On The Fringe
Journal of the Native Plant Society of Northeastern Ohio

Program schedule – Winter 2014

Sunday, January 19, 2:00-3:00 pm – Sicily-Ancient Land, Rich Flora, The West Woods Nature Center. Follow botanist and former native plant society president Tom Sampliner during his two week tour in the company of plant hunters from the U.S. and England as they explored the rich flora and saw some of the archaeological wonders of this ancient Mediterranean land. Joint program with Geauga Park District. Stay afterwards for a double feature:

Sunday, January 19, 3:30-4:15 pm – On Gossamer Wings, **The West Woods Nature Center**. It's the dead of winter; enjoy a foretaste of spring with field naturalist Linda Gilbert while learning about some of the colorful gossamer-winged butterflies seen in the past 5 years on the surveys at several Geauga Park District parks.

Saturday, February 1, 10:00-12:00 pm – Winter Tree ID, The West Woods, Nature Center. From fruits, twigs, and bark, learn how to recognize trees in winter condition. Indoor instruction session will be followed by an outdoor hike. Master tree finder booklets will be used for the program and will be available for purchase in the gift shop for $4.00. Joint program with Geauga Park District. Preregistration required by calling Geauga Park District at 440-279-0880.

Saturday, March 22, 9 am – noon – NatureHood is an urban restoration program which restores native landscapes to some of the approximately 3,000 acres of vacant land in the City of Cleveland. NatureHood improves our city's ecological footprint, facilitates the City's economic recovery, improves quality of life and helps to make Cleveland a healthier, more sustainable city. They will present to us how they create a network of native plant naturescapes on the City's vacant and abandoned properties. Weather permitting. Location and directions will be provided closer to program date.

2014 Membership Renewal Rates

Last year the Native Plant Society had its first dues increase in 10 years. In response to increasing printing and mailing costs, we added a charge for the print edition of *On The Fringe*. The dues have remained the same, but it costs an additional $10 to get the journal by mail. The electronic version will be sent at no extra cost (with color picture, hot links, and early delivery).

You will receive your renewal form before the end of the year. If you wish a printed copy of the OTF mailed to you, simply check the box to receive the printed journal and add $10 to your total.

Please also consider making a contribution to our endowment fund. This is the source of our Annual Grant, and with the low interest rates, we need to increase the principal.

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The Journal of the Native Plant Society of Northeastern Ohio is published 4 times a year at Novelty, Ohio. ISSN 8756-6087. Questions or comments are welcome and may be addressed to Diane B. Christensen, 8400 Top Rail Lane, Novelty, OH 44072; 440-666-4870, dbpolice@roadrunner.com; or Bill Oberdick, 986 Bushwood Ln., Columbus, Ohio 43235-5016; 216-392-7027, bandbober@wowway.com.

The Mission of the Native Plant Society of Northeastern Ohio is to promote the study, appreciation and conservation of the native plants and plant communities of Ohio.

Gott Fen Stewardship Day summary

By Judy Barnhart

Eleven hearty souls turned out for stewardship day on Saturday, October 12 at Gott Fen State Nature Preserve, five from the Native Plant Society, three from Cleveland Metroparks working on stewardship projects in the Cuyahoga River watershed, and three from the Ohio Department of Natural Resources Division of Natural Areas and Preserves (DNAP). Under the direction of preserve manager Adam Wohlover, we carpooled from the Target store in Streetsboro to the site. With equipment in hand we headed a half mile down the railroad tracks to begin our attack on the invasive glossy buckthorn, *Ramnus Frangula*. Working in pairs we spent three hours in the fen trying to eradicate this invasive shrub that shades out the native species, including the showy orchid we saw on our hike in June. Tom Sampliner and I filled two buckets with buckthorn seedlings, which pulled fairly easily from the soft sphagnum moss. Any Canada thistle, another invasive species, were also pulled. Others, including President, Kathy Hanratty, and members Kent Scot, Jerry Greer, and Chuck Fletcher, worked in pairs cutting larger buckthorn saplings, then carefully treating the stems with a glycosphate herbicide to prevent them from resprouting in the future. DNAP staff hauled the cut saplings to the compost piles. Everyone stayed on well-worn trails so as not to disturb any native species. We were rewarded by seeing results of earlier cutting, which allowed over 200 stems of grass of Parnassus to bloom. One was still in bloom in October. We plan to return next year to see the results of our efforts and what emerges.

Thanks to all who participated. DNAP was extremely grateful and would like us to help with stewardship efforts in other preserves. Keep your eyes open for future projects posted in the Journal.

Judy Barnhart is Vice President for programs for the Native Plant Society of Northeastern Ohio.

Photos taken at Gott Fen Stewardship Day, Saturday, October 12,
by Judy Barnhart, NPSNEO Board member.



