

Yew Mountain Center

*A Case Study By The
Livelihoods Knowledge Exchange Network*

BACKGROUND AND TRAINING

Growing up in Lewisburg, West Virginia, Will Lewis developed a keen interest in medicinal forest botanicals, along with a growing awareness of the need to steward both knowledge of, and habitats for, the botanical diversity so distinctive to Central Appalachian Forests. "I come from people that have been in West Virginia for many generations," Will said. "And my mother grew up on the land and they grew their own food. And you know, before forest farming was a thing, that's just what people did in West Virginia. That's how they lived. . . . And I just started having a passion about it in high school, growing food. In college I studied horticulture with an emphasis on sustainable agriculture, and just fell in love with plants in general, and since college, I have worked on various farm projects and just kind of grew into medicinal plants. . . and making my own medicine."

With Erica Marks, he helped establish the Yew Mountain Center in Lobelia, WV, as a forest farming demonstration site, educational hub, and seed source for aspiring forest farmers in Central Appalachia. The Yew Mountain Center provides an educational hub and resource center for aspiring forest farmers in West Virginia. To speed up the cultivation of agroforesters in the state, Will Lewis has worked with agroforestry leaders throughout the region, including Ohio's Rural Action, Virginia Tech, and Appalachia Sustainable Development's Herb Hub. Yew Mountain Center's production of medicinal botanicals is designed to facilitate its primary objectives of teaching and supplying plant stock to those who want to start their own agroforestry businesses.

CULTURAL VALUES AND MEANING

Will Lewis recognizes the strong cultural ties between people and the forests of West Virginia. Over the past



"One of my favorite things about farming is being able to step back and view the whole system and be able to work with all the pieces of that system too – it's kind of a beautiful thing about agroforestry."

–Will Lewis

two centuries, the management of the region's natural resources for coal, timber, and intensive agriculture have affected the region's biodiversity. People employed by coal and timber industries often provided for their households by hunting, fishing, and harvesting understory botanicals for sale in global markets. These practices, signaled in place names like "Seng Creek" and "Root Camp Hollow," are highly valued as recurring occasions for spending time in the woods with family and friends, while meeting economic goals. Over many generations, in woodland communities the plants themselves have become iconic of such values and opportunities.

The global demand for roots of medicinal botanicals like ginseng, black cohosh, and yellow root

(goldenseal, *Hydrastis canadensis*), as well as foods like ramps, puts pressure on those populations. The ginseng harvest is now regulated by the US Fish and Wildlife Convention on International Trade in Endangered Species (CITES), and there is rising concern about the continuing availability of other high value roots. Conservation policies can have an impact on the historically deep culture surrounding hunting and foraging. Expanding market demand beyond the roots to aerial parts of valuable medicinal plants, agroforestry can facilitate a shift that is both culturally and ecologically sustainable. Toward that end, and in the spirit of citizen science, Will Lewis is exploring horticultural methods that can boost the populations of these plants, while enhancing the potential for products that keep roots in the ground.

Ramps are widely celebrated in the mountains as the first wild greens to emerge in spring. In recent decades, their rising popularity in metropolitan areas has put pressure on populations of wild ramps. As with ginseng and goldenseal, the leaves of ramps could be harvested and used or consumed without extracting the roots. Unlike ginseng and goldenseal, ramps produce and lose their leaves months before they bloom and go to seed. While many mountain communities hail the emergence of ramps in the spring by feasting communally on the tubers and greens, Will Lewis watches for the seeds in late summer/early fall, which he collects in order to plant and distribute to agroforesters propagation. At the same time, he has transplanted ramps from the higher altitudes they prefer closer to the road, in order to educate the visiting public about the life cycle, ecology, and conservation of ramps. Ramps open a portal onto the complexities of agroforestry in a zone of microclimates, helping to illustrate the role played by elevation, aspect (north-facing slopes are cool and moist; south-facing slopes tend to be dry and warm), and drainage. Stopping at a ramp patch on a tour of the beds, Will begins: "So this patch of ramps here was transplanted two springs ago. These were transplanted bulbs that are now flowering, producing seeds. We have a bigger patch of ramps up on the mountain. It's probably 3,200 feet. It's on a direct south-facing slope which is rare, but again showing the exceptions are always there, especially when you get higher up in the mountains. It's still cool and moist up there, so ramps like it. We brought these down closer just to be more accessible and to spread our ramp populations around."

