

2019

Journal of
**MEDICINAL PLANT
CONSERVATION**

A United Plant Savers Publication



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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 mega-storm. 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.



American ginseng (*Panax quinquefolius*)

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 (C.I.T.E.S.) 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, C.I.T.E.S. 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 “digging 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.



American ginseng berries

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 (*Xanthorhiza 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.

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