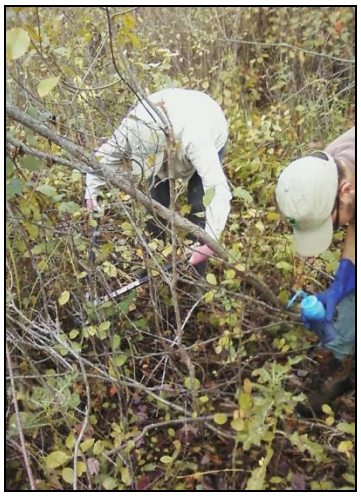
Tom Sampliner pulling buckthorn seedlings



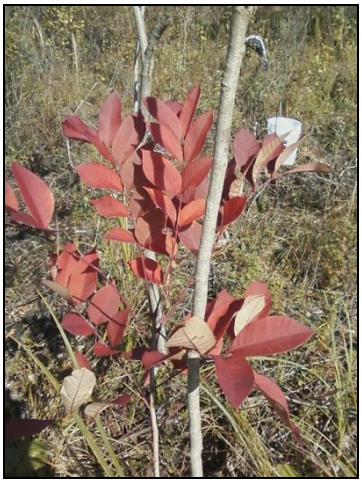
Chuck Fletcher hauling cut buckthorn



Kent Scott spraying buckthorn stumps



Jerry Greer cutting buckthorn



Poison sumac at Gott Fen



Kathy Hanratty with DNAP staff cutting and treating buckthorn

The Native Plant Society of Northeastern Ohio Awards
Judy Semroc
The Gentian Award for 2013

We are proud to present Judy Semroc with our Gentian Award. The Native Plant Society of Northeastern Ohio created the award in 2012 to honor those in the community who have made a significant contribution to the mission and goals of the Society. The Society's mission is the study, appreciation, and conservation of the native plants and plant communities of Ohio.

Judy Semroc sets a high standard of accomplishment in furthering the mission adopted by our Society. Springing from the rigors of an educational background, as well as work experience, in geology and civil engineering, her career is a steady path of initiating and actualizing projects conserving natural resources of Northeast Ohio. The breath of her work encompasses multiple aspects of environmental stewardship.

From 1999 to 2004, she developed hands-on science curricula for students from pre-school through the 8th grade level. Also during this time, she created Operation Botanic Rescue, a volunteer group rescuing plants and animals from areas slated for development for donation to protected areas, and Quail Hollow Land Conservancy, a non-profit organization in Stark County that protects ecologically significant habitats from development and holds over 230 acres of land under easement protection. She also created the first Ohio Chapter (*Chrysalis in Time*) of the North American Butterfly Association.

In 2005, Judy joined the staff at the Cleveland Museum of Natural History as Conservation Specialist. Her important work at this prestigious institution includes property site visits to search for and identify species important for land acquisition assessment. Her expertise is evident to all those fortunate to attend the hikes and classes she leads at the Museum. Beyond this, Judy is involved with the Regional Biodiversity Partnership and the 2015 Vision Program for Natural Areas. She continues to receive grants for study as diverse as recording butterfly and spotted turtle populations in a newly discovered fen in Stark County to natural history surveys of birds, coyotes, bears, and bobcats. She is co-author of the popular field guide *Dragonflies and Damselflies of Northeast Ohio* published in 2008.

At the heart of Judy's work is that special desire to share a view of nature that sees plants, animals and insects in their unique communities. Her interest in photography is a natural adjunct to that. Judy has helped greatly to deepen our knowledge and appreciation of native plants as they exist in community.

In April of 2010, Judy received the Portage Count, Conservation Hero Award for Environmental Stewardship, and in 2013, she received the Outstanding Staff Achievement Award from the Cleveland Museum of Natural History. Now we are delighted to honor Judy with this Gentian Award and know we will continue to benefit from her work on behalf of native species communities.

The plaque has a picture of a Fringed Gentian and says:

Gentian Award
For Dedication to the Native Plants of Ohio
Judy Semroc
2013

Congratulations Judy!

Kathy Hanratty, President of the Society, made this statement at the Annual Dinner on November 2, 2013, when she presented Judy Semroc with the Gentian Award.

Folklore:



Holiday Greenery
Mistletoe, Phoradendron leucarpum

By Kathy Schlosser

Winter reveals a whole new botanical world, including one item of peculiar interest for the Christmas holidays—mistletoe (*Phoradendron leucarpum*). The tradition of kissing under the mistletoe has its roots in Scandinavian history, where it was the custom that, if enemies met beneath an oak bearing mistletoe, they would lay down their arms for the rest of the day, believing that the plant held the soul of the host tree. From this tradition, it is believed by some, grew the custom of kissing under the mistletoe.

Another explanation is from the Norse myth of the goddess Frigga and her son, Baldur. When her son was born, Frigga extracted a promise from plants, animals, and objects to refrain from harming Baldur. A prankster god, Loki, took note that Frigga let mistletoe out of the promise, and convinced another god, who happened to be Baldur's brother, to fashion a spear from an oak on which mistletoe grew, using that spear to do away with Baldur. The death of Baldur, a god of vegetation, brought on winter, which eventually led the mischievous gods to bring Baldur back to life. Frigga responded by declaring that mistletoe should always bring love to the world rather than death, making mistletoe a sacred plant.