In late July, ramps illustrate the importance of seed collecting in Central Appalachian agroforestry. "And you can see here that we're producing seed right now," Will continues. "The seeds are still a little young with those green husks. We'll wait for those to brown out

and then they'll kind of crack and you'll see a black shiny seed coming through. Once that seed starts to dry, then that seed is ready to be harvested. And



*Ramps going to seed in late August, Randolph County, WV.
Photo by Mary Hufford.*

really, for anyone that's trying to do some bigger ramp production, if you've got time, but not labor, I recommend starting by seed."

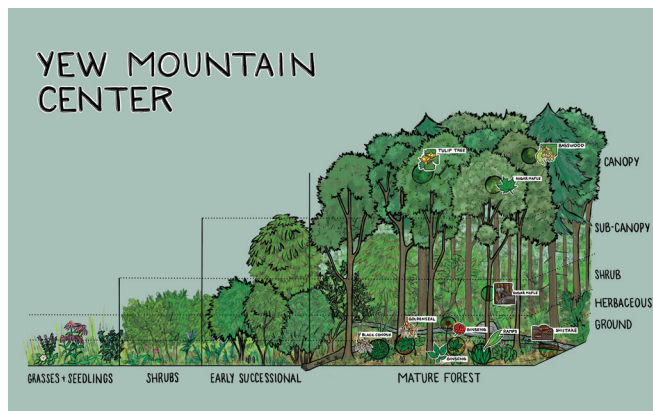
Thus Will locates the beds along the sides of the road built by the previous owner, with an eye toward a cultural shift needed for the sustainability of understory medicinal botanicals in the region. Such a shift will support the high value on spending time in the woods on activities that are ecologically and economically regenerative. What opportunities open up when we leave the roots in the ground? Instead of focussing on how to produce roots for extraction, how can we maximize seed production to jump start forest farming of ginseng, goldenseal, and ramps in Central Appalachia? How can we meet the growing demand for leaves, shown by researchers to have medicinal value? Instead of extracting roots, how can we partner with them to build a system of perennial forest crops?

"The plants teach you," said Will.

ECOLOGICAL DYNAMICS OF THE SITE

Yew Mountain Center's five hundred acre property harbors many of the habitats in which agroforestry may be practiced in Central Appalachia. As a form of multi-tiered agriculture, agroforestry can utilize multiple levels of the mixed mesophytic forest with attention to how reciprocities among canopy, subcanopy, herbaceous, and soil layers enhance crop production. How can the agroforester enter into a system governed by complex long-term relationships among its components? "You got the trees," said Will. "You're getting some of their benefits – maple

syrup. You got the plants underneath, you know, you get the bees that are pollinating and collecting nectar from all those. You got the mushrooms which work in a system that are very crucial to making new soil and breaking down, making wood into fertilizer for these plants. And so working with that kind of whole system dynamic where you have little pieces all throughout it is important."



Layers and stages of succession offered by the Central Appalachian mixed mesophytic forest, supporting agroforestry at the Yew Mountain Center. Artwork by Carly Thaw.

He cautions that the beginning agroforester should not try to tackle the entire system at once. "I really encourage people to take their time. We introduced one thing a year, or every other year because it is overwhelming, especially when you're learning these things. There's a lot to know about each system and I spent many many years studying all these things before I even started doing the work."

Will Lewis relies on spaces maintained out of the public eye to preserve native populations of medicinal botanicals, which supply seed stock for the demonstration beds established close to roads and trails for teaching. Placement close to the roads helps fulfill YMC's public education mission, and its ongoing research into the horticulture of native medicinal plants. "Our goals are for quick root production to sell as planting stock," Will explained on a tour of the beds. "So I wanted to do tilled beds next to a road and brought a tiller in here. I chose this spot for a few reasons. One, you can see there is thicker growth. . . right under this really nice sugar maple here. And sugar maple is a good companion tree. These trees are also older, more mature. So that kind of indicates a healthier soil. So we have that aspect. There wasn't a whole lot of competition. . . [And] we have it next to the trail where we walk and do classes, so it's easy for people to see production beds."

