concerns about how they were to navigate the new regulations elicited, that now required permits and restrictions on international travel with instruments and trade. I had special earphones so I could hear multiple languages translated from various countries, but all I could think about was how monumental it would be if every instrument owner participated in a global concert to raise awareness for the most silent of environmental crimes—illegal logging of endangered trees and the habitual loss of our global forests. Instead, the human plight was consumed in how to navigate enforcement, paperwork, and the rights of the music makers: the orchestras, musicians, and manufacturers. Who then speaks for the trees?

Consciousness in plant medicine necessitates the art of listening, as well as nurturing the diversity of sounds and scents.

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ON THE COVER: A Forest Caretaker by Katherine Ziff
Touch Drawing (monotype) on cotton vellum over water soluble oils, embellished with collage and soft pastels.
Fall leaves scanned, printed on cotton vellum, and collaged.
Riled up about what it means to seek balance between new trends and marketplace demands vs. respectful stewardship? Cultivating consciousness in plant medicine is a theme in this year’s Journal of Medicinal Plant Conservation.

The answers aren’t easy, the issues are multifaceted thus the following articles provide a range of insights from personal interaction with plants to consumerism of herbal products.

This year United Plant Savers delivered the opening talk to the AIA (Alliance of International Aromatherapists) conference at Rutgers University on the reality of unregulated trade in Hawaiian sandalwood essential oil. I believe there is important holistic insight into how traditional cultures use aromatic plants and value them as sacred. For example, aromatherapy as practiced in traditional communities in Central and South America is done with aromatic flowers/leaves often grown in home gardens, sustainable, and therapeutic in the cultural context of ceremonial baths and ritual. In the case of certain essential oils, it’s a very different story. It is a resource-intensive practice, and often those who use the oils have no idea where they come from or how they are being made. Buyers beware—adulteration and illegal practices are commonplace.

Rosewood (Aniba rosodora) makes the news again in September of 2017 with the announcement of a settlement to which Young Living founders, Gary and Mary Young, plead guilty to the intentional illegal harvesting and falsification of documentation to import rosewood essential oil and sell it for profit of which they made an estimated $9 million. Threatened with extinction due to demand and unsustainable business practices, not only is its wood prized for musical instruments and furniture/art carving, but also for the essential oil distilled from its inner heartwood and roots.

In detailed court documents it is stated that between 2010-2014 Young Living harvested 86 tons of rosewood illegally in Peru. They were also found guilty of illegal trade in spikenard (Nardostachys jatamansia) oil from Nepal. Through the FOIA (Freedom of Information Act) UpS acquired the court documents stating the case details, which we have on our website. How can we deplete biodiversity and at the same time claim that we are engaged in a healing practice? Essential oil use has to come with ethical consumerism, and Erika Galentin’s article, “Learning to Define Sustainability: Lessons for Essential Oil Consumers”, presents both mindful reflection and cautionary wisdom. New UpS board member, Kelly Ablard, explains about those essential and carrier oils that are threatened globally.

Reflecting back on 2017 it was a year of tremendous growth for United Plant Savers. We jumped into an “Earth Day Crowdrise” campaign to raise capital for building the first of its kind “Center for Medicinal Plant Conservation.” Thank you to all our supporters who made our fundraiser a success. We then headed to Wheaton College for the biannual International Herb Symposium where a new track of classes focused on conservation through cultivation was launched. A few weeks later, we held the Future of Ginseng and Forest Botanicals Symposium, a three-day conference in Morgantown, West Virginia. ‘We cannot have commerce without conservation’ was the guiding mantra. We have included the Table of Contents of Research and the Symposium summary in this Journal, the full proceedings are on the Up’s website. We held a Planting the Future event in Kickapoo, Wisconsin, taught classes at the Oregon Eclipse, and set up a booth at the Lockn Festival.

For the first time membership has surpassed 3,500. Our goal is to double our membership, then as an organization, we could sustainably support UpS’s operational costs and programs. If each member who receives this Journal could tell one friend, we could achieve our goal! Most importantly we want to share our mission, and we do so by providing all of our information on our website with free access to our resources, “At-Risk” Tool information, podcasts, past and present Journals, articles, and symposium proceedings.

We have also posted on our website a fascinating study of plants in trade on the internet that are CITES listed. This report was done by Jin A. Choi, an amazing young woman from South Korea who was an intern last year for the CITES Secretariat at the headquarters in Geneva.

As plant savers, we must take the time to know the stories of these plants. They need us to be their voice before their song goes silent. ■


“We need the tonic of the wilderness.”

– Henry David Thoreau
A YEAR IN REVIEW

UpS Board of Directors winter meeting

Team UpS at the International Herb Symposium

UpS supporters at Rutgers for the AIA conference

The sun temple at the Oregon solar eclipse festival

Teachers at the UpS event in Kickapoo, WI

UpS booth on Participation Row at Lockn

IUCN redlist training workshop in Arizona

UpS recognized for conservation easement by AOA

Rosemary and Susan at the Mid Atlantic Women’s Conference in PA

Steven Yeager and Howie Brownstein at the AHG conference in OR

Mark Hanson’s sandalwood nursery on the Big Island, HI

UpS receives AHPA herbal insight award for 2017
SHIFTING THE PARADIGM: CONSCIOUSNESS IN PLANT MEDICINE
by Shantree Kacera

In the last decade, especially the previous year or two, the field of herbalism has been shifting—the consciousness of both herbalists and the general public has changed as our climate and landscapes have around the whole world. The shift to looking through the eyes of our ecological selves has come more into the forefront.

In Carolinian Canada the landscape has changed dramatically since I started exploring, studying, and practicing herbalism in the 1970s. This beautiful green island tucked into the southward thrust of the Great Lakes is Canada’s richest and most endangered ecosystem. It is surrounded by 20% of the fresh water in the world. This life zone is actually the northernmost edge of the deciduous forest region in eastern North America and is named after the Carolina states.

It is a unique ecosystem zone found in southern Ontario. The term “Carolinian” refers to its similarity to the forests found in North and South Carolina in the southern United States. The Carolinian zone in Canada is extremely rich in both plant and animal species. Even though this region’s habitats and ecosystems include examples of sand dunes, marshes, tall-grass prairies, savannas, wetlands, streams, shorelines, and other aquatic habitats, it is the southern-type deciduous forests that characterize this unique Canadian ecosystem. Fifty-eight percent of these ecosystem types are considered rare. Each of these ecosystems has a distinctive set of species. Of all the plants on the UpS “At-Risk” and “To-Watch” Lists more than half of these are rare, threatened, or endangered here in this fragile bioregion of the world.

It is the country’s most diverse and most threatened ecological region. Over 500 species in the region are considered rare.

- 25% of Canada’s population on 0.25% of its area
- Over 7 million people live in this ecosystem and best farmland in the country
- Forest zone only covers 550 km, or 0.1% of the total forest area of Canada
- More endangered and rare species than any other life zone in the country
- 80% of the Carolinian region was covered with vast tracts of maple, ash, elm, oak, and pine forests, mostly in old-growth condition.

- A great diversity of wildlife of all kinds, including many species not found elsewhere in Canada
- Less than 2% of the landscape is in public ownership
- 73% of the landscape is in highly productive agriculture
- Forest cover has been reduced from 80% to less than 4% in key counties with almost no old-growth
- Forest interior has been reduced to just 2%
- Wetlands reduced from 28.3% to less than 5%
- It is estimated that some 2,200 native species of herbaceous plants grow here
- Less than 5% of Carolinian Canada is currently protected as natural landscapes
- There are 77 species of trees alone
- It is also the richest life zone with the most diversity in Canada.

Climate
The climate of this region is the main reason it forms a unique ecosystem. Affectionately termed the “banana belt” of Canada, this zone boasts the warmest average annual temperatures, the longest frost-free seasons, and the mildest winters in Ontario. For example, Point Pelee near Windsor averages over 170 frost-free days, while Guelph, which is just north of the Carolinian boundary, has an average of only 135 frost-free days per year.

Rare Species
The most unique feature of the Carolinian life zone is the number of rare species found here. The region boasts fully one-third of the rare, threatened, and endangered species found in all of Canada. Sixty-five percent of Ontario’s rare plants are found in the region, and 40% are restricted to the Carolinian zone. Included in these are trees, such as the pawpaw, blue ash, tulip, slippery elm and the Kentucky coffee tree; and herbaceous plants, such as American ginseng (Panax quinquefolius), bloodroot (Sanguinaria canadensis), echinacea (Echinacea spp.), false unicorn root (Chamaelirium luteum), goldenseal (Hydrastis canadensis), lady’s slipper (Cypripedium spp.), wild yam (Dioscorea villosa), both black cohosh (Actaea racemosa) and blue

“Keystone of forest gardening is a paradigm shift in our own human consciousness.
From monoculture mind to polyculture mind;
From separation to unity;
From exploitation and manipulation to respect and interdependence;
From intervener to ecosystem participant.”

– Dave Jacke
cohosh (Caulophyllum thalictroides), true unicorn (Aletris farinosa), Virginia snakeroot (Aristolochia serpentaria), trillium (Trillium spp.), our provincial flower, and our only cactus, the Eastern prickly pear (Opuntia humifusa). The rare southern flying squirrel, while also known from a few sites has its main habitat along the north shore of Lake Erie.

Shifting Our Paradigm – Living the Solution

In the last decade there has been a major shift among the many herbalists, forest gardeners, and foragers to localize our medicines and integrate native foods into our daily life. We are weaving herbal medicine, wild nutrition, and forest gardening into the mentorship programs offered at The Living Centre. We approach the solution through consciousness of re-wilding and of the interconnectedness of all things and looking at wisdom of wild plants that are native to this bioregion. We are designing a one-kilometer native plant trail using re-wilding perennial polyculture practices.

Re-Wilding – The Art of Creating Wild Perennial Polycultures

The re-wild strategy we are applying is done through a native perennial polyculture mapping process creating a dynamic, self-organizing multi-species community. This design process is done in such a way that entails the growing of a diversity of perennial plants, which imitates the diversity of natural ecosystems. It is a form of re-wilding both the landscape and practitioner. This is achieved through shifting the lens of the observer to see forward in time of the regeneration potential, a process that can occur by stepping in and being an active ecosystem participant. The intention in this process is to set ecosystems in motion to support their return back to wholeness to reach their optimal potential.

The other essential key to supporting the shift for the participants is asking each individual to commit to a regular practice of what we call “Tree Time”, a time to observe and connect to an ecosystem, to learn and be inspired. In addition we ask folks to integrate native wild foods into their daily life. For we “Are Where We Eat”, we encourage folks to experiment and create new wild and native delicious recipes. In gratitude a shifts happens—the internal ecological landscape to a full spectrum and expression of being a wild steward—to now act in shifting the external landscape in the art of Save – Steward – Seed for the future.

Go Wild Grow Wild – In the Zone Carolinian Canada

There is a major shift happening amongst the general public and the plant and herb lovers through a movement launched last year called In the “Zone” to encourage folks to Go Wild Grow Wild and create native foraging sanctuaries. This is to educate, demonstrate, and inspire folks in using, conserving, and revering native plants.

Thousands of folks are creating these native habitat sanctuaries and becoming intimate with and being a voice and a wild steward of living the solution and shifting the paradigm—a return of the sacred.

The vision is to plant one million forest gardens in Carolinian Canada by 2020 with native medicines and foods to create a resilient culture. As each person acts as ecosystem participant with a clear intention, applied ecological knowledge, and wisdom, we can actually benefit the earth with our existence by creating responsible managing and stewarding healthy ecosystems, which achieve miraculous abundance and regenerate the earth as well.

Shantree Kacera, RH., D.N., Ph.D. is the founder and co-director of The Living Centre (1983) and Living Arts Institute, located outside of London, Ontario in the heart of Carolinian Canada. Shantree received his doctorate in Nutritional Medicine and Herbalism in the 70s. He has an integrative seasonal approach to his teaching students, mentees, and apprentices through his mentorship programs in Herbal Medicine, Wild Nutrition, and Forest Gardening. He is one of a few Canadian Herbalists awarded ‘Honouring our Elders’ by the Canadian Council of Herbalist Association who have spent at least 25 years offering outstanding contributions to the field of herbalism. www.thelivingcentre.com

Spring 2018
**“AT-RISK” & “TO-WATCH” LIST**

**STATEMENT OF PURPOSE**

For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers, and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UPS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

<table>
<thead>
<tr>
<th>“At-Risk”</th>
<th>“To-Watch”</th>
<th>“In-Review”</th>
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</table>
| **AMERICAN GINSENG**<br>Panax quinquefolius | **ARNICA**<br>Arnica spp. | **HIGHEST PRIORITY: RESCORE NOW**<br>SILPHIUM<br>*Silphium integrifolium*
| **BLACK COHOSH**<br>Actaea (Cimicifuga) racemosa | **BUTTERFLY WEED**<br>Asclepias tuberosa | **SLIPPERY ELM**<br>Ulmus rubra
| **BLOODROOT**<br>Sanguinaria canadensis | **CASCARA SAGRADA**<br>Rhamnus purshiana | **GOLDENSEAL**<br>Hydrastis canadensis
| **BLUE COHOSH**<br>Caulophyllum thalictroides | **CHAPARRAL**<br>Castela emoryi | **FALSE UNICORN**<br>Chamaelirium luteum
| **ECHINACEA**<br>Echinacea spp. | **ELEPHANT TREE**<br>Bursera microphylla | **BLACK COHOSH**<br>Actaea racemosa
| **EYEBRIGHT**<br>Euphrasia spp. | **GENTIAN**<br>Gentiana spp. | **TOP PRIORITY: IN THE NEXT YEAR**<br>SPIKENARD<br>Aralia racemosa, A. californica
| **FALSE UNICORN ROOT**<br>Chamaelirium luteum | **GOLDTHREAD**<br>Coptis spp. | **CASCARA**<br>Frangula purshiana
| **GOLDENSEAL**<br>Hydrastis canadensis | **KAVA KAVA**<br>Piper methysticum (Hawaii only) | **BLOODROOT**<br>Sanguinaria canadensis
| **LADY’S SLIPPER ORCHID**<br>Cypripedium spp. | **LOBELIA**<br>Lobelia spp. | **VIRGINIA SNAKERoot**<br>Aristolochia serpentaria
| **LOMATIUM**<br>Lomatium dissectum | **MAIDENHAIR FERN**<br>Adiantum pedatum | **TRILLIUM**<br>Trillium spp.
| **OSHA**<br>Ligusticum porteri, L. spp. | **MAYAPPLE**<br>Podophyllum peltatum | **BLUE COHOSH**<br>Caulophyllum thalictroides
| **PEYOTE**<br>Lophophora williamsii | **OREGON GRAPE**<br>Mahonia spp. | **WILD YAM**<br>Dioscorea villosa
| **SANDALWOOD**<br>Santalum spp. (Hawaii only) | **PARTRIDGE BERRY**<br>Mitchella repens | **MID PRIORITY: IN THE NEXT 2 YEARS**<br>Lomatium<br>Lomatium dissectum
| **SLIPPERY ELM**<br>Ulmus rubra | **PINK ROOT**<br>Spigelia marilandica | **OSHA**<br>Ligusticum porteri
| **SUNDEW**<br>Drosera spp. | **PIPSISSEWA**<br>Chimaphila umbellata | **ECHINACEA**<br>Echinacea spp.
| **TRILLIUM, BETH ROOT**<br>Trillium spp. | **RAMPS**<br>Allium tricoccum | **BUTTERFLY WEED**<br>Asclepias tuberosa
| **TRUE UNICORN**<br>Aleuris farinosa | **SPIKENARD**<br>Aralia racemosa, A. californica | **STONERoot**<br>Collinsonia canadensis
| **VENUS’ FLY TRAP**<br>Dionaea muscipula | **STONE Root**<br>Collinsonia canadensis | **TRILLIUM**<br>Trillium spp.
| **VIRGINIA SNAKERoot**<br>Aristolochia serpentaria | **STREAM ORCHID**<br>Epipactis gigantea | **YERBA MANSA**<br>Anemopsis californica
| **WILD YAM**<br>Dioscorea villosa, D. spp. | **TURKEY CORN**<br>Dicentra canadensis | **MAYAPPLE**<br>Podophyllum peltatum
| **WILD INDIGO**<br>Baptisia tinctoria | **WHITE SAGE**<br>Salvia apiana | **PARTRIDGE BERRY**<br>Mitchella repens
| **YERBA MANSA**<br>Anemopsis californica | **WILD INDIGO**<br>Baptisia tinctoria | **INDIAN PIPE**<br>Monotropa uniflora
| **WILLIAM CHEWY**<br>Prunus serotina | **CHAPA**<br>Inonotus obliquus | **CHAPA**<br>Inonotus obliquus
| **SOLOMON’S SEAL**<br>Polygonatum biflorum | **YAUPON**<br>Illex vomitoria | **WILD GERANIUM**<br>Ceranium maculatum

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**Requested To Score**

**INDIAN PIPE**<br>Monotropa uniflora

**CHA**<br>Inonotus obliquus

**SOLOMON’S Seal**<br> Polygonatum biflorum

**YAUPON**<br>Illex vomitoria

**WILD GERANIUM**<br> Ceranium maculatum
The cultivation of medicinal herbs using regenerative agriculture methods can be as vital as conservation and education in meeting United Plant Savers’ goals. Herb farmers have the ability to cultivate some of the UpS “At-Risk” or “To-Watch” species, potentially reducing pressure on wild populations, as well as grow and promote alternatives to these same plants of concern. Herb farmers, particularly those who sell directly to consumers through farmers’ markets or Community Supported Agriculture (CSA) models, can also play a vital role in educating consumers who may not be aware of herbalists’ and UpS members’ stewardship concerns.

In an ecosystem, such as a farm, just as in humans, the health of the individual depends on the health, support, and cooperation of the larger community. On farms the role of soil microorganisms is increasingly being studied and understood as vital. Peer-reviewed research has shown that a healthy population of soil microorganisms can help increase crop yields, promote disease resistance of plants, and provide tolerance to abiotic plant stressors such as drought.

Folks drawn to herbalism often look beyond the individual health benefits of plants but also believe in the role of plant medicine in the healing of the community and planet. Soil microorganisms can be part of this larger healing, as they can help produce soil stabilizing humic compounds, act as natural fertilizers for crops, provide a significant role in carbon sequestration to help combat climate change, and also provide economic stability to farmers. Finally, research has shown that the right soil microorganisms can increase the nutrient density of foods and increase the levels of the active constituents in medicinal plants, potentially leading to increased medicinal benefits.

The relationship between plant roots and one part of the world of soil microorganisms, the mycorrhizal fungi, has been called the most important symbiosis on earth, essential to ecosystem function. The challenge for gardeners and farmers is that it is still unclear how to best work with these mycorrhizal fungi. The high level of interest of growers in the benefits of working with mycorrhizal fungi led to the development of a farm-based field research project looking at crop nutrient density, disease resistance, and crop yield in five medicinal herb crops: sweet basil (Ocimum basilicum), ashwagandha (Withania somnifera), parsley (Petroselinum crispum), fennel (Foeniculum vulgare), and onion (Allium cepa). This field research was completed on a small medicinal and culinary herb farmlet called Pleasant Valley Botanicals in Northwest Connecticut. It was completed by the farmer, with the assistance of volunteers (special thanks to Andrea Boneset!) and statistical analysis by Dr. Maura Bozeman (a local professor of Environmental Sciences). The methodology was designed to look at the crop yield of these five crops, the nutrient density of onions, and the disease resistance of sweet basil to basil downy mildew. Basil downy mildew was chosen because it is a devastating oomycete (Peronospora belbahrii) that can cause 100% crop loss, and there are no effective organic or conventional controls. Basil is the most economically profitable annual culinary
herb crop in the United States, and crop losses due to basil downy mildew can have a significant negative economic impact on vegetable and herb growers.

This research used a block design method, where each of the five crops in the field received one of three treatments at time of transplantation: a control, a commercially purchased fungal inoculant, and a homegrown fungal inoculant called IMO (Indigenous Microorganism). IMO inoculant is based on a Korean Natural Farming method, designed to cultivate a native population of mycorrhizal fungi and hopefully provide a wide range of benefits to the plants through these symbiotic relationships.

As each crop was harvested throughout the growing season, the yield was recorded from plants in each of the different treatments; crops were then included in the farm’s Medicinal Herb CSA shares. After data analysis, no crops in the IMO or commercial inoculant treatments had statistically significant improvements in crop yield compared to the control treatment. We also looked at the total inter-species crop yield from each bed to see if there was any possible benefit from the common mycorrhizal network. The CMN concept has shown that fungi will share nutrients between different species of plants, such as one study showing nutrient flow between a Douglas fir, a paper birch, and a western red cedar. However, there was also no statistically significant increase in inter-species crop yield.

Ultimately, this researcher concluded the environment created in the field trial did not meet the conditions necessary to support the mycorrhizal fungi and ultimately the benefits to crops as measured by yield. Specifically, regenerative agriculture presents us with three key components to have more effective sustainable agriculture systems: cover cropping, crop diversity, and low or no-till practices. This particular field design only incorporated crop diversity, as there was no prior cover cropping, and the design incorporated significant prior soil disturbance. Other research strongly suggests that maximum benefits are achieved by the inoculation of plants at the time of seeding (germination) as opposed to at the time of transplantation, as done in this study.

Because of financial and lab access limitations, this study used a refractometer to look at the brix levels of one crop, onions, as an attainable proxy for nutrient density or active constituent levels. There were no statistically significant differences in the onion brix between each treatment.

Finally, additional sweet basil plants in each treatment protocol were monitored weekly for signs of basil downy mildew based on percentage of leaf area with sporulation. There was a delay in infection in basil plants inoculated with the Indigenous Microorganisms treatment, which is a potentially promising finding worth further investigation. Even more exciting were two basil plants in the IMO treatment protocol that were infected with basil downy mildew (which typically has 100% crop loss), but then made a significant recovery with new healthy leaf growth. These finding may be an indication of systemic acquired resistance, though such a conclusion is beyond the scope of this study. This resistance is when a plant is able to develop an immune response or resistance after exposure to a pathogen, in this case because of the benefits of mycorrhizal symbiosis. Plants growing as part of a healthy ecosystem that includes mycorrhizal fungi have improved access to the diversity of metabolites and are better equipped to combat pathogens. Remarkably, plants can downgrade their immune systems to allow for beneficial symbiotic relationships, which later can protect them from other pathogens.

Setting this research project within a larger body of knowledge, the author would offer the following conclusions to gardeners and polyculture farmers: By adding fungal inoculants at the time of seeding, we improve the likelihood of seeing beneficial results. By exploring low cost, low tech methods of cultivating local indigenous microorganisms, we may find benefits
well worth the effort. But most important is supporting growing conditions where soil microorganisms can thrive, which can potentially help grow higher quality and more medicinally potent plants and offers significant environmental benefits. If used simultaneously, the three key tenets of regenerative agriculture: use of cover crops, crop diversity, and low or no-till practices potentially will create a habitat for the soil microorganisms and their associated benefits. These practices bring us back to farming methods more in keeping with natural processes than current conventional agriculture methods.

Melody Wright is the farmer/founder of Pleasant Valley Botanicals, a small farmlet growing vibrant medicinal and culinary herbs for the local community. Her commitment to growing medicinal herbs is based in her belief of herbs as an integral part of affordable and holistic health care and agricultural systems.

The author welcomes correspondence on this article and will gladly share the data and findings, a bibliography of helpful books and relevant peer-reviewed research, or information about the SARE program for interested medicinal herb farmers.

Pleasantvalleybotanicals@gmail.com or pleasantvalleybotanicals.com

This project supported in part by the Northeast Sustainable Agriculture Research and Education (SARE) program. SARE is a program of the National Institute of Food and Agriculture, U.S. Department of Agriculture.

“...The spicy teas and tasty delicacies I prepare from wild ingredients are the bread and wine in which I have communion and fellowship with nature, and with the Author of that nature.”

— Euell Gibbons
UNREGULATED WILD COLLECTION AND HABITAT LOSS LEAD TO VULNERABLE STATUS FOR MEDICINAL GOLDENSEAL

The latest update to The IUCN Red List of Threatened Species™ saw Goldenseal classified as “Vulnerable” on The IUCN Red List in a move that highlights concerns about the medicinal plant’s decline.

The IUCN Red List (www.iucnredlist.org) now includes 87,967 different wildlife species, of which 25,062 (approximately 28%), are classified as threatened - assessed as Critically Endangered, Endangered or Vulnerable.

Goldenseal (Hydrastis canadensis) is a long-lived perennial plant native to North America (USA and Canada) where it has undergone a decline in both its distribution and the quality of its habitat.

The plant is widely used medicinally amongst rural communities and national consumers alike given its high concentration of medicinally-active alkaloids. Its applications include treating colds and other respiratory conditions as well as curing digestive disorders such as stomach pain and swelling, diarrhoea and constipation.

“Goldenseal was widespread in eastern North American forests two centuries ago, and it has long been prized for its medicinal use,” says Leah Oliver, Senior Research Botanist with NatureServe who led the assessment.

“The main threats to Goldenseal are unregulated wild collection combined with historic and continuing loss of its forest habitat. However, there is a growing international market for cultivated Goldenseal, and wild-collection may be sustainable if it is carefully managed and contributes to protection of forest habitat. These activities may slow the decline of the species.”

“Medicinal plants, including Goldenseal, are an important use of the earth’s amazing biological diversity—not just for human health,” says Danna Leaman, Co-chair of the Medicinal Plant Specialist Group of the International Union for Conservation of Nature (IUCN).

“Many subsistence incomes, as well as some substantial fortunes, continue to be made from their commercial value. Survival of the companies and markets that rely on these species depends on adoption of sustainable wild harvest methods and habitat protection. We are undertaking global Red List assessments of many...
North American medicinal plants to identify the need for sustainable wild harvest before a species becomes threatened with extinction."

National and international demand for Goldenseal continues to rise. The species is designated as Threatened and is protected by national legislation in Canada, but is not protected in the United States. International trade requires a permit and is monitored by both countries under the Convention on International Trade in Endangered Species of Fauna and Flora (CITES).

“Goldenseal is an important species within the medicinal plant trade, both commercially and within local communities,” said Anastasiya Timoshyna, TRAFFIC’s Medicinal and Aromatic Plants Programme Leader.

“Its listing as Vulnerable to extinction should alert the industry associated with the wild harvest of Goldenseal to the urgent need for implementing sustainable wild harvesting practices—there has never been a greater need for sustainability certification systems like the FairWild Standard, which have already been instrumental in protecting other threatened plant species from over-exploitation.”

The FairWild Standard was established by TRAFFIC, IUCN, and WWF, in partnership with industry and other organizations concerned about unsustainable sourcing of wild plant ingredients. It provides the necessary safeguards and frameworks to enable sustainable wild collection and ensure the long-term survival of wild plant species as well as fair pay and good working conditions for plant harvesters.

“FairWild Certification schemes can also give rural collectors and communities access to commercial markets to help them reap the rewards of sustainable wild harvesting,” says Timoshyna.

“It is time that sustainable certification systems become a requirement rather than just an appendage to any form of wild plant collection. Otherwise we may see many more species declining, or disappearing completely, from the wild.”

About FairWild

The increasing demand for wild plants—as ingredients for food, cosmetics, well-being and medicinal products—poses major ecological and social challenges. The pressure on potentially vulnerable plant species can endanger local ecosystems and the livelihoods of collectors, who often belong to the poorest social groups in the countries of origin.

As a response to these concerns, the FairWild Foundation is working with partners worldwide to improve the conservation, management and sustainable use of wild plants in trade, as well as the livelihoods of rural harvesters involved in wild collection.

TRAFFIC has supported the development of the FairWild Standard, and now hosts the organization’s Secretariat under a partnership agreement: www.fairwild.org

About TRAFFIC

TRAFFIC, the wildlife trade monitoring network, works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. TRAFFIC works closely with its founding organizations, IUCN and WWF, making a critical contribution to achievement of their conservation goals through a unique partnership that complements and engages the considerable strengths of each of these two major global conservation organizations. www.traffic.org

About the IUCN Medicinal Plants Specialist Group

Medicinal Plants Specialist Group is a global network of specialists contributing within their own institutions and regions, as well as world-wide, to the conservation and sustainable use of medicinal plants. The MPSG was founded in 1994 to increase global awareness of conservation threats to medicinal plants, to undertake Red List assessments of medicinal plants, and to promote sustainable use and conservation action. The Group supports development and implementation of the FairWild Standard to verify sustainable harvesting and trade in wild plants. www.iucn.org/ssc-groups/plants-fungi/medicinal-plant-specialist-group

About NatureServe

NatureServe is a non-profit biodiversity conservation organization comprised of 86 Network Programs encompassing more than 800 biodiversity scientists who discover, innovate, and conserve over 70,000 species and 7,000 habitats in the Western Hemisphere. The NatureServe Network collects comprehensive information about imperiled species and entire ecosystems, transforms the data into knowledge products and visualizations, and provides meaning through expert analyses to guide decision-making, implement action, and enhance conservation outcomes. NatureServe diligently keeps its finger on the pulse of the planet, providing decision-quality knowledge to ensure the preservation of species and natural communities. Website: www.natureserve.org

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ANCIENT SAW PALMETTOS IN THE HEART OF FLORIDA

Reprinted with permission of Matt Candeias,
In Defense of Plants

When we think about long lived plants, our minds tend to fixate on bristlecone pines (Pinus longaeva), coastal redwoods (Sequoia sempervirens), or that clonal patch of quaking aspen (Populus tremuloides) in Utah. What would you say if I told you that we can add a palm tree to that list? Indeed, recent evidence suggests that the saw palmetto (Serenoa repens) can reach a ripe old age measured in thousands (yes, thousands) of years.

Now, at this point some of you are probably thinking, “How can you measure the age of a palm when there are no annual growth rings?” This is a legitimate hurdle that had to be overcome before such a claim was made. Using a lot of attention to detail and some crafty mathematics, a team of researchers was able to age saw palmettos in Florida’s most ancient habitats.

This work was performed on a peculiar geological formation. Aptly named the “Mid-Florida Ridge,” this 150 mile sand ridge bisects the middle of the state. Throughout much of the Pliocene and early Pleistocene, sea levels were as much as 50 meters higher than they are today. Nearly all of Florida was underwater during this time. All that stuck out above the water was a series of small islands. These islands served as refugia for flora and fauna pushed south by repeated glaciations. Once the ocean receded to its current level, these islands were left high and dry, thus forming the ridge in question. Because of its history as a refugium, the Mid-Florida Ridge is home to a staggering array of plant species, some of which are endemic to this relatively small area of Florida.

Because of its relative stability through time, the Mid-Florida Ridge is a haven for long lived plant species. Thus, it was a prime location for trying to understand the longevity of the charismatic and ecologically important saw palmetto. By tagging individual palms and observing them year after year, researchers were able to get an idea of exactly how fast this species can grow. Depending on soil conditions, saw palmettos grow at a rate of somewhere between 0.88 and 2.2 cm per year. They certainly aren’t winning any speed races at that rate. Regardless, you can begin to see that an estimate of yearly growth rate can shine a light on how
long these palms have been around. Measurements of tagged palmettos growing on the sand ridge show that individuals aged at a staggering 500 years are not uncommon!

This estimate gets a bit complicated when we consider another aspect of saw palmetto biology - they are clonal. For a variety of reasons, as saw palmettos grow, their sprawling stems will often branch out, creating clones of themselves. Over time, the trunk portions that connect these clones rot away, giving the impression that they are unique individuals. Genetic analyses showed that many of the palmettos in the study area were actually clones. Using some pretty sophisticated models coupled with DNA evidence, the research team was able to reconstruct the growth history of many of these clones, thus allowing them to more accurately age these clonal colonies.

Their results are staggering to say the least. Based on the rate of growth and spread, the estimated age of these clonal patches of saw palmetto range anywhere between 1227-5215 years! At this point you should be asking yourself “how accurate are these data?” The truth is that the researchers were actually being quite conservative in their estimates. For instance, there were likely many clones well outside their study area. If so, they were likely underestimating the growth time of these clonal colonies. Additionally, they were only using the growth rates of adult saw palmettos in calculating average growth rates.

Seedling saw palmettos have been shown to have a reduced growth rate compared to adults, only 0.3 cm per year. Thus, they did not take into account the time it takes for seedlings to reach maturity. The team feels that accounting for such variables could increase the age estimates for such clonal patches to well over 8,000 years! I don’t think we should be looking into buying that many birthday candles just yet, however, even their reported estimates are shocking to say the least.

What we can say is that for as long as Florida has been above water, saw palmettos have played an integral role in the ecology of the region. Long before humans began developing the state, the saw palmetto was functioning as a major player, shaping these sand ridge communities into the ecosystems they are today. It is without a doubt, a species worthy of our admiration and respect.

IN DEFENSE OF PLANTS

It would seem that most people don’t pay any attention to plants unless they are pretty or useful in some way. This is not good for the natural world. Plants are so much more than medicine or food. They are living breathing organisms that are fighting for survival just like animals. What is more, plants are the foundation upon which all other forms of life sit. They have this amazing ability to use our nearest star to break apart water and CO2 gas in order to grow and reproduce. From the smallest duckweed to the tallest redwood, the botanical world is full of amazing evolutionary and ecological stories. I am here to tell these stories. My name is Matt and I am obsessed with the botanical world. In Defense of Plants is my way of sharing that love with you. www.indefenseofplants.org

“I see a time of Seven Generations when all the colors of mankind will gather under the Sacred Tree of Life and the whole Earth will become one circle again.”

– Crazy Horse, Oglala Lakota Sioux (circa 1840-1877)
LESSONS ON STEWARDSHIP: CHINQUAPINS, CHIGGERS, AND INDIAN PIPES
by Ruth Davis

Plants are often introduced into my garden by a share from a friend. Sometimes it is only a fond memory shared that sends me on a search for the plant itself. This is the case with the chinquapins. My mother spent her childhood in the foothills of the Blue Ridge Mountains and talked so often about the abundance of the delicious nuts from these scrappy relatives of chestnuts. So, as a memorial, a few years ago, I began a quest to establish them in my garden. The first transplants from a southern Virginia nursery failed, but a second planting had survived two winters and were growing!

On a beautiful early summer afternoon, I made my way to check on the very first, very eagerly awaited chinquapin nuts. Surely, their willingness to fruit meant that ghost pipes were about to become the newest “rock star” of the herbal world and face danger of overharvesting. “Rock star” mystique were powerful forces. Soon I had conviction that the chiggers, bother as they were also a big part of this lesson.■

Later in the season, we found another little stand of ghost pipes about 5 yards from the first. Again, we watched with respect and admiration, but from a distance. The information that I learned about this marvelous plant will be shared later—again with a caution toward harvesting respectfully, only if necessary, and if invited. Maybe they will call to me for use in the future. For now, however, my goal is to share more thoughts in a future article on the chinquapins and the ghost pipes.

Not in 50 plus years of exploring and enjoying all that the great outdoors has to offer had I succumbed to this plague. My husband had also spent years as a Boy Scout and enjoyed camping and hiking as I had, and he also had never seen this form of torture. During the following several weeks of nearly constant application of anything we could think of to stop the itch, we talked a lot about why the chiggers hit when they did. I am a “get down in the dirt” kind of gardener and have knelt, sat, and sometimes crawled all over this property that we tend. I feel certain that this was a call from the ghost pipes. I had already felt unease through my readings, and it seemed that the chiggers were a very deliberate warning that the pipes should be left alone. I complied.

The next morning after my first encounter, I took my husband out to see the chinquapin nuts, stopping also to wonder about the pipes. We talked a bit about my research, the unearthly quality of the plant, and why it might have popped up just there and just then. We agreed that we had never encountered anything remotely akin to this Being; we agreed that the plant should be left in place, protected and watched without harm—that is, without harm to the pipes.

Later that day we both started to itch. Ferociously. After comparing symptoms and going back to Google, it appeared that we were the victims of chiggers. Seriously? We had not even been away from our house for a few days? It became apparent that we had been only one place outdoors together where we might have encountered the chiggers—at the locations of the chinquapins and the ghost pipes.

Monotropa uniflora is a mycotrophic plant, meaning that it exists by tapping into the mycorrhizal network, obtaining nutrients thought this mutualistic relationship between fungi and plant roots. It does not photosynthesize nor contain chlorophyll. It can neither be transplanted nor propagated. The simple fact of their uniqueness seemed to make people want to harvest ghost pipes with abandon, not pausing to question the need of the human, nor the survival of the plant. Mostly the “otherworldliness” attributed to this plant seemed to be the draw, even with warnings that its magic and mystique were powerful forces. Soon I had confirmation that the warnings and my fears were real.

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SOLOMON’S SEAL
by Laurie Quesinberry

Unlike ginseng (*Panax quinquefolius*), Solomon’s seal (*Polygonatum multiflorum*) sells for very little to a local root broker. However, its tendency to grow in thick patches and being easy to dig makes it a poacher’s gold mine. These plants were once found in abundance along the meandering roadsides of my area. As a former poacher, I’ve seen firsthand the damage that’s done by overharvesting and road crews.

As plans for the expansion of Hwy 58 into a four-lane highway chug along and survey lines go up marking land that will forever be changed, you’ll find me fighting the frozen ground to harvest Solomon’s seal roots.

Most people wouldn’t look forward to searching the roadsides for brown tops that have died back for the winter, but to me it’s a privilege. You see, no longer are these plants a few pennies in my pocket from the local broker. Instead, this Solomon’s seal is a key to my family’s future.

Looking towards a sustainable path for both my family and the plants is an ever unfolding journey. The more I learn, the more it becomes evident that farming the plants I once harvested from the wild is the only truly viable path. But I’m not a farmer; I’m a digger. Nonetheless, I anxiously await the days when it’s above freezing to go out with my shovel and bucket to gather roots for planting in my less than an acre yard.

This is a whole new concept, and there is no near-by farmer that I can visit to learn from. Instead the plants are teaching me and leading the way. In the wild Solomon’s seal grows alongside its close cousin, giant Solomon’s seal (*Polygonatum biflorum var. commutatum*), and together they thrive. Medicinally interchangeable, giant Solomon’s seal’s unique root growth habits hold great promise as a commercial crop.

Giant Solomon’s seal is fast growing and has massive roots in comparison to standard Solomon’s seal. One root has the potential to grow over two feet long and weigh half a pound. Thriving in conditions where the roots are compacted and growing intertwined, a 3x5 foot patch of plants can yield twenty or more pounds of sellable root.

Another wonderful aspect of giant Solomon’s seal is its propagation. Easy to grow by seed, these plants also self propagate. In the wild, I often find mother and grandmother roots that are creating baby roots off of their sides. As the older root dies back, the offspring establish themselves and carry on. Knowing that root division is part of Solomon seal’s natural life cycle shows me that it’s possible to use smart root division to my advantage.

With well over one hundred pounds of Solomon’s seal in the line of bulldozers, I’m on a mission to rescue as much as I can and use it to create a thriving farm. All around my house, I’m creating beds and holding places for rootstock. Following the cues of nature, I’m dividing roots into different lengths for planting back with the hope that each piece will create a new plant. As the ground thaws, I’ll plant these divisions in beds based on their size. With this model, we’ll be able to harvest different beds each year putting back cuttings and babies to start the cycle all over again. Additionally, thousands of seeds will be produced and planted back. The potential is truly as amazing as nature herself.

As the demand for Solomon’s seal rises, with no end in sight, it’s foreseeable that this plant will all but be lost within my lifetime. On the other hand, the future doesn’t have to be so grim. If all goes well, this spring my land will be bursting forth with plants—a sign that true change is possible not only for me, but also for other diggers in my area. This is a growing example of how thinking outside of the prescribed box and looking at nature differently can create a better future for both our families and the plants around us (unconventional to say the least). But I believe the plants are leading us down an unconventional path. They have a plan and “if we listen, they will teach us” the way.

Laurie Quesinberry, a generational digger and mountain woman, is steeped in the traditions of Appalachia wildcrafting. Laurie’s unique perspective towards commercial wild harvesting started as a poacher and evolved into the role of plant- and land-steward. Today she’s working to breathe new life into old traditions, while preserving a path for the future by promoting sustainable harvesting methods for “At-Risk” plant medicine.

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RESEARCHERS STUDY IMPACT OF MEDICINAL PLANT’S HARVEST IN SAN JUAN NATIONAL FOREST

By Ann Bond

National forests supply Americans with many natural resources – timber, livestock forage, minerals, energy – and increasingly, medicinal plants. Although native plants have been harvested for centuries by Native American tribes for medicinal purposes in North America, the modern herbal industry has increased the pressure on some species.

One of the medicinal plants found in the San Juan National Forest is osha (Ligusticum porteri), a slow-growing, perennial member of the parsley family. Osha is found in the southern Rocky Mountains and Sierra Madre between 7,000 and 11,000 feet. Large roots, typically from plants at least 10 years old, are favored as an herbal remedy.

“Osha has many traditional uses,” said Regi Black Elk of the Oglala Lakota Nation in South Dakota. “It is used for upper respiratory infections. You can chew the root for a sore throat, and it aids in treating colds.”

Black Elk, a senior studying American Indian Studies at Haskell Indian Nations University in Lawrence, Kansas, was high atop Missionary Ridge north of Durango last month helping collect data for a research project on the impacts of root harvest on osha populations.

“This work is hard but beneficial, especially if the Forest Service uses it to work with native tribes to save medicinal plants for future generations,” said Black Elk as he climbed over downed logs searching for osha sprouts and seedlings to flag amid dense vegetation.

The collaborative effort is spearheaded by Kelly Kindscher, senior scientist and environmental studies professor at the University of Kansas. His diverse research group includes college students and representatives from United Plant Savers, a national nonprofit, which lists osha as a species at risk from over-harvest, and the American Herbal Products Association, an industry group that promotes responsible commerce of herbal products.

“The Forest Service faces the challenge of managing the harvest of medicinal plants in a sustainable manner, so they will be available for traditional and cultural purposes into the future,” said Gretchen Fitzgerald, a forester who oversees permits for medicinal plant harvest on the San Juan National Forest. “Research like this will help us obtain biological information to inform our decisions.”

Sixty plots were established in areas where osha grows naturally on the Rio Grande and San Juan national forests. To add diversity, locations included an open meadow and beetle-killed forest in the Cumbres Pass area, and the burned area of the Missionary Ridge Fire.
“In some plots, we harvested 100 percent of the flowering plants and/or those mature enough to flower,” Kindscher said. “In others, we harvested one-third or two-thirds each year. In the control patches, we didn’t harvest at all. Now, three years later, we see some flowering plants in all of the plots.”

All those involved in the study say their intent is to ensure an abundance of medicinal plants on public lands. It takes osha three to five years to grow into its flowering reproductive stage. While it is resilient as a rhizome that can grow from its roots and also produce seeds, its vulnerability comes from its limited range, slow growth, and the fact that its roots are dug up during harvest. Additionally, osha has not been cultivated commercially because its germination rates are low, and it is very slow growing.