The association of mistletoe with romance and peace is quaint—certainly good tools for inspiring curiosity about our natural world in children. But the reality is a little different. First, mistletoe is a parasite. Second, it is spread primarily by birds who, devouring the berries with relish, then leave their excrement on the branches of trees—hardly the stuff of romance. The seeds thus deposited quickly send a tiny root-like system into the branch that provides the growing plant with nutrients and water. Incapable of growing in soil, mistletoe must have living tissue to support its growth. In our area, they are common on oaks and maples, where they can easily be seen this time of year. Look for a ball-like shape of evergreen growth high in the branches of trees. The mistletoe that grows around here usually has blue/black berries. The type often sold this time of year as a Christmas decoration, with white berries, is probably *Phoradendron tomentosum*, native to Texas, Oklahoma, and Louisiana. Both of these, and about 22 others, bloom during September and October with small golden yellow flowers. With leaves still on the trees at that time, few of us get to see the plants in bloom, but they are in their full berried glory and visibility now.

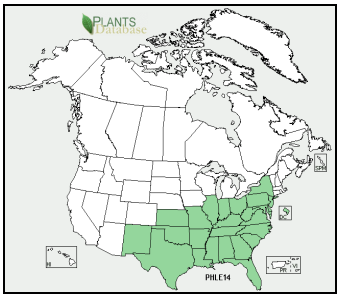


The name *Phoradendron* is derived from the Greek *phor*, a thief, and *dendron*, tree. The derivation of mistletoe is a little less clear, though apparently from Old English *mistel*, perhaps referring to "birdlime (a sticky substance sometimes from mistletoe)", and *tän*, twig. That sticky substance, birdlime, might help new plants get established as seeds are dropped by the birds.

If you have a tree infested with mistletoe, be assured that it is a slow grower. You can control a light infestation by simply pruning out the infected branch. If your tree is loaded with mistletoe, you would have to remove all infected branches, thus ultimately killing your tree. A heavy infestation can kill your tree too, especially in times of drought, when the mistletoe will consume much of the water drawn up by the tree, so it is up to you whether to enjoy the tree and the mistletoe as long as you can, or to remove the tree and replace it.

Most commonly known now as a holiday decoration, mistletoe, especially the European variety, has a long history of medicinal uses. Though the leaves and berries are poisonous to humans, extracts have been used for ailments ranging from convulsions, internal hemorrhage, urinary disorders, and more recently, cancer. In spite of laboratory trials exploring mistletoe as a cancer treatment, the FDA has so far not found it to be a safe or effective as a drug. In fact, mistletoe can cause vomiting, seizures, slowed heart rate, and death. There is still another way mistletoe can cause death, and property damage, for it is often harvested via shotguns. The plants firmly attach themselves to tree branches, and often on narrow branches near the tops of trees—which makes it

dangerous to climb to get them. Trusty old shotguns fill the bill by blasting the plants out of their roosts, providing the harvester with bits of the plant that can be sold this time of year. This is not a recommended technique for many obvious reasons. The best way to get mistletoe is to purchase it from someone who grows the plant and harvests with cherry-pickers. No sense ruining your Christmas and your chances for a kiss by spending time with our local sheriff for endangering the community. Get out your camera, walk through the woods, and collect your mistletoe on film.



USDA Plant Database Range for *Phoradendron leucarpum*



Reprinted from the *Native Plant News,* the newsletter of the North Carolina Native Plant Society, November 2012, Vol 10, No 5.

Photos in this article were added by OTF editors and taken from the USDA website.

Eastern Larch Beetles are Threat to Tamarack Forests

By Fraser R. McKee

Bark beetles, *Coleoptera: Curculionidae,* are one of the most important insect herbivores of conifer ecosystems. Bark beetles colonize the phloem layer of trees, disrupting the movement of water and nutrients between the roots and the tree crown, often resulting in tree death. Thus, bark beetles are important agents of forest mortality and can influence tree age, size, and genetic structure; floral and faunal diversity; hydrology and water quality; as well as fire patterns within forest stands.

Bark beetles are considered as either "aggressive" or "non-aggressive." Aggressive species exist for long periods of time as small, endemic populations, attacking weak or unhealthy trees. However, when environmental conditions are favorable, aggressive bark beetles can undergo population outbreaks.

During outbreaks, aggressive bark beetles attack healthy trees, resulting in severe, widespread forest mortality. In contrast, non-aggressive bark beetles exist through time as small, chronic populations and do not undergo population outbreaks. Non-aggressive bark beetles only colonize weakened or recently dead trees and do not cause large-scale forest mortality.

The eastern larch beetle is small, approximately 4 mm long, with a black body and iridescent, maroon wing covers. The beetle is native to North America and has a large distribution that closely matches that of its principal host tree, the eastern larch, or tamarack, *Larix laricina.* Within its range, the beetle will also attack non-native species of larch planted as ornamental trees. The main stem, large branches, and exposed roots are colonized on trees attacked by the eastern larch beetle.

The eastern larch beetle, *Dendroctonum simplex*, is related to some of the most economically important bark beetle species, such as the mountain pine beetle, *D. ponderosae*, and southern pine beetle, *D. frontalis*. Historically, the eastern larch beetle has not been considered a species of economic importance. As a non-aggressive bark beetle, eastern larch beetles typically attack trees that have recently died, are moribund, or suffer from some form of stress (e.g., drought, mechanical injury).

The lifecycle of the eastern larch beetle consists of an egg stage, four larval growth stages (instars), a pupal stage, reproductively immature teneral adults, and reproductively mature adults. Up to three larval broods may be established per year, although only a single reproductive generation is produced.