Experimenting with light and soil structure, Will is establishing tilled beds in places with varying amounts

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of shade to see whether goldenseal can be coaxed to yield more roots for planting stock within a shorter time frame. "If we put a tilled bed of goldenseal in here with more light, how's it gonna differ from this spot up here with more shade? Always just trying to learn and listen to the plants and what they say and what they do."



Shiitake mushroom logs on the campus of Yew Mountain Center, located streamside for periodic soaking. Photo by Mary Hufford.

As hive inspector for beekeepers throughout West Virginia, and a beekeeper himself, Will Lewis appreciates the reciprocities of bees with the biologically diverse canopy of the mixed mesophytic forest system. "I think one of the unrecognized products of our woods is honey," he said. "A lot of our tree species here give crops of honey. A lot of our trees, when they flower, produce active excellent nectar flows. Right now, as we speak, there's an amazing basswood flow coming in. Higher up in the mountains we have a lot of basswood. Lower parts of West Virginia have more sourwood. . . which is also kind of finishing up right about now. . . a really revered honey source. But also in the spring you get black locust [which makes] an incredible clear honey. Poplar [makes] a darker honey -- we got a pretty good flow of that this past spring. Black cherry had an excellent bloom this year, too. Even the maples in the spring, one of the best pollen sources in March, both the red and the sugar maple."

Beekeeping thus offers a way to produce multiple varieties of forest honey while contributing to the pollination of Central Appalachia's distinctive canopy species.

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Will Lewis, whose business is called "Blessed Bee Honey," working in his bee yard. Honey produced by bees pollinating the flowering canopy of the mixed mesophytic forest is a significant non-timber forest product. Photo by Mary Hufford.

LAND TENURE AND VALUES OF THE LANDSCAPE: HISTORICAL AND COMMUNITY CONTEXTS

The land has been through a series of private owners, each with plans that had to be abandoned. One of the owners, a retired coal executive, began developing it



Signs at a trailhead, Yew Mountain Center. Photo by Mary Hufford.

as a hunting getaway, with plans to put in a vineyard and to grow ginseng. "He put all the roads up on the property," said Will. "And there's several ponds on here that he put in with his equipment. And then I think he went bankrupt. . . . And now a lot of the roads that we use, you know, they're nice, wide roads. . . . which is really handy for us and our purposes here. A lot of them are great trails that go all the way up the mountain."

Erica Marks and Will Lewis recognized that their neighborhood has a stake in what becomes of its landscapes. In planning for the Yew Mountain Center's conservation program, Will Lewis and Erica Marks prioritized local community values. "This land has always been a community spot," said Will. "We all like to go swimming in this pond. And it was gonna go up for auction. It's a big property. And we were concerned that someone would come and just timber it, which would be sad, and also not let the community come here. And now our kids and people go swimming in the pond, and we can host potlucks, events, and music nights here at the lodge."

They worked on a plan that would bring to fruition Erica's dream of founding an alternative outdoor educational school. Will remembered, "I'm like,

‘Alright, let’s try to find someone to buy this property and let us have a school here.’” With funding from the Sacharuna Foundation, they were able to transition the foundations for a private hunting reserve into infrastructure for outdoor education. Their approach maintained the integrity of landscape and local community life, ensuring its continuing connection to regional history and ecology.

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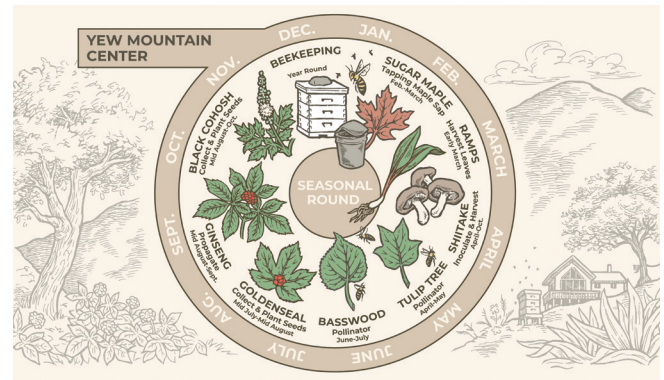


Music around a campfire at the Yew Mountain Center, during Forest Farming Field Days in May 2021. Agroforestry instructor John Munsell, of Virginia Tech, on bass, Will Lewis on guitar. Photo by Mary Hufford.