“We’re not asking for a moratorium on the use of native plants. Rather, we want to preserve these important species,” said Susan Leopold of United Plant Savers. “I’d love to see the creation of botanical sanctuaries to protect biodiversity for medicinal and native species and harvest areas set up to engage people with their public lands.”

Leopold says that protecting osha habitat will also protect other medicinal species in the Rocky Mountains, such as baneberry, Arnica, yarrow and others.

Daniel Gagnon, who owns the Santa Fe shop, Herbs, Etc., participated in the study as a representative of the American Herbal Products Association.

“We all need to work together to teach people how to harvest in a sustainable fashion,” Gagnon said. “We’d like to see the allocation of certain areas to certain pickers under permit and monitor the results.”

Kindscher said he expects to submit the results of his research for publication within a year.

“We feel we have enough data now to put forth a proposed rate of sustainable harvest for osha to be considered by the public land agencies, industry and others,” Kindscher said.

In the meantime, the San Juan National Forest will have no program for commercial harvest of osha until the results of the research offer enough information about how best to manage harvest of this important plant.

“Free permits are required to collect small amounts of osha root for personal use,” Fitzgerald said. “Participating in the permit process allows us to keep track of which areas are being harvested and to offer harvesting tips for sustainable practices.”

LEARNING TO DEFINE SUSTAINABILITY: LESSONS FOR ESSENTIAL OIL CONSUMERS
by Erika Galentin, MNIMH, RH (AHG)

The Elephant in the Room

Define sustainability. “Sustainability” is a not-so-new term floating around the shelves of our global economy, hot on the tongue of marketers and advertisers ready to sell us the next best thing to organic. Within the natural products industry, “sustainability” is a concept that appears in many dressed-up forms. For example, when we are purchasing essential oils or herbs, we are keenly aware of phrases such as “sustainably harvested” or “ethically wild crafted.” These phrases indicate concepts that we all seem to intuitively understand when we see them on a label, as if they give us clear conscious permission so we can proceed with our purchase.

When we see these phrases, we would like to think that the path this product has taken from its origins to our shopping cart is free from atrocity, dirty business, and unkind environmental practices. But is this really the case?

How, for example, can the bark of Hawaiian sandalwood (Santalum album) or palo santo (Bursera graveolens) be “sustainably harvested” when the biological, ecological, social, and economic data that would define its sustainable harvest do not exist? Can there really be such a thing as “ethically wild crafted” or “ethically harvested” when we are purchasing a critically-threatened species? Can a product be sustainable when an entire culture has become enslaved by its sale on the international market?

Believe it or not, for the average consumer “sustainability” is a concept that is nearly impossible to define. Marketing has done a good job of teaching us that all we need to know is that “sustainable” equals “good,” just as “farm fresh” or “all natural” equals “good” (although they rarely do). So, when thinking critically about the products we purchase, how much do we really know about sustainability and what it truly means?

To emphasize the weight of this question, it is important to remember that there are many businesses and manufacturers (even within the natural products industry) that have mentioned sustainability as a goal, yet often fail to transparently define how it is measured. To further this point, “sustainability,” “sustainably harvested,” or “ethically wild crafted” can mean entirely different things, depending on the product and the company producing it.

So if businesses and manufacturers are not upfront, clear, or consistent about how they define these phrases, how are consumers meant to interpret their meaning? The answer to that question is pure and simple. As consumers of essential oils, we must educate ourselves, not just about the company and the end product we are purchasing, but also about the plants themselves and their journey to market. We must learn to define the terms “sustainability,” “sustainably harvested,” or “ethically wild crafted” for ourselves, rather than simply trusting a label. This takes work and effort, and for many consumers, this is the elephant in the room. Not only is it sometimes impossible to find all the answers we seek, some of us are fatigued by the idea that our purchasing decisions may require additional energy beyond what is already represented by our dollars.

For herbalists, aromatherapists, and consumers of essential oils and medicinal plants, the journey to defining “sustainability” may be a long one, but it can also be incredibly rewarding. I liken it to going for a run, after having had a tough time motivating myself to put on my running shoes. Afterwards, I feel so good about myself, well in my body and mind, and generally accomplished. So, let’s not get too overwhelmed and discouraged by the work and start our journey together with a few simple definitions.
Learning to Define Sustainability from a Consumer Perspective

Before diving into the sustainability of essential oils, it is important to clearly present some concepts that are meant to define “sustainability” within a larger context. It is from this defining framework that we can then begin to ask questions about the sustainability of essential oils directly. To begin, when we type “define sustainability” into Google or Yahoo what do we find? Give it a try and let’s see. Both browsers point us to the following:

From Dictionary.com:

sustainability [suh-stey-nuh-bil-i-tee] noun
1. The ability to be sustained, supported, upheld, or confirmed
2. Environmental Science. the quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance

The next listed search result in our browsers is the Merriam-Webster.com definition:
sustainable sus·tain·able [sə-stən·ə-bəl] adjective
1. Able to be used without being completely used up or destroyed
2. Using methods that do not completely use up or destroy natural resources
3. Able to last or continue for a long time

These definitions seem rather comprehensive as I read them and try to understand the concepts that they explain. Both of these definitions suggest larger issues regarding quantity of resources, impact of long-term resource use and resource availability, and the environmental impact of extracting and utilizing those resources. These definitions are reminiscent of my internal, intuitive definition of “sustainability” and perhaps represent where many of us go in our minds when we try and define “sustainable.” However, more importantly, these definitions raise some interesting resource-based questions.

Using these definitions, we may ask ourselves, “If this product were continually produced in the same way, what types of resources would be needed to sustain, support, and uphold its production to indefinitely confirm its presence in the marketplace?” This is, of course, a loaded question that in and of itself begs further inquiry. For example, what is a resource? Is it plant material? Agricultural land? Fossil fuels? People? Is the marketplace a global or local one?

With these definitions, the issues of environmental degradation and depletion of natural resources are also mentioned. They give us the opportunity to ask questions such as, “If this product were continually produced in the same way indefinitely, would this resource disappear or cause other resources to disappear?” or “Can the methods being used to extract this resource ensure that the resource populations and habitats are not being decimated?” All in all, these definitions and the questions they arouse seem sound.

However, our process of defining “sustainability” is not yet complete. There is still more to add and certainly more to think about. There may be as many definitions of sustainability as there are groups or entities trying to define it. These additional definitions may have something to do with living within the limits, understanding the interconnections among economy, society, and environment, or encouraging the equitable distribution of resources and opportunities. However, different ways of defining sustainability are useful for different situations and different purposes. For this reason, we need to put our business hats on and check “sustainability” out from a business or manufacturing perspective.

The Triple Bottom Line: Planet, People, Profit

Oh geez. There it is: profit, the word that can make my skin crawl, as it tends to carry with it some negative connotations. However, within the capitalistic model of economics, profit is vital to business. Business is vital to economics. Economics is vital to the maintenance and stability of culture and society, and so on and so forth.

We have to remember that as consumers within this web of a capitalistic economy, profit must play a part in the decisions that businesses make about the products they source, manufacture, and sell to us. We can sit here and say that businesses are wrong or evil...
for wanting to make a profit off of nature, but that is oversimplifying things. It is how those businesses go about making that profit that should concern us as consumers.

I mention all of this because there are many profitable businesses out there that have taken the time to strategically design their sustainability protocols, which out of good measure will most often be easily accessible to the consumer (and not absent or buried in their website). More often than not, these protocols are based on a framework known as “triple bottom line accounting,” which incorporates three measures of performance: social, environmental, and financial. These three measures are also referred to as the 3P’s: people, planet, profit, or the “three pillars of sustainability.”

Sustainable businesses should be incorporating measures of these three different bottom lines in order to take account of the full cost involved in doing business. “Profit” refers to the standard measure of corporate profit, or the bottom line of profit and loss. “People” refers to how socially responsible a business has been throughout its operations. This refers not only to employees, but to the communities that the business is involved with. Lastly, “planet” clearly refers to a measure of how environmentally responsible a company has been.

One of the major issues with businesses labeling themselves as “sustainable” using this framework is that while profit and loss are measured in dollars, it is difficult to create a measure for social and environmental impact. These later measures can be company/business specific. As consumers, we may not agree, or we may find that the standards that the business is using to measure social and environmental impact are inaccurate or incomplete. Nonetheless, getting a handle on the concept of “triple bottom line accounting” gives consumers an opportunity to learn about sustainability from a business perspective. This can assist us in our information gathering and help us see the bigger picture when we make purchasing decisions.

**The Bottom Line of Essential Oils: Resource Intensive Products**

Now that we have taken the time to contemplate some larger concepts within the definition of “sustainability,” we are ready to get down to the nitty-gritty.

Unfortunately, it cannot be sugar coated. **Essential oils are resource-intensive products.** Period. It begs the question as to whether or not essential oils as products could ever fit into a definition of “sustainable.” As consumers of essential oils, we should be willing to face this truth and see it for what it is.

“Why be so glum?” you may ask. Let’s think about the sheer quantity of plant material needed to create a very small amount of essential oil. **Hundreds, and sometimes thousands, of pounds of plant material are needed to produce just 1 gallon of essential oil.** This is a huge volume when we think about the amount of agricultural land needed to grow the plants (soils, fertilizers, pesticides, water) or even when we are considering phrases like “wild crafted” or “ethically harvested” from wild populations.

We also need to consider other resources that are used in the harvest, transport, and production of essential oils. For example, if you are in the United States, and you are buying lavender essential oil, are those lavender plants being grown in the United States? It’s not likely. Let’s think about the quantity of fossil fuels needed for the agricultural production, distillation/production, and international transport of these products.

What about the people involved in essential oil production, from the growing or collecting of plant material, all the way to the final product? Are farmers or gatherers being given a fair price for their efforts? Is there support going back into the community? Do they have access to food, water, healthcare, and education? Is the industry negatively impacting culture? **What about the company’s employees? Are working conditions safe?**

What about the plants themselves? Are they critically threatened, or does the process of gathering the materials for their essential oil production actually kill the plant? Are they an endemic species, or do they require very specific habitat that can easily be destroyed through intensive harvesting? Are industries cutting down forests to create space for agricultural crops, as is the case of palm oil? As you can imagine, there are many, many layers to this onion. And sometimes onions can give us tears.
What is Your Bottom Line?

So perhaps you are now thinking to yourself “This lady doesn’t want us to use essential oils at all.” This is actually not the case. I use essential oils frequently for both self-care and for my family and clients. There are many companies involved in the essential oil industry that take the definition of “sustainability” and run with it. They are doing good work and are transparent and fair in their business dealings.

I make my essential oil purchases keeping in mind that essential oils are resource-intensive products. I choose which oils to use, which ones to avoid, and which companies to purchase from, based upon my own knowledge, understanding, and well-developed definition of “sustainability.” As a consumer, I continue to do the work needed to make the most ethical and sustainable purchases possible considering the product I am purchasing. I have created my own bottom line.

When learning how to define sustainability, it is important to remember that our purchasing power can shape entire industries. When we educate ourselves and make informed decisions about our purchases, we as consumers are the ones defining what “sustainability” means, rather than relying on the company or manufacturer to define it for us.

I have presented the preceding concepts and definitions with the hope that we all can discover how to ask better questions in regards to sustainability and learn how to think more critically about our essential oil purchases. It is probably safe to say that if you have read this entire post, you are a consumer of essential oils who is willing to do the work. For that, I commend you.

Resources for further reading:

Cropwatch
Is an Independent Watchdog for Natural Aromatic Products used in the aroma (fragrance/cosmetics, flavour, aromatherapy), traditional herbal medicine and phytochemical industries. Many of these natural commodities are under threat via their over-exploitation in the wild (see articles in Cropwatch Files section), or their continued use and availability faces uncertainty via the imposition of restrictive & over-precautionary legislation. You can find Cropwatch’s list of threatened aromatic plants here.
http://www.cropwatch.org/

FairWild Foundation
Established in 2008, the FairWild Foundation promotes the sustainable use of wild-collected ingredients, with a fair deal for all those involved throughout the supply chain.
http://www.fairwild.org/

The Numen Blog and the Sustainable Herbs Project
The Sustainable Herbs Project is a new project by the producers of the award-winning documentary, Numen: the Nature of Plants, the first feature length film on the healing power of plants. We are creating an interactive documentary following medicinal plants through the supply chain to provide you with the information needed to feel more confident about the herbal remedies you purchase. With stories, videos, and facts, we’ll bring the supply chain to life with interviews with men and women involved in all aspects of the industry.
http://www.numenfilm.com/blog/sustainable-herbs/

United Plant Savers
United Plant Savers’ mission is to protect native medicinal plants of the United States and Canada and their native habitat, while ensuring an abundant renewable supply of medicinal plants for generations to come. HANE students and members can get a United Plant Savers membership at a discounted price. Log into your student account or Herbarium membership and click on the “discount” tab for more info!
http://www.unitedplantsavers.org/

American Sustainable Business Council
The American Sustainable Business Council offers programs that educate and inform the public and policy makers about the benefits of a more sustainable economy and about policies and practices that can help the economy become more sustainable. The Council spans a growing network of business associations across the United States, which in turn represent over 200,000 businesses and 325,000 business executives, owners, investors, and others.
http://asbcouncil.org/

Lowell Center for Sustainable Production (University of Massachusetts Lowell)
The long-term goal of Lowell Center projects and affiliates is to redefine environmentalism and occupational health and safety while also demonstrating how these concepts are compatible with new systems of production and consumption that are healthy for workers, environmentally sound, economically viable, and socially accountable.
http://www.sustainableproduction.org/

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REFERENCES

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ESSENTIAL AND CARRIER OIL-BEARING PLANTS: CONSERVATION CONSCIOUSNESS
By Kelly Ablard, PhD, MSc, RA, EOT

The planet is undergoing the “sixth extinction” whereby species are being lost at a rate that far outruns the origin of new species. According to the IUCN (2018), approximately 970 species/subspecies are extinct, and nearly 7000 land plant species are threatened (i.e., critically endangered, endangered, or vulnerable). As an ethnobotanical and conservation research scientist and a certified essential oil therapist, the implications for the future of aromatic plant medicine are of considerable concern, not only for North America, but for countries throughout Africa, Asia, and Latin America which primarily use traditional medicine to support their health (WHO, 2003).

This is because although medicinal plants are highly valued for their use within these countries, essential oils of many aromatic plants are exported for economic gain. This puts a particularly high demand on said plants, as their oils and extracts are utilized worldwide. They are used in soap, cosmetics, solvents, toothpaste, shoe polish, printing ink, gum, soft drinks, tobacco, candy, ice cream, reagents, agriculture, perfume, and as medicine (Shiva and Lehri, 2002). Further, oil-bearing plants may be unsustainably managed, overharvested, and illegally traded. This puts these plants in imminent danger of extinction, especially when high demand and unsustainable management are coupled with impacts of climate change, overgrazing, pests, disease, fire, and/or logging.

Although some measures are in place to address pertinent sustainability and conservation issues globally, conservation consciousness of these measures is just beginning in North America within industries that rely on essential and carrier oils. Consequently, the goal is to spread awareness as we all have a responsibility to protect and preserve the plants on which we depend and deeply value.

Conservation statuses of over 400 essential and carrier oil-bearing plants using Global Forest Resources Assessment (2005) and the IUCN (2018) reports and databases were researched in September, 2017. Consequently, there are 20 threatened species (6 critically endangered, 6 endangered, and 8 vulnerable); and 6 species regulated by Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 2018).

CRITICALLY ENDANGERED

The actual or projected reduction in population size has decreased by ≥80% over the last 10 years or 3 generations; there are only fewer than 250 mature adults and the numbers are declining, and there is a 50% probability of extinction within 10 years or 3 generations. Critically endangered species are palo santo (Bursera graveolens), spikenard (Nardostachys jatamansi a.k.a. N. jatamansi), sandalwood (Santalum album), guggul [a.k.a. common myrrh] (Commiphora wightii), silver white fir (Abies alba), and agarwood (Aquilaria rostrata) (IUCN, 2018) (Table 1).

ENDANGERED

The actual or projected reduction in population size has decreased by ≥50% over the last 10 years or 3 generations; there are fewer than 2500 mature adults and the numbers are declining, and there is a 20% probability of extinction within 20 years or 5 generations. Endangered species are juniper berry (Juniperus communis), rosewood (Aniba rosaeodora) (Figure 1), atlas cedarwood (Cedrus atlantica), bay laurel (Laurus nobilis), araucaria [a.k.a. callitropsis; faux santal] (Neocalitropsis pancheri), and rosewood [English] (Dalbergia abrahamii) (IUCN, 2018) (Table 1).

VULNERABLE

The actual or projected reduction in population size has decreased by ≥30% over the last 10 years or 3 generations; there are fewer than 10,000 mature adults and the numbers are declining, and there is a 10% probability of extinction within 10 years or 3 generations. Vulnerable species are thuja (Thuja occidentalis), cypress (Cupressus sempervirens), and smilax (Smilax excelsa) (IUCN, 2018) (Table 1).
generations; there are less than 10,000 mature adults and the numbers are declining, and there is a 10% probability of extinction within 100 years. Vulnerable species are olive (Olea europaea), sandalwood (Santalum album), sweet almond (Prunus amygdalus), Spanish cedar (Cedrela odorata), elemi (Canarium luzonicum), Brazilian sassafras (Ocotea pretiosa), Siam wood (Fokienia hodginsii), and agarwood (Aquilaria malaccensis) (IUCN, 2018) (Table 1).

CITES

There are approximately 30,000 protected by CITES. Six CITES protected essential oil-bearing plant species are guaiac wood (Bulnesia sarmientoi), rosewood (Aniba rosaeodora), agarwood (Gyrinops spp. and Aquilaria spp.), African sandalwood (Osyris lanceolata), Himalayan spikenard (N. grandiflora a.k.a. N. jatamansi), and Indian rosewood (Dalbergia dartenensis) (CITES, 2018) (Table 1).

CONSERVATION CONSCIOUSNESS

There are ways to help conserve threatened aromatic medicinal plants. You can educate sellers and consumers about their plight and remain current on statuses and the global value of these plants through the IUCN, CITES, TRAFFIC, and United Plant Savers (UpS) websites. Take an active role in collective research projects by using tools like the UpS “At-Risk” assessment tool, or the IUCN Assessment tool for gathering population data. Grow and distil aromatic medicinal plants in community gardens; this is common in countries where aromatic medicinal plants extracted for essential oils face extinction. And you can also volunteer on projects aimed at replanting and saving/sharing seeds.

Finally, buy oils from aromatic medicinal plants not listed by the IUCN as Threatened or Near Threatened, but rather have a status of Least Concern (e.g. Roman chamomile (Chamaemelum nobile), yarrow (Achillea millefolium), and Virginian cedarwood (Juniperus virginiana) (Table 1). If possible, use oils from plants categorized as Least Concern because species that have not yet been assessed, or issued a status of data deficient could have a status of concern. If you choose to use oils extracted from threatened plants, minimize their use, ensure they are backed with a CITES permit when necessary, and request GC-MS profiles, which are critical as many said oils are adulterated and/or synthetic. Also explore alternative oils with similar chemical profiles. For example, because of their high linalool content, Ho wood (Cinnamomum camphora) and coriander oil (Coriandrum sativum) are good alternatives to rosewood (A. rosaeodora) oil and are not derived from threatened species.

I hope you will join me in elevating conservation consciousness as one way to help protect and preserve these beloved aromatic medicinal plants. For more information, please visit www.kellyablard.com.

“Earth provides enough to satisfy every man’s needs, but not every man’s greed.”

― Mahatma Gandhi

REFERENCES

Table 1. Common and Latin names, Countries (where threats are present), Conservation statuses, and last assessment dates of Threatened and Near Threatened essential and carrier oil-bearing plant species; *CITES regulated species.

<table>
<thead>
<tr>
<th>Common name(s)</th>
<th>Latin name</th>
<th>Countries</th>
<th>Conservation status</th>
<th>Last updated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agarwood</td>
<td><em>Aquilaria rostrata</em>; <em>Gyrinops</em> spp.</td>
<td>India; Malaysia</td>
<td>Critically Endangered*</td>
<td>1998</td>
</tr>
<tr>
<td>Guggul (Common myrrh)</td>
<td><em>Commiphora wightii</em></td>
<td>India; Pakistan</td>
<td>Critically Endangered</td>
<td>2014</td>
</tr>
<tr>
<td>Palo Santo</td>
<td><em>Bursera graveolens</em></td>
<td>Peru</td>
<td>Critically Endangered</td>
<td>2005</td>
</tr>
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<td>Sandalwood</td>
<td><em>Santalum album</em></td>
<td>Timor Leste</td>
<td>Critically Endangered</td>
<td>2005</td>
</tr>
<tr>
<td>Silver white fir</td>
<td><em>Abies alba</em></td>
<td>Belarus</td>
<td>Critically Endangered</td>
<td>2005</td>
</tr>
<tr>
<td>Spikenard</td>
<td><em>Nardostachys jatamansi</em> a.k.a. <em>N. grandiflora</em></td>
<td>India; Nepal; Bhutan; Myanmar; SW China</td>
<td>Critically Endangered*</td>
<td>2014</td>
</tr>
<tr>
<td>Juniper berry</td>
<td><em>Juniperus communis</em></td>
<td>Europe</td>
<td>Endangered</td>
<td>2005</td>
</tr>
<tr>
<td>Laurel leaf or bay laurel</td>
<td><em>Laurus nobilis</em></td>
<td>Albania; Slovenia</td>
<td>Endangered</td>
<td>2005</td>
</tr>
<tr>
<td>Rosewood (Bois De Rose)</td>
<td><em>Aniba rosaeodora</em></td>
<td>Brazil; Peru; Colombia, Ecuador; French Guiana; Guyana; Suriname; Bolivian Republic of Venezuela</td>
<td>Endangered A1d+2d ver 2.3*</td>
<td>1998</td>
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<tr>
<td>Atlas cedarwood</td>
<td><em>Cedrus atlantica</em></td>
<td>Algeria; Morocco</td>
<td>Endangered A2cd ver 3.1</td>
<td>2013</td>
</tr>
<tr>
<td>Araucaria (Callitropsis; Faux santal)</td>
<td><em>Neocalitropsis pancheri</em></td>
<td>New Caledonia</td>
<td>Endangered A2cd; B1ab....</td>
<td>2009</td>
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<tr>
<td>English Rosewood</td>
<td><em>Dalbergia abrahamii</em></td>
<td>Madagascar</td>
<td>Endangered B1+2abcd ver 2.3*</td>
<td>1998</td>
</tr>
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<td>Muhuhu</td>
<td><em>Brachylaena huillensis</em></td>
<td>African countries</td>
<td>Lower Risk/near threatened ver 2.3</td>
<td>1998</td>
</tr>
<tr>
<td>Opopanax</td>
<td><em>Commiphora guidotti</em></td>
<td>Ethiopia; Kenya; Somalia</td>
<td>Lower Risk/near threatened ver 2.3</td>
<td>1998</td>
</tr>
<tr>
<td>Karamaryanian thyme</td>
<td><em>Thymus karamarianicus</em></td>
<td>Azerbaijan</td>
<td>Near Threatened</td>
<td>2008</td>
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<tr>
<td>Frankincense</td>
<td><em>Baswellia sacra</em></td>
<td>Oman; Somalia; Yemen</td>
<td>Near threatened ver 2.3</td>
<td>1998</td>
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<tr>
<td>Himalayan fir needle</td>
<td><em>Abies spectabilis</em></td>
<td>Afghanistan, China, Nepal, Pakistan</td>
<td>Near Threatened ver 3.1</td>
<td>2010</td>
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<tr>
<td>Port Orford cedarwood (Rose of cedar)</td>
<td><em>Chamaecyparis lawsoniana</em></td>
<td>USA</td>
<td>Near Threatened ver 3.1</td>
<td>2011</td>
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<tr>
<td>Hemlock spruce</td>
<td><em>Tsuga canadensis</em></td>
<td>USA; Canada</td>
<td>Near Threatened ver 3.1</td>
<td>2011</td>
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<tr>
<td>Balsam popular</td>
<td><em>Populus balsamifera</em></td>
<td>Russian Federation</td>
<td>Rare species (no status)</td>
<td>2005</td>
</tr>
<tr>
<td>Olive</td>
<td><em>Olea europaea</em></td>
<td>Tunisia</td>
<td>Vulnerable</td>
<td>2005</td>
</tr>
<tr>
<td>Sweet almond</td>
<td><em>Prunus amygdalus</em></td>
<td>Pakistan</td>
<td>Vulnerable</td>
<td>2005</td>
</tr>
<tr>
<td>Agarwood</td>
<td><em>Aquilaria malaccensis</em>; <em>Gyrinops</em> spp.</td>
<td>Iran; Indonesia; Islamic Republic; Thailand; Philippines; Cambodia; Bangladesh; Bhutan; Malaysia; Myanmar; Singapore;</td>
<td>Vulnerable A1cd ver 2.3*</td>
<td>1998</td>
</tr>
<tr>
<td>Elemi</td>
<td><em>Canarium luzonicum</em></td>
<td>Philippines</td>
<td>Vulnerable A1cd ver 2.3</td>
<td>1998</td>
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<tr>
<td>Sassafras</td>
<td><em>Ocotea pretiosa</em></td>
<td>Brazil; Argentina; Paraguay</td>
<td>Vulnerable A1cd ver 2.3</td>
<td>1998</td>
</tr>
<tr>
<td>Cedrela (Spanish cedar)</td>
<td><em>Cedrela odorata</em></td>
<td>Central and South American; Amazonia</td>
<td>Vulnerable A1cd+2cd ver 2.3</td>
<td>1198</td>
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<tr>
<td>Siam Wood</td>
<td><em>Fokienia hodginsii</em></td>
<td>China; Laos; Vietnam</td>
<td>Vulnerable A2acd; B2ab(ii,iii,iv,v)....</td>
<td>2012</td>
</tr>
<tr>
<td>Sandalwood</td>
<td><em>Santalum album</em></td>
<td>China; India; Indonesia; Philippines</td>
<td>Vulnerable D2 ver 2.3</td>
<td>1998</td>
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RURAL AMERICA: THE NEW GLOBAL HEARTLAND FOR TRADITIONAL MEDICINAL PLANTS
by Dr. Michele Devlin

The population of rural America is changing very quickly due to the global economy, new labor needs, and an influx of refugees and immigrants to work in meatpacking, agriculture, and related fields. Nearly 200 languages are now spoken even in small states like Iowa, and some rural towns are quickly becoming home to new migrants from Africa, Southeast Asia, the Pacific, and other areas.

The use of traditional medicinal herbs for healing purposes is usually very common and well developed in many of these cultures, and migrant workers are bringing their knowledge, skills, and plants with them to their adopted homeland in the Midwest. New ethnic markets are springing up all over the heartland, owned and operated by refugee families making a thriving living from selling traditional food, clothing, medicinal plants, herbs, and other goods to their fellow newcomers and even local residents. A walk through most of these stores owned by Burmese, Congolese, Ethiopian, Marshallese, Sudanese, Guatemalan, Honduran, and many others will quickly reveal a host of traditional medicinal plants, home remedies, herbal infusions, healing foods, and other holistic healing products from their native countries. These over-the-counter items are often used enthusiastically by the immigrants, in addition to Western medicine from local American clinics. Shamans, curanderos, and other traditional healers are sometimes living in these new populations as well and maintain a wealth of historic knowledge about the use of traditional medicinal plants in their cultures. Some of these cultural groups are even starting community gardens featuring some of their beloved traditional plants.

Local American residents interested in learning more about the healing practices of these newcomers and their use of traditional medicinal plants can often reach out to neighborhood ethnic associations, key community leaders, faith institutions, and store owners to connect with these migrants and learn more about their rich medicinal plant heritage.

Dr. Michele Devlin is a Professor of Global Health, and Chair of the Division of Health Promotion and Education at the University of Northern Iowa. She is a specialist in the traditional health and healing practices of immigrants and refugees around the world. Dr. Devlin may be reached at michele.devlin@uni.edu or (319) 273-5806.
REPORT ON A DEEP ECOLOGY ARTIST FELLOWSHIP AT THE UNITED PLANT SAVERS GOLDENSEAL BOTANICAL SANCTUARY
by Katherine Ziff

“The plants are calling you. They have a rich and diverse vocabulary and speak in many tongues...the plants are calling us now, asking for help. The wild gardens are in trouble, and the precious medicines of the earth are being lost.”

— Rosemary Gladstar, 2000

What inspires stewardship of Earth’s medicinal plants? How to change a resource extraction mindset? One way is reform of political, legal, curricular, economic, and moral perspectives to embrace the inherent value of the richness and diversity of all life on earth (Hayden, 1994; Henderson, 1994). The deep ecology movement provides direction for such reform (Naess, 1973). And what might create within an individual the creative insight and vision to commit to a personal change in consciousness? Opportunities for deep encounters with nature that encourage a relational perspective.

Such a moment, about the vulnerability of nature and my commitment to its care, came to me in 2011. Early on a summer morning I was driving through rural Vinton County, Ohio, my car full of art materials on my way to a community library where twelve children and their families were waiting for me to offer them an art experience. Up ahead in the middle of the two-lane highway stood an owl, a big one, with an injured wing. The owl, unable to fly, looked at me. I had to make an instant decision whether to stop and try to gather up the owl and take it to a place where it could be helped. In my flash calculation of risk, I feared trying to pick up a big wild injured creature and contain it in my car. I had no idea where to find help. And it was hot; I could not leave the owl in my car while working in the library. So I drove on and flashed my headlights at an approaching car, hoping that perhaps this driver would know what to do.

That owl looks at me still. Since then the trajectory of my relationship with nature has shifted and taken over more of my art, my everyday activities, and my thoughts.

United Plant Savers offered me another such an opportunity in the form of a deep ecology artist fellowship, with the invitation to visit the Ups Goldenseal Botanical Sanctuary in Rutland, Ohio and to make art in response to its presence. In the course of this work, I have met people there, walked the trails, responded to the land and its botanical riches by making art, taught Ups interns about flower essences, enrolled in an herbal medicine class, and come to know a handful of plants. Through this immersion into botanical consciousness I have learned simple things: the joy of a meadow, the wisdom of a forest, the palpable generosity of nature, the enduring nourishment of herbal medicines, and the memories of a landscape. My tools have been a notebook, a Uni-Ball pen (medium) with waterproof ink, drawing pencils (HB, 2B, and 4B), multimedia paper, water soluble oil paint, watercolors, colored pencils, my hands, and my hiking boots.

“How is the first plant that you remember?” asked John Stock, Ups Outreach Coordinator when I arrived on August 18, a question that jolted me away from the workaday concerns that had occupied my thoughts as I drove down to the Ups Sanctuary from Athens, Ohio. A stepped-up vibration on the Sanctuary’s Medicine Trail, a peaceful aliveness, offered further contrast with the work preoccupations I had left behind.

A week later I returned to walk the meadow and the high Reclai Trail, the first views of which brought a wave of gratitude bordering on joy. Right away I met ironweed (Vernonia gigantea), infused with concentrated sunlight and sunny strength.

Back in my home studio, and taking inspiration from minimalist artist and print maker Ellsworth Kelly (Rosenberg, 2012), I made a blind contour...
a drawing of ironweed; this way of working allows you to focus on and experience the plant's details and gestures without any consideration for the outcome or appearance of the drawing. Next, I met wingstem (*Verbesina alternifolia*), also known as yellow ironweed, a plant with no known important medicinal qualities, but beautiful nonetheless and host plant for the silvery checkerspot and summer azure butterflies.

By late September, it was time to listen to the land. On a sunny afternoon on the Sanctuary's high Reclaim Trail I "announced" that I was receptive to whatever it had to share. Back in the studio I processed this listening with Touch Drawing, expecting beautiful images from nature. Instead, an old voice from the land expressed pain and despair from an earlier time about damage and destruction from coal extraction. My drawings told a story of the Earth dreaming, followed by the arrival of coal mining and the 1993 flooding of the Southern Ohio Coal Company's Meigs #31 mine when untreated, toxic acid mine drainage entered streams and creeks of the Leading Creek watershed in which the Sanctuary is located. (Leading Creek Watershed Volunteers, 2011; U. S. Fish & Wildlife Service, 2006). The final image was one of restoration and the "Green Spark" spoken of by Paul Strauss; it portrayed the source of the enormous work done by humans to restore the land of the Sanctuary and preserve the rich biodiversity of its forest.

By late October it was time to expand my experience to the Sanctuary's forest: settled, ancient in origin, beneficent, and a little cautious about newcomers (most likely my own projection rather than an accurate perception, but then again forests have reason for caution). This forest is intense with its forest floor plants, towering canopy of trees, waters, rocks, hills, small animals and big ones, too. It is majestic in places, and full of healing plants and energies and busy in a different way from the meadow. I imagine that if all the meadows of the world are in some way connected, it is by way of an airborne meadow consciousness that is busy growing, flowering, buzzing, pollinating, blooming, and full of colors—red, yellow, orange, purple, pink, blue, violet, magenta, and all the browns and grays and greens. In my imagination our forests are connected too, deep in the Earth by an ephemeral network of forest patterns created by an original meeting of starlight and a nature force, a Green Spark converting star energy to material form. I imagine that the Sanctuary's forest pattern holds richness, diversity, and healing. It is powerful and vibrant and precious. As this one forest is cared for and protected, its connections to forests and sanctuaries and their caregivers across the planet are strengthened.

In December, two plants brought in the light of the solstice: blackberry (*Rubus allegheniensis*) and roundleaf greenbriar (*Smilax rotundifolia*). It took me a while to find Smilax rotundifolia at the Sanctuary, much less to really see its spiraling growth pattern. Once
found, it appeared in abundance. Its heart shaped leaves, thorny vine, and graceful beauty kept me company all through the late Fall.

Winter blackberry brings the warmth of the summer sun, sweetness, strength, and the joy of magenta and indigo. Its molecular structure brings to humans, in the form of antioxidants, protection from stress and other toxins of the world. Its roots and leaves are used for medicines—leaves, tinctures, decoctions, extracts, and syrups. And from its fruit: pies and cobblers, preserves, wines, and cordials. Truly blackberry nourishes and heals humankind.

My artist fellowship at the UpS Botanical Sanctuary extends through the spring of 2018. I await further teaching from the land and from Nature’s medicinal plants.

Katherine Ziff is a clinical mental health counselor, artist, and writer in Athens, Ohio. She holds a doctorate in counseling from Ohio University and is the author of Asylum on the Hill: History of a Healing Landscape, published by Ohio University Press. Learning from the Sanctuary, Ziff’s online journal for the UpS Deep Ecology Fellowship, may be viewed at https://learningfromthesanctuaryblog.wordpress.com, and her email is katherineziff@aol.com.

REFERENCES

- Leading Creek Watershed Volunteers, 2011. Leading from the past: Stories from the Leading Creek watershed.

Kathleen Harrison remarks on the belief among the Mestizos of Peru in the pervasive nature of individual plant songs and their importance:

"Every species has a song. If you are granted the song in a vision state, or by just submitting yourself to the presence of a plant and opening up, then it's a real gift, and you are able to remember that song forever and share it when it seems appropriate. That song has power, healing power, and there are some which are handed down from one curandero or curandera to the next, and there are others which come to us as individuals. But they are part of an encyclopedia on the sonic level of the same thing that seeds represent on another level."

— Sacred Plant Medicine: The Wisdom in Native American Herbalism by Stephen Harrod Buhner
HUMLA FUND: WILD MEDICINAL PLANT CONSERVATION IN NEPAL’S HUMLA VALLEY
by Miranda Grizio

At the northwest corner of Nepal, bordering Tibet, lies Nepal’s Humla District. This remote district is known for its Tibetan villages and Buddhist way of life in a majority Hindu country. Medicinal plants are the first line of treatment for most villagers here as a part of their tradition of Tibetan medicine. Villagers in the Humla Valley collect wild medicinal plants from the forests beneath the Himalayas for their own use, as well as for export to neighboring India and China. In this way, these plants support both the health and livelihood of the Humli people. It is here that a creative project managed by Humla Fund, a nonprofit organization based in Spencertown, NY, is underway to support the conservation of wild medicinal plants.

Of Nepal’s seventy-five districts, Humla District is the farthest north and also one of the poorest. There is not only a shortage of modern healthcare services, but also of electricity, running water, and roads. Since the Great Himalaya Trail runs through Humla District, some tourists do pass through on their way to Tibet to trek Mount Kailash. But overall, life is quiet here and has changed little over generations.

Ongoing deforestation for timber and farmland and the impact of the country’s ten-year civil war on the forests continue to threaten the habitats of Nepal’s wild medicinal plants. In western Nepal, forest collection of medicinal plants is more common than cultivation, with 49.5% sourced from community forests and 18.5% from federally-managed forests (Kunwar, Mahat, Acharya, & Bussmann, 2013). Recognizing this national treasure, the Food and Agricultural Organization of the United Nations has recommended that Nepal prioritize the sustainability of its medicinal and aromatic plants, including advancing the domestication of these wild species (Food and Agriculture Organization, 1995). At last count, Nepal was home to approximately seven-hundred different medicinal plants (His Majesty’s Government of Nepal/International Union for Conservation of Nature and Natural Resources, 1988).

How can a poor country like Nepal turn from resource extraction to stewardship of its medicinal plants? Humla Fund has taken a novel approach, blending international education, ecotourism, and volunteer vacations in a way that encourages the conservation of Humla’s wild medicinal plants. Through an experiential travel model known as the Medical Service Trip, healthcare practitioners can travel to Humla Valley to learn about the collection and use of Humla’s wild medicinal plants in traditional Tibetan medicine, while also offering their healthcare services to the villagers through mobile clinics.

The Medical Service Trip is suitable for doctors, nurses, acupuncturists, chiropractors, massage therapists, herbalists, and other healthcare practitioners. As they travel together through Humla Valley, meeting villagers and providing medical care, they also learn about traditional Tibetan healing practices, such as shaman rituals and blessings and the shaman’s harvest festival.

Since medicinal plants, both their collection and application, are key to attracting

“Medicinal plants are like the jewels of the Earth. They are very precious and should be recognized and used as medicine.”

– Norbu Sangpo Lama, Humli Environmentalist
program participants, the villagers’ conservation awareness is enhanced. Participants provide not only medical services, but also income to the villagers through employment as guides, translators, and cooks. An important component of Humla Fund’s program is the ongoing education of villagers on the sustainable collecting of medicinal plants. Tibetan doctors and environmental activists affiliated with Humla Fund actively spread this message to the villagers. Another component is the coordination of fair trade pricing, which allows families to support themselves without over-collecting.

Humla Fund currently provides healthcare to the Humla villagers for free through mobile clinics, but the next step is to build a permanent Tibetan medical clinic. The clinic’s focus will be on herbal medicine and acupuncture. These are medical practices with a long history in Humla, but perhaps as important, they do not depend on electricity and laboratory equipment (all of which are in scarce supply) the way modern medicine does.

This inspiring effort is working to spread awareness of the benefits of plant conservation. It is an integrative approach, aligned with Humli culture, to sustaining both the wild medicinal plants and the people of Humla Valley.

Miranda Grizio is an international development specialist focused on sustainable development initiatives that can improve the lives of the rural poor in developing countries. She provides technical assistance in the area of food science for Compatible Technology International and the Good Food Institute. Miranda lives in the Pioneer Valley of Massachusetts and can be reached at mirandag@ati.org.

REFERENCES:


GRANT REPORT
THREE LEAF FARM
(UPDATE SPRING 2018)
by Sara and Lenny Martinelli

In 2013 Boulder County was hit by one of the worst floods in recent history. It’s been determined that it was a 500-year flood, meaning it doesn’t flood like that except once in 500 years. Our little farm is tucked along the banks of the Coal Creek, a little river that flows from the Continental Divide down the Front Range of the Rocky Mountains, until it hits our little farm about 10 miles east. By the time it reaches us, the creek is normally a gently flowing, 10-foot-wide creek. Usually, it’s perfect for the horses to play in or kids to hunt for tadpoles or crawfish.

But in 2013, our little creek flooded, and it covered almost our entire small 10-acre farm. The “wild” areas that we use for our herbal medicine classes were completely submerged under madly rushing water, and when the water finally receded, we were honestly unsure of what would be left. How could any plants survive the violence of that kind of natural disaster?

We turned to United Plant Savers to help us with a grant. Their generosity allowed us to help re-establish some of the native medicinal plants that we have growing in our area and to rebuild our Medicine Trail, which is one of our most important teaching tools at Three Leaf Farm.

Now that it’s been almost five years since the flood, it’s amazing to see the regenerative power of nature, but also the lasting changes that a natural disaster like this can bring.

Perhaps the most significant changes are the new areas of wetlands that now exist at Three Leaf Farm. Being in a flood plain, some of the areas have been holding water since the flood and don’t seem likely to dry out anytime soon. We’ve seen a completely new kind of ecosystem, bringing with it new kinds of plants and wildlife to the area.

These wetlands are unusual in the dry climate of Colorado, making up only about 2% of the landscape of the state. It’s a great opportunity for us to learn, observe, and teach about the plants. These diverse ecosystems provide many functions: they help to recharge the groundwater supply and help in nutrient cycling and sediment transport. They help to provide clean water as the wetland vegetation filters sediment that may contain heavy metals, pesticides, or fertilizers. This vegetation can also provide a buffer zone in flood areas and provide a quality wildlife habitat. Many animals at our farm depend on these wetlands, including ducks, cranes, hawks, egrets, and owls, as well as mammals like raccoons, coyotes, skunks, weasels, mice, and foxes.

The plants that are commonly found in wetlands are commonly called hydrophytes (plants that grow in water). They’ve adapted to their environment in a number of ways, including forming complex rooting systems, floating leaves, or long, hollow stalks that help to conduct air to the roots. We now see an amazing array of new plants, including cattails (Typha spp.), rushes (Juncus spp.), sedges (Carex spp.), duckweeds (Lemna spp.), and watercress (Nasturtium officinale). Trees like willows and cottonwoods are also common, as their shallow root systems obtain a large amount of their water from the groundwater and are now thriving at the farm.

The other areas of the property have shown remarkable recovery from the damage of the floodwaters. After amending our soil in the cultivated areas, we’re back into full production of the produce that we grow, including greens, beets, radishes, carrots, tomatoes, peppers, eggplant, and squashes. The medicine trail has reestablished itself through both natural means and our encouragement with the seeds purchased by the UpS grant. We have healthy populations of yarrow (Achillea millefolium), valerian (Valeriana officinalis), motherwort (Leonurus cardiaca), goldenrod (Solidago canadensis), cleavers (Galium aparine), catnip (Nepeta cataria), vervain (Verbena spp.), St. John’s wort (Hypericum perforatum), and more.