The lifecycle begins in late April

or early May, when reproductively mature beetles emerge from their natal host trees, disperse, and locate non-attacked tamaracks in which to reproduce. Female beetles emerge slightly before the males and are the host-selecting sex. As the female beetles fly through the forest, they use air-borne chemical signals emanating from host trees, as well as visual cues of tree size and shape, to orient towards trees that may be suitable hosts for beetle reproduction.

After alighting onto the bark of a potential host, the beetles chew through the outer bark and into the phloem layer. While tunneling into the tree, the beetles encounter resin pockets used by the tree to defend against insect and pathogen invasion. The chemical composition and toxicity of the resin is evaluated by the invading beetles. If the beetles find the resin noxious, they will abandon the attack and disperse to a more suitable host. If the beetles are not deterred and the host is suitable, they will release aggregation pheromones to attract conspecific female and male beetles to the focal tree undergoing attack.

Beetles arriving at the focal tree also release aggregation pheromones, resulting in a rapid increase in the number of attacking beetles on a focal tree. As the density of attacking beetles increases, anti-aggregation pheromones are released to repel and re-direct arriving beetles into nearby trees. The use of anti-aggregation pheromones prevents over-crowding within a single tree and avoids intraspecific resource competition among the beetles.

Once attacked, tamaracks undergo an induced resin response that increases the production of resin throughout the tree tissues. Increased resin production creates an effective physical barrier to beetle entry. Also, the toxicity of the resin is increased to maximize mortality levels among the attacking beetles. Tamaracks that rapidly up-regulate the resin defense



Fully mature eastern larch beetle adult. Photo by Fraser R. McKee.

response during the initial phases of beetle attack may kill the beetles before they release aggregation pheromones and avoid further attack.

There is an energy cost associated with increased resin production within a tree. Healthy trees with large energy reserves are better able to increase resin production to defend against beetle attack relative to weakened or stressed trees that have small energy reserves. Because defending against each beetle attack requires an expenditure of energy by the tree, each new beetle attack reduces the tree's ability to defend against subsequent attacks. The use of aggregation pheromones by the beetles often result in the attraction of more attacking beetles than a tree can successfully defend against. This use of aggregation pheromones to initiate a mass attack is an evolutionary strategy used by the beetles to overwhelm the defensive ability of the host tree. Eastern larch beetles also vector symbiotic fungi that rapidly invade the phloem and



Tamarac photo taken from www.myminnesotawoods.umn.edu

sapwood of the host and reduce the tree's ability to increase resin production in response to beetle attack.

Once a host tree is successfully killed the beetles begin to construct egg galleries. Initially, egg galleries are excavated vertically up the trunk of the tree and have a slightly winding "S" shape. As more egg galleries are excavated; the galleries begin to intersect one another to form a network. Eggs are laid in small niches cut into the sides of the egg gallery. Each niche contains from zero to four eggs for an average of 1.2 eggs / cm of egg gallery. Eggs can be found in the galleries from mid-May to late June.

Upon hatching, larvae feed in individual larval galleries that are oriented away from the egg gallery. Larvae feed through four growth stages (instars) and are present in the host tree from late June to early August. Fourth instar larvae create a chamber at the end of the gallery in which to pupate. Pupae can be found from mid-July to mid-August.

Teneral adults are found from late August to the following May and are the predominant over-wintering life stage. Some teneral adults remain in the pupal chamber over the winter, while others emerge, drop to the base of the tree, and over-winter in a small, newly constructed gallery. The following spring, the teneral adults engage in a period of maturation feeding under the bark and then emerge as reproductively mature beetles, completing the lifecycle.

Reports of eastern larch beetle activity have been recorded in North America for over 100 years. Historically, instances of beetle outbreaks were confined to small, localized areas that were predisposed to beetle attack due to some form of stress (e.g., insect defoliation, flooding, and drought), although beetles were reported to attack healthy trees after the supply of stressed material had been exhausted.

This low-level tamarack mortality indicated that eastern larch beetles should be considered as non-aggressive bark beetles.

However, in 1973, an outbreak of eastern larch beetles began in Alaska. The initial cause of the outbreak was uncertain, but repeated defoliation of tamarack by a species of larch budmoth *(Zeiraphera* spp.) in 1975 and 1976 caused the outbreak to rapidly increase in size to 215,000 hectares by 1977. Over 3.3 million hectares of tamarack were affected by 1980, when the outbreak ended.

Similarly, from 1973 until 1986, outbreaks of eastern larch beetles occurred on the east coast of North America from Newfoundland, Canada south through the Maritime Provinces of Nova Scotia, New Brunswick, and Prince Edward Island, and westward into Quebec.

In the United States, the outbreak affected large areas of Maine, New Hampshire, Vermont, and New York. Causes of the outbreak varied by region. Predisposing factors linked to the beetle outbreaks were defoliation by western spruce budworm, *Choristoneura occidentllis,* larch sawfly, *Pristiphora erichsoniii,* and larch case bearer, *Coleophora laricella.* A general decline in tamarack health was also credited as a predisposing factor to beetle attack in some areas. In other areas, the cause was unknown. Tamarack mortality within affected stands throughout the east coast outbreak exceeded 75 percent in some areas. Estimates of timber volume loss were not made for all areas of the outbreak; however, more than 1.4 million cubic meters of tamarack were killed in the Maritime Provinces.