VALUES OF THE ACTIVITIES: LABOR AND LIVELIHOOD

Because plants are their coworkers, agroforesters can synchronize cycles of tending and harvesting various crops with the life cycles of forest species, spreading the work out over the course of the year.

Will Lewis described the annual round he follows for Yew Mountain’s forest farming program. “January



Components of the seasonal round of agroforestry at the Yew Mountain Center. Artwork by Our Numinous Mind.

February we’ll be making maple syrup. In the spring you can do some planting, we typically do more fall planting here. The spring is a good time to inoculate mushroom logs if you’re trying to do that, and also cooking down your syrup. Selling your sap is another option if you don’t want to spend time cooking it down – summer is tending the forest botanicals – weeding and stuff like that; the bees are big in summer – that’s when they make a lot of their honey – spring, summer. . . . And then fall is. . . when plants start to die back, and so that’s when you can dig them up, make your root divisions, or purchase planting stock. . . fall is a good time to do that. Or for the ramp seed you know that’s kind of later summer – August September. . . Fall’s the time for planting things. You can do fall plantings for your fruit trees and nut trees, if you’re doing those. Spring’s a good time to do that as well, but forest botanicals easily do fall plantings whether it be by seed or root division.”

Distributing the work across the variety of times and spaces offered by the Central Appalachian mixed mesophytic forest can be a way of hedging bets in the face of dire weather events and fluctuating markets. “It creates a little more resiliency,” said Will. “If you don’t have a good crop of mushrooms that year or all of a sudden your buyer isn’t there, you’ve got something else to sell. But it does take more knowledge to manage each of those parts of that whole system.”

VALUES BEYOND THE SITE: NETWORKS, EDUCATION, AND KNOWLEDGE EXCHANGE

As host to the West Virginia Forest Farming Initiative, the Yew Mountain Center has taken a leading role in that state, providing start-up resources for new forest farmers, and working with seasoned forest farmers to develop resources needed for expanding on existing practices.

"We've been forming a network of forest farmers with the help of our various partners," said Will Lewis, "that have really helped us get this far. They've taught me a lot about the work that I do and trained me to do site assessments...so that we can promote the growing of these foresters, so people can make money on their land from forest botanicals, as well as other forest farm products."

With funding from Sacharuna Foundation and the Claude Worthington Benedum Foundation, YMC has offered free site assessments along with planting stock at affordable rates. Participating in a network of Central Appalachian organizations, including Rural Action and United Plant Savers (southeastern Ohio), Appalachian Sustainable Development Initiative (southwestern Virginia), and Future Generations (West Virginia), the Yew Mountain Center provides services for beginning forest farmers that are not yet available through state agencies. The network itself provides access to experience with various aspects of the growing field of forest farming that would not be available within any one of the states alone.

FUTURE PLANS

Like trees continually engaging partnerships within their habitats, Yew Mountain Center is soliciting partners in forest farming throughout the region, thereby broadening the economic, ecological, and social potential for an agroforestry that is distinctive to Central Appalachia. As long as interest in agroforestry continues to grow in West Virginia, Yew Mountain Center will be there meeting the needs of aspiring forest farmers for both education and planting stock. As Will Lewis puts it: "Find someone to work with. Don't do it on your own, don't try to reinvent the wheel."

"Find someone to work with. Don't do it on your own, don't try to reinvent the wheel. Come to us, come to anyone else that's been doing this. A lot of farmers love having someone to help them and you can give them a hand and help their operation out. Whether you get paid or not, you're going to gain a tremendous amount of wealth as far as knowledge and experience."

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Come to us, come to anyone else that's been doing this. A lot of farmers love having someone to help them and you can give them a hand and help their operation out. Whether you get paid or not, you're going to gain a tremendous amount of wealth as far as knowledge and experience. Try it out. Get your hands dirty. And then go out and do it too!"

—Written by Mary Hufford

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