The grasses have returned to our classroom meadow, and last spring we held a workshop called “Sacred Circles: Universal Symbolism of Our Relationship to Earth” in which we partnered with local naturalist, Martin Ogle for a program that explored how sacred circles have been used universally by people and seem to transcend both geography and culture. The workshop explored how these ancient motifs—and the creation of our own symbols—can help us appreciate modern-day relationships between families, communities, and Earth’s living systems.
Participants in the workshop helped to create a Sacred Circle Medicine Garden in the area that had been damaged by the flood. This garden is 16 feet in diameter with a walking border and an equal armed cross through the center. Each quadrant of the circle is carefully aligned to the four directions and designed to be planted with medicinal plants that correspond to that direction and season. For the first season of the garden, the workshop participants created the hardscape by digging out the circle, measuring the geometry, placing rocks, and setting different colored mulches. Initial plants and seeds were planted by the group, and we’ll continue to fill in the plants this season as we host the second year of this workshop.

In the north in the winter season we planted a miniature pine (\textit{Pinus} spp.), junipers (\textit{Juniperus} spp.), sage (\textit{Salvia} spp.), and Oregon grape (\textit{Berberis} spp.). These plants are often symbolic of winter and can be useful to alleviate ailments like colds and flu or respiratory infections. In the east, we planted plants of the spring. A miniature lilac (\textit{Syringa} spp.) is planted to bloom early with the fragrance of new beginnings. We added St. John’s wort (\textit{Hypericum perforatum}), which is traditionally harvested right at the end of spring on the first day of summer at the Summer Solstice. We added some springtime bulbs of tulips and daffodils, and tucked along the edge is a border of thyme (\textit{Thymus officinalis}). In the south, direction of fire and the summer, we planted a miniature hawthorn (\textit{Crataegus} spp.) and a variety of roses. English lavender (\textit{Lavandula angustifolia}), echinacea (\textit{Echinacea} spp.), and yarrow will all bloom and be at their most vital during the summer months. And finally, in the west, direction of the autumn, we will have an elderberry (\textit{Sambucus nigra}) bush, sunflowers, California poppies (\textit{Eschscholzia californica}), and calendula (\textit{Calendula officinalis}), all plants that thrive in Colorado’s warm, sunny autumn days.

We hope that over the years as this garden fills in, it will be one of the highlights of the medicine walk at Three Leaf Farm. People can walk around the exterior or move to the center to sit on a small bench and contemplate the cyclical nature of life.

Thanks to the support from United Plant Savers, our mission at Three Leaf Farm to be an educational center for medicinal plants has been able to survive the devastating damage of the floods. Not only did the grant offer us the ability to reestablish our native medicinal populations, but we now have new, unique ecosystems to explore. We are offering more workshops and classes than ever before, as well as hosting the amazing event, Botanica! A Celebration of Plants, a weekend-long event in June that explores the way that plants impact human lives through food, medicine, art, and religion.

For more information about Three Leaf Farm, please visit us online at \url{www.threeleaffarm.com}. 
PONDERING THE QUESTION
by Jesse LoVasco

On a walk today, I thought of the spring 2017 UPS journal and pondered the theme “conscious herbalism” and the question, “How can herbalism inspire stewardship instead of resource extraction of our precious “At-Risk” medicinal plants?” This is not an easy question to answer. With the amount of reckless waste and destruction of families and species of plants, it’s hard to conjure hope.

I thought perhaps there may be another question that needs to be asked. What drives people to take so much once they realize a plant’s value? There are two things that came to mind: recognition and financial gain. These seem to be the same reasons for extraction of many resources on this planet. The fight for water, oil, and land appear to center around financial gain and recognition or power.

So I began to think of a way stewardship could be fostered without destruction and how to approach it from a different angle. What if there were an International Plant Preservation Endowment that actually put out incentives for people who found large groups of plants or mushrooms growing in the wild and followed these instructions: mark the territory, as you would a Botanical Sanctuary and contact the United Plant Savers organization to receive a Medicinal Plant Conservation Journal (for education). These people could be awarded financially through the International Plant Preservation Endowment fund and receive recognition in the next issue of the journal, by stating their name, the plant or plants protected, and a description of their experience. This way the reasons that lured them in would be satisfied from a different angle. They would still get recognition, be empowered by their discovery, and receive the sum or close to the sum they may have received if they had taken it all and sold it.

There could be a board member from each participating country and within their regions they could hold an annual UPS or other plant preservation event that could create awareness and education and raise funds for the endowment.

I know, you’re probably saying, that’s not a conscious act in any way. But I think with the mindset of many today, we must look at the way in which they think and how they discern. How do they absorb information and what are they exposed to in everyday life? Were they taught how to care for plants or only to use them for their own gain?

I’m living in Michigan right now in a wealthy bedroom community after living in a small rural Vermont community for 20 years. It’s as though I’m existing in a different culture altogether. There is a profound difference in the way both areas value nature, how they think and see life, and how much exposure and interaction they have had with the natural world.

Thus, another piece to the reward would be seeds—“At-Risk” plant seeds, so that the recipient can not only be involved in preserving what grows but have the experience of growing them in their own gardens. Through nurturing seeds, perhaps the plants themselves will work their subtle energies and create a relationship with those who follow the directives and support the growth and proliferation of plants. Perhaps this approach could be a catalyst for changing the way plants in nature are viewed and build a broader understanding of the importance of precious plants and their medicines.

Jesse LoVasco is an herbalist, permaculture practitioner, and artist. She received her Family Herbalist Certificate at Vermont Center for Integrative Herbalism and has been an intern for Guido Masé and Jeff and Melanie Carpenter. She taught herb classes three years for Two Rivers in Vermont and worked on a 25-acre herb farm in Montpelier, Vermont. She currently lives in Michigan where her three children have blessed her with five grandchildren.

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SUSAN’S STACK
Ethnobotany Reading List for 2018

- Beyond the War on Invasive Species, Tao Orion
- Mushrooms of the Southeast, Todd F. Elliott & Steven L. Stephenson
- Nature’s Fabric, David Lee
- Southern Folk Medicine, Phyllis D. Light
- Forest Gardening, Robert Hart
- Civil War Pharmacy: A History, Michael A Flannery
- Hopewell Ceremonial Landscapes of Ohio, Mark J. Lynott
- Ramp Hollow, Steven Stoll
- Bloodroot Cantonos, Larry L. Yates
- Folk Medicine in Southern Appalachia, Anthony Cavender
- Mycorrhizal Planet, Michael Phillips
- The Botany of Empire in the Long Eighteenth Century, Batsaki, Cahanal & Tchikine
- Historical Apothecary Compendium, Daniel A. Goldstein
MORE STORIES FROM THE UPS BOTANICAL SANCTUARY NETWORK

The United Plant Savers Botanical Sanctuary Network (BSN) is one of our most important ongoing projects. This is a network of over 100 landowners who have formally expressed their intentions to steward existing populations of at-risk native medicinal plants and/or reintroduce these plants to their farms and landscapes. We view these Botanical Sanctuaries as living seed banks managed by well-intentioned conservationists that are poised to spread the native germplasm across the greater landscape when conditions allow.

This concept of native plant repopulation after disturbance has been demonstrated at the original United Plant Savers Botanical Sanctuary in Rutland, Ohio. After the brief but devastating surface coal mining that took place on the sanctuary land in the early 60’s, followed by years of erosion and abuse before reclamation, native plants are returning to these previously mined areas of the sanctuary. This relatively quick repopulation of the disturbed land by native plants is primarily due to an undisturbed pocket of biodiversity that remained after the mining took place. Humans, other animals, and natural systems helped to spread seeds and plant material from this remaining “plant sanctuary” across the previously disturbed area to regenerate the land. We believe that the Ups Botanical Sanctuary Network has the potential to serve this same purpose on a larger, worldwide scale.

Land that is to be considered for BSN status should at least occasionally be open to the public for educational purposes and also be a place where research on native plants, medicinal plant conservation, and cultivation is undertaken. The sanctuaries in the network range in size from small city lots to large tracts of land consisting of hundreds of acres. There has been a surge in participation in the BSN over the past few years with 29 new sanctuaries in 2017 and nearly 10 new sanctuaries so far in 2018. Please consider enrolling your land in the Ups Botanical Network. You can find more information on our website, www.unitedplantsavers.org, or by emailing office@unitedplantsavers.org.

Benefits of becoming a member of the Botanical Sanctuary Network include:

- A beautiful metal sign with the UpS logo on it to place at the entrance to your Sanctuary signifying this as a Ups Botanical Sanctuary.
- Priority Consideration for UpS Community Grants. Our Community Grants award $200-$500 dollars for community projects involving at-risk plant restoration and preservation. Sanctuary members are given first priority.
- Two weatherproof signs that designate the property as a Sanctuary being used for plant research and educational purposes.
- Botanical Sanctuary Resource Guide that includes where to order botanical signs for medicine trails, sources of grants and funding raising, useful books and information sources, etc.
- Listing on the UpS Website and social media channels.
- Opportunities to promote classes and workshops at your Sanctuary on our website and social media channels.
- Opportunities to publish your Sanctuary story on our website and in our annual Journal of Medicinal Plant Conservation.
7 ACRE WOOD FARM
BOTANICAL SANCTUARY
Burnsville, Virginia
Sanctuary Stewards: Anne Bryan and Joe Murray

This is how a 7-acre botanical sanctuary can help heal a community’s people and soil. Last year was our first year as a member in the Botanical Sanctuary Network. Receiving formal recognition from United Plant Savers and seeing our name listed with the other like-minded conservationists across North America made us feel a difference in how we related to the land.

Our first impulse in 2017 was to better understand what plants were growing on our property. Equipped with over one dozen plant identification books, we set out to identify as many plants as possible and were delighted to realize in our first year as botanical explorers, we had identified 231 plant species! We were especially pleased to learn that over 90% of the plants identified had some medicinal property recognized by Native Americans. We will continue this identification quest in 2018 and expand our search to include bryophytes, lichens, fungi, and grasses.

To improve habitat for medicinal plants, we invested time and energy to fence off areas in the forest and meadows that contained plants listed “At-Risk” on the UpS website, denying the deer browsing rights to ginseng (Panax quinquefolius), bloodroot (Sanguinaria canadensis), black cohosh (Actaea racemosa), echinacea (Echinacea spp.), and goldenseal (Hydrastis canadensis). These protected areas will now allow us to expand our plantings of cultivated medicinal plants and encourage the spread of wild medicinal plants.

In keeping with permaculture design principles, we were able to turn what at first appeared to be a liability into an opportunity. Living at an elevation of 2,400 feet with a slope between 10-15% means two things: we live in a colder hardiness zone than our friends in town and, when standing outside, our feet are rarely level. We took advantage of relatively steep topography and created a series of swales to collect, move, and store rainwater. In 2017, we increased space dedicated to cultivated medicinal herbs by creating approximately 1,000 square feet of planting space in these new swales.

After entering a partnership with our local electric cooperative in which we assume responsibility for managing the electric utility right-of-way with vegetation that will not conflict with the electric wires, we continue to transform the formerly barren landscape into a vibrant habitat that supports pollinators and medicinal plants.

Last year we were both invited as guest speakers at area garden clubs and local libraries and continue to accept invitations to speak about our medicinal herbs and efforts at creating pollinator habitat. In addition to sharing resources, herbal teas, tinctures, and salves, we also share seeds from our medicinal plants with family, friends, community members, and participants at our workshops. This year we are excited to accept an invitation to be instructors and share our knowledge and experience growing medicinal herbs at the Allegheny Mountain Institute, a permaculturally-inspired educational non-profit organization training young adults in creative food growing systems and public outreach.

www.7acrewoodfarm.org
FORSAKEN ROOTS
Acme, Pennsylvania
Sanctuary Stewards: Sara Shoemaker and Thomas Brown

We are Sara Shoemaker and Thomas Brown of Forsaken Roots in Acme, Pennsylvania. Our farm’s name, “Forsaken Roots” comes from the idea of lost or forgotten ways. It applies to us in more ways than one could ever imagine. From our home, to our property, our antique letterpress/block printing studio, to our 1952 Ford F-1 pickup truck, we are immersed in revitalizing what is already here and creating new life with it all.

So far, we have designated 35 acres of our property as a Botanical Sanctuary. Our farm is part of a 500+ acre farm that has been in Thomas’s family for 212 years. Within the last 3 years we have by ourselves, begun to restore our portion of the property’s fields, meadows, and forests to encourage native plant growth.

In time, we will be holding guided plant walks and workshops for underprivileged children, children of parents that are mentally ill or suffer from addictions. By offering our sanctuary to them, we hope it will allow those that need to disconnect from chaotic environments to find the peace and comfort that nature offers. We also plan to offer our sanctuary as a place for homeschooled children to visit and workshops for them to expand their studies. The workshops will range from plant identification, learning the endangered or at risk plants, to creating simple teas and recipes with edible plants and more.

We have planted over 500 tree saplings of different native varieties the past two springs. We are just beginning our attempts to restore the land back to its natural state as much as possible. Each year we aim to plant more and more. Thomas and his brother Benjamin have been planting saplings throughout the farm’s acres each year for as long as they can remember in their lives.

We have planted native ramps (Allium tricoccum), ginseng (Panax quinquefolius), goldenseal (Hydrastis canadensis), Solomon’s seal (Polygonatum spp.), and trilliums (Trillium spp.), from credited trusted sources, as well as transplanted endangered or at risk species from areas that were to be clear cut logged or cleared out for roadways, home building, etc. We plant to continue with these kinds of feats as much as possible.

Last fall, we planted 2 acres of native wildflowers in a 15 acre meadow in which native wildflowers already have established themselves. We plan to cover the entire area with native wildflower beauty for a thriving ecosystem of pollinators and wildlife.

During the summer months we harvest small amounts of flowers from the abundant field and deliver them to several local businesses in our small community, and we sometimes take special orders for small private events. We sell small bouquets in recycled jars in the family farm store and donate a percentage to our local Watershed.

Jacobs Creek Watershed. I serve on their board of directors, and our farm literally is the Headwaters of Jacobs Creek. We use the remaining portion towards purchasing more native plants and seeds and for our many restoration projects that lie ahead. We hope that by spreading these small doses of beauty with a message attached that it will become contagious and inspire others to do the same.

In the spring of this year we will be gaining the helping green thumbs of my twin Sister Jessi Shoemaker, who will be staying with us and helping us with activities and planting projects, and we have several volunteers who have committed to lending us a hand. To say we feel fortunate to have these wonderful people in our lives willing to their time and energy to help us is an understatement.

Our sister farm, Whoa Nellie Creamery has been working with NRCS in the last 2 years, making big changes to help conserve the land it occupies. We too have begun working with them to gain their assistance in taking the steps needed to create an even more biodiverse healthy native environment for pollinators and wildlife. And with the funding they will provide us, we will be able to incorporate into an Agro-forest area where we will grow an abundance of native mushrooms varieties, herbs, trees, blueberries, currents, huckleberries and more, as many of the over logged acres that have been taken over by invasive plant species and marshy areas are collapsing. We hope to replenish our property as close as possible back to its natural state.

We are also beginning beekeepers. We obtained our equipment from a local beekeeper and have befriended a neighbor who has been a respected beekeeper for many years as our mentor. We rescued a wild hive from a wall of a cottage that was about to be torn down. We will be harvesting the honey from our girls for a variety of nutritional and skincare uses. We are constantly asked when we will be selling our honey. We are starting small and will grow our hives slowly. Offering honey for sale will come with time, as we are focused more on creating strong hives and bringing back the pollinator population over making profit from them.

I (Sara) also create herbal goods that are in line with nature. I sustainably forage the medicinal and wildflowers growing in abundance for simple herbal recipes and as main ingredients to oils, salves, tinctures,
infusions, and teas. Just by gathering the abundant medicinal plants and herbs that grow on our property, I have been able to create enough Simples for fully stocked cupboards for a lifetime of cold and flu remedies, first aid and pain ointments, healing skincare, hair care, oxymel vinegars and cleaning vinegars, dried herbs for teas, and nourishing infusions.

I use absolutely no essential oils in any of my goods. I am a learning folk herbalist furthering my knowledge of the green world as a Green Witch student of the renowned herbalist, Susun Weed. Susun takes the complexity out of learning the plants and their uses and puts a focus on Simples and taking the time to get to know each plant. I believe that no matter how much I learn, I will always be a student of the plants, willing to learn all that they have to offer.

Another element of our sanctuary is our cabin home. The 2400 square foot 3 story 1790s Pennsylvania hued log cabin, (originally a German church) is the kind of house we both had explored as children in museum settings with our family or by exploring abandoned places as children with our siblings. Both of us always dreamed of living in a home like we have built for ourselves.

We began restoring the cabin in 2012, after Thomas and his brother purchased the home that was in ruins from the landowner for $100. The 3 story cabin had to be cleaned out, disassembled piece by piece, and moved 60 miles from Somerset County Pennsylvania to our property that sprawls across the Chestnut Ridge of the Laurel Highlands (a short trip from the origins of the Mother Earth News Fair!).

We live completely off grid and lived in the basement of our home with no utilities and running water for a span of for two and a half years. We, along with the help of a few family members and friends have patiently created a beautiful, simple, and comfortable home that now has running water and solar electricity.

Around the cabin, we are slowly creating a perennial biodynamic yard. We let the weeds and plants flourish and spread as they would in the wild, thus creating an ecosystem for insects, wildlife, and plants to thrive and makes less work for us having little yard maintenance. Although we do grow some annual veggies, almost everything else that we are planting are perennials in areas where they thrive best in companion style making for a diverse landscape that attracts, bees, butterflies, and native wildlife and looks naturally beautiful at the same time. The connection between nature and people has been lost with modern society. We hope by sharing our story with others that we may be the green spark that ignites the path for others to find this connection in their lives.

If anyone would wish to follow our endeavors please follow us at: @forsaken_roots on Instagram. We thank you all for taking the time to read our story!

Onward for the greater good,
Sara and Thomas Brown
As I ponder the concept of sanctuary, feelings of safety and protection resonate inside. These feelings are commonplace throughout this land. Perhaps it’s the location. At an altitude of 650 ft., the Gaspereau Mountain Herb Farm and Botanical Sanctuary is nestled at the top of the northernmost range of the Appalachian Mountains. Gaspereau Mountain overlooks the agriculturally fertile region of Nova Scotia’s Annapolis Valley. These ancient granite barrens and uplands have been inhabited for approximately 14,000 years by the Mi’kmaq Peoples, whose influence is regaining strength. The farm is 10 minutes directly up the mountain from the Bay of Fundy, known for the highest tides in the world, whose dramatic moisture and winds shape our daily lives as well as those of the forests and fields.

Observing and stewarding this land since 2012, our relationship feels like it is just beginning. A passion for herbal medicine fueled the search for this special land, the story of how we came to be here being a beautiful example of manifestation. The last property on this dead end road, our 220 year old farmhouse is surrounded by over 3000 acres of Acadian forest, much of which has been heavily cut over by generations of farmers. All of it is now in varying stages of regeneration. Our 25-acre farm includes teaching gardens, food gardens, a large greenhouse, production fields, forest, and recently planted fruit and nut orchards.

Having interned at the UpS Goldenseal Sanctuary in Ohio in 2009, then tending the gardens of Sage Mountain in Vermont, inspired me to create the magic that is happening. My connection with United Plant Savers, their remarkable work and people began then, forever shaping my life and visions to this day. Sanctuary became a sense of purpose, not just a physical place.

Upon arrival here, Vaunda and I were greeted in these fields and woodlands by an abundance of medicinal plants, both indigenous and naturalized. Many are included on the UpS “At-Risk” and “To-Watch” Lists. Eyebright (Euphrasia spp.), goldthread (Coptis trifolia), lobelia (Lobelia infulata), and pipisseewa (Chimaphila umbellata) were here growing, but it is the pink lady’s slipper (Cypripedium acaule), with whom I am most enamored. Last year I spotted well over five hundred of these orchids in our woods. Often in June, I can be found sitting in a dense patch of these majestic beauties, offering tobacco, my gratitude, and singing praise. My respect and reverence is profound.

Since 2012, we have identified 40 or more medicinal plants here, and by applying permaculture and biodynamic practices, we have planted close to 50 more species of herbs and trees. Of importance to UpS, they include American ginseng (Panax quinquefolius), bloodroot (Sanguinaria canadensis), black cohosh (Actaea racemosa), blue cohosh (Caulophyllum thalictroides), goldenseal (Hydrastis canadensis), echinacea (Echinacea spp.), wild yam (Dioscorea villosa), arnica (Arnica spp.), butterfly weed (Asclepias tuberosa), gentian (Gentiana spp.), mayapple (Podophyllum peltatum), and false unicorn root (Chamaelerium luteum). Despite the fact we are outside the native range of many of these mostly forest dwellers and
that the soil here is acidic, our climate (5b) and forest mix is right for most. Tenacity, inspiration, and determination to grow these precious allies help.

My attempt is to take the notion of sanctuary and conservation to that of the reintroduction, establishment, and proliferation of these much needed plants. Along with planting in our fields, gardens and edges, I have planted in the neighboring forests, streamsides, and abandoned pastures. Most of the “At-Risk” and “To-Watch” plants that have been reintroduced are not planted for harvest, but to enable propagation and to attract pollinators.

For the past 2 gardening seasons, the farm has hosted interns from around the globe. An amazing array of folks have helped us, often leaving with an appreciation for our indigenous medicinal plants, as well as knowledge about their healing abilities. Teaching workshops, doing plant walks, product making, live medicinal plant sales, and clinical herbal consultations have been part of the mix for the last 3 years, with this year seeing us organize a free herbal gathering entitled “Medicines of the People – A Herbal Celebration.” With over 125 attendees, our first annual event was a resounding success. Mi’kmaq elders opened the day with drumming, prayers, and smudging in an attempt to share their indigenous worldview and knowledge. The sacredness of water was a key theme and a reminder to all that water is the first medicine and must be protected.

Becoming part of the Botanical Sanctuary Network was a highlight of my year and is a great honor and privilege that I am still vibrating from. I managed to return to the Goldenseal Sanctuary for a visit in October of 2017, once again being inspired by the people, plants, and place.

This upcoming season will see us increase our workshop offerings and native plant walks. As it seems to be increasingly difficult to obtain ginseng and goldenseal seed in Canada, we will also attempt to establish a patch of each of these that will produce enough seed to share.

As Dr. Low Dog once said, “Don’t ever apologize for dancing with the plants”.

Gaspereau Mountain Herb Farm & Botanical Sanctuary
GREENMANBOTANICALS.COM
THE GINKGO TREE
BOTANICAL SANCTUARY

Dogwood and Brambles Farm, Ontario Canada
Sanctuary Stewards: Penelope Beaudrow
and Will Hutchison

My partner and I live on a lovely little farm called Dogwood and Brambles in central Ontario. This farm has been my personal sanctuary for over thirty years. It is part of me, and I am part of it. Will and I are at our happiest roaming the fields and bush with our dogs, Fred, Gus, and Pearl while identifying and picking a few leaves or flowers, which will become our next pot of tea. Many of these plants, the "At-Risk" and "To-Watch" have solely been identified and nurtured by me. We do not use these plants for teas or medicine. We have reintroduced many of these plants and welcomed Mother Nature back to stay.

I am so thankful that I have been able to also nurture and raise my four children in this little piece of heaven, now we have grandchildren, who will be having their own adventures on this family farm, learning to appreciate the nature that surrounds us. My dad, Frank, works along with us keeping up our gardens and being an amazing land steward. Did I mention he is 80 years old and irreplaceable? Only a small portion of our 100-acre farm is actually "farmed".

While most of our neighbors are clearing every fence row and bush for more workable land, we have taken over 60 acres of workable land and given it back to nature. Trees, shrubs, wildflowers, and herbs are all thriving, increasing the natural habitat for the surrounding wildlife. Common sightings are deer, rabbits, coyotes, wild turkeys, hawks, raccoons, and rare sightings of bobcats, bears, and even a cougar.

It is on this land since 2010 that herbal wisdom has been shared, taught, and felt. I share the knowledge that I have been gifted with my students on our nature walks and in workshops. I feel it is so important to share and educate about our plants.

The preservation of plants and natural habitat for wildlife and for others has been a huge part of what and who we are. It wasn’t until last year after speaking to United Plant Savers volunteers at the New England Women’s Herbal Conference that I realized that my personal sanctuary is already a botanical sanctuary! We are very proud to say that last year we became a Botanical Sanctuary Member of United Plant Savers, the first member in Ontario!

Our future goals here on our farm are simple—to increase the number of “At-Risk” plant colonies annually by way of donations, volunteers, and hands on education. We will offer “At-Risk” botanical walks and lectures. It is my dream that one of my children or grandchildren will carry on my work with plants, nurturing and loving our sanctuary as much as I do.

I am incredibly thankful every day for my work within the herbal community introducing people to the many uses of herbs and seeing them begin to use them daily—for themselves and their loved ones (human and pet)—it is truly my life’s passion!

http://theginkgotree.ca/
This is land that was used by a dairy farm for pasture, corn, and hay. Over the years the forest has returned, maple with beech, hemlock, pine, and birch. I am starting to turn my attention to medicine from trees, but I am just a beginner at that.

Some acres here are still hayed, certified organic, and that is where I gather many herbs such as alfalfa (Medicago sativa), red clover (Trifolium pratense), motherwort (Leonurus cardiaca), milkweed (Asclepias syriaca), and more. So many common herbs are very medicinal, and I believe that using them is one way to preserve the more rare species. The hayfields are loved by pollinators and butterflies. My lawn is really just a close mowed field and has violets (Viola spp.), dandelions (Taraxacum officinale), plantain (Plantago spp.), and more. I have counted over 30 species growing.

In the forest I have seen a natural return of herbs as the canopy closes and the soil regenerates. The first near my house was blue cohosh (Caulophyllum thalictroides). Last year I found maidenhair fern (Adiantum pedatum), and in the fall I found ginseng (Panax quinquefolius) with seeds. I planted them right near the mother. I was so excited!

I also have a patch of goldenseal (Hydrastis canadensis) that I planted with roots from someone across town. My patch has grown so well, it is my pride and joy. One year there were so many seeds, I planted them in a corner of the patch, and they have sprouted. I intend to plant them out in the forest next fall in spots where I think they will thrive. Last year all my seeds disappeared, and I suspect the local blue jays. I hope some of them sprout wherever they fall! I did have to put a good fence around my little plot to keep out deer, and I am always looking at the surrounding trees and adjusting the amount of light they get.

I also have rescued bloodroot (Sanguinaria canadensis) that was on the edge of the road left by the road crew machinery, and just a few roots have produced babies that sprout up all over the place and are so beautiful in the spring. In the same way I have adopted some black cohosh (Actaea racemosa) that appeared in a neighbor’s garden. He was horrified, but once he found out that I thought it was a great plant, he decided he thought so, too, and has kept his patch going. I also moved leeks and trillium (Trillium spp.) from where they would have been destroyed. My black birches have produced chaga (Inonotus obliquus) as well.

Much of my “gardening” is fighting at the field-forest boundary with invasive plants. Bittersweet (Celastrus spp.) is brought in by the birds and grows rampant. Black swallowwort (Cynanchum louiseae) is taking hold, and I actually burned a fire over where it lives, since it’s so hard to get rid of. I think it helped, but I have to keep after it. Spotted knapweed (Centaurea maculosa) is another, and Japanese barberry (Berberis thunbergii) far outgrows the amount I could ever use for dye or medicine and brings in ticks.

I try to appreciate every plant, but some take over too much. So a lot of my gardening is not in a little spot but in keeping the architecture of the forest and swamp available for the wild plants and animals to regenerate. I feel so blessed to do this work!
Sacred Plant Sanctuary at Seattle School of Body-Psychotherapy

Sanctuary Steward: Aylee Welch, LICSW

Blue cohosh
Devil’s club, a Pacific Northwest powerhouse
Solomon’s seal
Osha
The great magical mandrake
Schizandra blooms
Maidenhair fern, an at-risk beauty
WALKER MOUNTAIN
BOTANICAL SANCTUARY
(2018 UPDATE)
Deerfield, Virginia
Sanctuary Stewards: Shay and Kim Clanton and family

It is early February at Walker Mountain Botanical Sanctuary, close to the midpoint between the winter solstice and the spring equinox. This has been a cold winter, and it is comforting to think that we are headed towards spring and the emergence of the vibrant green world.

We are happy to write that, in 2016, we were able to purchase an additional 60 acres adjacent to the existing 40 acres of our land here at Walker Mountain Botanical Sanctuary in Deerfield, Virginia. The new land is mountain hardwood forest with an open field at the base of the mountain, and there is an old house that was the post office for this part of the valley long ago. The land, on the western edge, borders the George Washington National Forest, so we are connected to 1000s of acres of unbroken forest land. There is a rich north slope where mature ginseng (*Panax quinquefolius*), black cohosh (*Actaea racemosa*), blue cohosh (*Caulophyllum thalictroides*), bloodroot (*Sanguinaria canadensis*), and mayapple (*Podophyllum peltatum*) thrive. Last fall we planted more ginseng, both roots and seeds, as well as ramps (*Allium tricoccum*), trillium (*Trillium* spp.), and goldenseal (*Hydrastis canadensis*). We also carefully planted the berries of the mature ginseng already growing here in good places in the same general area as the mother plants. There is an old trail that winds up the mountain from a small spring, and here we have begun a medicine trail using old slate roof tiles for plant ID markers. We plan to continue to work on the trail throughout the spring and to add plants and seeds every year. We would love to soon be able to share with the public the woods and rich diversity of plants and the beautiful rushing mountain creek that flows from springs on Walker Mountain.

It is a dark time politically for those who love and honor the earth. The route of the proposed Atlantic Coast Pipeline runs just a few miles from our home on the opposite side of Walker Mountain. The ACP is a huge fracked gas pipeline that will run 600 miles from the fracking fields of West Virginia through Virginia to North Carolina through 1000s of acres of National Forest (where steep mountain ridges will be flattened and forests permanently cleared the width of a six-lane highway) and across 1000s of streams, rivers, and private farms and land, including the base of the western side of Walker Mountain and through beautiful Deerfield Valley. We have fought for three years with citizens groups to stop it, but it is currently in the final stages of approval. Our work with United Plant Savers and Walker Mountain Botanical Sanctuary gives us perspective and balance in a difficult time. This place is truly a sanctuary for the plants and for all beings. We are grateful to live in this beautiful forest and to be a part of the work of United Plant Savers. In each UpS Botanical Sanctuary there is hope for the green world and trust in the ancient intelligence and resilience of the natural world.

“If we surrendered to the earth’s intelligence we could rise up rooted, like trees”

— Rainer Maria Rilke from his poem, “As Surely Gravity’s Law”
UPSR BOTANICAL SANCTUARY NETWORK: ACTIVE MEMBERS

REGISTERED SANCTUARIES THROUGHOUT THE US & CANADA

7 Acre Wood Farm
Burnsville, VA

Aaxis Health/Nature Cares Nursery and Botanical Sanctuary
Portland, OR

Acadia University Harriet Irving Botanical Gardens
Fountain Valley, CA

Appalachia Ohio Alliance
Logan, OH

Appalachia School of Holistic Herbalism/Soulflower Farm
Asheville, NC

Ataga’hi
Marengo, IL

Avena Botanicals
Rockport, ME

Bastyr University Dept. of Botanical Medicine/Bastyr Herb Garden
Kenmore, WA

Bean Tree Farm
Tucson, AZ

Bee Fields Farm
Wilton, NH

BeeGood Gardens
Columbus, OH

Bluebird Botanical Plant Sanctuary
Eureka Springs, AR

Brigid’s Way
Washington Boro, PA

Broadwell Hill
Stewart, OH

Buck Mountain Botanicals
Miles City, MT

CA & J Farm
Foser, VA

Catkill Creek Native Plant Nursery
Greenville, NY

Cedar Mountain Medicinals
Newport, WA

Cherokee Medicine Woods
Bloomington Springs, TN

Dandelion Herbal Center
Kneeland, CA

Desert Canyon Farm
Canon City, CO

Diana’s Garden Herb Farm and Sanctuary
Sturbridge, MA

Dibble Hill Native Plant Sanctuary
Saegertown, PA

Dragonfly Medicinals
Vashon Island, WA

Earth Remedies
New Hartford, CT

Earthcrafts Botanicals
Uxbridge, MA

Eden Hyll Botanical Sanctuary
Natural Bridge, NY

Equinox Farm
Rutland, OH

Farmacy Herbs Farm
Providence, RI

Fern Hill Nursery
Cottage Grove, OR

Fire Om Earth
Eureka Springs, AR

Florida School of Holistic Living
Orlando, FL

Foodmedicine Farm/Whole System Design
Moretown, VT

Forsaken Roots
Acme, PA

Frontier Natural Products Co-op
Norway, IA

Gaia Herbs, Inc.
Brevard, NC

Gaia’s Peace Garden
Iowa City, IA
Gaspereau Mountain Herb Farm and Botanical Sanctuary
Wolfville, NS
Genie’s Dream
Gatlinburg, TN
God’s Gardens
Robbinsville, NC
Green Comfort School of Herbal Medicine
Washington, VA
Green Farmacy Garden
Fulton, MD
Green Turtle Botanicals
Nashville, IN
Happy Homestead/Bluebird Botanical Plant Sanctuary
Eureka Springs, AR
Hawthorne Way Botanical Sanctuary
East Meredith, NY
Healing Wheel Sanctuary
Hancock, NY
Heartmore Farm
Kent’s Store, VA
Heartstone Herbal School
Van Alstyne, NY
Herb Mountain Farm
Weaverville, NC
Herbfinders of Maine
Lubec, ME
Hidden Garden Ethnobotanical School
Brooklyn, NY
Herb Pharm
Williams, OR
Highwoods Heaven Botanical Sanctuary
Yacolt, WA
Humming Bird Hill Native Plant Nursery
Crocket, VA
Idlewild Native American Plant Sanctuary
Wilton, OK
Indian Pipe Botanical Sanctuary
Linden, VA
Knowlton Farms
Sebastopol, CA
Labyrinth Gardens
Mulberry Grove, IL
Light Footsteps Herb Farm and Learning Center
Chardon, OH
Luna Farm Herbal Gardens and Botanical Sanctuary
Troy, IL
Lynnwood Herb Farm
Lykens, PA
Maryland University of Integrative Health Garden
Laurel, MD
Mill House
Arrington, VA
Mockingbird Meadows Eclectic Herbal Institute
Marysville, OH
MoonMaid Botanicals/Woodlands Medicinal Sanctuary
Crosby, TN
Morning Star Sanctuary
Warnerville, CO
Morning Sun
New Egypt, NJ
Motherland Botanical Sanctuary
Wilton, CA
Mycoevolve
Essex Junction, VT
N.C. Ginseng & Goldenseal Co./Eagle Feather Farm
Marshall, NC
Native Earth Teaching Farm
Chilmack, MA
Nature Cares Nursery and Botanical Sanctuary
Portland, OR
Nettlejuice Herbals
Cochranville, PA
Oak Creek Botanical Sanctuary
Covallis, OR
Owl Mountain
Clyde, NC
Pangaea Plants
Black Mountain, NC
Perry Hill Farm
Millbrook, NY
Peterman Brook Herb Farm
N. 280 Riverview Road
Porterfield, WI
Phenix Farms
Augusta, ME
Plant and Gather Forest Farm
Marshall, NC
Plattsburgh Botanical Sanctuary
Plattsburgh, NY
Restoration Herbs
Erie, PA
Sacred Mother Sanctuary
Peabody, KS
Sacred Plant Sanctuary at Seattle School of Body-Psychotherapy
Seattle, WA
Sacred Plant Traditions
Charlot, WA
Sacred Roots Herbal Sanctuary
Shepherdstown, WV
Sage Mountain
E. Barre, VT
Sage of the Woods
Cedar Falls, IA
Seeds and Spores Family Farm
Marquette, MI
Seven Arrows Farm Botanical Sanctuary
Seekonk, MA
Shaw Black Farms
Morning View, KY
Shindogan Hollow Woodland
Wilseyville, NY
Singing Brook Farm
Worthington, MA
Sisters Sanctuary
Guilford, VT
Sisters Sanctuary
Guilford, VT
Soothing Herbs
Goshen, VA
Soulflower Farm
Asheville, NC
Sweetwater Sanctuary
Danby, VT
Terra Firma Gardens
Harrisonburg, VA
The Ginkgo Tree
Cannington, ON
The Green Spiral
Middlebury, NY
The Herb Crib
Blaisdell, GA
The Living Centre
London, ON
The Rare Seed Sanctuary
New Gloucester, ME
The Tillium Center
Conneaut, OH
The Wellspring Valley
Stahls, PA
Three Leaf Farm
Louisville, CO
Three Springs Farm
Waitsfield, VT
Two Creeks Organic Farm
Shiloh, GA
Underwood Herbs/Plattsburgh Botanical Sanctuary
Plattsburgh, NY
Vajra Herb Farm
Oskaloosa, KS
Val’ Haller Farm and Homestead
Burnsville, NC
Vintage Homesteader
St. James, MO
Walker Mountain Botanical Sanctuary
Deerfield, VT
Wasabi Springs
Barnardsville, NC
Weeds For Wellness
Nescopeck, PA
Weilspring Mountain/Eclectic School of Herbal Medicine
Lowgap, NC
Wildcraft Hollow
Amherst, VA
Wildflower School of Botanical Medicine
Cedar Creek, TX
Wind Song
North Garden, VA
Windsong
Honor, MI
Wise Ways Herbals/Singing Brook Farm
Worthington, MA
Wise Woman Center
Woodstock, NY

A GREAT BIG WELCOME TO OUR NEWEST SANCTUARIES!

■ = recently joined
As a member of UpS you can experience the power of our botanical sanctuary yourself. Along with your Journal of Medicinal Plant Conservation, sticker, and discounts to United Plant Savers events, UpS members have special privileges at the United Plant Savers Botanical Sanctuary.

The UpS Botanical Sanctuary is the exact location where, 23 years ago, Rosemary Gladstar, Paul Strauss, and a few others first began to talk about the idea of conserving these plants that were providing medicine and income to an ever-growing population of people.

Members are invited to hike the Medicine Trail where, if your timing is right, you will see American ginseng, black cohosh, bloodroot, blue cohosh, false unicorn root, trillium, one of the largest patches of goldenseal anywhere in the world, and more. Beyond the Medicine Trail lie the Main Hollow Trail, Oak Walk, Reclaim Trail, Heart Pond, and miles of additional paths to explore.

Come for the day or spend some extended time with us and really allow yourself to fall in pace with the plants. We have overnight lodging including the Yurt, which offers kitchen, bathroom with shower, and gas heat; Barn Rooms with two single beds, electric heat, and shared bath; the rustic Tornado Cabin nestled in the middle of the forest with two single beds; and in addition we have plenty of primitive camping sites. For more information visit www.goldensealsanctuary.org. If you would like to visit, just email office@unitedplantsavers.org or call 740-742-3455 to get on the calendar. I look forward to sharing this sanctuary with you!

Much of what makes the UpS Botanical Sanctuary special is the community that has formed around the plants and this hallowed piece of land. Here are a few of our neighbors, board members, and special guests during one of our annual board meeting potlucks.
Medicinal Plant Conservation Certificate Program

Hard Working?
Motivated to learn about medicinal plants?
Want to experience United Plant Savers’ 360-acre plant sanctuary in Ohio?

FALL 2018 SESSION:
September 4th to October 12th

~ & ~

SPRING 2019 SESSION:
April 29th to June 7th

Apply now for early acceptance!

A HANDS-ON PRACTICAL APPROACH

Interns take classes from local teachers and work on maintenance, conservation, and cultivation projects for 30-40 hours per week. The importance of interns spending time in the woods and developing relationships with the plants is emphasized. Internship program coordinator John Stock oversees the program and is the caretaker for the interns while they are here. Local teachers Paul Strauss, Chip Carroll, Lonnie Gall-Theis, and Tanner Flyay each lead work crews and apply their own personalities and technique to teach plant identification and uses. In addition to these core teachers, interns will learn from clinical herbalist Caty Crabb, longtime herbal educator Rebecca Wood, UpS Advisory Board member Mark Cohen, artist and flower essence practitioner Katherine Ziff, and more. Interns will work daily with “at-Risk” and endangered species, perform general farm maintenance, landscape maintenance, plant identification, sustainable wild harvest techniques, medicine making, and more!

Application available online at www.unitedplantsavers.org office@unitedplantsavers.org 740-742-3455

DEEP ECOLOGY ARTIST FELLOWSHIP PROGRAM

We are seeking artists looking to spend time at the sanctuary to explore their artistic perspective in regards to the role of native medicinal plants in the ecosystem through photography, writing, and mixed media. We will accept applications throughout the year on a rolling admission basis. Applicants can apply for up to four weeks. We will provide free lodging to those who are accepted. To apply please submit a one-page description of what your interest is in applying for the fellowship and an example of your art work along with a CV.

We also ask that those who are accepted to participate in the artist fellowship to share their work in our annual Journal of Medicinal Plant Conservation. We hope that this fellowship will offer an opportunity for those seeking sanctuary for artistic inspiration to have the time and space to connect with the healing plants. We look forward to attracting a diverse range of individuals who will explore the meaning of sanctuary and share their artist experience with our membership and the broader plant community.

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Deep ecology is an ecological and environmental philosophy promoting the inherent worth of living beings regardless of their instrumental utility to human needs, plus a radical restructuring of modern human societies in accordance with such ideas. Deep ecology argues that the natural world is a subtle balance of complex interrelationships in which the existence of organisms is dependent on the existence of others within ecosystems. Human interference with or destruction of the natural world poses a threat therefore not only to humans but to all organisms constituting the natural order.
Begin your hike by walking up an earthen “ramp” that will take you past the Heart Pond and to the shoulder of the ridge. In 1963, there would have been large dump trucks full of coal creeping down this trail and then on to the Ohio River where they would feed power plants and fill barges.

Once at the top of the ramp you will be standing in front of the “high wall”. Until relatively recent times the stone outcroppings you see would have been hidden as layers of rock strata under many thousands of years worth of topsoil. The high wall on this land was exposed during the process of coal extraction.

Continue on the Reclaim Trail as it winds along with the high wall on your right, and contoured mounds of overburden that once covered the coal seam below the trail to your left.

If it is the right season, keep an eye out for tadpoles, toads, frogs, and salamanders that take advantage of the vernal long ponds below the high wall.

Leaving the forest canopy you will enter an open field containing native plants and trees such as goldenrod, ironweed, and hawthorn to name a few. In addition, there are several non-native plants including multi flora rose, lespedeza, and autumn olive. These non-native and potentially invasive plants were introduced as part of the reclamation process because of their ability to quickly spread, create organic matter, and fix nitrogen in the soil.