The eastern larch beetle outbreaks in Alaska and the east coast of North America were the first records of large-scale outbreaks by this insect. An outbreak of eastern larch beetles in Minnesota has been occurring since 2000. To date, more than 160,000 hectares of tamarack forest have been affected, causing severe tamarack mortality. In many areas more than 90 percent of the available tamarack has been killed. The cause of the present outbreak is not clear. Tamarack defoliation by a concurrent outbreak of larch case bearer does not appear to be associated with beetle activity.

Research by the Minnesota DNR has determined that only 5 percent of tamaracks killed by eastern larch beetles have been previously defoliated by the larch case bearer. The DNR data suggest that above-average annual temperatures, particularly during the past decade, may be a factor in the outbreak. Warmer temperatures during the spring and summer would allow beetle larvae to develop more rapidly and be fully mature before the onset of cool weather in the fall. Also, warmer fall and winter temperatures may reduce the level of overwintering beetle mortality. This could result in larger populations of reproductively mature adult beetles the following spring, increased beetle attack on tamaracks, and larger beetle populations. Finally, Minnesota has been experiencing drought conditions throughout much of the state over the last decade. Prolonged drought stress lowers tree health and vigor, reduces the defensive ability of the trees, and makes the trees more susceptible to beetle attack.

The outbreaks of eastern larch beetles in Alaska and eastern North America have prompted some forest entomologists to suggest that the eastern larch beetle should be considered as an aggressive bark beetle species. Certainly, the size, severity, and longevity of the current beetle outbreak in Minnesota reinforce such sentiment. While outbreaks of eastern larch beetles have previously been a rare event, the outbreak in Minnesota provides excellent opportunities for research.

Current research by the forest entomology laboratory of Professor Brian Aukema at the University of Minnesota and the DNR is directed at studying the biology of the eastern larch beetle in Minnesota, determining the cause of the beetle outbreak, and examining the interactions between the beetle and its host tree that affect the reproductive success of the beetle.



USDA Plant Database Range for Tamarac



Tamarack Forest, Photo taken from www.123rf.com

Fraser R. McKee, Ph.D. candidate, Department of Entomology, University of Minnesota. This summarizes his Minnesota Native Plant Society talk on December 6, 2012.

Reprinted from the *Minnesota Plant Press*, The Minnesota Native Plant Society Newsletter. Winter 2013, Vol 32, No. 1.

Interesting Factoid:

Use of Goats in Vegetation Management

Goats are helping the USA to go Green. Goats have been used to clear brush worldwide for centuries, but they're now being used in the USA as a sustainable method to clear land. They prefer wooded areas to grassy plants. More people are using goats on their own property, particularly those on the waterfront, to prevent chemicals from entering the water. Goats really do not stop eating and they only take occasional breaks to sleep. Goats serve as a good replacement for men, machines and herbicides. They graze in places that mowers can't reach and humans don't want to go (yes, they love Poison Ivy). In fact, goats eat a wide range of unwanted vegetation, including kudzu, oriental bittersweet, ailanthus, multiflora rose, japanese honeysuckle, mile-a-minute and more. Goats may also be used to reduce woody species such as oak, sassafras, persimmon, buckbrush, blackberry, locust, sumac, winged elm, cedar and forbs such as greenbrier, honeysuckle, sericea lespedeza, chicory, ironweed, ox eye daisy, curly dock, pigweed, Queen Anne's lace, yarrow, thistle, and other species.

Goat Grazing Facts:

- Goats have been used by the U.S. Fish and Wildlife Service, the Bureau of Reclamation, the Bureau of Land Management, and the U.S. Forest Service. State, county and city contractors (such as the city of Seattle) have also used goats for weed and invasive species control.
- Goats will graze all day, going through very dense material at about a quarter acre per day per 30 goats (this can vary widely; it depends on many factors including density, location and vegetation species).
- Goats fertilize as they graze, then trample the fertilizer, so that the wanted grasses and other vegetation left behind are given a natural boost!
- Goats have special enzymes in their guts that allow them to eat plants that are poisonous to other animals.
- The goats are really good at eating buckthorn, honeysuckle, multifloral rose and garlic mustard. They just hammer those plants. It's really hard on them and some of them die.
- Goats will eat Christmas trees after the season has been celebrated.
- The Gateway National Recreation Area in Sandy Hook, N.J. furloughed its poison ivy-eating goats during the 2013 Government shutdown.



The use of goats has been around worldwide for centuries. But we are seeing more and more as a relatively inexpensive way to clear unwanted growth. Here are some companies and cities that are employing goats.

- Google is using goats for vegetation management. Google wanted a clean air alternative to noisy gas powered lawn mowers and didn't want toxic chemicals for their weed control. Since the cost of using goats was about the same as mowing, using goats allows Google to show their commitment to low-carbon, non-toxic alternatives.
- The historic Congressional Cemetery in Washington, D.C., brought them in earlier this month to help trim a 1.5-acre, overgrown area the cemetery owns.
- Chicago's O'Hare International Airport turned to goats, along with sheep and llamas, to feast on plants on 120 acres in the northeastern corner of the airport.
- Haverford College in Pennsylvania is using them to eliminate invasive plants.
- In Sandy Hook, N.J., they're helping remove about 40 years' worth of poison ivy from about 6 acres of property at the Mortar Battery, a historic site.
- Goats are used to help clear brush to prevent wildfires in the West. San Francisco International Airport recently brought in goats to eliminate brush, as it does every year through a company called Goats R Us.