You can now return to the beginning of the trail by following Split Rock Trail to Main Hollow Trail to Medicine Trail to Prairie Walk. Take some time to enjoy Heart Pond before heading down the hill to the Prairie. Here you will have a chance to see many prairie plants that are native to this region.

What is Strip Mining?

- Strip mining was the most widely used way of accessing coal seams in this area.
- The practice is called “strip mining” because a long strip of “overburden” is first removed from the land, revealing the coal to be mined.
- The coal seam in this rock represents where ancient trees decomposed. The coal found here was actually created in the Carboniferous Period, about 300 million years ago!
How Does Mining Affect Water Quality?

The soil and rock that covered the coal, called overburden, becomes mining waste. Heavy metals and other minerals, including sand and silt, are brought up with the coal, which washes into streams and ponds and contaminates them.

The 2005 Leading Creek Improvement Plan set goals and steps for the restoration of water quality in the Leading Creek Watershed.

The project’s goal was to bring aquatic life, like frogs and fish, back to the creek.

The Reclamation Process

In 1972, a revision of the strip mine law took effect in Ohio. This law required re-grading of the mine site to mimic the pre-mining contour of the land, replacement of topsoil, and the establishment of vegetation cover over the mined area by the mine operator.

The goal of the vegetation is to protect the soil from erosion, build organic matter in the soil, and increase biodiversity by attracting insects and wildlife.

How does this Restoration Pond Help Wildlife?

Heart Pond was created by Paul Strauss to restore fish to return back to the creek and to bring wildlife back to the area. In addition, the pond was built to create a gravity fed water source for the greenhouse.

Ponds provide habitat for many species of wildlife, like fish and frogs. Other species of animals come to the pond for water and water.

Prairie for the Pollinators and Ecological Diversity

This field was formerly managed for cutting hay. Hay has not been harvested here since the 1990s. The field was burned and tiled the season before being planted with various prairie seeds. Seeds were gathered from Ohio to ensure maintenance of local species diversity.

These plants provide food for seed eating birds and the flowers of these prairie plants provide nectar and attract pollinating insects, which in turn attract bug eating birds.
United Plant Savers Partners in Education program is designed to enrich school programming and students’ education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted ‘student-friendly’ price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: www.unitedplantsavers.org. United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating 2016-2017 schools and programs:

ArborVitae School of Traditional Herbalism
New York, NY
arborvitaenyc.com

Appalachian Ohio School of Herbal Medicine
Rutland, OH

Bastyr University Herbal Sciences
Kenmore, WA
bastyr.edu

Blue Otter School of Herbal Medicine
Fort Jones, CA
blueotterschool.com

Botanica
New River, AZ

Chestnut School of Herbal Medicine
Weaverville, NC
chestnutherbs.com

Dandelion Herbal Center
Kneeland, CA
dandelionherb.com

Florida School of Holistic Living
Orlando, FL
holisticlivingschool.org

Florida Herbal Conference
Orlando, FL
Floridaherbalconference.org

Green Comfort School of Herbal Medicine
Washington, VA
greencomfortherbschool.com

Green Girl Herbs
Hopewell, NY
greengirlerbs.com

Green Turtle Botanicals
Nashville, IN
greenturtlebotanicals.com

Greenwood Herbals
Limerick, ME
greenwoodherbals.com

Herbal Academy of New England
Bedford, MA
herbalacademyofne.com

Herbal Sage Tea
Pomeroy, OH
herbalsage.com

Heartstone Center for Earth Essentials
Van Etten, NY
heart-stone.com

Jean’s Greens
Castleton, NY
jeansgreens.com

Magnolia School
Glouster, OH

Maryland School of Integrative Health
Laurel, MD
muih.edu

Milagro School of Herbal Medicine
Orlando, FL
milagroschoolofherbalmedicine.com

Mockingbird Meadows
Eclectic Herbal Institute
Marysville, OH
mockingbirdmeadows.com

Moonwise Herbs Apprenticeships and Certification Programs
Stoughton, WI
moonwiseherbs.com

Northwest School of Botanical Studies
McKinleyville, CA
herbaleducation.net

Omnigreen
Port Clinton, OH
omnigreen.com

Owlcraft Healing Ways
Scottville, VA
owlcrafthealingways.com

Purple Moon Herbs and Studies
Hartly, DE
purplemoonherbstudies.com

The Resiliency Institute
Naperville, IN
theresiliencyinstitute.net

Sacred Plant Traditions
Charlottesville, VA
sacredplanttraditions.com

Sage Mountain
East Barre, VT
sagemountain.com

Thyme Herbal
Amherst, MA
thymeherbal.com

Twin Star Herbal Education
New Milford, CT	
twinstarherbal.com

Vermont Center for Integrated Herbalism
Montpelier, VT
vtherbcenter.org

Wintergreen Botanicals Education Center
Allenstown, NH
wintergreenbotanicals.com

Yerba Woman Herbal Apprentice Program
Willits, CA
motherlandbotanicalsanctuary.com
2017 ANNUAL MEDICINAL PLANT CONSERVATION AWARD
— Recipient —
LAURIE QUESINBERRY
by Kat Maier, Director Sacred Plant Traditions

Last spring I received a phone call from a woman who sounded as though she was born from the very ridges and rocks of these Appalachian Mountains. The difference from the land, said to be the oldest mountains on the planet, was that her cadence was quick and hurried, imbued with urgency. She told me she was a poacher who lived and "hunted" plants in southern Virginia, and her family had been doing so for generations. She had just learned from a friend that the plants that she was digging and selling for pennies were actually valued medicines, and many were endangered. She was incredulous that all her life she had no relationship to the species she dug, save that they were a means for her family to provide food and shelter. She had tracked down United Plant Savers, who then directed her to me as I live in Virginia. Our conversation seemed to last an eternity as I heard her stories and her immediate recognition that something had to be done to change what was happening in the fields and hollows of her home.

I then called Susan Leopold, UPS ED and before we knew it, Susan and I were heading south to meet Laurie Quesinberry, this year’s recipient of our Medicinal Plant Conservation Award.

When we arrived in her mountains, she arranged for us to stay in a beautiful vacation cabin and had generous gifts and platters of food for our stay. Walking the mountains with Laurie and hearing her stories made me realize that all herbalists and plant stewards need to have this experience to understand the trade of our medicines. She took us to hillsides that were covered in trillium (Trillium spp.) and thinking that this growth stand was common, thought nothing of harvesting this precious medicine for literally $3.00/pound.

In the short year since the three of us walked her land, Laurie has immersed herself in the conservation, education, and sharing of what she is learning. Her immediate grasp of the benefits of social media and an ability to translate her message of stewardship and conservation into the language of vimeo, Instagram, and other modes of communicating vital issues has been nothing short of amazing. As a digger she translated for me the reality of what we are talking about when we refer to these beings as articles of commerce. I realized through her work that one pound of trillium root, which is still being bought and sold at higher quantities than we realized, represents over 400 plants. The 15-pound order that she had just filled represents thousands of plants. How there are still medicines in our mountains attests only to their resilience, yet her urgency is spot on.

It is a great honor to award this conservation award to a woman who wants to be nowhere other than in the woods, making a living in the place she knows best but is now walking with a different heart and vision. She has begun a nursery for many of our most popular native medicines and has been incredibly active with plant rescues as well as looking at forest grown planting ventures. She has shown us the value of herbalists working directly with diggers so that we can receive the medicines we know and love and be assured of high quality. We can then support this level of professionalism as we move forward in the rearranging of old hierarchies of commerce and power in our field.

Laurie has shown me how my curriculum needs to change so my students have more time in these realms of nature, harvest, forest farming, and what the business really entails for our trade, as well as the wild places. I will close my tribute by quoting Laurie from a class presentation, as she is now beginning to travel and teach at symposiums and conferences as someone who knows this world from the ground up.

For as long as anyone can remember, the plants of the mountain have been intertwined with our lives, providing for the family and giving more than we could have ever asked. Selling “Seng” for heat and food, digging cohosh to buy shoes for the kids, or searching for bloodroot to pay for school supplies, our family today still depends on these plants as much as our past generations did.

Without woods to call our own, we walk these heirloom ridges where our forefathers once tread, no longer proud to be diggers in a world that calls us poachers. Our birthright has now become dirty and a thing of
shame. Each year our numbers get fewer as the loss of wild spaces chokes out our livelihood. Soon our heritage will be all but lost, an urban legend, a fading piece of mountain history.

I sit atop an old man rock and dream of a time when the plants are honored as well as those of us who harvest them, a returning to stewardship and partnership with the forest around us. The clan has dug and cared for our sliver of hunting lands for four generations.... Some years ago, I sat... wondering what my life would be once all that I've known is gone. Life on the mountain isn't getting easier. Lands are getting smaller and harvests get slimmer each year. Logging, cabins, and roads are encroaching on our woods.... Though diggers know almost every plant of the forest, we live in a world that's completely detached from the herbal world as a whole. We tend to think of ourselves as the dirty little secret of the industry.

Atop this old man rock, it's clear that something has to change. But how do you save the mountain and this way of life at the same time? With no book to buy or road map to follow, this is a question that I'm still trying to figure out.

I thought it was rather odd to call a plant conservation group when I was trying to figure out a better way to sell the plant. But out of desperation for some sort of direction, I finally broke down and gave UpS a call. Looking back now, I can only imagine what they thought. Yet, to my surprise, they didn't hang up on me. No one scolded me for digging plants. Instead, they listened to my heart, embraced my spirit, and filled me with encouragement.

...There’s no desire inside of me to change who I am. The mountain created the digger inside of me, and a digger I’ll always be. Yet...Today, I sit atop that old man rock with my vision totally changed. No longer poaching the mountain’s plants, I see everything in a new way. The plants are here to be honored. They were created to give us so much. My vision now is to become a steward of these natural resources instead of a poacher. ...The diggers, stewards, herbalists, users; the mountain intertwines us all in seemingly unexpected ways. There’s a spirit of the old flowing throughout the mountain. The path I’m on is rocky and one of constant uncertainty. At the same time, filled with magic, this unfolding journey is right where I’m supposed to be.

To learn more about Laurie’s work, you can find her website at bearsmountain.com.
RECAP FROM THE FUTURE OF GINSENG & FOREST BOTANICALS CONFERENCE

Summary of Conference
by Chip Carroll

Approximately 197 people, representing all stakeholder groups, attended this 3-day symposium in Morgantown, West Virginia.

During the conference, four flip charts were stationed in the exhibit area, with the following key topic headings: Conservation; Commerce; Policy/Management; and Cultivation. We asked symposium participants to take notes during sessions and post questions, ideas, concerns and thoughts on the appropriate flip chart to generate a more comprehensive view of stakeholder concerns and ideas.

The following is a summary of the points raised by symposium attendees in each of the four topic areas.

A copy of the full conference proceedings, co-edited by Alison Ormsby and Susan Leopold, can be downloaded at www.unitedplantsavers.com.

CONSERVATION

Under the Conservation heading, topics varied from environmental to scientific to policy-related issues. One theme that emerged under Conservation was concerns about habitat loss. Habitat loss was mentioned multiple times with some of the comments specific to effects of habitat loss due to surface mining and mountain top removal and climate change. Creating local seed banks and refugia for ginseng and other botanicals was another theme that came out of the comments. Concerns about genetic preservation and local seed sources were touched on in comments such as “Land Grant Universities should play a role in maintaining local seed sources and supplying growers like (they do for) other crops.”

Several comments related to research needs and concerns with comments ranging from Citizen Science and Research Questions to questions and concerns about the timing of ginseng monitoring, e.g., population censusing needs to be done before June 15th to get reasonable demographic data, otherwise deer browse, etc. will skew census. Timing of monitoring efforts was a concern that was repeated along with the impacts that deer are having on ginseng populations.

Many of the comments were phrased as questions from participants such as “what is our recovery goal for ginseng; we need to know not just how to reverse the loss, but what we are aiming for” and “can a root size requirement help prevent LEGAL overharvesting / immature plant harvest?” Opinions in favor of developing a conservation plan for ginseng were mentioned with the suggestion of “modeling it on federally endangered species recovery plans.” Questions surrounding issues of plant size-based harvesting or reproductive capacity were mentioned multiple times as discussions surrounding the idea of a roof (thumb size or “slot” requirement as in fisheries) or leaf size based harvest criteria were mentioned and repeated. Comments in favor of a 10-year age requirement for ginseng were also noted.

Outreach, education and awareness raising were mentioned multiple times with ideas about creating “campaigns” to change public opinion and raise awareness. Comments about placing higher value and demand on cultivated botanical products (more than wild-harvested) were repeated throughout.

Themes that emerged under the conservation heading were habitat loss/ environmental concerns, needs for research and identifying “gaps”, regulatory changes (size and age-based) that would improve wild populations while protecting growers, development of local refugia for conservation and source for seeds/planting stock, conservation plan for botanicals and evaluating methods used to collect data on wild populations.

COMMERCe

Under the commerce heading, topics seemed to coalesce around education, marketing and regulation (i.e., digger licensing). Concerns over illegal trade and enforcement of current laws were mentioned along with interest in developing more local and domestic market opportunities for ginseng. Mention of “herbal medicine” reinforced the ideas and discussions around fungicide use and chemical inputs into traditional cultivated ginseng and concerns about residue left in roots being sold and consumed as medicine.
“Marketing and Outreach” along with “Outreach and Education for Buyers” emphasized the need for a standard education to be provided to licensed dealers around the issues of illegal trade and current trends and issues. Throughout the event, discussions about increasing or requiring more education to dealers and diggers were common. There seems to be agreement on the need for requiring education or the passing of a test to become licensed as either a dealer or digger. Many state coordinators present seemed to be considering requiring a digger license in their states; currently only Wisconsin requires licensing of diggers. Other comments related to this issue included:

- “What if harvesting permits/licenses connected to a specific area? So the diggers would become stewards of their leased/local area. If they could keep the lease for years, and sell or pass on the lease, its long-term value would encourage long-term stewardship and connection & protection”

- “Digger licensing”

- “Educational component to licensing programs... pass the test”

- “How can we get all 19 states to enact a ginseng harvester’s license? CHEAP! Like a fishing license type concept”

- “Stop illegal purchasing by non-licensed individuals in commerce”

Other creative concepts that were mentioned under the commerce heading included: “With lower amounts of harvesting why not limit sales to a USA market only until supplies return?” This comment revolves around lower availability of harvestable plants and harvestable areas in the wild and suggests limiting export until populations recover. Some comments revolved around commerce in the more traditional sense such as “Designing products around regenerative supply chains/forest farming into mainstream” and “Marketing regenerative supply chains/forest farms into mainstream” both of which are interested in placing more value on forest farmed and/or cultivated plant material. This is another theme that seemed to develop and continually be discussed throughout the event – a call for more companies to begin to place more/higher value on cultivated material.

Other ideas captured continued along the lines of the need for education and information sharing such as: “We need to keep lines of information flowing... how do we do that?”; “Menominee Tribe Message: --Public Education & outreach meetings – Social Media Pages – Facebook – Brochures regularly annually”; and “Law enforcement: How does the Menominee tribe put the conservation message across? Could states use their message? And Methods?” These ideas seemed to involve the need for developing consistent educational materials across the board for the entire industry and using technology (social media) to better spread the messages.

Commerce topics related specifically to growers, and opportunities included concerns about availability of local seed, availability of local roots for local herbalists, start-up business opportunities and the need for an organized group or growers association. Comments included: “How can we build up growers and help growers start local/native ginseng seed banks”; “Finances of start-up companies”; “Local seed banks”; “Local roots for local practitioners”; and “States need ginseng growers associations or a viable National Ginseng growers network/association.”

Remaining topics listed under the commerce heading were largely questions and concerns. Concerns about diversity and stakeholder inclusion were repeated several times. Comments such as, “Diversity, opportunities targeting African Americans and Native Americans” were repeated under all the headings as well as a concern over the lack of harvesters and diggers attending the meeting. Some key stakeholder groups were not well-represented at the event and finding ways to engage them will be an important part of any successful follow-up work.

A few other questions and comments included: “Is there any difference in medicinal value/price between Re and Rg genetic ginseng?”; “Are any diggers, growers & brokers considering offering ginseng leaf as a result of attending this symposium? Super sustainable product.”

Themes that clearly emerged under the commerce heading include the need for education around conservation, regulations and sustainability for all stakeholders and interest in pursuing digger licensing (with “test” / education component) to combat illegal trade and get a grip on chain of custody issues. Development of domestic market and placing greater value on cultivated materials were two other topics that had a lot of interest. Overall the theme seemed to be driven by the need for more sharing and education throughout the industry and developing more opportunities that value the sustainable practices while discouraging poor practices through regulation and education.

POLICY/MANAGEMENT

Under the Policy/Management heading, topics ranged from ideas around using a new or additional metric to guide the harvest of ginseng (size-based or age-based) to concerns about deer and definitions. The policy/management topics cover a wide range of issues and concerns as well as ideas about how to better manage all facets of ginseng harvest and trade. Several presenters at the event discussed the idea of managing ginseng much like we manage our fisheries, with ideas about developing a “slot” system for ginseng harvest that would allow reproductive plants to be harvested but leave juvenile and “elderly” plants to grow, reducing the “high-grading” of ginseng in the wild. Some of these ideas require more discussion and evaluation before any new policies are developed.

One comment that deserves additional thought and discussion was “please suggest possible size criteria
for harvest.” Based on information presented by Jim McGraw, the idea is that it may make sense to explore other criteria besides age to base harvest on. Leaf width, stem size, root size and plant height were all possible alternatives. Administering or enforcing another metric besides age will be difficult and requires additional thought and exploration. Another comment related to this idea was “Engage fishing policy makers, learn from them” – the idea of managing ginseng more like a fishery.

Some of the recurring themes under the policy/management heading revolved around ginseng theft (poaching); penalties; licensing of diggers, buyers and exporters; and illegal trade. Comments such as the following all encompass concerns about the education of those participating in the ginseng harvest and trade:

“Digger licensing”;
“Restrict first points of sale to fresh root only to cut down on early harvest”;
“Education/Training, Buyers, Diggers. Licensing”;
“Make sure that proposed tests built into any new regulations/licensing are fair and consider the education level of all involved”;
“If we move in the direction of written tests for diggers permits...how can we address literacy concerns in the region that could disenfranchise people who have historically harvested this plant?”
(Video instead of written?);
“Educational Classes for dealers, diggers and buyers collectively instead of sending literature in the mail”; and
“Ginseng training for agencies provided by industry & growers.”

There seemed to be consensus around the idea of requiring educational components to any licensing programs as long as the educational components are equitable and fair to those who would be required to pass a test. Ideas about having diggers watch an educational video and take a brief test to qualify for a license were discussed as an alternative to written materials.

Another comment suggests administration with a point system that would penalize offenders: “Digger permits/Point System... Theft / Poaching = (x) points on permit. After (x) points or # offences, loss of digger permit, loss of dealer permit, loss of hunting/fishing licenses. Also have fines greater than $1000. Add Teeth to Regulations!”

Other comments around this idea have to do with the ability of states to administer a ginseng licensing program because many of the state licensing agencies are separate from the agency tasked with managing ginseng. It is important to state that licensing would generate some income for ginseng management. Also there seemed to be consensus on the fact that any licensing requirement should be kept fairly priced with many discussing the idea of a $10 license fee. It is worth noting that the licensing discussion appeared under all the headings — conservation, commerce, policy, and cultivation.

Comments around the theft issue and current laws were also at the forefront of the policy/management discussion. The following comments all revolve around the problems and concerns with the theft and illegal harvest of ginseng: “Law enforcement should develop A.) relationships with dealers and B.) better enforcement methods for theft/poaching/illegal harvest. Do it like regular FWS/Wildlife type law, e.g., Ability to prosecute cases – send $$$ (fines) back to species protection/research.”

Theft and illegal harvesting were of major concern to all of the stakeholders present, suggesting that current regulations and laws addressing the issue may not be having the desired impact of reducing occurrences. In many states, the penalties for ginseng theft were much stiffer 100 years ago than they are today.

Other topics that came up under the policy management heading had to do with management of the resource, current policies, and a desire to develop consistent definitions and rules across all states. “Regulations across states”, “Consistency on definitions & reporting”, “Develop better interface/engagement”, “CITES listing concerns”, “Distinguishing wild from wild-simulated”, and “Monitoring” all capture the concerns around difficulties in managing ginseng when there are 19 states with differing agencies tasked with consistently managing this resource. Lack of standard definitions and policies across all states leads to confusion and difficulty in effectively managing ginseng harvest and trade. Inability to distinguish wild...
from wild-simulated roots creates the possibility of poor management decisions based on incomplete and inaccurate harvest data. Lack of regular interface and engagement between and amongst agencies and stakeholder groups can lead to confusion and distrust amongst stakeholders. Clearly there seems to be a desire for more interface amongst key groups such as what took place at this event. Bringing together stakeholders more often and regularly can provide the opportunity to “dig down” on some of these issues and come up with workable solutions for all involved. Other comments related to management included: “Beyond policy to prevent the exploitation of ginseng as a resource – what thoughts do people have here for using this resource/cultivation of it for preservation of our forests and watersheds...Keystone species”; “Deer”; “Monitoring”; “Forest management to consider plants/understory”; and “Identify gaps in existing research” all touched on the need for more research and better research methods i.e., timing of monitoring) in order to get a more accurate picture. Comments also touched on the correlation between non-timber forest products (NTFP’s), ginseng and overall forest health and management. New information about the interactions and relationships between ginseng and other species (e.g., wood thrush) and NTFP’s as an indicator of overall forest health were mentioned as was the need to consider NTFP’s in forest use planning and overall management decisions.

In summary of the policy/management heading, comments focused primarily on issues related to Education focusing on diggers, buyers and agencies, Licensing of diggers with a strong educational component, enforcement of existing Laws as well as development of more consistent rules and regulations across states. Theft & Illegal Harvest were front and center amongst the concerns mentioned as was Deer Impacts on both wild and wild-simulated ginseng populations. Ginseng as a keystone species encompasses the ideas around considering ginseng (and other botanicals) in our overall decision-making processes related to forest management.

**CULTIVATION**

Under the cultivation heading, most topics fell into three broad categories: grower verification; planting stock/seeds sources; and theft or “poaching” issues. Other topics discussed relating to cultivation were about support and education for growers, and questions related to specific growing techniques.

Support for verification programs for growers was voiced in simple statements such as “verification” and “support for growers” and “Buyers/Consumers willing to pay premium prices for cultivated crops.” The ideas about grower verification programs such as the one being administered by PCO (Pennsylvania Certified Organic) were discussed at the event. The need for this type of verification has been being discussed for at least the last decade and stems in large part from concerns ginseng growers had about the future ability for them to market their crops if an export ban were ever placed on American Ginseng. Since that time West Virginia legislatively established a ginseng grower certification/verification program, and PCO established their “Forest Grown Verified” program that includes other forest grown botanicals besides ginseng. In addition to potentially protecting a grower’s ability to market ginseng, these program have also placed value on raw materials that are verified and labeled under such a program.

The issue of ginseng theft was discussed repeatedly, with concerns about the lack of consistent and strong penalties for those who engage in such activity. Comments such as “Theft, stealing, poaching”, “Fines for poaching need to be high enough that it’s not worth the risk. Price of ginseng is so high that most poachers feel it is worth it”, “Growers need real repercussions
for ginseng thieves in order to do business & grow this valuable commodity crop – which in turn lessens market pressure on our beautiful wild ginseng populations” and “Educate judges prosecuting cases – send $$$ (fines) back to species protection/research” were repeated across headings.

Concerns over the lack of availability of local seed sources for ginseng were mentioned repeatedly as well. “Planting Stock Sources”, “Seed Sources” and “How do I find local seed source for ginseng in my area?” were common concerns. Because so much attention and concern has been given/raised over the last decade in regards to genetic mixing of ginseng from cultivated gardens with that in the wild, sourcing “local” seed has become a hot topic. Although demand for local seed is high, producing it is difficult because of the intensity in which ginseng must be cultivated in order to produce any meaningful amount of seed. Comments related to this issue can be found throughout all four different headings discussed.

The importance of cultivation in general was expressed through comments such as: “Cultivation is of the utmost importance not just to take the pressure off of wild populations, but also to have easier methods of studying them. See the Chinese concept of Dao Di”; “Educate to encourage growing by private citizens”; “Create opportunities for African American and Native American partnerships/communities”; and “Polyculture/forest farming/ecological design/symbiotic species.” These comments share the idea that cultivation of these forest botanicals in their native habitats can provide benefits economically, environmentally, and socially if supported and encouraged properly.

Some comments and questions were broad and showcased the questions or “gaps” in information that people are seeking. Questions related to cultivation methods included: “Are there known companion plants to support ginseng production and/or pollinators and ways to bring them into ginseng populations?”; “As a “would be” cultivator in PA, where is the best place to start? Education, Resources, Agencies. Is there a universal list for the entire US specifically for ginseng?”; “Is it possible to grow ginseng in the piedmont area of Virginia? East of Lynchburg, VA?” – “Yes”; and “Does canopy litter bioaccumulation act as a limiting factor in alkaloid content?” Other concerns listed under cultivation related to terminology and definitions and a concern over the use of fungicides and herbicides on ginseng crops: “Terminology problems – Woods grown, wild-simulated, wild”; and “No more poison in ginseng.”

In summary of the cultivation heading, clearly the big issues include issues around Theft / Poaching, Planting Stock Sources and Grower Verification. Comments indicate an understanding for the importance of cultivation and a recognition of the many benefits of forest cultivation of these botanicals. Comments also indicate a need for more information sharing and better communication amongst industry, regulators and growers to come up with workable solutions that can benefit everyone. Based on the questions asked, it appears that there is a need for more research and information gathering related to the cultivation of ginseng and many forest botanicals.

OVERALL SUMMARY OF INPUT

Interestingly, comments, concerns and discussions seemed to have focused most often on the need for greater education, educational resources and information sharing for all the stakeholder groups. This speaks to the need for stakeholders to come together more often and regularly to share current trends, information and research as well as to develop educational materials to be shared with the broader community. Lack of effective ways to reach folks on the ground (i.e., diggers, buyers and growers) who are often operating independently and in isolated rural communities will only exacerbate the many problems and issues surrounding the habitat loss and over-harvesting of these botanicals. Finding ways to engage all stakeholders more effectively and more often will go a long way to helping conserve these important species. Thinking creatively about new ideas and policies and working with the larger community to develop those ideas can potentially provide answers to some of the issues facing American Ginseng and other forest botanicals.

Symposium Papers

“The Sustainable Herbs Project: Sourcing and Sustainability in the Herbal Products Supply Chain”
Armbrecht, Ann. Sustainable Herbs Project Director, Montpelier, VT. a.armbrecht@gmail.com

“Can Wild Ginseng Regenerate New Plants from Replanted Rhizome?”
Beyfuss, Robert Layton. Retired Agriculture Agent and American Ginseng Specialist for Cornell University Cooperative Extension, NY and Vice President American Ginseng Pharm LLC. rl14@cornell.edu

“Black Cohosh: Harvest Impacts, Population Response and Implications for Sustainable Management of this and Other Medicinal Forest Products”
Chamberlain, James and Christine Small. USDA Forest Service, Blacksburg, VA. jchamberlain@fs.fed.us

“Demographic response of American ginseng to three natural canopy disturbances common in mixed mesophytic forests”
Chandler, Jennifer L. Appalachian State University, Boone, NC. jchandler23@gmail.com

“Ginsenoside Profiles in American Ginseng (Panax quinquefolius L.) in Western North Carolina” (poster)
Clarke, H. David, Jonathan Horton, Jennifer Rhode Ward, Jessica Burroughs, and John Brock. University of North Carolina Asheville. jburroug@unca.edu

“Use of Natural Fungicides with Organic Ginseng Production”
Eidus, Robert. North Carolina Ginseng & Goldenseal Co., Marshall, NC. reidus@frontier.com

“Characteristics of Woodland Herbal Users in the United States – Summary from an Epidemiological Study”
Feinberg, Termeh and Kim Innes. University of Maryland. TFeinberg@som.umaryland.edu, Kinnes@hsc.wvu.edu

Spring 2018
“Mycorrhizal Symbiosis in Forest-Grown American ginseng (Panax quinquefolius) and the Relationship Between Mycorrhizal Colonization and Root Ginsenoside Content”
Filyaw, Tanner R. and Sarah C. Davis. Environmental Studies, Ohio University, OH. tanner@ruralaction.org, tf287901@ohio.edu
daviss6@ohio.edu

“NatureServe and Native Plant Conservation in North America”
Frances, Anne, Amanda Treher, and Leah Oliver. NatureServe, Arlington, VA. anne_frances@natureserve.org

“Supply and Regulation of Wild American Ginseng”
Frey, Greg, James Chamberlain, and Jeff Prestemon. Forest Service, Southern Research Station, Forest Inventory & Analysis, Blacksburg, VA.
jchamberlain@fs.fed.us

“Indications for the Importance of Growing Methods on Pharmacological profiles of Herbal Medicines”
Gonick, Meghan. University of Bridgeport Acupuncture Institute, CT. generativehealth@gmail.com

“Sanguinaria canadensis L., Bloodroot, highlighting historical and potential uses”
Gonick, Meghan. University of Bridgeport Acupuncture Institute, CT. generativehealth@gmail.com

“Spreading the Ginseng Gospel: Case Study in Ginseng Production and Promotion from Watauga County Cooperative Extension”
Hamilton, Jim. County Extension Director for North Carolina Cooperative Extension, Watauga County, Boone, NC. jim_hamilton@ncsu.edu

“Connecting Appalachian Icons: The importance of conserving plant-animal mutualisms in a changing world.”
Hruska, Amy M., Michael C. Elza, and James B. McGraw. University of Hawai’i at Mānoa. hruska.amy@gmail.com

“Antidermatophytic Effect of Black Walnut hull, Juglans nigra”
King, Rosanna, Andrea Lutac, Natalie Rubio, Jenna Yutz, and Rebecca Rashid Achterman. Bastyr University, Kenmore, WA. herbalist.rosanna.king@gmail.com

“RootReport: Measuring the Market for Forest Medicinals”
Krug, Steve, John Munsell, James Chamberlain, Jeanine Davis, Ryan Huish, and Steve Prisley. Virginia Tech, Blacksburg, VA. skrug@vt.edu

“Producing wild leek in forest farming under northern climates”
Lapointe, L., Dion, P.-P., Denis, M.-P., Boulanger-Pelletier, J., Bussières, J. & Bernatchez, A. Department of Biology and Centre for Forest Research, Laval University, Quebec City, Canada. G1V 0A6. line.lapointe@bio.ulaval.ca

“Conservation status of North American forest botanicals: What do we know? Why does it matter?”
Leaman, Danna. Research Associate, Canadian Museum of Nature, Ottawa, Canada. Co-Chair, Medicinal Plant Specialist Group, Species Survival Commission, International Union for Conservation of Nature (IUCN); Trustee, FairWild Foundation. djl@green-world.org

“Taking the Broad View: How Are Wild Ginseng Populations Faring and When Does Conservation Policy Need to Change?”
McGraw, Jim. Eberly Professor of Biology, West Virginia University. james.mcgraw@mail.wvu.edu

“Population, Distribution, and Threats of American Ginseng (Panax quinquefolius L.) in Indiana and Illinois”
Oliver, Leah, Amanda Treher, and Anne Frances. NatureServe, Arlington, VA.
leah_oliver@natureserve.org

“Partial root harvest of Panax quinquefolius L. (American ginseng): a non-destructive method for harvesting root tissues for ginsenoside analysis”
Sabo, Ian, Jonathan L. Horton*, H. David Clarke, and Jennifer Rhode Ward. Biology Department, University of North Carolina Asheville. *Corresponding author jhorton@unca.edu

“Assessing the Status of American Ginseng from Harvest and Monitoring Data”
Schmidt, JP and Jenny Cruse-Sanders. University of Georgia, GA. jps@uga.edu

“Relationships between Genetic and Phytochemical Diversity of American Ginseng from Western North Carolina”
Ward, Jennifer R.1*, H. David Clarke1, Jonathan Horton1, John Brock2, Jessica Burroughs1, and Nicholas Freeman1 1 Biology Department, University of North Carolina Asheville. 2 Chemistry Department, University of North Carolina Asheville. * Corresponding author jrward@unca.edu

“American ginseng status assessment on four National Forests in the Mid-Atlantic U.S.”
Young, John, David Smith, and Tim King. USGS Leetown Science Center, Kearneysville, WV. jyoung@usgs.gov

“An Introduction to Flower Essences: Sustainable Supplements from Forest, Field, and Garden”
Ziff, Katherine. Briarwood Studies, Athens, OH. katherineziff@aol.com

“Alkaloid content in forest grown goldenseal: preliminary results and current directions”
Zuiderveen, Grady H. and Eric P. Burkhart. Pennsylvania State University, State College, PA. gjz5033@psu.edu
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## HERBAL BUSINESS MEMBERS

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Herbal business members have a unique opportunity to educate their customers about issues surrounding the sustainable supply of our native medicinal plants. More information about the corporate member program is on our website.
Adopt an “At-Risk” Plant Program

Adopting an “At-Risk” healing herb is your five-year commitment to sponsor your adopted herb’s page on UpS’s website. The webpage will include your logo, a brief description of your organization, and any relevant information you provide. The webpage will be regularly updated with current research towards the conservation and propagation of your adopted healing herb. Your adoption fee also helps fund the many programs which fulfill the mission of United Plant Savers.

To learn about how to adopt and the benefits of adopting an “At-Risk” healing herb, download our PDF brochure from our website www.unitedplantsavers.org.
UPS EVENTS & GREEN NETWORK

2018 HERB EVENTS

AUGUST 24 - 26
New England Women’s Herbal Conference
Hebron, New Hampshire
www.womensherbalconference.com

SEPTEMBER 6 - 9
Breitenbush Herbal Conference - 35th Reunion!
Breitenbush, Oregon
www.breitenbushherbalconference.com

SEPTEMBER 22 - 23
Chesapeake Herb Gathering
Jefferson, MD
www.chesapeakeherbgathering.com

SEPTEMBER 29 - 30
MidAtlantic Women’s Herbal Conference
Kempton, Pennsylvania
www.womensherbal.com

OCTOBER 25 - 29
American Herbalists Guild 29th Annual Symposium
Helen, Georgia
www.americanherbalistsguild.com

FEBRUARY 22 - 24, 2019
Florida Herbal Conference
Lake Wales, Florida
www.floridaherbalconference.org

UNITED PLANT SAVERS LAUNCHES ITS FIRST PODCAST ON PODBEAN.COM

“Cultivating and Caretaking the Ecosystems We Call Home: Sam Thayer” recorded by United Plant Savers on August 12, 2017 in Wisconsin.

ADDRESSED IN THIS PODCAST:

Beyond, sustainable harvest, we look at the long-term future of our landscape and the special role that plant gatherers have in maintaining its ecology and prosperity. We’ll talk about the threats and historical changes to our ecosystems, and discuss strategies to work and grow past them.

We can do more than just “reduce our impact”—we can be a positive force to create and maintain vibrant and diverse communities of native plants that are at once productive for us and a paradise for wildlife. Nurturing the land that nurtures us.

The Driftless Area will be used as an example for ecological and management concepts that apply everywhere. We’ll explore some traditional, mutually beneficial relationships between Native peoples and the plants that support them and discuss practical techniques for implementing this kind of harmony on our own sacred gathering grounds.

Samuel Thayer, renowned author, forager and internationally recognized authority on edible wild plants. To read more about Sam or purchase his books visit www.foragersharvest.com.
SAVE THE DATES!

PLAN AHEAD TO HELP US CELEBRATE THE UPCOMING 25TH ANNIVERSARY OF UNITED PLANT SAVERS.

The following dates have already been announced for next year:

JUNE 7-9, 2019
INTERNATIONAL HERB SYMPOSIUM
Wheaton College, MA

JUNE 15, 2019
PLANTING THE FUTURE AT HERB PHARM
Williams, OH

It's going to be a year-long celebration culminating with... 

SEPT. 13-15, 2019
THE CENTER FOR MEDICINAL PLANT CONSERVATION GRAND OPENING
United Plant Savers Botanical Sanctuary
Rutland, OH

CREATE • CONSERVE • CONNECT
Journal of MEDICINAL PLANT CONSERVATION
A United Plant Savers Publication

What Is Going on with White Sage?

Botanical Traditions and Innovations in Bulgaria

Plant Blindness

Romancing the Root: The Passions and Perils of Wild American Ginseng

Noxious and Invasive Weeds as Medicine

Conservation and Sustainable Use of Medicinal Flora in India

Paradise Found, Traditional Healing Lost
This year’s Journal celebrates 25 years of Medicinal Plant Conservation and is our most extensive publication to date. The theme is Voices from the Land, with intent to share indigenous perspectives in relationship with plants. This perspective is most profound in the article on white sage and the conflict with commercialization and cultural appropriation of a plant sacred to many. These issues have been a part of United Plant Savers discourse since the inception of the organization. I looked back over all the past publications and discovered an article from 2005 by Karyn Sanders, “Wildcrafting: Why We Should Not, A Native American Perspective”, who put forth a call for herbalists to consider not harvesting wild plants for seven years. Her article presents plants as people, living beings with capacity for knowledge, intimacy, relationships, and communication. This perspective aligns with another article by Dr. Jody E. Noé, MS, ND, from 2010, NO -DA -TSI A - Di -TA -S –DI “Tea That Makes Friends out of Enemies”, Spicebush, Lindera benzoin.” It shares the Cherokee traditional use of making peace with ourselves, with others, and with our environment. Certainly plants are teachers, offering wisdom and healing, as our ancient ancestors here long before us. Over the years we have had wonderful contributions such as Kat Anderson’s, “The Original Medicinal Plant Gatherers and Conservationists”, published in 2016, and in 2013 we published “DOING IT RIGHT, Issues and Practices of Sustainable Harvesting of Non-Timber Forest Products Relating to First Peoples in British Columbia” by Nancy J. Turner. All of our Journals are online free for download under the resources tab, and we look to publish our Journals into one book to offer a reflection of voices and stories over the last 25 years of the organization’s diverse contributors.

We have filled this issue with international perspectives on how medicinal plants are managed, such as the innovations in Bulgaria and the impact of communism in regards to the medicinal plant trade in Albania. Stories from the Sacred Seeds international network of botanical sanctuaries share how India is trying to manage and protect its medicinal plant diversity and the work of Holt Woods in England, a medicinal forest garden teaching and networking farmers and herbalists. In a rapidly changing environment we have a story from the Marshall Islands dealing with climate change, the opportunity of using invasive plants as medicine; and “For the Wild,” a project to restore the Redwoods; and a podcast, described as, “a love song to disappearing wild places.” “Romancing the Root” is an article that reveals how ginseng works its magic bringing together important people/plant relationships to explore plant conservation and herbal medicine.

Our Journal is truly unique in the diverse and eclectic voices from our members. Stories from our Botanical Sanctuary Network and featured artists from our Deep Ecology Art Fellowship bring creativity to how we can enrich our relationship with plants and in return heal ourselves and the planet. We hope our Journal inspires, uplifts, and engages those who read its pages. Our members are critical to the work of United Plant Savers, and we thank you as we celebrate 25 years with the Opening of the Center for Medicinal Plant Conservation.

“In Native American culture we see ourselves as part of nature, intertwined with life, not separate. We as humans are connected to everything on this earth and in the universe. Every living being is our relation. Every action we take affects another. As Native people, we feel our purpose here is to protect Mother Earth, to tend this place we call home and help all living beings.”

— Journal 2005, Karyn Sanders


WHAT IS GOING ON WITH WHITE SAGE?
by Susan Leopold

This year it was evident due to the social media reaction that people were expressing anger and concern over the increase in commercialization of white sage (Salvia apiana) and the cultural appropriation and offensive marketing that overlooks ethics and ecological, cultural awareness of a deeply sacred and spiritual plant.

The rumblings on social media in regards to those who claimed to wildcraft white sage, along with selling the wildcrafted material that was being gathered from public lands, were clues that the balance between respectful wildcrafting and the use of terms like “ethical wildcrafting and sustainable wildcrafting” for personal use versus commercial gain was being pushed to its limit.

In October of 2018, “Cleaning Space Kits” including white sage bundles appeared on the shelves of Anthropologie, and with the collective social media outcry they were removed from the stores almost immediately—thank you, Anthropologie. At this time white sage can be purchased on Amazon and Walmart websites and on the shelves of stores such as Urban Outfitters in pre-packaged new aged kits. This is a serious indicator of alarm for many who know and respect the ecological and cultural fragility of this plant.

One of the most active voices in the social media outcry is @Metzil on Instagram. The Metzil Project is an Indigenous based arts and culture collaborative, based in Los Angeles. The Metzil Project brilliantly updated the Wikipedia page on white sage to provide information on the recent controversy, citing the illegal harvest arrests and current press on this issue over the last two years.

Commercial harvest of wild white sage populations is a concern held by many Native American groups, herbalists, and conservationists. In June 2018, four people were arrested for the illegal harvest of 400 pounds of white sage in North Etiwanda Preserve in California.

It is very difficult when companies make claims of sustainable harvest when we have no accountability within a very secretive trade. In some cases permits are given on public lands for commercial harvest of economically valued plants, but in the case of white sage no such permit exists. The only way this would be legal is if harvesting took place on private land with permission. What I learned when I was in California and visited the Etiwanda Preserve was that it is the epicenter of the current commercial harvest. The ranchers that I spoke with described a very difficult situation in that it is mostly
North Etiwanda Preserve, California

undocumented individuals that are desperate for the work, putting themselves in danger, sneaking into the Etiwanda Preserve to harvest. The residents living near the preserve, working with law enforcement to help coordinate efforts to address the issue were responsible for the recent arrest in June of 2018. This came about when four undocumented individuals were arrested with over 400 pounds of white sage harvested from the preserve.

The North Etiwanda Preserve is a unique Riversidean Alluvial Fan Sage Scrub plant community that provides protection for a number of sensitive plant and wildlife species, several of which are Federal or State listed threatened or endangered. Listed endangered species that may occur on the Preserve include the least Bell's vireo, California gnatcatcher, the southwestern willow flycatcher, and San Bernardino Merriam's kangaroo rat. Sensitive species include Los Angeles pocket mouse, San Diego black-tailed jackrabbit, American badger, coastal cactus wren, San Diego horned lizard, coastal western whiptail, Southern sagebrush lizard, San Bernardino ring-necked snake, coastal rosy boa, Coast patch-nosed snake, mountain yellow-legged frog, two-striped garter snake, Parry's spineflower, and Plummer's mariposa lily.

The Management Plan for the preserve acknowledges that the area is considered to be a sacred site by the Gabrielino-Shoshoni Nation and Serrano people and is currently being used for cultural purposes. It further states in the management plan their priority actions of conducting historical research, coordinating with tribes to facilitate access for ceremonies, and collection of white sage. When I spoke to a preserve manager, she confirmed the Preserve's efforts to provide permits to tribal members for collection of sage for ceremonial use.

The San Bernardino associated governments along with multiple state agencies, federal/USFWS, local universities, and non-profits manage the preserve, which was first established in 1998 and expanded with highway mitigation funds in 2009. Working together the management plan establishes its principle goals.

Management Plan principal goals:
1. Preservation of Native Species, Habitats, and Ecosystem Processes;
2. Protection and preservation of Cultural Resources;
3. Monitoring Existing Habitats, Species, and Physical Conditions;
4. Restoration of Disturbed On-Site Habitats;
5. Develop and Maintain an Informational Database

What is important to stress is that this underground sage mafia is not ethical or sustainable wildcrafting as it is portrayed in hipster IG accounts and stores! The scale of white sage commercial trade on the Internet and demand in China is alarming.

United Plant Savers is working with agents at the USFWS and at the State level to provide as much insight as possible into the trade so that law enforcement can be informed to protect the preserve. I was invited by the owner of a white sage company to meet at the Etiwanda Preserve in March of 2019; he wanted to show his sustainable harvesting methods. I quickly pulled out my phone to show him that it was against the law to do so, and that recent arrests had been made. He carried on as if that were not the case, and fortunately law enforcement arrived, and I was able to get confirmation of the laws in regards to the preserve from the officer on the spot. His story quickly changed, and he claimed he no longer wildharvested but had a farm where he is now growing sage for his company. I tried to convey why
the preserve did not allow commercial harvest permits and the level of community engagement that goes into ensuring safe haven for threatened and endangered species. Certainly he was proud to show off his harvesting technique and make claims to be a former student of Michael Moore, but he lacked ecological knowledge of the diversity of species in the habitat he claimed to sustainably harvest, not to mention basic laws surrounding wild harvest of plants on state and federal lands.

It can be frustrating when attempts to inform stores who sell sage bundles respond that they are getting their sage from those that claim sustainable harvesting techniques and have all the right verbiage on their social media and websites. Consumers and retailers need to understand laws in regards to wild plants because even if one's techniques are sustainable, if it is not permitted, then it is illegal. A first step for a buyer or consumer is to ask to see a permit.

White sage is abundant in its local habitat as a keystone species of its plant community, but that habitat is under threat due to development and it is fragile, apparent by the many endangered and threatened species that rely on its habitat. Most important to note is that it can be grown, and if it is to be in any form of commercial trade and certainly on the scale it is now, the only sustainability claims should be that it is coming from a cultivated source, and a buyer should always visit the farm to verify the claim.

Traveling throughout California to understand the state of sage habitats and the cultural teachings of white sage, I came across the recently published book Kumeyaay Ethnobotany at the Anza Borrego Visitors Center. The photograph by Rose Ramirez caught my attention and through a Google search I was able to locate her and ask permission to use the image for the cover of this year’s journal.

We then began a dialogue on the issues and concerns over its recent popularity and I asked if she would provide me a quote to share from the perspective of an indigenous elder. She responded by telling me about the quote above by Barbara Drake. I was glad to find her quote that speaks to why they discourage selling of spiritual plants on a commercial scale because one does not know if the person who is collecting them is doing so in a good way, with a good heart as very profound.

“We do not sell white sage. If you need it as a medicine and we have it, we’re going to give it to you. We discourage selling medicine plants, spiritual plants, because we don’t know if the person collected them in a good way, with a good heart. But if you have white sage growing in your own back yard, you would know because you would be taking care of it.”

– Barbara Drake, Tongva Elder

Wildharvesting can be detrimental to the plant and/or the species that relies on the plant, but often it is most harmful to those who are harvesting, when they are forced into doing so for very little because they are in a desperate situation.

This is why programs like fair wild are important because they address the fair treatment of those communities of harvesters and the plants, and this is important. If we the consumers want to be healed by the plants, then should we not want those who are harvesting to be treated fairly? Conversely harvesting wild plants when regulated and when harvesters are treated fairly can result in beneficial relationships, for both consumer and harvester, and the harvester and the plants, as well as for the plants and their habitat. It seemed serendipitous that my year would be filled with two impactful sage encounters, when I learned about the wild sage native to Albania facing overharvesting in the wild due to unregulated trade and the herbal companies working towards a solution by transitioning to cultivated sage and support to small scale farmers. (See article in this issue on Albania).

The Ethnobotany Project is a collaboration among Rose Ramirez, Deborah Small, and the Malki Baliena Press, working together to document southern California and northern Baja California’s Native people’s contemporary uses of native plants. The primary goal is to create a resource for Native people in this region to share and learn traditional knowledge about native plant uses and gathering practices. The project began in 2007. Two publications have resulted so far: a 2010 large-scale calendar and a book in 2015. The Malki Museum, founded in 1965 by Native Americans (Dr. Katherine Siva Saubel and Jane Penn) on an Indian reservation, is the oldest non-profit museum in California and has been the inspiration for several other museums. My journey to understand the complexity of white sage has led me on a learning journey to the many state and federal recognized tribes and the discovery of many diverse projects working hard to revive and celebrate cultural and ecological diversity. I would encourage those who are drawn to white sage to spend time researching the cultures that have tended its habitat and choose a smudge that you build a personal relationship with and question the idea of ethical wild crafting, considering the habitat, the harvester, the laws, the cultures, and the medicinal teachings.
RECONNECTING TRADITIONAL HARVESTING PRACTICES WITHIN THE NATIONAL PARKS by Susan Leopold, PhD

In 2016, the National Park Service enacted a ruling that allows the gathering of certain plants or plant parts by federally recognized Indian Tribes for traditional purposes. This landmark document established a protocol where tribes can formally request a permit to harvest, and then the NPS conducts an environmental assessment to review the impact of the request, and a contractual agreement is then established between the tribe and the park.

In some cases there are prior agreements, such as treaties that established the rights of local tribes to harvest certain plant materials, but these agreements are rare and this new ruling allows for future agreements that can build upon tribal relationships with National Parks. Reconnecting relationships between plants and people on National Park land has the potential to increase cultural and ecological diversity. Certainly the process is not perfect and can be perceived as cumbersome but it is a step towards acknowledgment of the indigenous relationships with the land prior to the current management and ownership by the national park service.

Shortly after the ruling the Tohono O’odham Nation requested to continue harvesting saguaro fruit (Carnegiea gigantea) and cholla buds (Cylindropuntia acahoncarpa) in alignment with their traditional practices. These activities have occurred for millennia within the Sonoran Desert, including on ancestral lands now managed by Saguaro National Park. The 2016 rule has created a new framework for authorizing tribal harvest of plant materials by directing NPS units to specify proposed activities within an agreement and analyze impacts from the activities on park resources through an Environmental Assessment (EA).

In an article in the local paper Scott Stonum, chief of science and resource management for the park, said, “Upon completion of the assessment, the director of the Park Service’s Intermountain Region signed a finding that the gathering has no significant impact on Saguaro Park and therefore can go on. “We realize that the current engagement of the Tohono O’odham people with the lands of Saguaro National Park is an important part of their cultural heritage, and that’s part of what the park is here to protect.”

“Based on the way they harvest and the relative small quantity they harvest, we feel it’s very compatible with the operation of the park,” Stonum said, noting that harvests took place long before the park was established, originally as a national monument in 1933. Tohono O’odham officials welcomed the decision to permit continued harvesting. “The saguaro fruit harvest brings families together every year to celebrate our cultural
heritage,” said Edward Manuel, chairman of the Tohono O’odham Nation.

Another example is the recent request from the Eastern Band of Cherokee Indians (EBCI) to harvest sochan (Rudbeckia laciniata) in the Great Smoky National Park. An extensive Environmental Impact study was done according to NEPA standards. This report is available on the Parks website and provides a wealth of information on the species and research that looked at effects of harvest on the species. In reviewing the study it appears that it recommends in favor of an agreement to allow harvesting along with monitoring in place and a five-year revisit/renewal of the agreement.

Plant population mapping and monitoring studies that result in agreements between tribes and the National Park authorities signal a change in the mindset of park-based conservation where people are no longer perceived as separate from nature but are actively engaged in meaningful reciprocal relationships. In reviewing the guidelines that frame this new ruling and the plant-specific agreements, it is encouraging to see the relationship between plants and people not be quantified by a financial gain but by cultural and ecological values.

RESOURCES
Overview of the ruling and official announcement

Information on Saguaro Fruit harvesting

Quoted article above

EA study of sochan gathering

SUSAN’S STACK
Deep Dive Into Indigenous Knowledge

- A Warrior of the People, Joe Starita
- Pocahontas, Powhatan, Opechancanough, Helen C. Rountree
- Temalpakh: Cahuilla Indian Knowledge and Usage of Plants, Lowell John Bean and Katherine Siva Saubel
- Kumeyaay Ethnobotany: Shared Heritage of the Californias, Michael Wilken-Robertson
- Indigenous Perspectives on Sacred Natural Sites, Jonathan Liljeblad and Bas Verschuuren
- Hopewell Settlement Patterns, Subsistence, and Symbolic Landscapes, A. Martin Byers and DeeAnne Wymer
Indigenous Perspectives on Sacred Natural Sites
Culture: Governance and Conservation
Edited by Jonathan Liljeblad and Bas Verschuuren

Much previous literature on sacred natural sites has been written from a non-indigenous perspective. In contrast, this book facilitates a greater self-expression of indigenous perspectives regarding treatment of the sacred and its protection and governance in the face of threats from various forms of natural resource exploitation and development.

It provides indigenous custodians the opportunity to explain how they view and treat the sacred through a written account that is available to a global audience. It thus illuminates similarities and differences of both definitions, interpretations and governance approaches regarding sacred natural phenomena and their conservation. The volume presents an international range of case studies from Australia, Canada, United States, East Timor, Hawaii, India, Mexico, Myanmar, Nigeria, and the Philippines. A chapter contributed by Susan Leopold highlights the work of United Plant Savers.

After the Dragonflies

Dragonflies were as common as sunlight
hovering in their own days
backward forward and sideways
as though they were memory
now there are grown-ups hurrying
who never saw one
and do not know what they
are not seeing
the veins in a dragonfly’s wings
were made of light
the veins in the leaves knew them
and the flowing rivers
the dragonflies came out of the color of water
knowing their own way
when we appeared in their eyes
we were strangers
they took their light with them when they went
there will be no one to remember us

— W. S. Merwin

Common Roots Radio
healthy planet + thriving people
ourcommonroots.com
United Plant Savers’ Susan Leopold and Mountain Rose Herbs’ Jennifer Gerrity travel into the Balkan mountains at the peak of the autumn harvest to visit our organic farm and harvest partners in the Bulgarian countryside.

Amidst the stunning foliage of a golden autumn, I journeyed into the lush valleys and mountains of Bulgaria to seek out the wild plant collection sites where our regional partners harvest an array of our botanicals. Accompanying me on this trip was my esteemed colleague, ethnobotanist Dr. Susan Leopold, Executive Director of United Plant Savers. We wanted to gain a deeper understanding of the horticulture of Bulgaria, meet the people who harvest these plants, observe their traditional methods firsthand, and learn about the culture surrounding plants in the Balkans.

When it comes to biodiversity, Bulgaria is one of the richest countries in Europe. It ranks third in the EU in the percentage of national territory that is included in the European ecological network Natura, a 28-nation nature preserve system founded to “ensure the long-term survival of Europe’s most valuable and threatened species and habitats.” The country has extensive laws governing the wild collection of indigenous plants regulated by the Medicinal Plant Act of 2000 and the Biodiversity Act of 2002, making Bulgaria a role model for the rest of Europe and possibly the world. It has a unique and strictly enforced system for ensuring the survival of its habitats, biodiversity, and endangered species.

Bulgaria’s Ministry of the Environment and Water enforces these laws by annually auditing all companies who employ wild collectors or participate in the distribution of plant material domestically or for export. The country also has a list of non-pick plants (forbidden for commercial collection) and enforces collection limits for specially listed plants such as valerian, gentian, and elecampane. All wild collection of plant material in any season for commercial purposes undergoes a permit process that is audited in detail as part of an annual review.

We visited a consolidation site centrally located in the famous “Valley of the Roses,” where wild *Rosa damascena* bushes grow alongside cultivars for as far as the eye can see. This facility is not only a distillery specially designed for creating rose absolute, but also a place where wild harvesters and farmers come with their bounty to have it weighed in and purchased. The consolidator showed us the extensive record keeping that goes into such an

Educational posters depict proper wild collection practices as well as protected plants that must be left alone. Bulgaria strictly enforces its regulations governing the practice of wildharvesting, and field workers must be well trained in these rules to practice their craft for commercial purposes.
Gulka, an experienced wildcrafter, has been harvesting Bulgaria’s wild bounty with her family for many generations. Wild collecting communities like Gulka’s take great pride in their practice, and we’re fortunate to benefit from their exceptional skills in locating, identifying, and properly collecting the precious plant treasures of their region.

operation. When bringing in a harvest, each collector must submit proof of permits and documentation comparing the weight of harvest as measured at the time of collection in comparison with sales invoices (to help monitor and manage overall harvest rates in a given season or area). The facility’s walls were filled with educational posters from conservation organizations committed to promoting sustainable harvest practices in Bulgaria, each written in the local language and illustrated with easy-to-understand visual guides to proper collection practices. The instructive graphics allowed Susan and me to identify many of the wildharvesting best practices we work to promote back in the US—practicing careful plant identification before collecting, leaving plant roots in the ground when taking aerial portions, harvesting only in the proper season and when the species is an abundant population, and so forth.

While wildcrafting has held a prominent place in this region’s traditions for centuries, participation in the trade has slowly but steadily fallen off in recent years due to factors like declining interest and a general population shift away from the agrarian villages into urban areas.

To help preserve these traditional practices, the producer we visited has begun hiring collectors as full-time, long-term employees, offering them year-round work for competitive salaries and even providing bonuses in recognition of advanced knowledge and expertise. Such employment opportunities mark a significant shift in this industry, as collectors would have historically worked seasonally and independently for multiple outfits—and very much according to their own interests. For example, if a strong rainy season were to spur an abundant mushroom harvest, few collectors would hesitate to drop plant collecting in favor of these more lucrative pickings.

We traveled up into the mountains to the village of Zmeitza at the peak of the juniper berry harvest, where we met Gulka, a seasoned collector who has been picking hawthorn fruits and juniper berries by hand for many years. Gulka and her family ascend these mountains during harvest season to gather fresh material and bring it down into the village to be placed in organic driers. She also harvests yarrow during the summer months until the season changes to juniper berry harvest. Juniper (Juniperus communis) season starts in September and ends with the first snow. Each year, the collectors comb the different regions for which the local municipality issues permits for wild collection according to its plant population conservation schedule.
A large distillery occupies the ground floor of the village’s processing facility, where fresh botanical material is placed directly into the vats for distilling into essential oil. The facility had already worked its way through all the summer crops for the season, including yarrow, nettle, linden leaf and flower, elder flowers, and red clover blossoms. Now, processing of the late season harvests was in full swing—mainly juniper, but also some hawthorn berries, rosehips, and evergreens—during our visit, we witnessed white pine (Pinus sylvestris) boughs being brought in by the truckload.

From this somewhat mechanized but still largely traditional setting, we journeyed onward to a unique cultivation center that housed a state-of-the-art tissue culture propagation facility. Here, plant parts are cut, sterilized, and placed on an agar medium blended with natural growth hormones to encourage cell growth in a completely controlled settings (each type of plant culture requires different environmental conditions, so various rooms are managed to accommodate each species). From this precisely cultivated tissue, many plants can be propagated and then slowly transitioned into a greenhouse environment and eventually nursery rows, wherein they gain the hardness to weather the elements when transplanted into the field. Ultimately, the established plants will be dispersed to the facility’s large farmer network for commercial scale organic cultivation. This cultivation method provides several benefits, allowing growers to cultivate a surplus of plant material rapidly and at the same time ensuring species consistency across all the plants propagated.

Jars of tarragon (Artemisia dracunculus) are cultivated en masse through tissue culture propagation for eventual placement in the field. This innovative practice ensures the desired species identification, allows the propagation of many individuals at one time, and facilitates germination of difficult to grow plants.

We were also intrigued and inspired by this particular lab’s experiments with woodland botanicals that are at-risk in the wild, such as goldenseal and black cohosh. While there is still much research to be done for these two species, the researchers are encouraged by their abundant success with other plants like lady’s mantle, licorice, and tarragon, as well as species of raspberry and strawberry prized for their leaf production.

Additionally, the laboratory team has also instituted an outreach project at the high school serving its surrounding agricultural community, designing and financing a plant identification and conservation program to encourage student exploration of this unique regional trade.

Organic farms thrive in Bulgaria’s fertile soils, where many tea crops such as comfrey leaf and root, chamomile, coltsfoot, catmint, tarragon, and lovage are commonly cultivated.

We left the facility and drove through the winding switchbacks of the Balkan mountains into southern Bulgaria, passing the occasional horse-drawn wooden cart along the way. The road offers vistas of rich farm lands patchworked with sunflower fields against a backdrop of rock cliffs. Small agrarian villages dot the roads, where homes made of hand-hewn wood and stone stand ensnared by canopies of grape vines heavy with ripe clusters, just waiting for the villages’ annual wine making.

We reach the lower lands and walk through the cultivation sites of many of our common botanicals, such as lemon balm, hyssop, marshmallow, tarragon, catnip, elder, and alfalfa. The fields are crossed by carved out furrows that distribute fresh water for irrigation. The hedgerows are thick with blackthorn, wild hemp, and wild hops growing together. A slight smoky scent wafts our way from some structures nearby, where sunflower hulls and peppermint stalks from the local farms are burned to fuel the driers for other crops. This corner of the world feels like it has supported agriculture since the beginning of time, yet our travels demonstrate how gracefully it has also adapted to the modern world’s...
changing and growing demands for aromatic and specialty plants—an inspiring and pristine example of sustained organic polyculture farming put into practice.

We are honored to partner with talented stewards who care so deeply for their unique natural environments, the biodiversity they support, and the incorporation of their traditions into a forward-thinking vision for their horticultural heritage.

Jennifer Gerrity is the Chief Operations Officer at Mountain Rose Herbs and has played a key role in establishing the company’s botanical sourcing program over the last decade. She has a bachelor’s degree in Plant Science from Rutgers University, where she specialized in propagation and agribusiness management. During her study there, she focused on tropical agriculture, bioremediation, and tissue culture and continued doing research for the university and the EPA after graduation. Jennifer oversees the staff, production, and quality assurance at Mountain Rose Herbs. She takes special interest in the procurement of high quality organic herbs, spices, and teas through domestic farm visits and international travel. She is committed to farm development and outreach in the form of special projects such as our Fair For Life partnership in Karnataka and cultivating a domestic market for woods grown American Ginseng.

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**SUSAN’S STACK**

Ethnobotany Reading List for 2019

- *The Gardens of Emily Dickinson*, Judith Farr
- *Thus Spoke the Plant: A Remarkable Journey of Groundbreaking Scientific Discoveries and Personal Encounters with Plants*, Monica Gagliano
- *Rory McEwen: The Colours of Reality*, Martyn Rix
- *Herbarium*, Emily Dickinson

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*Prevent Plant Blindness Logo digital design From the Collection of The Lloyd Library and Museums artists-in-residence project, Posters for the Plant Blind 2018*
PLANT BLINDNESS
by Anna Kell

Last June, we collaborated as artists-in-residence at the Lloyd Library, where we worked for the month on a design project titled Posters for the Plant Blind. Digitally collaged with visual elements culled from the library's extensive collection, the posters are meant to highlight the presence of plants in our world as well as ripe resources like the Lloyd Library.

"Plant Blindness" is a term, coined by educator-botanists James Vandersee and Elisabeth Schussler in 1998, that describes what they observed to be an increasing inability among 21st century people "to see or notice the plants in their environments." While early scholarship centered on explanations such as zoocentrism, or the cultural preference for animals based on shared characteristics, Vandersee & Schussler steered the term's relationship to vision, shifting the focus onto the limitations of human perception and visual cognition, an area that artists have long investigated.

Since initiating the project, we have finished a number of posters and allowed the work to branch into new directions. The Pantry, one of the more elaborate of our designs, is a sprawling, illustrative map of thirty common kitchen items engulfed with a lush border of plants that reveals the source of each item's main ingredients. The poster lures viewers into its content through the use of familiar staples, like Grippos chips and Kroger-brand black pepper, simultaneously making us aware of the plants and their indispensability. Our Eye Test poster is inspired by the original prevention campaign initiated by Vandersee & Schussler, whose poster featured a rather surreal and now-dated design of a blurry landscape overprinted with these three words: PREVENT PLANT BLINDNESS (and was distributed to over 22,000 school teachers). Our rendition serves to test and augment viewers' knowledge of regional, native trees, while synthesizing our mutual interest in the dizzying spatial effects of 60s "Op" art, vintage optometry charts, and the many representations of leaves we found in the Lloyd's archive.

We hope our posters foster not just an aesthetic experience, but the start of an educational one, capable of improving plant literacy and cultivating a greater sense of connection with plants. Luckily, no matter what your work is in the world, Vandersee & Schussler articulate a simple and elegant piece of advice to help prevent future plantblindness: pass on and share your knowledge of plants.

There are many ways to become what the pair dubbed a "plant mentor". If you know how to grow and tend plants, do it with the children in your life. If you can identify plants in your local landscape or distinguish their parts, teach those around you how to do the same. If you don’t have children in your personal life, volunteer to do a workshop at a school or community garden (or guerrilla artist-activist style, wherever and however you dare).

Culture is built through the passing down of information and experiences. Our muses remind us that without "conscious intention, attention, and effort to preserve it", the information our brains receive about plants is likely to be discarded; all that green, leafy stuff simply can't compete with the plethora of extraneous cultural imagery for our attention. In 2019, and beyond if it goes well, let’s do something—however we can—to make space for the awareness and appreciation of plants.

REFERENCES
- Vandersee & Schussler, "Toward a Theory of Plant Blindness," 6-7

Anna Kell is Assistant Professor of Art at Bucknell University in Pennsylvania.
NOXIOUS AND INVASIVE WEEDS AS MEDICINE: AN ALTERNATIVE FOR THE PESTICIDE TREADMILL AND A WAY TO REDUCE USE OF AT-RISK MEDICINAL PLANTS

by Autumn Arvidson and Kelly Kindscher

Introduction:
The use of medicinal plants is gaining popularity in the health industry as more individuals are recognizing the risks associated with modern pharmaceuticals and the benefits of many herbal products. While this may be considered a step in the right direction for individuals seeking low side effect treatments, it is worrisome for those trying to manage populations and preserve the integrity of at risk native medicinal plants. Perhaps a way to reduce harvesting of at risk native plant species would be to find alternative medicinal plants which offer some of the same healing properties; we would like to recommend consideration of noxious and/or invasive plants. There is an abundance of non-native invasive and noxious weeds that have promising medicinal uses that could be used alternatively. This would not only allow for the harvesting of some native medicinal plants to be reduced but would encourage an ecologically friendly way of managing populations of noxious and invasive weeds.

With the abundance of non-native weeds in the United States remaining constant or increasing and the increasing toxicity of the herbicides used to remove them, changing the negative relationship people have with weeds would have many positive impacts. There is significant research published showing numerous medicinally promising non-native plants present in the United States. These plants include kudzu (*Pueraria montana*), purple loosestrife (*Lythrum salicaria*), and creeping Charlie (*Glechoma hederacea*), all of which were introduced to North America intentionally for their ecological benefits, such as preventing soil erosion. For the purposes of this literature review, the plants listed above were focused on as examples due to the abundance of peer-reviewed research which determined the chemical components of the plants and their respective potential as medicinal tools.

<table>
<thead>
<tr>
<th>Kudzu</th>
<th>Purple Loosestrife</th>
<th>Creeping Charlie</th>
</tr>
</thead>
</table>
| **Location and Legal status:**
  - Found in Midwest and southeast US.
  - Noxious in 10 states
  - Invasive in 1 state
  - Quarantined in 4 states | **Location and Legal Status:**
  - Found in most of North America
  - Noxious in 19 states
  - Invasive in 1 state
  - Prohibited in 7 states | **Location and Legal Status:**
  - Found in all North America excluding: NM, AZ, NV.
  - Noxious in CT
  *While the plant is only noxious in one state, other states are considering reclassifying the plant due to its increasing presence.* |
| **Useful Compounds:**
  - Antioxidants
  - Isoflavonoid
  - 6'-O-p-d-glucoypranosylpuerarin
  - 3'-methoxypuerarin
  - O-p-d-apiosylpuerarin
  - Biochanin A
  - Formononetin
  - Daidzin
  - Daidzein | **Useful Compounds:**
  - Polyphenols:
    - C-glucosidic
    - Ellagitanins
    - C-glucosidic
    - Flavonoids
    - Heteropolysaccharides | **Useful Compounds:**
  - methyl isoferuloyl-7-(3,4-dihydroxphenyl) lactate
  - 1α,10β-epoxy-4-hydroxy-glechoma-5-en-olide
  - 1β,10α-epoxy-4,6-dihydroxy-glechoma-5-en-olide
  - 1β,10α,4α,5β-tetraepoxy-8-methoxy- |
| **Medicinal Uses:**
  - Fever, influenza, dysentery, hypertension, hangovers, migraines, improving cerebral circulation, anti-dipsotropic, anti-drinking.
  - High antioxidant activity
  - Reduces occurrence of breast, uterine, and prostate cancers.
  - Lessens risk of coronary heart disease.
  - Reduces menopause symptoms | **Medicinal Uses:**
  - Astringent, antihemorrhagic, dysentery, diarrhea, intestinal inflammation, hematuria, leucorrhea, epistaxis, hemorrhoids, intestinal bleeding, vomiting, colic.
  - Helps relieve symptoms of some digestive and inflammation disorders.
  - Lowers blood pressure. | **Medicinal Uses:**
  - Asthma, bronchitis, colds, inflammation, allergies, arthritis, fibrosis, hyperlipidemia.
  - Remedy for gall and bladder stones.
  - Reduces fluid buildup on body cavities and tissues.
  - Inhibits tumor promoting activity in cells.
  - Elevates circulating insulin levels.
  - Alleviated diabetes-induced hyperphagia. |

(Legal Status, Useful Compounds, and Medicinal Uses of three exemplary noxious weeds)
**Discussion:**

Kudzu, which is so predominate in the South and coined “the plant that ate the South,” is very hardy and can grow where almost nothing else will. The plant produces several useful compounds and shows promise of being a medicinally significant plant containing the isoflavones, daidzein and genistein. These isoflavones have been found to reduce the occurrence of breast, uterine, and prostate cancers; lessen the risk of coronary disease and heart disease; and reduce menopause symptoms (June, 2003). Another compound found in kudzu, puerarin, is effective at reducing symptoms and side effects of alcoholism, including over consumption, dependency, and withdrawal symptoms. One study found puerarin extracted from kudzu to be effective at reducing binge drinking in all participants in a study, even when consumed shortly before alcohol consumption began. This study demonstrated that kudzu would be a safe and effective adjunctive tool in the treatment of alcohol abuse and dependency (Penetar, 2015).

Purple loosestrife is a non-native plant that invades wetland habitats. Purple loosestrife has many medicinal properties, as the whole plant from root to flower contains useful medicinal chemical compounds, which can be used both externally and internally. It can be used in several forms including powdered, infusion, and liquid extract for health ailments such as diarrhea, dysentery, inflammation of intestines, nose bleeds, and severe menstrual cramps. The plant’s flowers and roots can be used for their astringent, styptic, antibiotic, hypoglycemic, or vulnerary effects on burns, snake bites, and pain management (Šutovská, 2012). Due to the plant’s astringent properties the extract has been shown to be very effective at treating conditions such as eye inflammation, sinusitis, varicose veins, hemorrhoids, and ulcers (Piwowarski, Granica, & Kiss, 2015).

Creeping Charlie, which while only classified as noxious in Connecticut has begun to raise concern in other states as its presence is ever increasing. However, as a medicine this plant would be very useful as it has been found to contain several promising compounds, one of which being rosmarinic acid, as well as some of its analogues, which can be used in the treatment and prevention of inflammation related diseases such as allergies, arthritis, and fibrosis (Kim, et al, 2011). Creeping Charlie has also been found to contain significant concentrations of oleanolic and ursolic acids, which have been found to promote tumor inhibiting effects. In a study monitoring papilloma (tumor) bearing mice which were treated with a topical ointment containing both oleanolic and ursolic acids, researchers observed that the number of papillomas per mouse decreased significantly when compared to the control group of mice who received no topical treatment containing the two acids (Liu, 1995). Furthermore, a study investigating the medicinal potential of oleanolic and ursolic acids found that the intake of these compounds elevated the circulating insulin level and alleviated diabetes-induced hyperphagia; which is characterized by hyperglycemia, weight loss, and increased food intake (Wang, Hsu, Cheng-Chin & Yin, 2010).
While these non-native plants may currently be considered nuisances and largely unwelcome in the ecosystems they inhabit, they may be an innovative tool that could be used in improving the health of citizens and reducing the harvesting of native medicinal plants. Improving the health and abundance of native medicinal plants may be one of many positive side effects that would result from the use of weeds as medicinal products. This would also help to reframe the ways in which people view plants that are considered invasive and/or noxious, which would only further propagate the shift from thinking certain plants are inherently bad to viewing these plants as unproductive in their current environment, but if utilized could be beneficial in advancing treatments for certain health conditions.

Conclusion:

Further consideration should be given to how non-native invasive and noxious plants are being controlled and/or removed from ecosystems using ecologically degrading herbicides. The chemicals used to remove these weeds include 2,4-D, Dicamba, Picloram, and other broad leaf herbicides. Unfortunately, the use of these potent and toxic herbicides can be considerably harmful to non-target organisms, including native plants and insects. It is also worth noting that these herbicides have only limited success.

The effectiveness of these chemical control methods should be considered and reevaluated. Since the Noxious Weed Act was enacted in 1974, we do not know of one noxious weed that has been successfully eradicated and removed from the list. This may show that the current methods of eradicating these plants have not been, and will likely not be, effective, and this may lead to even more toxic herbicides being used in the future. It is a perfect scheme to have perpetual herbicide use.

The continued use of toxic herbicides will only further and exaggerate ecological degradation already being caused to the ecosystems of some native medicinal plants by invasive and noxious weeds. The lack of data showing the long-term effects of herbicide use in ecosystem health and functionality should be concerning. The prolonged use of herbicides on invasive and noxious weeds may cause irreversible damage to soil, water, and macroinvertebrates that are integral components to the health and success of ecosystems. However, harvesting these plants for further testing and medicinal product production would be a mutually beneficial solution to the current weed-pesticide paradigm while allowing some at-risk native medicinal plant populations the opportunity to improve both in abundance and health. But if even a portion of the acreage of noxious weeds could be harvested for beneficial herbal product use, this would be an important demonstration of an alternative paradigm.

So, we would like to propose the following: In clean environments (those that do not have a history of being sprayed), the funds that have been used by the state and county governments to buy pesticides and hiring staff to spray noxious weeds should as a pilot project, be replaced with hiring herbalists and wild-crafters to harvest and prepare medicine from these noxious weeds. The research funding for noxious weed research and State Extension program funding related to noxious weeds could also be altered to include funding that would promote the techniques of harvest and most effective and healthful use of many of these plants. The results would likely be equally effective, while managing these noxious weeds. In addition, there would be healthful benefits for the environment and for people alike, including providing jobs for herbalists (yes, a jobs program for herbalists). We believe that developing this approach could benefit the health of ecosystems, while also reducing the use of some at-risk medicinal plants. And we believe it is time for a paradigm shift.

Autumn Arvidson is a TRIO McNair Scholar and recent graduate. She is now working with Kelly Kindscher on his Native Medicinal Plant Research Program at the University of Kansas.

REFERENCES


ROMANCING THE ROOT: THE PASSIONS AND PERILS OF WILD AMERICAN GINSENG
by George Lindemann

Toward the end of April 2018, the Chinese Government imposed a tariff on imported wild American ginseng (Panax quinquefolius). This little known wild root has somehow gotten into the middle of a brewing American/Chinese trade war. I am not sure whether this new tariff is a good thing or a bad thing for ginseng or ginseng lovers. I do know that wild American ginseng grows on my East Tennessee farm.

Ten years ago, I purchased a tract of land on Tennessee’s Cumberland Plateau. The property rests on an east-facing mountain top. The elevation begins at around 2500 feet and gently rolls its way down towards the Tennessee River. In the distance is the Great Smoky Mountains National Park. The land was once used for coal mining, but over the last 75 years or so has been managed for timber harvesting. Approximately one-third of the property has recently been logged, leaving a wasteland of broken tree tops, brush, and muddy logging trails. It was my intent to clear this land of debris and plant a combination of native and non-native grasses. These new fields would provide pasture for income-producing cattle, as well as habitat for local and migratory birds and animals. I feel strongly that a farm needs to be economically and environmentally sustainable. My cattle operation would make money and enhance wildlife habitat.

One-third of the property contains creeks, marshes, and other types of riparian (wet) areas. The Cumberland Plateau’s waterways are one of the world’s most diverse and endangered freshwater ecosystems. I have been determined to do everything I could to preserve and even enhance those aquatic treasures, while simultaneously providing clean water for my cattle.

The remaining third of the property consists of mature forests. These forests provide ample trails for hiking, mountain biking, bird watching, and of course, foraging. For several years I explored the woods and considered what else I might do to create economic value from my forest. Timber harvesting as a business doesn’t make sense in an area near significant population centers. Near population centers, land is worth more for development than the harvesting of trees. That is, the forest was worth more intact and growing than as raw material. But ever the business man, I knew there was untapped value in those woods.

Late September is usually an off-season on the farm. The hay has been cut, the calves weaned, and the herds have been moved to their fall fields. It’s too cold to swim in the spring-fed pond and too dry to paddle the Cumberland Plateau’s free flowing creeks. Even so, my four kids and I had to evacuate Miami in mid-September 2016 as Hurricane Irma threatened to devastate South Florida. Schools, businesses, and government all shut down in anticipation of the megastorm. We headed north to our farm. It was on that trip that we found treasure: wild American ginseng.

Ginseng: A Plant with a Colorful History

Ginseng was first discovered in the New World about 300 years ago by a Jesuit priest who was living near Montreal. Exports to Asia began shortly thereafter. Early settlers like Daniel Boone are reported to have traded in ginseng. One of America’s first millionaires, John Jacob Astor, made part of his vast fortune by trading and exporting ginseng. References to ginseng are replete in early American history.

Who bought American ginseng as far back as three hundred years ago? The Chinese did. Why? Because they believed that ingesting ginseng cured depression, diabetes, fatigue, inflammation, nausea, tumors, pulmonary problems, and ulcers. Older and well-formed roots were believed to have spiritual qualities which brought good luck. Traditional Asian medical practitioners believed that ginseng was also a powerful aphrodisiac and an erectile dysfunction medicine. Today, the Chinese believe as strongly in the power of ginseng root as they did several hundred years ago. Unfortunately, after thousands of years of exploitation, wild ginseng is virtually extinct in Asia.
Demand for ginseng is so strong that farmers have taken notice and tried to replicate the wild root with a farm-grown, “cultivated” version of the plant. While cultivated ginseng is effective, wild ginseng is much more potent. Ginsenoside concentration in wild roots is exponentially higher than in farmed ginseng. But wild ginseng grows very slowly in specific forest habitats. As a result, wild American ginseng, like the plants in Asia, is becoming harder to find in North American forests.

The root grows in cool shady areas of deciduous hardwood forests. These forests stretch along the Appalachian Mountain Ridge from northern Georgia all the way to southern Quebec. Ginseng grows best at altitudes of 600 to 3500 feet. In the southern United States, roots grow in wild mountainous areas. As you go further north, roots can be found in more populated areas. Unfortunately, roots closer to population centers are more likely to have been discovered and removed.

There is agreement (at least among the scientists and users of ginseng products) that it is perhaps the most interesting plant on the planet. According to ecologist James B. McGraw, roots can live up to 25 years, with a few living to 50 years of age. I have spoken to knowledgeable ginseng folk who claim that roots can live as long as 100 years. When the root turns four years old, it is mature enough to produce red berries. In autumn, berries fall off the plant and eventually become new roots—unless of course they are eaten by deer, rodents, or bugs.

Ginseng roots don’t necessarily come into blossom every year. They often lie dormant, though there is scant information explaining why and when this happens. Folklore suggests that like groundhogs the root is able to “predict” the weather. Some people believe that roots stay dormant if they don’t like the “feel” of the upcoming growing season. Ginseng is steeped in lore, and because it is so hard to conduct long-term scientific research, it’s important to listen to and give some weight to folk tales and “digger” beliefs.

Poaching is a big problem, too. Plants under scientific observation in the wild are very often poached. Wild American ginseng’s monetary value is a welcome boon for diggers, but the bane of ginseng scientists. Scientists report spending years researching specific patches of plants, only to return one fall to find their years of work stolen by an illegal digger. Diggers trespass on private land, they dig on public lands where they are not allowed, and they even dig outside of season and outside of prescribed age and size rules. But, poaching is not the only challenge faced by wild ginseng. Legal over-harvesting is a challenge as well. Ginseng is the most heavily traded wild plant in the United States. McGraw pointed out that in 1841, more than 600,000 pounds of ginseng root were shipped to Asia from the United States. According to Gary Kaufmann, a botanist with the U.S. Forest Service, today, exports are about 10 percent of those totals. Eighty-five thousand pounds of legal ginseng are foraged each year. At the current rate of exploitation, the wild ginseng root’s sustainability prospects are not very good.

Root with an Uncertain Future

In 1975, the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) was enacted. Rhino horn and ginseng (among others) were internationally protected by this treaty. The National Fish and Wildlife Service is responsible for reporting to, and complying with, CITES in the United States. Even with international attention and protection, poaching is still rampant. It is easier to steal ginseng than to grow and harvest the plant. This causes a vicious cycle. The rarer the roots are, the more valuable they become. The more valuable the roots are, the more they are pursued.

As North American populations have grown, ginseng populations have declined. Currently, Appalachian North Carolina, Tennessee, and Kentucky have become the root’s last stronghold in the United States. As land prices continue to rise with population growth, large swaths of ginseng habitat have been subdivided into smaller and more accessible plots. Once land is accessible, so is the ginseng.

Traditionally, over digging, conservation, and even poacher prevention was stewarded by local populations. McGraw states that “digger practices were passed from father to son and generally included respect for
resources.” Absent sufficient science, local ginseng families are excellent information resources. These families know/knew that ginseng is a source of income, and they learned about and took care of their plants. They knew, without reading papers, about picking berries and planting them next to the parent root. They knew not to over dig. They knew to let the root grow to a ripe age and to leave a variety of aged roots in the ground.

Today, scientists are beginning to reevaluate regulations explicitly requiring that only older roots be harvested; these artificial rules are potentially changing the DNA of the root itself. Traditional digging families knew how to dig just the right number of roots and how to leave the right amount in the ground. They treated their ginseng forests as they did their crops—with rotations and fallow years. But times have changed. McGraw has estimated that currently in West Virginia, 4.9 percent of roots are harvested each year. This is not a sustainable yield. But, the “if I don’t dig it, someone else will” challenge is a real threat to survival of the species.

Wild American ginseng, as its name suggests, cannot be grown on a farm. Its fate rests with conservation and management efforts. Regulations and policies are challenging to formulate and difficult to enforce. Some of the most intact ginseng habitat in the nation runs through Eastern Tennessee. The state of Tennessee is committed to conservation, yet it only employs one dedicated ginseng official. Despite her knowledge, passion, and commitment, she’s just one person.

Even if the state were to allocate an entire division to ginseng conservation, a broader effort would still be needed. In order for any venture to succeed, the interests of all the stakeholders must be considered and accounted for. Government, landowners, nonprofits, diggers, and academics all need to find common ground. It’s challenging to find common ground when so much (including the science) is unclear.

Many science-based organizations won’t even address ginseng. Discussing and understanding the root is tainted with quackery. Some say that ginseng is for healers or poachers; it’s not for the mainstream. Many biologists don’t consider the root or its impending extinction to be a serious problem. This needs to change if we are to save this piece of our heritage.

Federal and state governments need to address the concerns surrounding conservation efforts. Enforcement of old laws and the creation of new ones must be balanced with the cultural traditions of digging families. We have all sorts of rules and regulations for hunting rare animals. Similar attention and vigilance needs to be focused on ginseng. Scientific questions need answers as well.

For example, what is the best age to harvest ginseng plants? Should age determine harvestability? Or should the number of leaves (prongs) on a plant determine if it is ready to be dug? Should berries be left to fall on their own, picked and hand planted, or harvested to plant in other locations? Botanists, ecologists, and agronomists, among others, need to try and address these questions.

Education must also be part of ginseng conservation discussions. Unfortunately, ginseng is most often found in rural areas where efforts to educate and to license are often seen as too much government interference. Administering a government dealer/digger test would be, to say the least, highly problematic. Nevertheless, there are millions of acres of public land where ginseng has historically grown. Government must insert itself by working with nonprofits and research centers in order to survey and address the plant’s needs.

Some states are beginning to make efforts to show local farmers how they might grow ginseng as a cash crop. Root care classes are offered to interested farmers. Berries or baby roots are provided or sold to class participants. These berry/roots are then planted in backyards or unused wooded areas. But wild American ginseng, as its name suggests, is a wild plant. Domestication efforts are complex. Nature has its own ways and when changed, bacteria, fungus, and disease often thwart “wild simulated” efforts. Plant health challenges combined with slow root-growth rate will likely deter many prospective farmers. Time is not on ginseng’s side.
Can Commerce Save Ginseng?

Traditional farmers are not the only property owners who might be interested in ginseng. In rural Appalachia there are thousands of non-farming landowners with holdings from 10-10,000 acres of northeast facing habitat. Efforts to reach out and educate these folks could germinate a new conservation effort. Non-Timber Forest Products (NTFP) are a neglected revenue source for large tract landowners. If government or nonprofits connect landowners with traditional diggers, there is a potential for a win-win relationship. Landowners sign hunting leases. Why not sign a ginseng harvest lease? Diggers do not need government permits to forage on privately-held land. But they do need the owner’s permission. The states can and should develop programs to bring these two ginseng stakeholders together. Most Appalachian communities have government or university agricultural outreach centers. These centers are fixtures in rural communities and are a good place to begin pairing diggers with a database of interested landowners. A well-defined lease will also encourage diggers to manage the ginseng population as if it were their own. Traditional diggers intuitively understand the plant and its complex needs. If long term leases are in place, more acreage will be properly managed and better protected from poachers.