This article was based in part on material taken from www.eco-goats.com, www.todaystmj4.com, www.nrcs.usda.gov and www.usatoday.com in the fall of 2013. Photo taken from www.usatoday.com.

Sharp-Lobed Hepatica
Hepatica acutiloba

By Gene Bush

Low expectations usually accompany Midwestern gardeners when they go for a walk in winter. Cold wet winds, perhaps some lingering snow in the north and east shadows, do not usually conjure up vivid visions of flowering perennials. While there certainly is not an abundance of bloom in late February and early March as in mid-May, there are fully opened flowers to be found in native woods and gardens. Bundling up for a winter walk can be rewarding.

Hepatica has leaves the shape of a human liver, thus the name "Liverlobe." Around the late 1800s, collecting of hepatica as an herb for medicinal purposes exceeded 450,000 pounds in a single year. I can remember my father taking his spoon of dark brown liquid from a patent medicine bottle that had hepatica both in the name and the contents. The fact that many of the patent medicines contained a high percentage of alcohol may have helped as much as or more than the herbal remedy



Photo taken from the North Carolina Native Plant Society website.

The name of our local native hepatica has been recently changed to *H. nobilis* variety *aeuta.* The older wildflower guides list *H. aeutiloba* and *H. amerieana.* Now both are under H. *nobilis* as *H.* var. *aeuta* and *H.* var. *obtuse.* For me, *Hepatica nobilis* was the European species, so it is going to take a while for my old brain to make the transition.

According to the doctrine of signatures, God or nature has placed a plant into the natural world for each illness of man. Those plants can often be recognized by their shapes, which resemble parts of human anatomy.

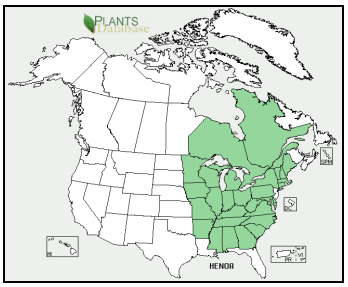
The sharp-lobed hepatica *(H. nobilis aeuta)* is the species I find closest to my home. Within walking distance of my garden is the Blue River with its limestone bluffs. All along those rock ledges can be found colonies of very old plants, usually in pockets of leaf mold over rocky soil. I have seen a few growing beneath sheets of moss on large boulders. The prevailing color of bloom seems to be white, but on occasion lavender-blue will be seen. When watching for nice color forms, pay particular attention to the stamens. On occasion the stamens will be a contrasting

color to the sepals. Blooming period is from late February to mid-March and well into April.

The flowers are actually composed of showy, three-quarter inch sepals that appear as petals. Stems are quite hairy, and the fuzz is very apparent on new stems. Flower stems reach from four to about eight inches in height. Foliage is evergreen on hepatica, but very tattered by bloom time. (In late fall and early winter the foliage will turn bronze, adding to their show.) Just as blooms fully appear, the new, softly hairy leaves unfold. The amount and pattern of mottling in hepatica, foliage will vary from plant to plant, just as the bloom color varies. I have seen leaves with such a high degree of mottling that I would grow the plant if it never bloomed.

The soil in my garden ranges in pH from slightly acidic over limestone to neutral. Most of my hepatica are growing in raised beds containing a high percentage of compost and leaf mold. All are located in the midst of shrub and tree root competition. I have noticed over the years that seed has gotten around a bit. I am now finding hepatica in the richer soils of the shade garden. The only care I give my plants is chopped leaf mulch each fall. All plants have a north and easterly exposure from the north side of a hill.

I have *Trillium nivale* as a companion to my sharp-lobed hepatica. Sometimes they will bloom together, other times the hepatica blooms just a bit later than the trillium. When the dwarf snow trillium goes dormant, hepatica foliage will persist the remaining seasons. Trout lilies, or *Erythronium,* are also favorite companions for both flower and foliage.



USDA Plant Database Range for *Hepatica acutiloba*

Gene Bush grows and sells ornamental shade plants, including many natives, in southern Indiana. Follow his blog at www.munchkinnursery.com.

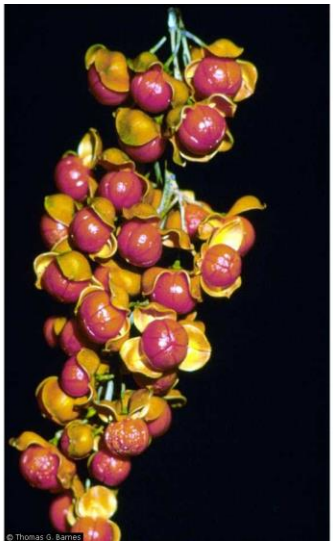
Invasive Plant:

Oriental Bittersweet

By Ruth Ann Ingraham

Anyone who drives through our southern states is stunned by mature trees, buildings, and even abandoned vehicles enveloped in the green cloak of kudzu. Kudzu is the classic example of a deliberately introduced, exotic plant whose original function was to control erosion along roadsides. This decision went awry with a disastrous results—the plant is out of control. Many of us are surprised when we learn that kudzu grows in Brown County as well as in many other counties in Indiana, and even into Michigan. The situation in Indiana is being closely monitored, and control efforts are ongoing.