The Cumberland Plateau is still a densely forested area. There are many private landowners who love their land and would be thrilled to learn about ginseng’s possibilities as a NTFP. Profit is an excellent incentive. Until now, it has been the bane of ginseng’s existence; the root is worth as much as $1000 a pound. People will search and dig aggressively to make that kind of money. We must reach out to private landowners and educate them on the value of this plant, both to their wallets and to the planet. Many don’t understand ginseng’s importance as an indicator species nor its value as a NTFP. I was one of those landowners, but not anymore.

For years I walked and rode past vast forested areas wondering how I might create value beyond timber. I know the answer now. Harvested ginseng is worth a lot of money. It is also worth a lot to me if I leave it in the ground and conserve it for the sake of conservation. Who knows what the future might hold for such a unique and rare medicinal plant?

My fifteen-year-old son Sam is designing software to track the plants on our farm. It will use GPS tracking devices and insert locations, pictures, and information onto spreadsheets. We want to couple pictures and locations of plants as we find them. Just recently, Sam and I met with Dr. Ying Gao at Middle Tennessee State University. She is studying ginseng DNA and is very interested in seeing the new software. We are all hopeful that we can share the system with other growers. Dr. Gao has asked Sam to include space in the spreadsheets for various DNA results. The challenge is to share the data while maintaining location confidentiality. While most sensible growers would not want to share the exact longitude and latitude of his/her root with anyone else, they would likely share some information for the sake of science.

With the help of the new GPS tracking system, my family and I plan to map every plant we find. This will provide us with an inventory of our NTFP (our ginseng crop) and will also be a fun activity. There is ginseng all over Coal Creek Farm, and we are all determined to locate it, map it, and watch it grow.

Ginseng and More

Last fall I purchased three hundred roots (7-10 years old) from a local, trustworthy digger. We gently and lovingly replanted our new roots in a northeast facing slope on the farm. We’re excited to see how many of those roots survive (so far most of them are growing quite well). In all of my research and meetings with state officials and scientists I have not encountered anyone else planting aged wild ginseng. But why not? I am curious to track the transplanted and natural roots. I will continue to explore the cultivation of ginseng and the value it may provide financially, medically, or maybe even spiritually. I also want to keep writing and talking about my experiences so that others might look in their backyards for their own treasure. Maybe it’s ginseng, or maybe it’s something else?

When I wander through my woods, I still ask myself what other NTFP lie hidden in the depths of these Cumberland Plateau forests. Someone recently provided me material on yellow root (Xanthorrhiza simplicissima). This plant has medical applications and is much more abundant than ginseng. But yellow root is not ginseng. Wild American ginseng is still the “king of herbs,” and my ginseng journey is truly a royal romance.

George Lindemann is a father, philanthropist, farmer and more. He’s a successful businessman, developer and devoted conservationist. He loves paddling and skiing and hiking. He’s learned to appreciate the value of a great controlled burn and he’s found Ginseng on his Cumberland Plateau farm in Tennessee. As a result of this discovery, he is now working with scholars to find better ways to manage and cultivate this endangered root. He’s managing the farm with a combination of new technology and thinking, coupled with some of “the old ways.” In the process, he’s developing ways to feed his longhorns native grasses while encouraging the their recruitment. The native grasses bring back native flora and fauna that departed after years of clear cutting.

REFERENCES


EXPLORING THE RESILIENT ROOTS OF ALBANIAN AGRICULTURE
by Jennifer Gerrity

Albania’s mountains and valleys teem with rich botanical bounty. Mountain Rose Herbs and United Plant Savers visited its fecund countryside at the peak of the autumn harvest to meet the farmers and wildharvesters who help bring culinary apothecary herbs and fruits to plant lovers across the world (like the ripe and ready hawthorn berries above).

Having spent a number of gilded fall days traveling throughout the countryside visiting farms and villages in Bulgaria, Dr. Susan Leopold from nonprofit United Plant Savers and I journeyed west to connect with our growing partners in another Eastern European country filled with ecological treasures: Albania. Within Albania’s biologically diverse mountain and valley ecosystems, hundreds of desirable native botanical species thrive in the wild. This incredible natural variety and abundance have set the scene for Albania’s long-running and complex role on the stage of the global herbal trade.

We traveled south to picturesque Gramsh and high up into the southern Dineric Alps, which span the length of the country, taking in westward views into the fertile valleys sweeping towards the Adriatic and Ionian Seas. This dramatic landscape contains a variety of microclimates in which a diverse array of precious...
plants can grow with seasonal availability. An average of 260 sunny days per year provides the ideal climate for aromatic crops such as thyme, pennyroyal, and raspberry leaf, as well as high alpine natives such as arnica, valerian, and gentian. The terrain is unspoiled and rich, the air and water clear, and the people have homesteaded here in these rich lands for hundreds of years.

The small pockets of communities residing in these mountains have traditionally relied on wild botanicals for their economy and typically live very simple, agrarian lives. Up in these mountains, people have created beautifully constructed homes with stone and wood gathered from the very land on which these structures are built, and the plants and animals they rely on daily to survive are also housed or cultivated within a few minutes' walk of their front doors. We observe shepherds out roaming with their flocks, often stopping to collect desirable herbs along the way. We were lucky enough to run with a pack of true Anatolian shepherd dogs cruising the dramatic landscapes. It is a lifestyle from another era, where horses are the main mode of transportation, and goods are carried with hand-built carts.

And while we find it impossible not to lose ourselves in these tranquil and bucolic scenes, we are also aware of the decidedly non-idyllic historical events that led to a culture being effectively frozen in time.

Albania's long history of communism, which governed the country from 1941 to 1991, restricted free trade and occupation options, leaving many inhabitants of these rural areas to rely on homesteading to survive. The long and oppressive reign in a way preserved this way of life, since living off the land in the mountains became even more necessary as cities and towns were emptied of opportunities and resources.

During this difficult time in the country's history, the tradition of wild-harvesting was kept alive by collectors like Misir, who we meet upon our arrival in the village. Misir has lived in these mountains his whole life and comes from a group of wildcrafters who specialize in gathering rosehips and juniper berries in the autumn months. As he takes us into the mountains where he collects his berries for hours each day during collection season, he remarks that he could make more money doing other things, now that the political climate has improved, but that this is the way of life he prefers. For Misir, at least, catching up with the modern world seems a race not worth running, even when the government no longer prevents the people from doing so.

For others, the return of commerce to city centers has provided new economic opportunities, even for those who continue to live remotely and simply most of the time. In the center of this lush valley region, in an area still inaccessible by road, stands a completely hand-built village of the Romani people called Grabova. This self-sustaining community of 400 is completely self-governed. Our guide, Alban, is the buyer for these pickers. He explains that his father was once a prominent collector up in these mountains, so he grew up learning the trade, gathering berries, roots, and flowers. He eventually
learned the business side of things as well, and he now represents the collectors by consolidating and transporting their harvest to the city and negotiating for the best price.

The nation’s plant bounty includes a wide range of apothecary and culinary favorites. Crafters of herbal remedies have long sought out its elderberries (Sambucus nigra), rosehips, hawthorn berries, juniper berries, and gentian. It also hosts many of Mediterranean cuisine’s most essential ingredients, including thyme, mint, oregano, marjoram, savory, and tarragon—not to mention the famous wild Dalmatian sage, Salvia officinalis. This aromatic native was once abundant in the northern and the southern areas of the country along sea crests and rocky, low-elevation terrain. Its silver-green leaves are valued as a spicy culinary worldwide, and much of the supply comes from the rugged cliffs along the coast of the Adriatic Sea.

Albania is known for some of the world’s finest sage, and due to the global demand on the small country, these populations have been dramatically over-harvested. Historically, collectors would seek out the herb just twice a year: once in the summer, and a second time in the fall. As demand increased, however, this harvest schedule was ramped up to four or five times per year, woefully depleting natural sage communities. In 2013, the Albanian government stepped in to stop the rampant picking, but this mainly served to drive the industry underground into a botanical black market that continued to threaten the future of this precious herb. Today, sage populations have somewhat recovered, allowing the government to instate a permit process for legally collecting limited amounts in select locations, but due to the challenges of verifying and enforcing these regulations, many commercial herb buyers have turned to cultivation on private land for a more reliable source of material. (In many ways, Albania’s Dalmatian sage story runs parallel to the sourcing challenges associated with white sage (Salvia apiana) currently playing out here in the western United States.)

In fact, while at one time virtually all of Albania’s commercial botanicals were wild collected, the entire industry is now undergoing a slow but apparently steady shift from wild-harvesting to dedicated botanical cultivation on farmland. This transition will likely become more and more pronounced (and necessary) as Albania brings more and more of its high quality botanicals into the global marketplace.

We visited Fran, a horsetail farmer in the northern region. His land is situated in a flat valley with dappled light and fed by natural geysers bubbling up from the earth. Silica-rich horsetail thrives abundantly in this pristine wetland, and Fran has stewarded this plot by keeping it open to the sunlight and free from weed species and roaming animals.

He cultivates two varieties, Equisetum arvensis and Equisetum fluviatile, each in its own sectioned pasture. Fran hand-cuts the horsetail with a scythe and allows it to air dry naturally in a covered area protected from the sun.

Jennifer Gerrity admires the bounty from Fran’s plots of horsetail (Equisetum spp.) and other commercial botanicals. This silica-loving herb thrives under the natural irrigation of the fresh spring geysers that gush up from the very ground in which Fran plants his crops.

While chatting and admiring this lush, green landscape, we are interrupted by a sudden spring bursting forth from the earth, and its crystal clear bubbles begin to flood the cultivation site. Fran knows well how fortunate he is to be able to harness these mineral springs for his irrigation. In this natural and self-sustaining system, Fran’s fields are completely submerged with this pristine water from January into March. Fran also cultivates oregano, lemon balm, dandelion, marshmallow, and eucalyptus leaf, and he enjoys wild-collecting blackberry leaf, savory, wild thyme, and linden in the fields and forests around his farm.

As we approach the end of our travels here, we reflect on the intriguing and challenging contrasts we’ve observed along the way. While it would be naïve to deny the hardships suffered by these communities during past decades of oppression, the country has emerged with a landscape brimming not with the modern productivity of humans, but rather with the life-affirming productivity of nature. Those who guided us throughout our travels clearly love plants and the lives they have built around them, and many seem to be finding a comfortable rhythm between the still relatively new opportunities of reconnecting with world trade and honoring the traditional lifestyles that have long sustained them, or rather, have allowed them to sustain themselves. We look forward to returning again in the future, to see how this new/old world society continues to adapt, change, and grow—as natural things do so well. ■
“AT-RISK” & “TO-WATCH” LIST

STATEMENT OF PURPOSE

For the benefit of the plant communities, wild animals, harvesters, farmers, consumers, manufacturers, retailers, and practitioners, we offer this list of wild medicinal plants which we feel are currently most sensitive to the impact of human activities. Our intent is to assure the increasing abundance of the medicinal plants which are presently in decline due to expanding popularity and shrinking habitat and range. UPS is not asking for a moratorium on the use of these herbs. Rather, we are initiating programs designed to preserve these important wild medicinal plants.

<table>
<thead>
<tr>
<th>“At-Risk”</th>
<th>“To-Watch”</th>
<th>“In-Review”</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMERICAN GINSENG Panax quinquefolius</td>
<td>ARNICA Arnica spp.</td>
<td>HIGHEST PRIORITY: RESCORE NOW</td>
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<tr>
<td>BLACK COHOSH Actaea (Cimicifuga) racemosa</td>
<td>BUTTERFLY WEED Asclepias tuberosa</td>
<td>SLIPPERY ELM Ulmus rubra</td>
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<tr>
<td>BLOODROOT Sanguinaria canadensis</td>
<td>CASCARA SAGRADA Rhamnus purshiana</td>
<td>GOLDENSEAL Hydrastis canadensis</td>
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<tr>
<td>BLUE COHOSH Caulophyllum thalictroides</td>
<td>CHAPARRO Castela emoryi</td>
<td>FALSE UNICORN Chamaelirium luteum</td>
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<td>ECHINACEA Echinacea spp.</td>
<td>ELEPHANT TREE Bursera microphylla</td>
<td>BLACK COHOSH Actaea racemosa</td>
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<tr>
<td>EYEBRIGHT, Euphrasia spp.</td>
<td>GENTIAN, Gentiana spp.</td>
<td>TOP PRIORITY: IN THE NEXT YEAR</td>
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<tr>
<td>FALSE UNICORN ROOT Chamaelirium luteum</td>
<td>GOLDTHREAD, Coptis spp.</td>
<td>SPIKENARD Aralia racemosa, A. californica</td>
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<td>GOLDENSEAL Hydrastis canadensis</td>
<td>KAVA KAVA Piper methysticum (Hawaii only)</td>
<td>CASCARA Frangula purshiana</td>
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<td>LADY’S SLIPPER ORCHID Cypripedium spp.</td>
<td>LOBELIA, Lobelia spp.</td>
<td>BLOODROOT Sanguinaria canadensis</td>
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<td>LOMATIUM Lomatium dissectum</td>
<td>MAIDENHAIR FERN Adiantum pinnatum</td>
<td>VIRGINIA SNAKEROOT Aristolochia serpentaria</td>
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<tr>
<td>OSHA Ligusticum porteri, L. spp.</td>
<td>MAYAPPLE Podophyllum peltatum</td>
<td>TRILLIUM, Trillium spp.</td>
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<td>PEYOTE Lophophora williamsii</td>
<td>OREGON GRAPE Mahonia spp.</td>
<td>BLUE COHOSH Caulophyllum thalictroides</td>
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<td>SANDALWOOD Santalum spp. (Hawaii only)</td>
<td>PARTRIDGE BERRY Mitchella repens</td>
<td>WILD YAM Dioscorea villosa</td>
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<td>SLIPPERY ELM Ulmus rubra</td>
<td>PINK ROOT Spigelia marilandica</td>
<td>MID PRIORITY: IN THE NEXT 2 YEARS</td>
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<td>SUNDREW, Drosera spp.</td>
<td>PIPSISSEWA Chimaphila umbellata</td>
<td>LOMATIUM Lomatium dissectum</td>
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<td>TRILLIUM, BETH ROOT Trillium spp.</td>
<td>RAMPS, Allium tricoccum</td>
<td>OSHA Ligusticum porteri</td>
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<td>TRUE UNICORN Aletris farinosa</td>
<td>SPIKENARD Aralia racemosa, A. californica</td>
<td>ECHINACEA Echinacea spp.</td>
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<td>VENUS’ FLY TRAP Dionaea muscipula</td>
<td>STONEROOT Collinsia canadensis</td>
<td>BUTTERFLY WEED Asclepias tuberosa</td>
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<td>VIRGINIA SNAKE ROOT Aristolochia serpentaria</td>
<td>STREAM ORCHID Epipactis gigantea</td>
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<td>WILD YAM Dioscorea villosa, D. spp.</td>
<td>TURKEY CORN Dicentra canadensis</td>
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<td>WILD INDIGO, Baptisia tinctoria</td>
<td>WHITE SAGE, Salvia apiana</td>
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<td>YERBA MANSANA, Anemopsis californica</td>
<td>WILDFLOWER, Baptisia tinctoria</td>
<td>PARTRIDGE BERRY Mitchella repens</td>
</tr>
</tbody>
</table>

Requested To Score

| INDIAN PIPE Monotropa uniflora | WILD CHERRY Prunus serotina | YAUPON Ilex vomitoria |
| CHAJA Inonotus obliquus | SOLOMON’S SEAL Polygonatum biflorum | WILD GERANIUM Geranium maculentum |
FOR THE WILD
By For the Wild Collective

In 2011, Ayana Young, then a Columbia University ecology student, was overwhelmed by climate chaos, mass extinction, and struggling to find a voice. That’s when she got involved with Occupy Wall Street, seeing the protestors in Zuccotti Park taking action. “They put a vocabulary to what I was feeling,” she says. “I was finally part of a community that was talking about the things that I was struggling with for so long.”

This was Young’s initiation into activism and advocacy work. Intentional and passionate, she turned with laser focus towards learning everything she should about deep ecology and the manifold threats that endanger the earth as we know it. The biggest detriment to our earth’s health is human supremacy, which “isn’t looked at nearly enough,” says Young. “Why are humans somehow entitled to all the resources in the world?”

Young’s organization, For The Wild is the result of her fierce advocacy. For The Wild is described as, “a love song to disappearing wild places,” merging restoration and conservation efforts with storytelling and education. There are localized land-based projects, like the 1 Million Redwoods Project (http://forthewild.world/1-million-redwoods-project/), a boots on the ground, collective effort to renew and protect North America’s Cascadia bioregion from Northern California to south-central Alaska, and there are also compelling media efforts, including the For the Wild podcast (http://forthewild.world/listen/), a weekly broadcast that has come to be known as a platform for critical discourse and coalition-building among people committed to social justice, wilderness conservation, and ecological renewal.

Young, who lives in Northern California, shares with clarity and urgency that now is a time to act to protect the landscapes, the plants, trees, and waterways that we love. She has felt a call to action from the forest, and her work is a response to defend the wilds of the Pacific Northwest.

Her 1 Million Redwoods Project is an initiative to renew and protect the biodiversity and resiliency of the temperate rain forests in Cascadia through holistic research, biomimetic reforestation, land conservation, and nurturing living libraries of native seeds and fungi.

Young began her love affair with the temperate rainforest, as a commercial mushroom hunter, finding herself immersed in diverse forest expanses and witnessing firsthand the devastation wrought by human development, industrial logging, and resource extraction. Over 90 percent of native temperate rainforest has been lost, and what remains is managed heavily for timber production. Through forest immersion, the difference between the vitality of intact old-growth forests and the lifelessness of monocropped plantation forests became acutely clear. Searching for how best to support these ravaged ecosystems became a heart-song for Young. The idea for the 1 Million Redwoods Project was an inspiration that emerged through spending time listening deeply to the forest. Embodying a whole-systems approach to the 1 Million Redwoods Project, For The Wild is focused on planting a diversity of plant and mycelial species and bolstering reciprocal relationships between species. Recognizing that every ecosystem component, from soil microbe to canopy-dwelling epiphyte, is vital to the health and adaptability of a forest, and aiming to lean in to that.

Young and For The Wild are navigating how to engage in reforestation without following conventional methods that involve resource-intensive extractive practices like irrigation systems and plastic pots derived from fossil fuels, imported soil with ingredients extracted from far corners of the planet, like coconut core, peat moss, glacial rock, and perlite. Likewise, the contemporary model for reforestation of logged land has primarily focused on a small number of profitable species, which are planted to become future timber. This is a factory-farm approach to tree-planting — a commodification of life, with short-term goals in mind. For The Wild is working a different approach entirely, asking instead how to support long-term thriving for trees to create biodiversity hot spots and to foster climate resiliency.

For The Wild is committed to a position in opposition to human supremacy and firm in their belief that nature

Redwood Cones

For The Wild’s 1 Million Redwood Project is dedicated to renewing and preserving the biodiversity and resiliency of Cascadia’s temperate rainforest through holistic research, biomimetic reforestation, land conservation, and living libraries of native seed and fungi.
should have the space and opportunity to evolve autonomously. Where they come in is to support and encourage native species to thrive as the climate grows more unpredictable. Influenced by Traditional Ecological Knowledge and learnings from experts in the field, including forest ecologists Peter Wohlleben, Suzanne Simard, and Sally Atkens and biomimicry pioneer Janine Benyus, For The Wild is employing a biomimetic approach and experimenting with direct seeding and coating seeds with a mixture of native fungal and bacterial inoculants to build soil integrity and encourage the plant to tap into the existing underground mycelial network.

This resource-sharing mycelial network is a primary focus of For The Wild's approach to resilient reforestation. Conventional methods, where trees are grown in pots in commercial nurseries for up to three years before being planted out, overlook the importance of the mycelial network. Forests are familial communities, supporting one another. When a tree is grown in isolation in a pot, its roots may have a more difficult time connecting when they are eventually planted. For The Wild isn't saying that growing in pots never has a place, but it is certainly a resource-intensive process, and arguably it produces less robust trees. Currently, most forests are replanted through commercial nurseries, but For The Wild is learning that biomimicry—the design of systems that are modeled on biological entities and processes—offers a new way of partnering with nature, and they aim to promote interconnectedness and harmony through their work.

Young is particularly concerned about how rising temperatures and decreasing precipitation will impact forests and specifically, the redwood range, which is quite narrow, uniquely cool, and moist, paralleling the thickest regions of the California fog belt. Redwood forests are reliant on coastal fog, which supplies up to 45 percent of the total water used by redwoods and two thirds of the water used by understory species annually. Implications for fog decline could be severe. Habitat ranges are shifting all over the planet. Slow-growing trees, like redwoods, will have a particularly difficult time, as their southern range becomes uninhabitable.

It's abundantly clear that climate change is real, human-caused, and that we will all be directly affected by it. The wildfires in California are not an anomaly, nor are they restricted to the south. Forests are burning from Southern California all the way up to Alaska, and it’s expected that fires will only escalate. Weather extremes, are quickly becoming the new normal. We can't deny extractivism, and capitalism play a role in what's happening, including climate change and the destruction of all forests. The vast majority of redwood forest is degraded and earmarked for industrial logging, so these forest communities have been suffering extensively and by proxy, endangered species, such as the coho salmon, the steelhead trout, the marbled murrelet, and the northern spotted owl, along with whole ecosystems of plant species associated with redwoods, such as the coast fawn lily (Erythronium elegans), are becoming increasingly rare.

Climate change is not only hitting intact, healthy forests but also impacting vulnerable landscapes that have been logged, dammed, developed, mismanaged, and poisoned. The immune systems of these terrains have already experienced significant trauma. Human-centric interaction with the earth is contributing to a rapidly shifting climate in ways that can no longer be denied. Entire nonhuman communities are in deterioration, because all species are very much connected.

Young urges individuals to take action, reminding us, “Wherever you are, somebody is most likely already working to preserve biodiversity. Explore what Indigenous and grassroots groups have been doing in your area. Reach out and see how you can support them!”

As the project continues to grow, For The Wild is looking to build a mycological and redwood research team to begin designing several experimental research projects, such as test plots and exploring assisted migration, as well as undertaking comprehensive scientific study. Keep in touch, through their newsletter (http://forthewild.world/newsletter), and stay tuned for announcements about land partnership opportunities, seed collection, and planting days.

If you are interested in supporting the 1 Million Redwoods Project, they’re welcoming donations, calling in funds for seed collection and our seed library, scientific research, coordinating land partnerships, and the labor of love it takes to tend seeds and spores of biodiversity. For The Wild is looking to expand their network of land partners in Mendocino County. If you’re looking to restore and conserve your land, or if you are excited about the collection and preservation of seeds and fungi, check out their website (http://forthewild.world) to find out how to get involved for future collaborations.

For The Wild is an anthology of the Anthropocene, focused on land-based protection, co-liberation, and intersectional storytelling rooted in a paradigm shift from human supremacy towards deep ecology.
Pink lady’s slipper (Cypripedium acaule)  Butterfly weed (Asclepias tuberosa)  Bloodroot (Sanguinaria canadensis)

AT HOME WITH THE LAND
By Meaghan Thompson

During a recent dinner conversation with friends, the subject landed on the meaning of place and how one can have the feeling of being “home.” One friend said they didn’t particularly feel at home anywhere, that they could pack up and go as they please. Others expressed how they wouldn’t want to leave their places of home because of the bonds they felt with the land. As for myself, I fall somewhere in between, able to pack up and go as I please, while still forming a sense of home with the land I inhabit. Over the past year I had the opportunity to live and farm on a beautiful piece of land in West Virginia. Along with the flowers, herbs, and vegetables I grew in the gardens, I made a point to plant as many native plants as I could throughout the meadows and forest. All the while knowing I would be leaving the place with which I was forming a bond.

A few days after that conversation I sat by the stream that cascades down through the forest where I had planted some calamus (Acorus calamus) and wild ginger (Asarum canadense). A realization came to me. For most of my life I have never lived in the same place for more than a few years. Since childhood I have always been moving. But no matter where I am, I do what I can to make it feel like home. Since my early twenties this has been very much involved plants. Even when I know I will be leaving, I devote my time to establishing a garden for food and medicine, meeting the plants that already live there and introducing, (or in most cases re-introducing) new ones. Yes, it can be very hard to leave my green friends behind, but the work is always worth it. I know the plants will continue to grow after I am gone and be a blessing to the next person.

Thinking of the land I recently left, I am happy about the native plants I brought there over the past year: bloodroot (Sanguinaria canadensis), wild ginger, wild yam (Dioscorea villosa), sweet Cicely (Myrrhis odorata), false Solomon’s seal (Smilacina racemosa), wood betony (Stachys officinalis), calamus (Acorus calamus), echinacea (Echinacea spp.), scarlet beebalm (Monarda didyma), and butterfly weed (Asclepias tuberosa). I think fondly of the green ones that were already there: yarrow (Achillea millefolium), goldenrod (Solidago spp.), St. John’s wort (Hypericum perforatum), ghost pipe (Monotropa uniflora), black cohosh (Actaea racemosa), and pink lady’s slipper (Cypripedium acaule). I planted elderberry, white pine, spruce, and persimmon trees, but oh how the glorious oaks, maples, sassafras, paw paw, and poplar trees that made up the majority of the forest there were ever so gracious to me. All of the green kin in that place I hold so dear to my heart—I will always see them in my mind’s eye and feel their spirits.

In my new home I will continue to plant a garden, re-introduce native plants, and learn as much as I can from my green allies already there. Wherever I am I will do my best to enrich the land as much as possible. Perhaps it is my duty to be a pollinator, spreading love one plant at a time. Perhaps I should walk through the meadows and woodlands casting native seeds wherever I go making the entire world feel like home. I am always hoping the next human finds and recognizes the treasure of plants that surrounds them and that they will learn from the green ones and feel the love and joy that the plants graciously bestowed upon me.

A lifelong student of nature, Meaghan grew up exploring the forest and fields around her home as much as possible. Beginning her studies in the Wise Woman tradition, Meaghan went on to study clinical herbalism at Sky House Herb School, followed by studying at Green Comfort School of Herbal Medicine. Spending two years living and working at Sacred Roots Herbal Sanctuary deepened her relationship with the plants by having the opportunity to work hands on with all the green allies she was learning about. Her latest passion has been starting free community wellness days where various alternative healing modalities are available to the public at no cost.
PARADISE FOUND, TRADITIONAL HEALING LOST
By Michele Devlin, Dr.PH. and Mark Grey, Ph.D.

Climate change and severe weather events are displacing people in rapidly growing numbers. The link among climate change, severe weather events, and long-term population shifts is increasingly receiving attention from human rights, migration, public health, economic, and other global professional sectors. Environmentally induced migration involves “persons who, predominantly for reasons of sudden and progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or chose to do so, either temporarily or permanently, and who move either within their country or abroad” (IOM, 2007). Furthermore, “gradual and sudden environmental changes are already resulting in substantial population movements. The number of storms, droughts, and floods has increased threefold over the last 30 years with devastating effects on vulnerable communities, particularly in the developing world” (IOM, 2015). Already, millions of people have become climate change refugees or environmental migrants, and their numbers are expected to grow. Forecasts for the number of environmental refugees between now and 2050 range from 25 million to 1 billion (Rigaud, et al., 2018).

While this urgent global public health issue has received significant international attention in recent years, very little research has been conducted on the impact of climate change and forced environmental migration on indigenous healers, traditional medicinal practices, and the future of herbal or plant-based remedies used for hundreds, if not thousands, of years by local populations. To this end, we recently completed a professional development assignment as part of our faculty research duties at the University of Northern Iowa by visiting the remote Pacific nation of the Marshall Islands. We were academic guests there on the island of Ebeye, courtesy of the United States Army Garrison on Kwajalein Island. This wildly beautiful, low-lying chain of sandy atolls is on the frontlines of global climate change, environmental degradation, and forced human migration and is rapidly going under water as sea levels rise due to melting polar ice packs. The rising seas have made life there more difficult and unpredictable. The highest point on many of the sandy islands is now only approximately 3 meters above sea level, which is particularly risky during increasingly severe tropical storms and rising tides. Drinking water supplies are becoming too salty for human consumption, and even traditional plants no longer grow in this brackish new environment. The waters are warming and changing the environment for coral, fish, and other creatures as well and depleting the historically rich fishing areas there around the islands. Already, more than a third of the population of the Marshalls has left their country for better socioeconomic opportunities and more stable environments in the United States, where they maintain the legal right to work and live due to the Compact of Free Association (PBS, 2018).

While meeting with local medical professionals, public health providers, and other residents in the Marshalls, one of the topics that we heard a number of concerns about was the loss of traditional medicinal plants and even the emigration of some of the indigenous healers themselves. According to locals, many of the traditional plants that have been used medicinally and spiritually for hundreds of years are no longer growing in outer islands of the archipelago, due to rising sea waters and a degraded environment. The availability of these plants is dwindling due to increasingly salty or brackish water, the erosion of soil, and/or human overcrowding. Some of the outer islands are no longer hospitable or practical for humans, or certain plants, to live on productively. In fact, on the island of Ebeye, relatively few plants were visible. Much of the rich tropical foliage common on many Pacific islands had long since been removed or died off, due to brackish water supplies and the urgent need for space to build housing shanties to hold the remarkable level of human density that is congregating on larger islands as smaller ones are becoming submerged. We saw numerous residents of Ebeye traveling by ferry to the neighboring island of Kwajalein to bring back fresh drinking water for their families; with space and fresh water limited, even small household gardens with
healing and culinary plants are no longer practical to maintain for many.

We greatly enjoyed visiting the local Marshallese museum on Kwajalein that carried a fascinating supply of photographs and displays of traditional medicinal plants and herbal healing remedies used historically in the area. Unfortunately, this rich visual history was countered by the sad stories we heard from locals that their family members and some traditional healers need now to travel to other islands in order to gather certain plant remedies that are no longer available on their own islands due to the changing climate. Some cannot find the plants they need at all for healing anymore. They have fewer remedies to choose from, and much of the historical plant wisdom is being lost for future generations due to the dwindling supply of local medicinal plants.

This body of traditional medicinal plant healing knowledge is further being lost through permanent migration to the United States by the Marshallese. Resettled migrants in states like Iowa where we work typically have little access to medicinal herbal remedies, traditional healers, and the indigenous body of knowledge about the power of traditional plant-based healing. Many of these traditions are also sometimes looked down upon by Western medical providers in refugee resettlement countries and can contribute to a rapid loss of indigenous cultural wisdom in a short amount of time.

With the increase in climate change migration, further attention, research, and sustainability programming needs to be placed on trying to maintain the historic body of knowledge and practices of indigenous people related to their medicinal plants. Traditional healers have often been those people that live most in tune with the elements of nature around them and have historically been uniquely aware of ways to modify and utilize their environment sustainably to promote the wellbeing of their communities. Their voices, opinions, and ideas must be heard about ways to prevent the loss of these plants and the body of healing wisdom that surrounds them.

Sadly, if local and global efforts are not taken, both traditional healers and the rich diversity of medicinal plants they have treasured for generations may become victims of climate change extinction in future decades.

Dr. Michele Devlin is Professor of Global Health at the University of Northern Iowa and adjunct research faculty member with the US Army War College. Dr. Mark Grey is Professor of Applied Anthropology at the University of Northern Iowa. Both Drs. Devlin and Grey are also adjunct research faculty with the United States Army War College. They are specialists in working with refugee and immigrant populations, particularly in disaster and emergency settings.

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REFERENCES
- Rigaud, Kanta Kumari; de Sherbinin, Alex; Jones, Bryan; Bergmann, Jonas; Clement, Viviane; ober, Kayly; Schewe, Jacob; Adams, Susan; McCusker, Brent; Heuser, Silke; Midgley, Amelia. 2018. Groundswell: Preparing for Internal Climate Migration. World Bank, Washington, DC. World Bank. https://openknowledge.worldbank.org/handle/10986/29461
SAVING PLANTS FROM PIPELINE
by Neal Laferriere

Sitting with my daughter Aislinn at the top of a steep ridge in Highland County, Virginia, we can see for miles. The beauty of this place is stunning. It is April 14th, 2018, and as we look down at the beauty of the valley, our focus is on a 125 foot path. It cuts up over the ridge we are on and continues for more than two miles across the centennial farm below us in the valley before going up the next mountain. It is only marked with orange marking tape.

This 125 foot path is the right of way for the Atlantic Coast Pipeline, and everything on this path is slated to be cut down and dozed. So we take a moment to give thanks for the brushstrokes of nature as we begin our search. Aislinn and I begin our descent looking for native plants that our group can rescue.

On the other side of the valley my wife Beth is leading a small group of herbalists and plant protectors through another area rescuing plants that we had identified on a previous visit. Today we have the venerable Kat Maier from Sacred Plant Tradition (president of United Plant Savers) and several of her clinicians and students helping save the plants in the path of destruction. They are working with hepatica (*Hepatica* spp.), spring beauty (*Claytonia virginica*), and partridge berry (*Mitchella repens*)—beautiful spring ephemerals on death row.

Back on our side as we climb down, we are looking for medicinals and rare plants to rescue. We come across a huge patch of mixed cohosh, black (*Actaea racemosa*) and blue (*Caulophyllum thalictroides*). Interspersed through the patch is bloodroot (*Sanguinaria canadensis*) popping up all over the place. I hit the radio to let our group know we will be moving to this side of the valley.

As the group joins us, we work together to rescue as many of the plants as possible. We spend time with the land owner and a few of her family explaining the properties of the plants. My twins explain the difference between the black and blue cohosh roots (“Blue cohosh roots look like cooked ramen and black look more like worms.”) Working together we rescue hundreds of pounds of roots. We learn about the passion each of us has for the plants, we laugh, and we share the sorrow of the loss of habitat that this invasive infrastructure project will destroy.

The next day my family and I spend a few quiet moments replanting some of the rescued plants with the land owner in a safe location close to her house.

This is what plant activism can look like!

In our ever progressive world there is a very real need for folks to become more involved with efforts just like this one. From large infrastructure projects like the one I described to road construction, housing developments, to any variety of habitat destruction you can imagine. The plants are losing ground every day.

We may not be able to stop all of these projects and the expansion as our population continues to expand. What we can do is protect the native and at risk plants! We can protect the genetic diversity of plant species! We can take these plants off death row and put them into a protected environment that will ensure they thrive and reproduce.

Our rescued plants found homes at many places including the United Plant Savers plant sanctuary in Ohio, the Rentschler Arboretum, and the University of Virginia Wise County botanical garden. We have given them a new home where they will be used to help educate others on their value.

Everyone that volunteers at our rescues also takes a few plants home to plant in their area or gardens.

We chose plant activism for a couple reasons. The first is our love for the plants and the environment. The second is we felt that a proactive approach allowed us to resist these projects with less risk. Third was the ability to create a positive of something we define as negative.

I would encourage you to get involved! It is not difficult to get started. Find a project near you that is going to take plant habitat. Reach out to the landowners and ask if they will let you rescue the plants.

You would be surprised how many people will be happy to let you do it!

Once you have permission, set a date and call some friends. If possible relocate some of the rescued plants onto the same property.

If you would like more details or have questions about
125 ft. wide right-of-way for the Atlantic Coast Pipeline

getting involved, please feel free to reach out to me at Blackberrybotanicals@gmail or on our Facebook group, Appalachian Native Plant Rescue. We are happy to help and have permission slips and release forms available to share.

Neal Laferriere is the co-owner with his wife Beth of Blackberry Springs Farm and Blackberry Botanical. His love of native medicinals is evident on his sustainable certified organic forest farm in the mountains of West Virginia. Neal and his family have been leading plant rescues across the two Virginias as well as teaching others how to get involved.

Blackberry Botanical is a small family run company that focuses on sustainable products made in small batches with their own certified organic crops. They make medicines, teas, spices and sell small quantities of sustainably harvested products to other medicine makers. For more information on Blackberry Botanicals reach out to us on Facebook or call us at 304-923-3716.

Bloodroot (Sanguinaria canadensis) with fairy-like petals greets the dawn along the path of the Mountain Valley Pipeline path. One of the hundreds that were rescued!

Our plant rescue group scours the hillside for hidden botanical friends

Neal Laferriere and Kat Maier discuss the difference between black and blue cohosh root structure.

A patch of mature American ginseng (Panax quinquefolius) sitting in the path of the Mountain Valley Pipeline is ready for rescue!

Ginny Lane and Beth Laferriere work on a patch of Blue Cohosh (Caulophyllum thalictroides) plants that need new homes away from the destructive path of the Atlantic Coast Pipeline path.
DEEP ECOLOGY ARTIST FELLOWSHIP PROGRAM

This program is available for artists looking to spend time at the sanctuary to explore their artistic perspective in regards to the role of native medicinal plants in the ecosystem through photography, writing, and mixed media.

Deep ecology is an ecological and environmental philosophy promoting the inherent worth of living beings regardless of their instrumental utility to human needs, plus a radical restructuring of modern human societies in accordance with such ideas. Deep ecology argues that the natural world is a subtle balance of complex inter-relationships in which the existence of organisms is dependent on the existence of others within ecosystems. Human interference with or destruction of the natural world poses a threat therefore not only to humans, but to all organisms constituting the natural order.

Art Fellowship Highlights of 2018: Exhibits, Reflections and Art!

We are thrilled to share each fellow’s artwork and their passion for deep ecology, exploring how we communicate and advocate for the plants. Poems, charcoal, photography and pure magic come to life through space and time when we allow art to consume the day. UPS’ Deep Ecology Artists in Residence Fellowship Program participants for summer 2018 included Jessie Lovasco (herbalist/artist from Vermont), Audra Phillips (artist and midwife from Ohio), Sara Haley (art teacher from Florida), and the Cimarron Maz Collective (a cohort of artists, musicians, plant people, and amateur historians).

AN ART FELLOWSHIP
by Jessie Lovasco

Poems come from the dome in the ceiling of my head having it slightly opened so air seeps in, but not rain. No soggy words, but crisp and unexpected metaphors instead of answers to prayers, questions about flowers. Not just any flowers but those from medicinal plants. How to capture them with color, execute the lines, stimulate memory. How to make it stick so that walking in the field one recognizes wild ginger, goldenseal, ginseng. There are hundreds of plants that never reach our tongue in speech or by the spoonful. only hope that the purpose of my stay is to say something ancient in a new way for the children of my children and anyone who will listen.
MY EXPERIENCE AT UPS

by Jessie Lovasco

My experience during the Ecological Art Fellowship was deeply awakening. It affirmed the work I do in the world. There was a rich integration of observation, discovery, beauty, connection, art, and poetry that poured through me.

To have a dream realized, to be united with the most potent and precious medicine of our land was exhilarating. Plants that some may never see in their lives I could touch, see, draw, and photograph with no limits on time. I followed the trails as if I were in a church, a sanctuary of primitive voices and birds, messaging as they sensed my presence. I understood that the forest and I were breathing together—that the plants were feeling the heat of the day like I was, hearing the birds and breeze that made its way through every so often. It was an honor, a privilege to be there, joined with the medicines of the earth. And this would be true for anyone who chanced to walk these paths, smell the pungent decay and spring fragrance of forest in layers of green hues and distinct outlines of every leaf.

The nights couldn’t have been more peaceful. On the first night, the winds blew lightly. When I woke for water, fireflies were flickering past the windows. An owl was inches away, calling out from a branch.

On summer Solstice, being inside the round yurt was like being in an inner sanctuary; the world around, the outer sanctuary. A hermit thrush landed on a branch outside my window. On a walk, I saw a brown and gold turtle, two pileated woodpeckers, a mother deer and her baby, and later as I was heading down the Reclaim Trail, I saw a buck.

When I walked, there was usually a plant that seemed to call to be represented in art. Sometimes it wasn’t even there, like jack-in-the-pulpit (Arisaema triphyllum), an ephemeral that had gone by. Yet, it continued to speak to me, even as I passed other plants. Because its roots were there, I was walking in its home. It seemed to have a desire to be seen, even if only in a painting.

The clouds had been heavy every day, dumping rain. It kept me from frequenting the outdoors, and the paintings continued to come along steadily. Nothing was there to distract me—no phone, no internet, no interruptions. The work was a meditation, as I chose colors or set up the composition. I attuned myself with each plant, the brilliance of it, the power of its medicine and the grace it brings to the forest and earth.

In the quiet and peacefulness of fireflies and long sunsets, solace, and rest, I found myself wondering what to do with the finished work. Selling work for the sake of art is one thing, but these plants had a message. United Plant Savers has a mission that I wanted to uphold. It occurred to me that I would have a traveling show, whereby the art would be ambassadors and represent the work being done at UpS. I could travel with the show, giving talks about UpS and sell cards of the art with a 5% donation going to United Plant Savers.

The first venue of this series of visits will be in Montpelier, Vermont at the North Branch Nature Center in April, May, and June, 2019. The Ecological Art Fellowship art will be hanging in the main room, and the Native American Herbal Alphabet, Mothers of the Sun, will be in the front hall. I will be doing a presentation about UpS and discuss the art and poetry on April 24, 2019.
Botanical illustrations have come to assume a fairly streamlined form. One may imagine a specimen plucked from its environment to lie gracefully upon a bright, flat void. Each aspect of the plant is individually poised, every structure simplified, salient features exaggerated. The practical impact is that a live specimen can be compared against the illustration and, with some degree of sureness, identified. The aesthetic impact is one of pristine optical clarity. I propose that, although useful, this standardized aesthetic is working at odds with essential integrative dynamics of herbalism.

Every clarity of representation is made possible by some level of distortion. For instance, the Mercator Projection, designed in the 16th century for oceanic navigation, forms the basis for our most widely used representations of Earth today. One can imagine the Mercator as having been created by wrapping a cylinder of paper around a glass globe lantern, with the light directed at the equator in the center of the Atlantic Ocean. The projection is most accurate near the source of the light, with increasing distortion around the edges of the paper. Distortions in the relative sizes and shapes of landmasses themselves were allowed in the service of clarifying longitudinal bearing at sea. It is as if our present vision of the planet is still calibrated to the European colonizers’ gaze.

Which round dimensions between plants, environments, and humans are being stretched and possibly erased beyond recognition to achieve the standardized clarity of botanical illustration? Let it be said that this skepticism is not an attempt to categorically reject the form. There’s no disputing that this particular aesthetic is precisely aligned to the purpose of cross-identifying plant species and structures. Further, I believe that botanical illustrations make up some of the most wonderful artworks to date.

However, something in the systemization of botanical illustration resonates with the “clinical gaze” proposed by Michel Foucault in Birth of a Clinic. The clinical gaze is a filter by which a doctor may observe, ignore, categorize, interpret, and thus construct plans of medical action from the phenomenon of the patient’s body. The gaze renders some kinds of information legible while obscuring or rejecting others. In the Western medicine tradition that Foucault described, data for diagnosing acute disease had been clarified at the expense of a holistic body systems view. Thus the clinical gaze, like the Mercator Projection, loses accuracy beyond the bright glow at the center of the doctor’s lamp.

But I am not a doctor, nor a cartographer, nor an herbalist. I’m an art teacher passionate and curious about the power of plants, grasping at the limits of my own perspective. How are my limits constructed and reproduced by the images I see, make, and perhaps most importantly, train others to make? Images of plants upon voids, though undeniably striking, are not necessarily intrinsically truer, more naturally valid than those that may be considered “subjective” interpretations.

Several years ago, I heard the story of a European war general and a Native American chief drawing a man on a horse. The man in the general’s rendering had only one leg and the man in the chief’s drawing had two. As the story goes, both men felt that the other’s drawing had been comically distorted. The general tried to explain that one leg could not be seen, as it was hidden behind the body of the horse. The chief tried to explain that Man has two legs whether or not both could be seen from one’s own limited position. Which, of these two drawings, is less marred by “subjectivity”? The historic western preference for optical likeness in representation persists today. As my teachers taught me, I instruct my art students to “draw only what you see, not what you think you see” to encourage more realistic drawing. As I teach, I silently wonder what plant illustration mode would be most realistic to a botanist, to a futures trader, to a blind person, to the plant itself, to a fungus, to a cloud.

As herbalists, to what end do we
seek plant illustrations? Certainly, there are moments for the classic scientific aesthetic, especially to ensure safe use of a plant. However, do we seek illustrations only to use? Do we use only to address bodily phenomena rendered legible as medical disorders? The economic notion of utility, in regards to the environment, has led to enormous progress, but also unprecedented destruction. The forces of climate change that have already devastated countless other species are now beginning to endanger our own. Herbalism, in its countless rhizomatic expressions, seems universally grounded in the pursuit of being in authentic communion with plants. This involves a human-nonhuman partnership transcending human notions of use. So then, how does the standard botanical illustration serve and/or hinder the goal of fostering human-nonhuman partnership? What might it look like to reverse-engineer an illustration form built up from a conceptual ground of a priori human-nonhuman partnership? What aesthetic forms might emerge if visible likeness was stretched and bent to bring clarity to interspecies connectedness?

This line of inquiry is what led me, a 28-year old middle school art teacher from Miami, to participate in the United Plant Savers Deep Ecology Residency. In two weeks, I was hoping to create a new illustration form that could help me transcend the limitations of illustration. Right. What happened in real life was that I arrived at the Sanctuary and immediately felt a little foolish. I'd anticipated hiking around and finding plants and knowing, just knowing in an irrepressibly logical way how we were all enmeshed. Part of my proposal emphasized the value of a plant being alive in its environment for drawing. I ran into the snag of how could I know all the ways a plant is interfacing without seeing the total system? What about the fungus in the ground supporting the flow of nutrients to roots? What about the mineral composition of the soil? What of all the microscopic stuff going down?

I wanted to accurately represent these immensely complex, yet hidden, yet very real flows between things | Journal of Medicinal Plant Conservation in a way that was still unintentionally of the standard illustration gaze. I was diagnosing importance based on the same clinical grammar I'd been hoping to move past. Not to mention that when I did get out, I quickly learned how many, spiky, moist, itch-inducing, venomous, buzzing forces there were to attempt to ignore while drawing in the field. I discovered the massive gap between sensory overload of actual experience and the neatness that had been proposed to me by plant illustrations. Drawing in the forest, I felt an intense craving to achieve such an order not only by the drawings I would make, but also in my very perception. It struck me that illustrations are both artifacts of subject-object relationships and equipment for reproducing these relationships. That is, one's gaze bears creative force in and of itself.

For a few days, I opted to study indoors. My hope was that I might learn enough to get the most out of the experience “out there.” I'd read and read and then charge out of the library with 99% of my body covered, fifteen pounds of art supplies, and my spiderweb stick twirling. I was, myself, a slapstick comedy. In time, though, I dropped it all, all those goofy barriers. First to fall was the frantic reading. I began wandering for longer and longer intervals. The total body shield and the spider web destroyer were next to go. I moved to the off-grid wood cabin in the forest uphill. I stopped lugging the art supplies around when I realized that what felt like the truest drawings were the energetic nonsense candlelight scribblings before bed. This freed up my body, mind, and daylight to simply exist with and within the ecosystem. I felt at times dissolved into the place. I'd previously sought the forest for solitude. What was emerging was instead an immersive awareness of life throbbing around and of me. How classic, right? This narrative of self discovery in a forest. So it is; there I was.

When I was actually making hard efforts at proper illustration, I kept returning to the thought that illustrations may signify a brokenness between subject and object. Cultures with a close connection with plants and cultural traditions seem to get along fine without
a visual archive. Or any kind of external archive, really. The wisdom is passed down orally between people and energetically between one's self and plants. In contrast to a reference book that may lie inert on a shelf, I could imagine constant care would be needed in the traditional system to keep the circuitry humming. I consider how when I look at a lusciously explicit botanical illustration, there's a level of trust that I have in the representation and a passivity that I feel in relationship to it. That drawing's got it all in there.

I consider how different it would feel to be of a more environmentally-oriented culture as an elder shared their knowledge of a plant. I can imagine leaning in to attune myself to most fully receive their soft, fleeting words. I would become a bearer of something irreplaceable.

But I am not of such a culture. I am programmed to first seek man-made artifacts to learn about my immediate surroundings. It is what it is. For years leading up to the final days of my Deep Ecology experience, I'd been somewhat mournful to be a product and unintentional re-producer of this systematic brokenness. However, walking through the forest shortly before my fellowship closed, I encountered a snapped slippery elm (*Ulmus rubra*) tree that melded in my mind with, appropriately, a book, that would destabilize this perspective. Specifically, I was reminded of Martin Heidegger's broken tool analyses from *Being and Time*. Although some elements of this book have problematic social implications, I'm deeply inspired by the German philosopher's proposal of how equipment or tools have a quality of springing to life when they stop working. That is, when equipment is doing what it is designed to do, it can be considered to exist as an ideal outside of our space and time. When the equipment is broken, it is momentarily freed from the vacuum of that purpose, and must be beheld in the fullness of its immediate material form.

Maybe there's some power in considering the contemporary western human society as broken components of the planetary equipment. I can get so sucked into my utility that I lose the capacity to detect my own experience. For instance, it was only once I'd finally let go of extracting a cohesive set of data for illustrating the forest that I could begin attuning to its throbbing presence. Something similar seems to be occurring on a larger human scale as well, evidenced by the devastation driven by abstract economic tools on vast physical landscapes. Map-making, western medical diagnosis, botanical illustration, and public school art instruction are all oddly alike in that they are specialized tools to serve specialized ends. In their own processes, each produces images of the world that, in turn, reproduce not only the content but also the gazes of their makers. It seems that in aiding expert execution, specialized gazes can also perpetuate limited perceptions. Thus, I propose a practice of the regular relinquishment of utility and playful consideration of one's own brokenness. May this momentary freedom attune one to one's own pure sensations as if to a whispering elder. Perhaps such practice could electrify the dormant circuitry between one's self and all else.

Then there's the elm that had snapped and fallen and reminded me of that thing I'd learned from a book about being. It was broken yet dissolving to become everything else. Elm as elm was broken, but maybe that was my construct of me that was broken. I blinked, vanished, and everything keeps humming along. ■

REFERENCES


GINSENG TELLINGS  
NOTES FROM THE FIELD  
Cimarron Maz Collective

As a group of artists passionate about storytelling, we are so happy to have ginseng as our focus. Our stay at the United Plant Savers Plant Sanctuary in November 2018 was an adventurous and illuminating journey into many of the narratives around the legacy of American ginseng (*Panax quinquefolius*). Pictures featured here are snapshots of our collective’s art-making, research, and of course, hunting down American ginseng. We want to especially thank John Stock and Chip Carroll for the time they have spent coordinating and sharing their knowledge with us so far.

A bit of background about our project: Cimarron Maz Collective was formed in early 2018 and is a cohort of artists, musicians, plant people, and amateur historians. The aim of our project is to create a cross-cultural, multi-layered and multimedia storytelling experience, using interviews, music, writing, and puppetry as our mediums. We are currently in the research and development stage of our project.

A bit about our process: our time at UpS was (and will in the future be) about getting to know American ginseng and its indicator plant community. While we were there, we connected with Chip Carroll, who shared stories from his decades-long experience of working with this plant, to the extent that one person commented after his departure that they felt like they were “living in a documentary.” Senza Infinite and Aaron Morgan worked on creating soundscapes and video of our improvised recordings, and Micah Li and Bugz Fraugg started to workshop the puppetry end of our process. Biotunes artist Loretta Maps Bolt lead our group in gathering plant audio from different plants in ginseng’s habitat. This is done by translating the plants’ electrical resistance into musical notes. We will be using these sounds, gathered seasonally, along with samples gathered from interviews, to create a musical and narrative backdrop that will form the puppet show.

Our project is concerned with the ways in which we tell our lives into being. The way that our histories have been shared have been limited in their scope, just as the ways that we interact with the earth in modern society alienates us from the source of our lives. By illuminating the stories so long ignored by the history books and weaving them together with the literal songs of the earth and stars, we aim to inspire reverence and response to our planet and create popular culture that centers plant preservation. If you or someone you know might be interested in participating in our project, and most especially if you are from First Nation, Appalachian, African American, or East Asian ancestry and are familiar with ginseng’s growth region, trade, or culture we would very much like to talk to you! We also welcome participation from anyone to whom this plant is important and to whom this manner of tender interspecies collaboration is meaningful and motivating, regardless of your origins. This invitation most definitely warmly welcomes LGBTQ2S+ folks as well.

Finally, if you are from an Amazonian nation and have an interest in, or knowledge of birds, we have learned that the only currently known animal helper of American ginseng is the migratory wood thrush. The wood thrush winters in the Amazon, and so we become aware of the global significance of every living thing, by considering the importance of the Amazon to the continued well-being of ginseng. All told, there are many ways to participate in this project, and we need your help. We would like to mention that this project is currently entirely self-funded and we need financial support. If you would like to participate or if you would like to donate to help us complete our seasonal returns to gather plant recordings, please contact us at cimarronmaz@gmail.com.

One last announcement! We have begun exploring the possibilities of collecting donations to be able to travel to Haudenosaunee communities with ginseng plants to rematriate these powerful medicine plants by sharing ginseng stories with one another and planting them together. In the upcoming months we will be seeking donations of seeds, plants, legal advice/licensing, and funds to realize this effort.

Thank you for having a look at our work-in-progress report. We’re very excited to be doing this! For more information and to stay in touch please join us on social media: [www.facebook.com/CimarronMaz](http://www.facebook.com/CimarronMaz) and at our website: [www.cimarron-maz.com](http://www.cimarron-maz.com) or email us at cimarronmaz@gmail.com. We look forward to connecting with you!
Aaron Morgan on the first frosty morning of our stay.

Between team-building exercises, Cimarron-Maz members met in person together for the first time in November 2018 at UpS to get to know each other, meet ginseng, and continue collaboration.

Using the electrical resistance in plants, we translate the data into musical notes. Plant hunting is a big part of the process of making music with plants, and ginseng is a great example of this. To interpret the consciousness and agency of plants, compositions of plant soundscapes are recorded in the field.

Using technology like EEG pads can reveal new aspects of a plant’s life in the wild. Attaching these pads to a variety of plants during our stay was an exciting musical journey. We heard melodic expressions from the plants in a number of genres—from sleepy time melodic ginseng to the high energy rattlesnake fern tones.

Micah Li working on a “Cranky” puppet. This is a method of puppetry that we are exploring for our narrative creation as we explore these Ginseng Tellings.

Shooting a scene with ginseng, frog, and snail puppets for a future music video showcasing our time at UpS in November 2018. This was an experiment, as it was our first time combining puppetry and film skills.
MOON TEA
Reflections from Katy Pawlick, Medicinal Plant Conservation Certificate Program Graduate

The picture below was inspired by the little recollection I wrote below. The second is of some poisonous plants that I drew sometime last summer for fun. I’ve included it because I like it a little better (I’m not really used to watercolor yet). The plants are Amanita muscaria, poison hemlock, and dolls eye. Dolls eye was a new plant I learned about and saw when I was at UPS!

One of my favorite things to do at the United Plant Savers sanctuary was sit up in the yurt alone and read through Rosemary Gladstar’s giant lesson book. A chapter I really enjoyed was on lunar infused tea. She wrote about collecting the herbs under the full moon, placing them in a glass bowl overnight, and letting the tea infuse.

I ran around the gardens barefoot under the full moon and picked raspberry leaves, spearmint, evening primrose — maybe yarrow too. I went out into the field and stared up at the moon for a long time. I remember the moon seeming to glow so bright at me, I thought the other interns were returning from the paw-paw festival and their headlights were shining on me. I spun around, but there was no car; it was just the light from the moon in front of me. I’ve never really told anyone about this until now. It felt surreal and special.

I left the herbs and water under the moon all night. The next morning I retrieved it, strained it, and took a sip. I was shocked at how strong and alive it tasted. It was mellow after a few sips, but that first taste really made me feel something. Rosemary wrote about how the moon brought out different energies of the plants.

I loved all of the events and learning at the sanctuary, but also valued the alone time with nature like this so much. It was something very personal and healing.

“The other traditional Cherokee use of spicebush is as a beverage made from twigs, bark, leaves, and fruit offered as a ‘peace treaty’ inducing tea. The beverage is used to start negotiations with enemies as a token of friendship and peace. If we use the ‘old way’ of making peace within our environment and ourselves, then the state of health is established because we are living in a disease-free state. As long as we have destruction of our Planet (the Mother of us all, EARTH), and as long as we have War, Poverty, and Discrimination amongst the peoples of the EARTH, we can never have true health and be disease free...unless we make friends out of our Enemies! So, go out and gather some spicebush tea and enjoy for the betterment of your health, your environment and for the ‘greater good’ of making Peace.”

— Journal 2010,
Dr. Jody E. Noé, MS, ND
AUDRA PHILIPS
ARTIST’S STATEMENT:

The Sanctuary holds a special place in my heart. I first visited 20 years ago, when a friend invited me to sit in on a class taught by Rebecca Wood and Paul Strauss. I remember driving down McCumber Rd. and feeling a change in the air and a sweet energy emanating from the woods. Over the weekend on the land we learned about Paul’s incredible reverence for the plants and land, and his vision and hard work to create the Sanctuary. We experienced the beauty and magical spirit of the place. I have been drawn back to the land and surrounding community many times since that first visit. It always feels like a return to home, and seeing the plants is like greeting old friends. Over the years, I have also come to realize the richness and diversity of plant life at the Sanctuary, making it a truly unique place in the world.
NEWS FROM
HOLT WOOD HERBS
by Anne Stobart

A medicinal forest garden in the UK

Anne Stobart is a clinical herbal practitioner and grower based in the UK. She was an intern at the Ohio Botanical Sanctuary in autumn 2010. She says, “In Ohio, I gained a deep respect for the plants and the people struggling to protect them and gathered many ideas for more sustainable cultivation and harvest back in the UK.” Since then the project Holt Wood Herbs, founded by Anne and her partner in the South West of England, has continued to grow, transforming an old conifer plantation into a vibrant medicinal forest garden. The aim has been to develop experience in cultivating and harvesting a range of medicinal trees and shrubs suitable for a temperate climate. At Holt Wood, Anne is growing both native and introduced plants. Using alternative herbs to endangered species and reducing air miles in imported herbal supplies have been key factors in deciding what to grow and harvest. For example, antispasmodic bark is harvested from native coppiced shrubs such as cramp bark (*Viburnum opulus*), while the young leafy twigs of introduced Virginian witch hazel (*Hamamelis virginiana*) are gathered for distillation into an antiinflammatory water.

Support for organic herb growers

In January 2018, Anne joined with a herbal practitioner colleague in organising a session on developing UK herb cultivation at the Oxford Real Farming Conference (ORFC). The ORFC is a stunning and eclectic yearly get-together of people from all kinds of growing contexts — agroforestry, organic farming, forest

Growing Virginian Witch Hazel (*Hamamelis virginiana*)
gardens, permaculture, and more. Subsequently, in 2019, a new Organic Herb Growers Co-operative is being launched in the UK, aimed at supporting herb growers using organic methods. Many herbs are imported for cosmetic, culinary, and medicinal use from Europe and the USA but could be grown or harvested in the UK. Despite FairWild and other initiatives, these imported herbs are often wild-harvested with little attention to sustainability or regeneration of plant populations. There are growing opportunities for UK organic farmers since the herb market continues to expand and, due to customer demand, manufacturers and producers are looking to ensure the sustainable provenance of supplies. It is planned that the Organic Herb Growers Co-op will help to link growers and producers while promoting networking and training to ensure the quality of herbal supplies.

**Courses in medicinal trees and shrubs**

Meanwhile, short courses are run at Holt Wood about designing a medicinal forest garden and harvesting medicinal trees and shrubs. A new course planned for 2019 is “Medicinal Herbs in Historical Practice”, in which participants will learn about native wild plants harvested in the seventeenth century and explore traditional preparations. Anne is currently writing a book on cultivating and using medicinal trees and shrubs in a temperate climate, *The Medicinal Forest Garden Handbook*. It will be published in early 2020 by Permanent Publications. You can see more about the Holt Wood Herbs project at [https://unitedplantsavers.org/holt-wood-herbs/](https://unitedplantsavers.org/holt-wood-herbs/) and see the website blog at [www.holtwoodherbs.com](http://www.holtwoodherbs.com).
1. THE PRIMACY OF MEDICINAL FLORA IN FOREST HABITATS

A little known fact regarding the species composition of Indian forest flora is that 40-70% of the flora across ecosystems and all the six vegetation types viz., tropical evergreen rain forests, deciduous or monsoon type of forests, principal dry deciduous forests and scrubs, semi desert and desert vegetation, tidal or mangrove forests and mountain forests are species of medicinal values. This makes medicinal plants the largest plant taxon in forest flora. In certain ecosystems easily accessible to human communities like the deciduous forests the proportion of medicinal taxa in the forest flora can be as high as 70%. In evergreen forests due to their inaccessibility it may be lower. A little reflection on this information may replace surprise with understanding about the reason for this high proportion and composition of medicinal plants in the floristic diversity in various habitats. The source of information about medicinal plants is from local human communities. The human need of plants is for food, fuel, housing, crafts, clothing and medicine. The number (not quantity) of species needed for food, fuel, housing etc. is far smaller than the species needed and discovered for their medicinal values for human, animal and agricultural use. Hence not only in India but across all societies in Asia, Africa, Latin America and even Europe, it is the fact that communities use the largest number of wild plants for healthcare. It is known that the first botanical garden in Europe in modern times was a physic (medicinal) garden established in the University of Pisa created by Luca Ghini in 1543. In India and several developing countries, the use of plant life for healthcare was a practice since 3000 BC, and it has remained...
a living tradition until now when millions of homes, community healers, folk veterinarians and farmers continue to use ecosystems specific medicinal plants.

1.1 Profile of India's medicinal flora.

An unambiguous and bold definition of “medicinal plant” is provided in traditional knowledge systems in India. The 6th century Ayurvedic text, *Ashtanga Hrudayam* gives an extremely emergent definition of medicinal plants as below.

“Jagatyevam anaousadhham na kinchit Vidyate dravyam vasatnanartha yogayoh”

This verse means that every plant has potential medicinal properties. However, at a particular stage of social history, plants are declared to be medicinal only when their properties or uses have actually been discovered by some system of medicine or health care. “Medicinal Plants” may thus be defined as those botanicals listed and used in Ayurveda, Siddha, Sowa-Rigpa, Unani, Homeopathy, Allopathy and the ecosystem and ethnic community specific folk systems of medicine.

A staggering 6581 species of medicinal plants are in use in more than 250,000 (TKDL – CSIR) unique formulations across these healthcare systems. This extent of the use of diverse botanicals is perhaps the largest in the world. The medicinal plants are sourced from all habitats and landscapes across the country from the trans-Himalayas to the coastal regions, from arid and desert habitats to mangroves and evergreen forests. Related to medicinal plant resources there exists sophisticated systemic knowledge of biology, pharmacology, diagnostics, therapy and pharmacy, which is documented in around 100,000 traditional medical manuscripts.

With the advent of cutting edge research in the frontiers of genomics, transcriptomics, proteomics, metabolomics, systems biology, pharmacogenomics and combinatorial chemistry, scientists are beginning to rediscover the value of systemic knowledge alongside their vast repository of natural resources.

The table below (TDU database 2019) enumerates the number of species used across different systems of healthcare in India.
As per a published report of NMPB (2017) out of 6500 medicinal plant species traditionally used by Indian communities, only 1622 botanicals corresponding to 1178 plant species are found to be in all India trade. Of these 42% are herbs, 27% trees and 31% are shrubs & climbers. Only 242 species witness high volume trade (>100 MT) annually. The major botanical families to which these species belong to are Fabaceae, Asteraceae, Lamiaceae, Malvaceae, Euphorbiaceae, Acanthaceae, Apocynaceae, Caesalpiniaceae, Solanaceae, Convolvulaceae, Mimosaceae, Phyllanthaceae and Rubiaceae. Diverse parts of plants (leaves, flowers, fruit, seed, bark, root, resin, gum) serve as medicinal raw drugs. Nearly 53% of the medicinal plant species are subject to destructive methods of harvest, as the medicinal parts harvested include underground parts, wood, bark & whole plant. It is observed that 85% of the traded species and 70% of the demand are met from wild sources.

**High Volume Traded Medicinal Plant List prepared by FRLHT**

<table>
<thead>
<tr>
<th>S.No</th>
<th>Botanical Name</th>
<th>Trade Name(s)</th>
<th>Major</th>
<th>Estimated Annual</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Abelsmoschus moschatus</td>
<td>Muskóana, Kasturilatika, Kasthuri vendai</td>
<td>C</td>
<td>100-200</td>
<td>100-150</td>
</tr>
<tr>
<td>2</td>
<td>Abies spectabilis</td>
<td>Talispatra, Talisa</td>
<td>HF</td>
<td>100-200</td>
<td>50-60</td>
</tr>
<tr>
<td>3</td>
<td>Abrus precatorius</td>
<td>Kunnimuthu, Kundumani, Gundumani, Gunja</td>
<td>W</td>
<td>200-500 [8=110]</td>
<td>90-110</td>
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<td>4</td>
<td>Abutilon indicum</td>
<td>Tutti Atibala</td>
<td>W</td>
<td>100-200</td>
<td>25-Oct</td>
</tr>
<tr>
<td>5</td>
<td>Acacia catechu</td>
<td>Katha</td>
<td>TF</td>
<td>500-1000</td>
<td>750-1600</td>
</tr>
<tr>
<td>6</td>
<td>Acacia nilotica subsp. indica</td>
<td>Babul, Kikar, Bubbula, Karuvelum</td>
<td>TF</td>
<td>1000-2000 [8=520]</td>
<td>75-125</td>
</tr>
<tr>
<td>7</td>
<td>Acacia senegal</td>
<td>Gum Arabic, Char Gond</td>
<td>I</td>
<td>&gt;20000</td>
<td>100-300</td>
</tr>
<tr>
<td>8</td>
<td>Acacia seyal</td>
<td>Gum Arabic, Talha Gum</td>
<td>I</td>
<td>2000-5000</td>
<td>100-300</td>
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<tr>
<td>9</td>
<td>Acacia sinuata</td>
<td>Shokkai</td>
<td>TF</td>
<td>1000-2000 [8=90]</td>
<td>25-95</td>
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<td>Acalypha indica</td>
<td>Khokoli, Haritamanjari</td>
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<td>100-200 [8=365]</td>
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<td>Achillea millefolium</td>
<td>Brinjaçif, Yarrow</td>
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<td>Aconitum heterophyllum</td>
<td>Atiss, Ativisa</td>
<td>HF</td>
<td>100-200</td>
<td>3500-10500</td>
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<td>Acorus calamus</td>
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<td>500-1000 [8=165]</td>
<td>50-65</td>
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<td>16</td>
<td>Aerva lanata</td>
<td>Cheroola, Pa ura</td>
<td>W</td>
<td>100-200 [8=200]</td>
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<tr>
<td>S.No</td>
<td>Botanical Name</td>
<td>Trade Name(s)</td>
<td>Major</td>
<td>Estimated Annual</td>
<td>Rate</td>
</tr>
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<td>17</td>
<td>Albizia amara</td>
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<td></td>
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<td>Chi aratha, Granthinimula</td>
<td>C</td>
<td>100-200</td>
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<td>21</td>
<td>Alpinia galanga</td>
<td>Rasnamool, Kuianjan, Perarathai</td>
<td>C</td>
<td>200-500</td>
<td>100-130</td>
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<td>Surankand, Surana</td>
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<td>23</td>
<td>Anacyclus pyrethrum</td>
<td>Akarkara, Akarkarabha, Akraharam</td>
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<td>200-500</td>
<td>200-250</td>
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<td>30-Oct</td>
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<td>paniculata</td>
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<td>150-220</td>
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<td>Musali safed, Satawar</td>
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<td>250-400</td>
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<td>Zingiber zerumbet</td>
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<td>242</td>
<td>Ziziphus Mauritiana</td>
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2. Key role of FRLHT - TDU in the recent history of Indian initiatives for in situ conservation of medicinal flora

The first comprehensive program for in situ conservation of medicinal plants in the country began in 1993 under a bilateral cooperation program between MoEF GoI and DANIDA.

FRLHT (Foundation for Revitalization of Local Health Traditions, Bangalore) recently legislated into the “Trans-Disciplinary University”, was the national technical coordinator of the medicinal plant conservation program. The execution of the program was undertaken by State Forest Departments (SFD) of Kerala, Karnataka and Tamil Nadu. During 1993-2004, 34 Medicinal Plant Conservation Areas (MPCAs) were established across different forest types to conserve wild populations of medicinal species. Subsequently 74 more MPCAs were established in 9 other states.
(Maharashtra, Andhra Pradesh, Madhya Pradesh, Orissa, West Bengal, Rajasthan, Arunachal Pradesh, Uttarakhand and Chhattisgarh) under UNDP supported CCF I (Country Coordination Fund), CCF II and Global Environment Facility (GEF). Altogether 108 MPCAs across 12 States were established during 1993-2014. Additionally, during 2008-2018 the National Medicinal Plants Board (NMPB) has independently established 102 MPCAs. Today the size of India’s MPCA network has grown to over 210 sites. Each MPCA is of an average size of 200 Ha, and they are distributed across 21 States of India. This is the largest insitu conservation network for conserving wild gene pools of medicinal plants in the tropical world. However, it is hardly known to conservationists and even at times to policy makers that India is a global leader in insitu conservation of medicinal plants.

In hindsight, on review of the MPCA's program in 2019, despite its size, the program in India has serious limitations, which if corrected can result over the ensuing decade in the creation of a globally significant conservation effort for medicinal botanicals that can benefit not only India, but countries all over the world.

3. In 2019: TDU working on a plan to build upon the conservation initiatives of the last two decades

There are 6581 species of medicinal botanicals documented in India. The actual number may in fact be much higher of the order of 10,000 species, but due to limited ethno medical studies across the length and breadth of India, the current documentation is of the order, as mentioned above. Obviously one needs to prioritize species for insitu conservation. Reflection on the matter would suggest that the priority should be on species that are in high volume trade and actual use and alongside key parameters like their endemism and current population status. It is also important to appreciate that the practical execution of a national program for insitu conservation of wild gene pools of medicinal botanicals can only be done at State levels with the active involvement of State Forest Departments. Thus the scientific execution of a contemporary, world class Medicinal Plant Conservation Program needs four kinds of prior information.

Firstly, knowledge about which are the medicinal species in high volume all India trade and of species that are largely sourced from wild forest habitats. This information is available today in the Trans-Disciplinary University from the work of the last two decades.

Secondly, it is necessary to analyze traded species that are endemics or assessed to be under higher degrees of threat as per IUCN criteria. This information is partially available today and more analytical and field work needs to be done to bring to the table rigorously determined information.

The third requirement is ready access to a database on the occurrence of the medicinal flora in all the 29 States and 7 union territories in India. This information is partially available and needs to be deepened.

Fourthly, it is essential to have reliable information on the natural geographical distribution of the highly traded endemic and threatened species. This information is largely available but incomplete in the geographical distribution databases established over the last two decades by the Trans-Disciplinary University. Ideally the distribution of medicinal species should be determined not only at State levels but also at taluka levels for meaningful applications of the knowledge of medicinal botanicals, particularly in the context of health and livelihood security.

It is based on the above four kinds of information at State level that forest managers and policy makers can deepen the efforts of the last two decades by focusing on highly traded, endemic and threatened medicinal taxa that are State specific.

3.1. Need for revisiting the MPCA program to 1993-2015

The already established 210 MPCAs were created during 1993–2015 across 21 States. Today they definitely need to be revisited to analyze how many of them are appropriate sites in the light of information available in 2019 which was not available in 1993-2015. In 1993 there was not even a comprehensive check list of the medicinal plants of India and no information on the 242 botanicals known today to be in high volume trade, several of which are endemics and threatened. The early MPCAs were therefore established in vegetation types and sites selected only...
on the criteria of capturing species diversity. However today MPCA sites have to be very carefully selected by State Forest Departments to capture gene pools of the breeding populations of highly traded endemics and threatened medicinal plants that occur in the particular State. In most of the 21 States the MPCA program is dormant. Some MPCAs may indeed harbor populations and gene pools of one or more of the priority 242 species, others may merely have populations of medicinal species, but they may not be significant sites in respect to carrying viable breeding populations of the priority species for *in situ* conservation.

Further refinement of the MPCA program will subsequently happen when State Forest Departments support genetic studies to select specific MPCA sites rich in gene pools of highly traded endemics and threatened species, including studies to determine the number of MPCAs needed for a particular medicinal species to conserve its hot spots of intra-specific genetic diversity across its geographical distribution range. For example, in the case of an endangered and threatened species like *Saraca asoca*, which is distributed from pockets in Kerala, TN, Karnataka, Maharashtra, Goa, Orissa, Meghalaya, Assam and Manipur, the gene pool cannot be captured in one MPCA site because of its genetic diversity. However, in the case of an endemic species like *Pterocarpus santalinus*, which is endemic to Tirupati,

Nellore, Kuddapa and Kurnool in AP, one MPCA site may suffice. A further quantum jump to the program will take place when genetic material of therapeutic value from MPCAs is made available to breeders for *ex situ* multiplication. It is also important to put in place sustainable Joint Forest Management (JFM) programs around MPCA sites to ensure community benefits from the conservation program.

**Red Listed (Near threatened and above) medicinal plants list prepared by FRLHT**
(Based on IUCN Red List Categories and Criteria)

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<td>295</td>
<td>Stereospermum colais(Dillwy) Mabb.</td>
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<td>296</td>
<td>Strychnos aenea A.W.Hill</td>
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<td>297</td>
<td>Strychnos colubrina L.</td>
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<td>298</td>
<td>Strychnos nux-vonica L.</td>
<td>VU</td>
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<td>299</td>
<td>Strychnos potatorum L.f.</td>
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<td>300</td>
<td>Swertia chirayita (Roxb. ex Flem,) Karst.</td>
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<tr>
<td>301</td>
<td>Swertia corymbosa (Griset.) Wight ex C.B.Clarke</td>
<td>VU</td>
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<tr>
<td>302</td>
<td>Swertia iaw (Wight ex C.B.Clarke) Burk.</td>
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<tr>
<td>303</td>
<td>Symlocos paniculata (Thunb.) Miq.</td>
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<tr>
<td>304</td>
<td>Symlocos racemosa Roxb.</td>
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<td>305</td>
<td>Syzygium alternifolium (Wight) Walp.</td>
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<td>306</td>
<td>Syzygium travancoricum Gamble</td>
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<td>307</td>
<td>Taccia integoflora Ker-Gawl.</td>
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<td>308</td>
<td>Taccia leontopetoides (L.) Kuntze</td>
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<td>309</td>
<td>Taxus ballichiana Zucc.</td>
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<td>310</td>
<td>Tecamema undulata (Sm.) Seem.</td>
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<td>Terminalia arjuna (Roxb. ex DC.) Wight &amp; Arn.</td>
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<td>Terminalia chebula Retz.</td>
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<td>Terminalia pallida Brandis</td>
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<td>Thalictrum dalzellii Hook.</td>
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<td>315</td>
<td>Thalictrum foliolosum DC.</td>
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<td>316</td>
<td>Tinospora sinensis (Lour.) Merr.</td>
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<td>Toona ciliata M.J.Roem.</td>
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<td>Urginea nagarjunae Hemadri &amp; Swahari</td>
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<td>329</td>
<td>Valeriana jatamansi Jones</td>
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<td>Vetaria macrocorpa B.L. Gupta</td>
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<td>Zanthoxylum armatun DC.</td>
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<tr>
<td>335</td>
<td>Zanthoxylum rhetsa (Roxb.) DC.</td>
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4. The rich Indian knowledge base of medicinal botanicals and its resonance with the emerging concept of ONE HEALTH

There are estimated to be 100,000 medical manuscripts containing knowledge of the uses of medicinal botanicals for human (Ayurveda), veterinary (pashu-ayurveda) and agricultural (vriksh-ayurveda) applications. TDU has initiated work on cataloging and digitization of medical manuscripts of India and completed cataloging of 17,000 manuscripts.

TDU believes that interfacing traditional knowledge of healthcare with advanced scientific research will contribute to two emerging global needs viz., Integrative Health Sciences and ONE HEALTH.

This is the future TDU vision for conservation and sustainable use of medicinal plants, and we will be pleased to collaborate with genuinely interested and competent international organizations for the execution of this vision.
5. The 10 innovation objectives we visualize during the ensuing decade (2019 – 2029)

1. Create an open access portal on native medicinal plants searchable at taluka, town, city, state, and regional levels with spatial information on occurrence, populations, trade and threat status, insitu conservation initiatives, local nurseries and herbal gardens and reliable applications of indigenous knowledge for human, vet and agriculture. The portal will be searchable at taluka, town, city, state, and regional levels.

2. Demonstrate a strategy for strengthening management of Medicinal Plant Conservation Areas (MPCA’s) by State Forest Departments (SFDs) and in the preparation of State level 5-year plans for conservation and sustainable use of medicinal plants.

3. Build Capacity in State level research institutes to engage in collaboration with SFDs for long term threat assessment and species recovery of medicinal botanicals.

4. Demonstrate methodology for conducting genetic variability and plant endophyte studies on selected clinically important species, which are critically endangered in order to support both insitu conservation and sustainable use programs for user groups.

5. Create network of home and community gardens and nurseries in selected talukas.

6. Demonstrate models for health and livelihood security programs executed by community based organizations in partnership with professional organizations.

7. Strengthen national herbarium and raw drug repositories of medicinal botanicals in TDU and regional herbaria in selected research institutes and botany departments.

8. Develop innovative medicinal plant extract library in TDU of traditionally used fractions and not only bio-actives.

9. Build Capacity in State Forest Departments, research institutes, regional herbaria, folk healers, citizen groups and community based organizations by designing and implementing specialized education and training programs for insitu conservation, threat assessment, species recovery, nursery techniques, herbarium and raw drug repository management, digitization techniques, assessment of genetic variability and indigenous knowledge of plants for human, veterinary and agricultural purposes.

10. Seed International Cooperation with relevant foreign universities and research organizations engaged in research and outreach on biodiversity and one health.

Darshan Shankar is Vice Chancellor of the Trans-Disciplinary University (TDU) Bangalore, India. TDU (www.tdu.edu.in) is a legislated form of FRLHT, which is a member of the Sacred Seeds Network.

REFERENCES
11. FRLHT analysis of proportion of medicinal plant species across 34 MPCAs in south India, verifiable from available botanical survey records of 34 MPCAs carried out by Prof Ravi Kumar, unpublished.
13. Ashtanga Hrudayam a foundational Ayurvedic text
14. Ayurveda Siddha, Sowa-Rigpa, Unani, Homeopathy, Allopathy and the ecosystem and ethnic community specific folk systems are the healthcare knowledge systems practiced in India
15. FRLHT-TDU database on Medicinal Plants of India, 2019
16. Traditional Knowledge Digital Library, CSIR 2019
MORE STORIES FROM THE UPS BOTANICAL SANCTUARY NETWORK

The United Plant Savers Botanical Sanctuary Network (BSN) is one of our most important ongoing projects. This is a network of over 100 landowners who have formally expressed their intentions to steward existing populations of at-risk native medicinal plants and/or reintroduce these plants to their farms and landscapes. We view these Botanical Sanctuaries as living seed banks managed by well-intentioned conservationists that are poised to spread the native germplasm across the greater landscape when conditions allow.

This concept of native plant repopulation after disturbance has been demonstrated at the original United Plant Savers Botanical Sanctuary in Rutland, Ohio. After the brief but devastating surface coal mining that took place on the sanctuary land in the early 60’s, followed by years of erosion and abuse before reclamation, native plants are returning to these previously mined areas of the sanctuary. This relatively quick repopulation of the disturbed land by native plants is primarily due to an undisturbed pocket of biodiversity that remained after the mining took place. Humans, other animals, and natural systems helped to spread seeds and plant material from this remaining “plant sanctuary” across the previously disturbed area to regenerate the land. We believe that the UpS Botanical Sanctuary Network has the potential to serve this same purpose on a larger, worldwide scale.

Land that is to be considered for BSN status should at least occasionally be open to the public for educational purposes and also be a place where research on native plants, medicinal plant conservation, and cultivation is undertaken. The sanctuaries in the network range in size from small city lots to large tracts of land consisting of hundreds of acres. There has been a surge in participation in the BSN over the past few years with 29 new sanctuaries in 2017 and 20 new sanctuaries in 2018. Please consider enrolling your land in the UpS Botanical Network. You can find more information on our website, www.unitedplantsavers.org, or by emailing office@unitedplantsavers.org.

Benefits of becoming a member of the Botanical Sanctuary Network include:

- A beautiful metal sign with the UpS logo on it to place at the entrance to your Sanctuary signifying this as a UpS Botanical Sanctuary.
- Priority Consideration for UpS Community Grants. Our Community Grants award $200-$500 dollars for community projects involving at-risk plant restoration and preservation. Sanctuary members are given first priority.
- Two weatherproof signs that designate the property as a Sanctuary being used for plant research and educational purposes.
- Botanical Sanctuary Resource Guide that includes where to order botanical signs for medicine trails, sources of grants and funding raising, useful books and information sources, etc.
- Listing on the UpS Website and social media channels.
- Opportunities to promote classes and workshops at your Sanctuary on our website and social media channels.
- Opportunities to publish your Sanctuary story on our website and in our annual Journal of Medicinal Plant Conservation.
“I’m a farmer who grows farmers.”

What started as an organic veggie and herb farm 8 years ago is now a thriving Certified Biodynamic® and organic medicinal herb farm and training center, as well as a United Plant Savers Botanical Sanctuary.

Founder Gabriel Noard recognized the need to work with his environment, including his community and saw the need for sustainably grown herbs that would protect the plant populations in his local Appalachian Mountains, and build the diversity and health of his farm, and ultimately the prosperity of his community.

What he found was that not only are the herbs endangered, but that the knowledge of how to grow, harvest, dry, and process these herbs in scale is also a much endangered art. Though the public’s desire to learn is growing, there are are only a handful of sustainable production size herb farms in the country—a country that spent $37 billion on natural supplements last year.

Within 3 years of orienting the farm to only medicinal herbs, the farm, Pangaea Plants has had visitors and applicants from all across the U.S., and as far as Vancouver, B.C., Kenya, and Beijing. The popularity led them to be voted Best Farm Start Up of the Country by the National Farm Bureau and put on the cover of Acres USA magazine. The demand for knowledge on how to sustainably supply our growing appetite for herbs is genuinely on the rise.

The increase in populations and interest in medicinal herbs has grown exponentially and the pros and cons of this have been felt throughout the wild. There is currently a culmination happening highlighting the importance of sustainably growing the domestic supply of medicinal herbs, and providing the country with safe, effective unadulterated herbs.
Pangaea Plants herbs, grown as close to better than nature as you can get, are Certified Biodynamic by Demeter USA, and the quality and freshness of their herbs are always remarkable. The farm is kept without additional inputs and the biodiversity of the land encouraged. Crops are alternated with cover crops, and tons of compost are made every year. The farm meets strict standards of agriculture set in place nearly 100 years ago. That includes placing value on the parts of a farm that are often absent from farms today, namely biodynamics. This includes valuing biodiversity and working with the energetic and cosmic forces that help keep the environment in balance. The centurion methods also naturally support regenerative agriculture, which has now become known as the surest way to combat climate change.

The company also produces these herbs according to modern strict federal standards outlined in the Food Safety Modernization Act (FSMA) that dictate further the safe growing and harvesting procedures for the human consumption of these sustainably grown herbs.

Pangaea Plants has developed an Herb Farmer Training Course to teach students the intricacies of the natural products industry. Led by industry experts, the course is designed for those serious in a career in the natural products industry. Three courses are offered—a spring and fall 6-week course and a summer long 6-month course. In one year there could be 40 new herb farmers trained, each able to convert 10 acres or more into sustainable certified biodynamic herb production.

The demand for sustainable domestic and local herb production can only be sustained if we ask for it. Support for this course has until now only been a conversation, and options for these herbs were nonexistent. The situation will only change as we continue to seek the sustainable herb farmer and their products.

Farmer Gabriel Noards’ thirst for connections to the herb growing community is insatiable. Comments, tricks, and tips for herb growing are graciously received. He and the farm can be reached at www.pangaeaplants.com.
FROM PASTURE TO SANCTUARY IN 10 YEARS: AN INTRODUCTION TO FARM CENTER’S WORK, TRANSFORMING THE WORLD ONE WATERSHED AT A TIME!

By Sophia Bowart and Neil Logan

The story of Hawaii’s current ecological predicament is similar to other colonized tropical islands. In short, the indigenous populations were subdued and relieved of their natural resources. This process has left deforested lands across the globe. The vast majority of Hawaiian forests has been logged and will never return to their former glory, state of abundance, and rare diversity. What can be regained, however are functional ecosystems and watersheds, but this will take focus, knowledge, and lots of hard work!

On the island hundreds of thousands of acres have been transformed from lush tropical evergreen forests of *Acacia, Erythrina, Santalum, Diospyros*, and others into grasslands of low diversity and dwindling productivity. On the Kohala mountain road in North Kohala, Hawaii, there are majestic views peering across the massive valleys made by Mauna Loa and Mauna Kea. A description of the ecology of the region before 1840 reads more like a well-manicured garden of great diversity and beauty than the eroded and desiccated landscape of 2019 (Tummons, 2002). Today, the garden has been replaced with acres of grass that stay brown at least half the year. Soils are eroding, and grasslands are failing due to overgrazing and lack of nutrients. Is there a plan for restoring degraded lands like these that have become so common all over the planet?