The experience with kudzu illustrates what may happen when an exotic plant settles into a new environment without the natural controls that keep it in check in its homeland—Japan, in the case of kudzu.



Celastrus scandens L.
American bittersweet
Photo taken from the USDA

One of Brown County's favorite fall plants is bittersweet, *Celastrus scandens*, with its clusters of bright orange orbs that dangle tantalizingly from vines that may reach the tops of tall trees. For as long as settlers have inhabited our county, as well as counties in 37 other states, including Ohio, bittersweet fruit, within reach, has been cut and used for decoration.

In the 1860's, a confusing look-alike was introduced as an ornamental plant—Asian or oriental bittersweet, *Celastrus orbiculatus*,

native in Korea, China, and Japan. It escaped cultivation and naturalized, outcompeting the species that has grown in North America historically.



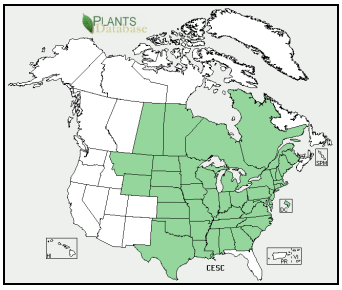
Celastrus orbiculatus, Oriental Bittersweet
Photo taken from the www.pfaf.org

Both vines are woody, perennial plants. Because they are similar in many ways, it is difficult for most of us to tell the native from the interloper, but there are distinct differences. The best way to determine whether you have the native or the non-native species is to check where the blossoms bloom and the fruit forms on the vine. American bittersweet produces flowers (and fruits) in single, terminal clusters at the tips of the stems. Oriental bittersweet is a prolific fruiter with lots and lots of fruit clusters emerging at many points along the stem.

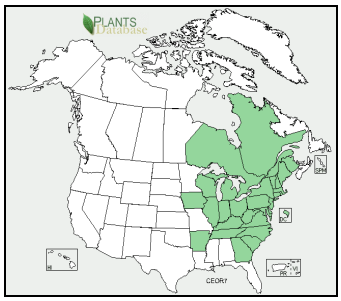
Unlike American bittersweet, oriental bittersweet grows vigorously and climbs over and smothers vegetation, which may die from excessive shading or breakage. It can weaken mature trees by girdling the trunk. Left unchecked, it forms impenetrable thicket and becomes a pure stand in forests.

In Brown County, oriental bittersweet infests forest edges, woodlands, and fields, especially where land has been disturbed. While often found in more open, sunny sites, its tolerance for shade allows oriental bittersweet to invade forested areas. (Unfortunately, hybridization of the two occurs, making identification more difficult. Before using control methods, be cautious lest the native bittersweet becomes the target.)

Many of us buy wreaths and other fall decorations that include sprigs of bittersweet berries. If, at the end of the season, you plan to discard the berries, and if you question whether the fruit is from the invasive rather than the native variety, discard them in your trash in a plastic bag. Putting the seeds or branches of oriental bittersweet in a compost or brush pile could accidentally introduce an invasive species to your property.



USDA Plant Database Range for *Celastrus scandens* L.



USDA Plant Database Range for *Celastrus orbiculatus*

Ruth Ann Ingraham is the historian for the *Inpaws Journal.* She is also the author of *Swimming with Frogs* (Bloomington: Indiana University Press, 2004), a journal of experiences with nature at her Brown County Cabin.

Reprinted from the *Inpaws Journal*, the Newsletter of the Indiana Native Plant and Wildflower Society. Winter 2011–12, Vol 18, No 4.

Weeds Gone Wild: Alien Plant Invaders of Natural Area

This web-based project of the Plant Conservation Alliance's Alien Plant Working Group provides information for the general public, land management, researchers, and others on the serious threat and impacts of invasive alien (exotic, non-native) plants to the native flora, fauna, and natural ecosystems of the United States.
Along with a compiled national list of invasive plants infesting natural areas throughout the U.S., the site provides background information; illustrated fact sheets that include plant descriptions, native range, distribution and habitat, management options, suggested alternative native plants, and other information; and selected links to relevant people and organizations. Visit www. nps.gov/plants/alien.

ACORNS

By Gordon Mitchell



White oak nut

Most of us who hike through forests will often encounter large amounts of nuts (mast) upon the forest floor. Many of those nuts are Acorns (or Oak nuts).

Acorns come from Oak trees (Genus *Quercus*). All Oak species produce these single-seeded acorns. Oaks can trace their ancestry back to the Cretaceous Period of the Mesozoic Era and of the Phanerozoic Eon.

Oaks are members of the Order *Fagales* and of the Family *Fagaceae*. The generic name, *Quercus*, is Celtic for "beautiful tree". *Quer* is "beautiful" and *cuez* is "tree".

There are 2 groups or sections of Oaks: the White Oaks (Subgenus *Lepidobalanus* or *Quercus*) and the Red (or Black) Oaks (Subgenus *Erythrobalanus*). The White Oak acorns mature in 1 year (Annual Oaks) and germinate in the fall. The Red Oak acorns mature in 2 years (Biennial Oaks) and germinate in the spring or in the following fall.

The Red Oak acorns require cold temperatures to break their dormancy before germinating. The White Oaks don't require cold temperatures.