One plan, as presented and demonstrated by Forest Agriculture Research Management Center (FARM Center), is to take degraded pastureland and return it to forest, while building soil, producing value, and leaving behind rare endemic forest species.

In 2008, Sophia Bowart and her family purchased a 20-acre parcel on the Kohala Mountain and began planting trees to help restore the watershed. Forest Agriculture Research Management Center (FARM Center) was created six years later, with her husband Neil Logan, out of the need to systematize and develop functional agroforestry systems to share with the local community and expedite the process of adopting afforestation.

Costs are extremely high in Hawaii. For the past 100 years, cattle ranching has been very successful because it allows huge agricultural acreage to be managed with only a few laborers. The neighbors to the south of FARM Center are able to run 300 head of cattle on 300 acres with only 3 ranch hands! Unfortunately, tropical pastures don’t stay nutritionally rich for long because the nutrients are constantly being leached from the soils via rain. Today it is obvious that the pastures are worn out and need to rest, but the ranching operations can’t afford to rest the pastures long enough to bring them back to health. FARM Center has been working to research and demonstrate methods and systems for...
regenerating the soils and hydrologic cycles that are economically viable to allow for a transition in land use.

In 2010, Sophia Bowart and Neil Logan began to implement agroforestry systems inspired by Ernst Gotsch. At the start, there were only ~11 species identified on the property. It was essentially an open pasture with a *Casuarina* windbreak on the south and east boundaries. Initially the goal was to figure out how to get a foothold in the tight Kukuyu grass mat. Every seed and cutting that might be useful in the harsh pioneering environment was collected and planted. Plantings were dense and diverse to help overcome the extreme winds of the site and to combat the aggressive runner grass with sheer numbers. In time, the guilds began to radiate outward, shading out the grass. These efforts created just enough change in the conditions that new organisms became better suited. New, more desirable species were planted and/or moved in and replaced the Kukuyu grass without weeding, spraying herbicide, or really much management at all.

Today, (the end of 2018), the project has moved through the pioneering and accumulation phases of succession and is now at the very beginning of the abundance step. There is now what most people would consider a “forest” with at least 5-7 layers of stratification and emergent species reaching 40-60 feet in height. There are many productive fruit trees, NTFPs, and annual vegetable crops. The site stays lush and green all year even during times of drought. This has been accomplished without the use of pesticides, herbicides, and chemical fertilizers and with only rainwater to irrigate! In addition to the food and other products, there are endemic, long-lived species interspersed throughout the farm. These will be long-term (climax) species that will outlast us and replace the farmed species in time.

There are half a dozen rare endemic species at the site that will outlive all other tree crops such as *Santalum paniculatum*, *Acacia koa‘ia*, *Erythrina sandwicensis*, *Diospyros sandwicensis*, and *Tetraplasandra hawaiensis*. This project is a demonstration of how it is possible to take a degraded pastureland and return it to forest, while building soil, producing value, and leaving behind our rare endemic forest species. This essentially reverses the current trend in agriculture where forests are cleared to make way for crops, then turned into pasture,
later to be abandoned as wasteland. Currently, FARM Center is developing tools and educational materials to help others achieve what we are doing. As a project sponsored by United Plant Savers, FARM Center is honored to continue to give sanctuary to rare medicinal, edible, and culturally significant plants in the North Pacific.

Please visit our website (www.farmcenter.org) for more info and to find out how you can participate in helping restore watersheds everywhere. ■

REFERENCE:


QUOTING:


Neil Logan is an applied ethnobotanist trained in permaculture and Syntropic Farming. He has developed a bio-regional database of ethno-ecology, Hawai‘i’s first Living Fuel Break prototype, site-specific project plans, and has consulted on large acreage in arid Hawaii. In addition, Neil has been working with the United Plant Savers and the Hawaiian Reforestation Program to accurately assess the threats to Hawaiian Sandalwood and how to restore its habitat. Neil founded the consulting firm Integrated Living Systems Design in 2006 and now co-directs FARM Center.

Sophia Bowart has a background in non-profit development and sustainable business management. She initiated and managed the development of Mohala Lehua Farm (a forest farm devoted to regenerative Hawaiian ecosystems) in 2006 and completed her MBA in Sustainable Business Management in 2009. In addition to being a co-presenter and co-author with Neil Logan, she has also worked to promote the Buy Local/Eat Local Campaign and the Hawaii Alliance for a Local Living Economy (HALE). Her passions for the economics of sustainable agriculture have inspired her to co-found FARM Center.
Native grasses and wildflowers replace areas of turfgrass between the swales.

7 ACRE WOOD FARM
Burnsville, Virginia
Sanctuary Stewards: Joe and Anne Murray

Our Second Year as a Botanical Sanctuary

We’re writing this summary, comfortable in our little cottage, while the land around us is experiencing the polar vortex, gripping much of the nation this January (2019). While we’re concerned about the health of our plants, we take comfort in knowing our work to improve soil health improves the resiliency of our sanctuary and its ability to respond to ever-increasing severe weather events associated with climate change.

Upon seeing our United Plant Savers sign, visitors inquire about the purpose of a botanical sanctuary. We enjoy sharing information about the UpS Botanical Sanctuary Network and how we feel we’re contributing to the UpS mission. On several occasions we’ve had to clarify that the network initiative is a partnership between a non-profit organization and citizens volunteering their land and labor, not a state or federally funded program. These conversations often drift to a discussion of who should regulate the growing, harvesting, preparation, and dispensing of herbal medicine. Until the plants can speak for themselves, we’re happy to be their spokespersons!

Taking advantage of the significant slope of our land, we installed a series of swales, each with a themed plant (medicinal herbs, berries, and nuts). In the nut swale, hazelnuts and chinquapins should be of sufficient size in a couple years to provide enough shade and protection for the incorporation of “At-Risk” medicinal plants. Our task this year is to identify (and grow) plants associated with “At-Risk” medicinal plants in nature. In addition to planting these “companion” plants, or “guild members,” in our forest, we will incorporate them into our swales so “At-Risk” medicinals will feel right at home. Between our swales, we allow just enough space for walking paths and let the rest of the land go wild with native grasses and wildflowers.

Last year, we built an electric deer fence (image) to protect approximately 2 acres of cultivated land. During the planning phase, we thought it prudent to extend the perimeter of the fenced-in area to include a portion of the forest to separate deer from future plantings of ginseng (Panax quinquefolius) and goldenseal (Hydrastis canadensis). After our faithful BCS tractor (“Tina”) blazed
a path through the forest, we attached 2x4’s to metal fence posts at a 45-degree angle and affixed seven wires, spaced approximately 1’ apart. After about a month of “learning,” that involved regular repair and replacing of electrical lines, the deer “accepted” the proposition that this portion of the forest is “off limits.”

In 2018, we gave nine presentations on sustainable land care practice, highlighting our botanical sanctuary. These presentations addressed diverse audiences ranging from local garden clubs, native plant societies, patrons at public libraries, and even one at the Biodynamic Farming conference in Portland, Oregon. Joe taught a day-long workshop on woody plants at the Allegheny Mountain Institute, a permaculturally-inspired educational non-profit organization training young adults in creative food growing systems and public outreach. Anne was a featured herbalist at our local farmers market.

We appreciate the support and information made available by UpS on their website, Facebook posts, and in the Journal of Medicinal Plant Conservation. Reading about the great things happening at the UpS Botanical Sanctuary and the other sanctuaries in the network renews our sense of purpose and realization that our sacred 7 acres is part of a much greater whole.

In 2019, we continue to practice the three principles we learned at the Findhorn Foundation, an intentional community in Scotland: co-create with the intelligence of nature, practice inner-listening, and that our work is “love in action.”

Anne Bryan and Joe Murray
7 Acre Wood Farm
Burnsville, VA
www.7acrewoodfarm.org

Mowing a path through the forest for our new deer exclusion fence.
HERB MOUNTAIN FARM LEARNING AND LODGING CENTER AND BOTANICAL SANCTUARY
Weaverville, North Carolina
Stewards: Hart and Mary Morgaine Squire

Back in 1962, in Connecticut, Hart Squire led his first plant walk in the woods. He had been observing and tending the native plants behind his house—the trilliums (*Trillium* spp.), skunk cabbage (*Symplocarpus foetidus*), lady's slipper (*Cypripedium acaule*), and partridge berry (*Mitchella repens*). He wanted to share the unique beauty and medicine of these plants with others, so he gathered a group together and pointed out all these plants along the trail. At the age of 12, Hart knew that these green beings were special and needed to be honored and protected.

In 1968, Hart's family bought a piece of property in the Reems Creek Valley, in a small town called Weaverville, about 20 miles north of Asheville, North Carolina. His parents still lived in Connecticut at the time, but Hart moved on to the land and continued to deepen his relationship with the plants. He used all of his resources to improve the earth upon which he had landed—a piece of property that had been a local dump and had suffered so much erosion from poor land management that one gulley stood 20 feet deep and 30 feet wide!

Hart spent years clearing away trash and hauling it to the dump, while he spent every opportunity he could, hauling in any kind of manure, hay, wood chips, or leaves to make compost pile after compost pile to build up the soil. He was a young idealist and was determined to take a piece of land completely depleted (the gardens were really like subsoil—bright red and either sticky and slimy when wet, or hard as a brick when dry).

For many years, Herb Mountain Farm sold flowers, herbs, garlic, and vegetables to local stores and restaurants. All this time Hart was mostly ridiculed by the local Extension Service and his neighbors for not ever using chemicals for growing his gardens and small farm. Back then, the USDA didn't think Hart was a legitimate “farmer” and laughed at the idea that a farm could not use chemicals! Forty years later, few people realize what a “hard-row-to-hoe” Hart was determined to maintain, as organic agriculture has become more and more mainstream. Herb Mountain Farm is now celebrating its fiftieth year chemical-free!

Over the years this land has become a jewel of a place, mostly because Hart has dedicated his life to it. Hart sometimes shows people around and points out how Nature—way more than him—has regenerated and healed the land simply because of humans not getting in Her way.

In 2005, Mary Morgaine came on board as an employee on the garlic crew and began applying her knowledge of herbs and gardening while learning from Hart countless ways to steward Earth with consciousness and loving
tenderness. In 2012, they were married and began to grow a vision of turning the property into a learning center. Many energy efficient buildings were built or renovated here, and so they worked on transforming two of them into lodging for guests. They also established a mile long nature trail around the land and named it in honor of Mary Morgaine’s late partner and botanical explorer, Frank Cook and added numerous edible and medicinal gardens in addition to what was already here. Inspired by United Plant Savers Botanical Sanctuary Network, they became members in 2016 and continue tending to and bringing many plants into the different ecosystems of the property.

Every plant is like an old or new friend. The winter gets hard because we can’t see our friends as much, but we know they are there, just taking a long and hearty rest, like we all should! Our dear human friend, Marc Williams, Executive Director of Plants and Healers International, has also helped increase the diversity of plant life here by donating many native plants over the past few years. These include several Trillium spp., Jeffer sonia diphylla, Asclepias spp., Ligusticum canadense, Chamelirium luteum, and lots more! And thank you Robert Eidus of the NC Ginseng and Goldenseal Company for donating goldenseal (Hydrastis canadensis) starts, as we try to encourage and coax that remarkable being back into the landscape.

Hart starts a lot of the plants by seed, including spikenard (Nardostachys jatamansi), angelica (Angelica spp.), butterfly weed (Asclepias tuberosa), echinacea (Echinacea spp.), blazing star (Liatris spicata), lobelia (Lobelia spp.), wild senna (Senna hebecarpa), bee balm (Monarda spp.), and anemone (Anemone spp.). These are just a few of the thousands of seedlings Hart sets out every year.

Entrance to Frank Cook Nature Trail

Marc Williams admiring the Ragweed (Ambrosia psilostachya) that feeds the wildlife and gives major compost back to our soil every year

Hart has been working this land since 1970
Mary Morgaine sprinkles the trail with shooting stars (*Dodecatheon* spp.), yellowroot (*Xanthoriza simplicissima*), turtleheads (*Chelone* spp.), phlox (*Phlox* spp.), and horsetail (*Equisetum* spp.). We have over 150 species of trees and shrubs on the farm and over 550 species of perennial plants, not including ferns and mosses! This is our life work, our passion, to cultivate diversity and work in respectful planetary stewardship with this land. Our website (herbmountainfarm.com) has a complete list of our species inventory if you would like to read further.

Many years ago we also turned 105 acres of this property into a 100% protected conservation easement that is also available for hikes and plant-walking. The upper part of our mountain land holds even more botanical treasures, as a hike involves moving up through close to a thousand feet of altitude—like going from southern Pennsylvania to central Connecticut climate zones! Our buildings, nature trail, and gardens are at about 2800 feet.

We have just this year (2019) finished our remodel and opened our Learning and Lodging Center with the vision it will draw folks here looking for not only a place to rest and renew, but to also teach and learn—to find something of deep meaning from nature to take back out into the world and share with others. We are determined to leave a legacy of Herb Mountain Farm as a learning environment—drawing in teachers to hold classes and workshops centered on medicinal and edible plants and healing, as well as providing an advancement of study centered around restoring and honoring Nature.

We hope to meet some of you plant lovers along the journey! ▪

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**SLEEPING IN THE FOREST**

*by Mary Oliver*

I thought the earth remembered me,  
she took me back so tenderly,

arranging her dark skirts, her pockets
full of lichens and seeds.

I slept as never before, a stone on the riverbed,  
nothing between me and the white fire of the stars
but my thoughts, and they floated light as moths
among the branches of the perfect trees.

All night I heard the small kingdoms
breathing around me, the insects,

and the bird who do their work in the darkness.

All night I rose and fell, as if in water,
grappling with a luminous doom. By morning

I had vanished at least a dozen times
into something better.
To the land, I would imagine, this is no surprise. In her infinite wisdom, she will continue to heal herself and us along with her. Yet, what has surprised me the most about the journey is the people who have shown up. Like the plant allies who support us along the way (major kudos to beloved tulsi), we are still here because of the dear hearts who came to help lift up our vision, learn, connect, and work their asses off alongside us. Our farm is aptly named Sacred Roots Herbal Sanctuary. Little did we know at the time just exactly how much power the word sanctuary could hold. Year after year, interns, friends, volunteers, work crews, and total strangers have now become family. It truly takes a village. In the process, we’ve all been stretched, shaped, and transformed by this generous and wise land we call home. Who was healing whom?

Like life, this sanctuary is a perpetually evolving, organic work in progress and a labor of love to last a lifetime.

Hillary Banachowski and her husband Keir Knoll live in Shepherdstown, WV and feel grateful beyond words to be “growing where we’ve been planted.”

sacredrootswv.com
A short drive east from Charlottesville, Virginia is Sharondale Mushroom Farm, located in Cismont, in the Piedmont and the National Historic District of the Southwest Mountains. The land in this eastern part of Albemarle County is rolling, mixed-use farm and forest with large and small landholdings. Sharondale is about seven acres and has a historic house and outbuilding built by my great-great-grandfather, who was a house builder and a wheelwright. I know this place from my earliest memories. My grandmother lived here, and our family visited during summers and holidays. My earliest garden memories of picking ripe yellow tomatoes with my grandmother, playing in the boxwood “rooms” and eating Concord grapes to the point of bursting are here, too. My history here, living and working in Cismont for the past 15 years, the beautiful landscape, and fellow villagers make this a special place.

The farm is open land around the house with cultivated forest gardens and mixed, predominantly oak hardwood forest with a spring run and small wetland. I have been building the mushroom farm since 2004, when I arrived to live here. My grandmother had the foresight to grow several heirloom plants, including peonies, magnolias, and an old apple tree. I have been cultivating a forest garden of useful perennials into which a friend plants annual flowers, herbaceous perennials, and food plants.

In addition to maintaining the old house and buildings, current conservation practices on the farm include certified organic mushroom production; a rainwater catchment pond; no-till garden planting; composting; mulching; lumber-milling from storm-felled trees; recycling; permeable access roads; equipment maintenance; and increased time in the hammock.

Sharondale Farm offers workshops and occasional tours of the farm and gardens in the spring and fall. Some of our workshop offerings for 2019 include Growing Gourmet and Medicinal Mushrooms, Gardening with Mushrooms, Mushroom Log Inoculation 101, and a Piedmont Virginia CRAFT (Collaborative Alliance for Farmer Training) tour. The farm is available for private tours and workshops. We’ve had middle school students, farmer groups, and garden clubs visit.

I have close ties with the local herbalist community and know about United Plant Savers through them. In 2017, we joined United Plant Savers as a medicinal plant and mushroom sanctuary. The idea of local and regional plant repositories resonates with my belief that regional flora, fauna, fungi, and local knowledge (FFFK) of agroecosystems need sanctuary from exploitation of the capitalist kind. Development of such repositories happens primarily on small-scale farms that depend on ecological diversity for optimizing yields of food, medicine, and culture. I practice farming as a creative way to learn about Kingdom Fungi and its myriad relations to the world of FFFK. My study is the cult, culture, and agriculture of fungi.

Since starting Sharondale Mushroom Farm, I have come to appreciate more deeply the ancient relationship fungi have with our world and our culture. That is why I like to think of the farm as a fungus farm. I grow mushrooms—the fruit of Kingdom Fungi—but also work to understand fungi of all kinds and help hobby growers and small farmers develop the edge that supports diversity and resilience in their gardens, farms, and communities. This includes, for farmers, the ability to realize income from their farm byproducts and “waste”.

With increasing population pressure on forests and wildlands and changing land use, it is necessary to create citizen-driven local repositories of fungi representing landraces of edible, medicinal, and useful fungi. I’m working to ensure that Sharondale Mushroom Farm serves as a plant and mushroom (fungi) sanctuary and repository for regionally important species. We conduct ongoing research integrating fungi into agroecosystems and develop cultivation protocols for many species in our region.

At Sharondale Farm, cultivating mushrooms happens at the intersection of science and art. The farm culture bank holds more than 100 strains of gourmet and medicinal mushrooms. A few of the collected wild strains have been developed into productive food and medicine crops, and several have shown potential for bioremediation of diesel oil and hydraulic fluid, two common pollutants on small farms.

While growing mushrooms is a good business, approaching fungi from a broader perspective helps push the edge of knowledge about what is possible for our future as a species. Fungal allies co-create resilience in agriculture by improving the health of soil and crops and animals, and in our communities by providing healthy food and jobs. Our farm works to demonstrate that fungi can help heal the planet by supporting human designed ecosystems.

Sharondale Mushroom Farm is certified organic for mushrooms and mushroom spawn by Pennsylvania Certified Organic. Our facility is USDA-GAPs certified which is opening new markets for our specialty retail mushrooms. We are producing useful products with our spent mushroom substrate and developing our organic mushroom compost and vermicasting production.

Mark Jones is a farmer and mycologist, a founding member of the Piedmont, Virginia CRAFT, a member of the Pennsylvania Association for Sustainable Agriculture, Future Harvest Chesapeake Alliance for Sustainable Agriculture, and serves on the board of the Virginia Association for Biological Farming.
Turkey Tail (*Trametes versicolor*)

Oyster Mushroom (*Pleurotus ostreatus*)

Reishi Mushroom (*Ganoderma lucidum*)
UPS BOTANICAL SANCTUARY NETWORK: ACTIVE MEMBERS

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Hancock, NY

Heartmore Farm
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Sisters Sanctuary Guilford, VT

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SANCTUARIES!

A GREAT BIG WELCOME TO OUR NEWEST SANCTUARIES!
(Indicated in Green)

Spring 2019 |
VISIT THE SANCTUARY

Visit The Sanctuary
To learn about upcoming events, or to schedule a tour, a visit, or a rental, please contact: United Plant Savers Office: (740) 742-3455 or office@unitedplantsavers.org

Medicinal Plant Conservation Program
6 Weeks in Fall/Spring. Participants learn identification, conservation & cultivation, sustainable wild harvesting practices, medicine making & more.

Hostel In The Woods
- Rooms
- Camping
- Cabin
- Yurt

Talking Forest Trail
A 6-mile, information-laden trail that represents years of effort by UpS staff & our supporters. Experience the splendor of this forested herbal treasure chest!

Find the United Plant Savers Botanical Sanctuary on Airbnb and Hipcamp
NOW YOU CAN BOOK YOUR STAY THROUGH AIRBNB AND HIPCAMPS, TWO ONLINE MARKETPLACE AND HOSPITALITY SERVICES FOR PEOPLE TO RENT SHORT-TERM LODGING.

As a member of UpS you can experience the power of our botanical sanctuary yourself. Along with your Journal of Medicinal Plant Conservation, sticker, and discounts to United Plant Savers events, UpS members have special privileges at the United Plant Savers Botanical Sanctuary.

The UpS Botanical Sanctuary is the exact location where, 23 years ago, Rosemary Gladstar, Paul Strauss, and a few others first began to talk about the idea of conserving these plants that were providing medicine and income to an ever-growing population of people.

Members are invited to hike The Medicine Trail where, if your timing is right, you will see American ginseng, black cohosh, bloodroot, blue cohosh, false unicorn root, trillium, one of the largest patches of goldenseal anywhere in the world, and more. Beyond the Medicine Trail lie The Main Hollow Trail, Oak Walk, Reclaim Trail, Heart Pond, and miles of additional paths to explore.

Come for the day or spend some extended time with us and really allow yourself to fall in pace with the plants. We have overnight lodging including The Yurt, which offers kitchen, bathroom with shower, and gas heat; Barn Rooms with two single beds, electric heat, and shared bath; the rustic Tornado Cabin nestled in the middle of the forest with two single beds; and in addition we have plenty of primitive camping sites. For more information visit www.goldensealsanctuary.org. If you would like to visit, just email office@unitedplantsavers.org or call 740-742-3455 to get on the calendar. I look forward to sharing this sanctuary with you!
Medicinal Plant Conservation Certificate Program

Hard Working?
Motivated to learn about medicinal plants?
Want to experience United Plant Savers’ 360-acre plant sanctuary in Ohio?

UPCOMING SESSIONS

SUMMER 2019
July 8th to August 16th

SPRING 2020
April 13th to May 22nd

FALL 2020
August 31st to October 9th

Apply now for early acceptance!

A HANDS-ON PRACTICAL APPROACH

Interns take classes from local teachers and work on maintenance, conservation, and cultivation projects for 30-40 hours per week. The importance of interns spending time in the woods and developing relationships with the plants is emphasized. Internship program coordinator John Stock oversees the program and is the caretaker for the interns while they are here. Local teachers Paul Strauss, Chip Carroll, Lonnie Galt-Theis, and Tanner Filyaw each lead work crews and apply their own personalities and technique to teach plant identification and uses. In addition to these core teachers, interns will learn from clinical herbalist Caty Crabb, longtime herbal educator Rebecca Wood, UpS Advisory Board member Mark Cohen, artist and flower essence practitioner Katherine Ziff, and more. Interns will work daily with “at-Risk” and endangered species, perform general farm maintenance, landscape maintenance, plant identification, sustainable wild harvest techniques, medicine making, and more!

Application available online at
www.unitedplantsavers.org
office@unitedplantsavers.org
740-742-3455

Funded in 2016 by an Ohio EPA Environmental Education Fund Grant, the Reclaim Trail guides hikers through the story of past land use and its consequences, current restoration efforts both intentional and natural, and how the power of sanctuary can heal the land and spread biodiversity.
2019 ANNUAL MEDICINAL PLANT CONSERVATION AWARD
— Recipient —
JULIET BLANKESPOOR
by Emily Ruff

“Gathering medicine and food from the wild connects us to the natural world, our ancestral heritage, and our wild animal selves. Being involved in our sustenance and healing is boldly empowering and ties us into simple living and the change of the seasons. By gathering our own medicines carefully and conscientiously, we can be assured that our medicines are fresh, of high quality, and gathered in a sustainable fashion.” — Juliet Blankespoor

Juliet Blankespoor, director and primary instructor of the Chestnut School of Herbal Medicine, has been selected as the recipient of the 2019 Medicinal Plant Conservation Award.

Juliet has been sharing her passion for plants for over twenty-five years through herbalism and botany education, with a degree in botany from the University of Florida. Through her school’s involvement in the UpS Partner in Education, Juliet has demonstrated depth of commitment as a plant steward by not only engaging her students with curriculum that promotes responsible wild-crafting and regenerative herb cultivation, but she directly sponsors a UpS membership for students enrolled in her Online Herbal Immersion Program.

In addition to sponsoring student memberships, Juliet’s website is rich with practical plant stewardship resources for anyone looking to grow deeper roots in their plant relationships. Through blog articles such as “Foraging for Wild Edibles and Herbs: Sustainable and Safe Gathering Practices,” “Cultivating Medicinal Herbs, with a Focus on At-Risk Woodland Medicinals,” and “Growing Medicinal Herbs from Seed,” Juliet provides practical advice and time-tested techniques for novice and experienced herbalists alike to embrace the nuances of relationship with our ecology and how we can honor and respect the plants whose communities are threatened.

These heady titles belie the inspirational wordsmithing therein—Juliet offers technical knowledge through the lens of her relationship with the plants, which always captures the beauty of the green world. Her voice makes clear the depth of her intimacy with the wild magic of plants and sparks a reminder of the humbling healing potential of the plant-human connection. With stunning videos and photos, her artistic eye brings each reader and student into the green world in a way rarely found alongside such practical scientific teachings.

Juliet’s generous philanthropy-in-practice does not stop there. Her school sponsors restorative justice and ecological harmony in the plant world along with nine other organizations, such as One Million Redwoods Project, Organic Growers School, and Plants and Healers International (whose director, Marc Williams, was recipient of this award in 2016). In addition to promoting responsible plant stewardship, Juliet also supports the herbalist community by continuously providing access to free educational resources, and also by awarding 8+ annual scholarships through non-profit partners, such as Grow Where You Are, Harriet’s Apothecary, and Soul Fire Farm, as well as 90 enrollments to date through her own need-based diversity scholarship program.

Juliet founded the Chestnut School of Herbal Medicine in 2007 and serves as the school’s primary instructor and Creative Director. She’s been a professional plant-human matchmaker for close to three decades. Juliet caught the plant bug when she was nineteen and went on to earn a degree in Botany. She’s owned just about every type of herbal business you can imagine: an herbal nursery, a medicinal products business, a clinical practice, and now, an herbal school.

These days, she channels her botanical obsession with writing and photography in her online programs and here on her personal blog, Castanea. She’s writing her first book: Cultivating Medicinal Herbs: Grow, Harvest, and Prepare Handcrafted Remedies from Your Home Garden.

Juliet and her houseplants share a home with her family and herb books in Asheville, North Carolina.

Her photographs, videos, and writings can be found at chestnutherbs.com, along with her school’s Online Herbal Immersion Program—the most in-depth course available on cultivating medicinal herbs and at-risk medicinals.
LOOKING BACKWARDS...
MOVING FORWARD

By Rosemary Gladstar

Founding President, United Plant Savers

I've just spent the afternoon reading the draft of the newest UpS Journal ~ the very one you have in your hands now. I was so impressed by the wide range of interesting articles that span the world and by the passionate voice UpS has become for the plants on a global scale. Where else would we find such revealing and thought provoking information on popular herbs like White Sage, Hawaiian Sandalwood, Ginseng, Goldenseal ~ articles that share not only their medicinal uses and history, but how to use them judiciously, with conservation, not consumption, as the primary goal. I especially loved reading about our Sanctuary members and the good work they are doing in their local communities. I am inspired by how even the smallest plot of land can host such diversity, becoming a haven for pollinators as well as the pollinating ground for families, children and local communities to ignite their interest in medicinal plants, their importance, and their survival.

As we stand on the crest of United Plant Saver's 25th anniversary, I can't help reflecting back to our humble beginnings, how much we've accomplished, and how far we have yet to go.

United Plant Savers began simply, in a moment of inspiration with a small group of dedicated plant lovers. It was 1994. We met in one of the small dorm rooms at Wheaton College during the second International Herb Symposium. Each person I'd invited to join in that circle had a long and deep connection with the plant world and was involved in one way or another in an herbal business. Though we were all herbalists, our experiences and backgrounds were diverse ~ there were herbal practitioners, medicine makers, educators, seed savers, wild crafters, an herbal manufacturer and an herb farmer in the circle. While we were all excited to see the interest in herbs and herbalism burgeoning so quickly, we had growing concerns about where the plants were coming from. Who was growing these plants for the seemingly insatiable appetite of the herbal industry? Were they being cultivated or coming from the wild? And if so, what effect did wild harvesting have on these native plant populations? Did anyone even know?

Our small gathering that auspicious day at Wheaton College began with the questions; is there a problem with our wild medicinal plant populations? And if there is a problem, what are we going to do about it? As we sat crammed into that little room and talked late into the afternoon, we realized we all had similar concerns; happy to see the interest in herbs growing, but alarmed at the extent that wild populations of medicinal plants were disappearing. It was a 'paw paw moment', one of those golden lushest moments when lives are about to change. This was the first opportunity that we had to talk with others who were sharing similar thoughts about our wild medicinal plants; and in our shared enthusiasm and optimism we decided on the spot we were ready to do something about it. We had no idea what that looked like or what would be involved. Or that it would require endless years of hard work, enduring dedication, unrelenting steadfastness, and an open heart. Nor did we realize at the time how rewarding the work would be, or how disappointing and frustrating, at times.

Early on we adopted as our mantra Margaret Meade's now famous quote, “Never doubt that a small group of thoughtful committed citizens can change the world. Indeed, it's the only thing that ever has.” These became the guiding words and a source of inspiration for folks at United Plant Savers as we went about changing our small part of the world plant-by-plant, seed by seed, sanctuary by sanctuary. While there is always admittedly more work that needs to be done, I think we can be rather pleased about what a small group of thoughtful committed herbalists were able to accomplish in these past 25 years. We have hosted countless educational events on medicinal plant conservation throughout the U.S. and introduced medicinal plant conservation into the curriculum of most herb schools. We have written and printed numerous educational publications, including Planting the Future, which remains an important book on native plant conservation. Through a tremendous amount of creative effort we compiled a list of At Risk and To Watch Plants and a tool for assessing which plants are most vulnerable to over harvesting. UpS's Journal Medicinal Plant Conservation has grown from a 16-page home printed newsletter to a full blown highly regarded publication. We have given away thousands of native medicinal plants and seeds for members to plant and have created a network of member owned UpS Botanical Sanctuary's that span the country. And, of course, there is our jewel, the United Plant Savers Botanical Sanctuary in South Eastern Ohio. This beautiful 350 acre plant rich Sanctuary is one of UpS's lasting treasures to plant lovers everywhere, a place where our children's children, and their children after them can come to see the native medicinal plants that in all good faith will be thriving for generations to come.

We've come a long way in the past 25 years, with a lot of work under our shovels, and there's still a long way to go in front of us. The work can get overwhelming and heartbreaking at times, but so long as we have good people willing to listen to the plants, to take a stand for them, and to give back even just a little of what the plant world gives to us, then we will be successful in our work. Never doubt what a small group of thoughtful committed impassioned plant lovers can do...we are replanting the world, plant by plant, seed by seed, sanctuary by sanctuary.
PARTNERS IN EDUCATION (PIE)

United Plant Savers Partners in Education program is designed to enrich school programming and students’ education through instilling awareness and ethics in regards to the conservation of our native medicinal plants. Schools and apprenticeship programs that have enrolled in the Partners in Education program have provided their students the opportunity to receive all of the benefits of membership at a discounted ‘student-friendly’ price. These schools and programs are also given educational resources and curricular support as well as provided the opportunity to promote classes and workshops on our website and social media channels. For more information about our Partners in Education program, please visit our website: www.unitedplantsavers.org. United Plant Savers holds a special place in our heart for our Partners in Education Schools and would like to thank the following participating 2018-2019 schools and programs:

- Appalachian Ohio School of Herbal Medicine
  Rutland, OH
  herbsheal.com

- ArborVitae School of Traditional Herbalism
  New York, NY
  arborvitaeny.com

- Bastyr University Herbal Sciences
  Kenmore, WA
  bastyr.edu

- Blazing Star Herbal School
  Ashfield, MA
  blazingstarherbalschool.typepad.com

- Blue Otter School of Herbal Medicine
  Fort Jones, CA
  blueotterschool.com

- Botanica
  New River, AZ

- Chestnut School of Herbal Medicine
  Weaverville, NC
  chestnutherbs.com

- Dandelion Herbal Center
  Kneeland, CA
  dandelionherb.com

- Florida School of Holistic Living
  Orlando, FL
  holisticlivingschool.org

- Green Comfort School of Herbal Medicine
  Washington, VA
  greencomfortherbschool.com

- Green Girl Herbs and Healing
  Hopewell, NY
  greengirlherbs.com

- Green Turtle Botanicals
  Nashville, IN
  greenturtlebotanicals.com

- Greenwood Herbals
  Limerick, ME
  greenwoodherbals.com

- Herb Pharm
  Williams, OR
  herb-pharm.com/connect/internship

- Herbal Academy of New England
  Bedford, MA
  herbalacademyofne.com

- Herbal Sage Tea
  Pomeroy, OH
  herbsage.com

- Heartstone Herbal School
  Van Etten, NY
  heart-stone.com

- Jean’s Greens
  Castleton, NY
  jeansgreens.com

- Luna Farm Herbal Gardens and Botanical Sanctuary
  Troy, IL
  lunaherbcoco.com

- Magnolia School
  Glouster, OH

- Maryland School of Integrative Health
  Laurel, MD
  muih.edu

- Milagro University of Herbal Medicine
  Orlando, FL
  milagroschoolofherbalmedicine.com

- Mockingbird Meadows Eclectic Herbal Institute
  Marysville, OH
  mockingbirdmeadows.com

- Moonwise Herbs
  Stoughton, WI
  moonwiseherbs.com

- Northwest School of Botanical Studies
  McKinleyville, CA
  herbaleducation.net

- Omnigreen
  Port Clinton, OH
  omnigreen.com

- Owlcraft Healing Ways
  Scottsville, VA
  owlcrafthealingways.com

- Purple Moon Herbs and Studies
  Hartly, DE
  purplemoonherbstudies.com

- The Resiliency Institute
  Naperville, IN
  theresiliencyinstitute.net

- Sacred Plant Traditions
  Charlottesville, VA
  sacredplanttraditions.com

- Sage Mountain
  East Barre, VT
  sagemountain.com

- Thyme Herbal
  Amherst, MA
  thymeherbal.com

- Twin Star Herbal Education
  New Milford, CT
  twinstarherbal.com

- Vermont Center for Integrated Herbalism
  Montpellier, VT
  vtherbcenter.org

- Wintergreen Botanicals Education Center
  Allenstown, NH
  wintergreenbotanicals.com
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THANK YOU FOR YOUR GENEROUS CONTRIBUTIONS & SUPPORT

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• William Chioffi
• Shay Clanton
• Bevin Clare
• Marilyn Comb
• Talitha Daddona
• Rosalee de la Foret
• Alyssa Dennis and William Keefes
• Olga Donohue
• Cathi Duffy
• Colleen Frenzel
• Jen Frey
• Eric Friedlander
• Sylvia Gaboriault
• Wallin Gina
• Amy Goodmankiefer
• Karl Graf
• Howard and Gayle Gross
• Nadav Haggith
• Louise Harmon
• Tanya Hughes
• Martha Hughes
• Barth Irene
• Cathy Johnson
• O'Hearn Kelly and Paul
• Kelly Kindscher
• Eleanor Kuntz
• Katinka Locascio
• Helen Lowe Metzman
• Tara MacLeod
• Tara MacLeod
• Kathleen Maier
• Michael McGuffin
• Bruce McGuire
• Carpenter Melanie and Jeff
• Elizabeth Mersky
• Helen Lowe Metzman
• Curtis Mischler & Diomira D'Agostino
• John Munsell
• Christina Neumeister
• Mark and Kathryn Niemeyer
• Darlene Nolan
• Kelly and Paul O'Hearn
• Andrew Philipsborn
  in honor of
  Maggie Philipsborn
• Audra Phillips
• Denise Piazza
• Todd Quackenbush
• Emily Ruff
• Gerard Rushe
• Arianna Wack
• Julie Wentzel
• David Winston
• Terri Wright Knapke
• Helen Wright Miller
  in memory of
  Ms. Shauna Wall
• Steven Yeager

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HERBAL BUSINESS MEMBERS

21 Drops
Delray Beach, FL
21drops.com

All Good Products
Morro Bay, CA
allgoodproducts.com

Alkemists Laboratories
Garden Grove, CA
alkemist.com

Alternatives For Wellness
Waltham, MA
alternatives-eds.com

American Ginseng Pharm
Preston Hollow, NY
american Ginseng pharm.com

Amulette Studios
Bend, OR
amulettestudios.com

Ancestral Herbology LLC
Berlin Heights, OH
ancestralherbology.com

Angelina Organic Skincare
Bend, OR
angelinaskincare.com

Apoterra Skincare Co.
Astoria, NY
apoterra.com

Apoterra Tinctura
Denver, CO
apoterra.com

Aromafloria
Huntington Station, NY
aromafloria.com

Atmosphoria LLC
Morrisville, VT
www.atmosphoria.com

Barefoot Botanicals
Doylestown, PA
barefootbotanicals.net

Botanical Kitchen
Waltham, MA
botanicalkitchen.com

Desert Sage Herbs
Chandler, AZ
desertsageherbs.com

Earth Mama Organics
Clackamas, OR
earthmamaorganics.com

Elixirs for Life
Calgary, Alberta
elixirsforlife.ca

Empowered Herbs
Chimacum, WA
empoweredherbs.com

Equinox Botanicals
Rutland, OH
equinoxbotanicals.com

Essence of Thyme Ltd
Langley, BC
essenceofthyme.com

Everyday Alchemy Tonic Co.
Laytonville, CA

Five Flavors Herbs
Oakland, CA
fiveflavorsherbs.com

Frontier Natural Products
Norway, IA
frontiercoop.com

Gaia Herbs
Brevard, NC
gaiaherbs.com

Genie’s Dream
Gatlinburg, TN
genaidsbath.com

Gig Harbor Naturopathic Medicine
Olympia, WA
Gig Harbor Naturopathic

Golden Apple Healing Arts, LLC
Neenah, WI
drmarthallster.com

Golden Needle Acupuncture
Fletcher, NC
goldennneedleonline.com

Goldthread Herbs
Florence, MA
goldthread-herbs.myshopify.com

Goosefoot Acres Inc
Valley City, OH
Goosefoot Acres

Green Dragon Botanicals
Brattleboro, VT
greendragonbotanicals.com

Green Girl Herbs & Healing
Hopewell Junction, NY
greengirtherbs.com

Guayaki Sustainable Rainforest Products
Sebastopol, CA
Guayaki.com

Health & Wisdom Inc.
Arlington, MA
health-and-wisdom.com

Hedge Witch Apothecary
Gibsonia, PA
hedgewitchapothecary.com

Herb Pharm
Williams, OR
herb-pharm.com

Herbal Lodge
Petskye, ME
herbalodge.com

Herbal Revolution
Union, NJ
herbalrev.com

Herbalism Roots
Denver, CO
herbalismroots.com

Herbalist & Alchemist, Inc.
Washington, NJ
herbalist-alchemist.com

Herbiary
Asheville, NC
herbiary.com

Herbolab
Taguig, Metro Manila
herbolab.com

Herbs Etc.
Santa Fe, NM
herbsetc.com

Herbs For Life
York, ME
herbs-for-life.com

Herb Wise Therapeutic Botanicals
Cobb, CA
herbwisetherapeutictobotanicals.com

Higher Mind Incense
Portland, WA
highermindincense.com

Homestead Apothecary
Walnut Creek, CA
homesteadapothecary.com

Insight Herbals
Macedon, NY
insightherbals.com

Jade Mountain Wellness
Burlington, VT
jademountainwellness.com

Jean’s Greens
Castleton, NY
jeansgreens.com

Kim Manley Herbals
Dillon Beach, CA
kimherbals.com

Kroeger Herb Products
Boulder, CO
kroegerherb.com

Kuumba Made
Tucson, AZ
kumbamade.com

La Abeja Herbs
Austin, TX
labeaherbs.com

Laura’s Botanicals
Richmond, VA
laurabotanicals.com

Leaf People Skin Care
Basalt, CO
leafpeople.com

LearningHerbs LLC
Shelton, WA
learningherbs.com

Loess Roots
Stan ton, NE
loessroots.com

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Stan ton, NE
loessroots.com

Mako Labs LLC
Delray Beach, FL
21drops.com

Mama Jo’s Sunshine Herbals
Indian Harbor, FL
mama-jos.com

Maison/Made
New York, NY
maisonmade.com

Medicine Hunter Inc.
Lev ert, MA
medicinehunter.com

Mindful Life Nutrition
Dallas, TX
mindfullifenutrition.com

Mom’s Organic Market
Rockville, MD
mom’sorganicmarket.com

Moonmaid Botanicals
Cosby, TN
moonmaidbotanicals.com

Mother Earth Foods
Parkersburg, WV
monearthfoods.com

Mountain Rose Herbs
Eugene, OR
mountainroseherbs.com

Natural Hope Herbs
Millersburg, NY
naturalhopeherbs.com

New Chapter
Brattleboro, VT
newchapter.com

Northica Media
Winnipeg, MB, CAN
northica.com

Oneka Elements
Freleighburg, QC
onekaelements.com

Oshala Farm
Grants Pass, OR
oshalafarm.com

Perry Hill Farm
Millbrook, NY
perryhillfarm.com

Radicle Wellness
Bishop, CO
radicewellness.com

RE Botanicals
Cotati, CA
rebotanicals.com

Red Moon Herbs
Asheville, NC
redmoonherbs.com

Ridge Runner Trading Co.
Boone, NC
ridge runner trading.com

Root Alchemy
Lake Placid, NY
root-alchemy.com

Roots Medicine Gardens
Denver, CO
rootsmedicinegardens.com

Sacred Moon Herbs
Dripping Springs, TX
sacredmoonherbs.com

Sacred Plant Traditions
Charlotteville, VA
sacredplanttraditions.com

Sage Mountain Retreat Ctr.
East Barre, VT
sagemountain.com

Sandy Mush Herb Nursery
Leicester, NC
sandy mush herbs.com

Seven Arrows Farm
Attleboro, MA
sevenarrowsfarm.com

Solidago School of Herbalism
Deer Isle, ME
solidagoherbalschool.com

Southern Oregon Bokashi
 Talent, OR
sobokashi.com

Starwest Botanicals
Sacramento, CA
starwest-botanicals.com

The Garden Continuum, Inc.
Bellingham, WA
thegardencontinuum.com

The Grow Network
Paonia, CO
thegrownetwork.com

The Royal Treatment Veterinary Center
Chicago, IL
royaltreatmentveterinarycenter.com
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