Depending upon the species, the acorns vary in size and shape. They may be spherical or elongated. They have a tough, leathery shell. All acorns are smooth and have a pointed head. They travel by water and by animals.

The Red Oaks are bitter, inedible, have yellow nutmeat, and are hairy upon the inside of their shells. The White Oaks are sweet, edible, have white nutmeat, and are smooth upon the inside of their shells.

All acorns are nested within a textured, scaly, cap-like cup. These cups are formed from tightly compressed and poorly developed leaves that have fused together and have hardened. Depending upon the species, these cups vary from saucer shape to bowl shape. The Red Oaks have brown, thin, and flat cup scales with downy interiors. The White Oaks have paler, woody, and knobby cup scales with smooth and shiny interiors.



Red oak nut

An average Oak tree can produce about 5,000 acorns a year. About 1/10 of 1% of these acorns will become trees. Every 3-5 years, a tree may produce a bumper acorn crop. Oak trees in the open areas produce more acorns than Oak trees in the deep forests.

These trees often bear fruit after 10 years. They will continue to bear fruit well into their old age.

When acorns fall from their trees, they contain about 45% moisture. If these acorns dry out to 25% moisture, they won't germinate. However, soaking these dry acorns in cold water for at least 48 hours will restore their needed moisture requirements.

Tannin

All acorns contain tannin (or tannic acid). It is present to discourage insect attacks. Red Oaks contain more tannin than do the White Oaks.



Tannin is astringent and is a toxic carcinogen. Although no human fatalities have been recorded, tannin can irritate the mouth and throat, can harm the liver and the kidneys, and can cause headaches. It can cause digestive problems by inhibiting digestive enzymes. It can also irritate, inflame, and cause hemorrhaging in the intestinal walls.

Tannin can also harm domestic livestock, especially Cattle, Sheep, and Goats. Although it is harmful to livestock, some farmers feed acorns to their Pigs.

Tannin may have medicinal uses. Tannin may someday be used in

antiviral, antiseptic, and anticancer medicines. Presently, this is still within the experimental stage.

Animal Consumers

Acorns are a staple diet for numerous bird species. Some of those bird species in this part of the country include Blue Jays, American Crows, Northern Cardinals, Common Grackles, Mourning Doves, Bobwhite Quails, Woodpeckers, Wood Ducks, and Wild Turkeys. Passenger Pigeons and Carolina Parakeets, both extinct species, also ate acorns. Those bird species with larger bills are better able to crack open the acorns.

Many Mammal species from this part of the country consume these acorns. Most of them are Rodents, such as Mice, Voles, Eastern Chipmunks, Squirrels, and Eastern Cottontail Rabbits. Other mammal species include Virginia Opossums, Raccoons, Foxes, American Black Bears, and White-tailed Deer. During the fall, about 25% of the White-tailed Deer's diet is acorns.

Squirrels consume acorns from both Oak groups, but not at the same time. Red Oaks have more fat than do the White Oaks. This extra fat helps the Squirrels survive the winter. Because the White Oak acorns sprout earlier than the Red Oak acorns, the Squirrels consume the White Oak acorns first. They bury the Red Oak acorns for later consumption after the White Oak acorns are gone. Many buried acorns that are not exhumed become Oak trees.

Human Consumption

Archaeological excavations around the world have uncovered evidence that humans have been eating acorns since prehistoric times.

Humans can eat acorns if they are properly prepared. They can be gathered in the fall. Acorns with wormholes in them should be discarded.

The water-soluble tannin must be leached out before consumption. Keep Red Oak acorns and White Oak acorns separated. Acorns should be soaked in warm water for about 20-30 minutes. The acorns will soften, swell, and split. Floating acorns should be discarded. After soaking, the thin shells should be removed and the nutmeat should be boiled in several changes of water for about 2 hours. The water should be changed when it becomes light brown. After boiling, the nutmeat should be chopped or ground into nut meal and placed in a strainer or upon a clean cloth and doused with hot or boiling water until the water is clear. The acorns should also be roasted in an oven for about 1 hour at 350 degrees F.

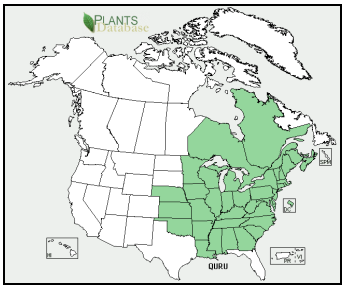
The Native Americans had their own methods of leaching. The acorns were either mixed with wood ashes (lye) and buried underground for several months to a year or were placed in running streams for a few to several days.

Depending upon the species, acorns contain about 4-20% fat, about 2-5% protein, about 4% crude fiber, about 10% sugar, and about 30-70% carbohydrates. They also contain the vitamin niacin and minerals, such as calcium, magnesium, phosphorous, potassium, and sulfur.

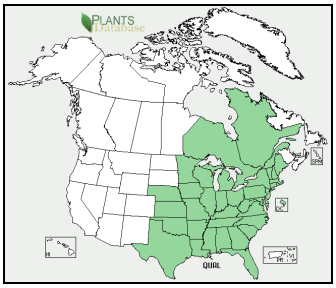
The acorn meal can be used as a flour substitute for making bread, cakes, noodles, pancakes, and muffins. They are used for thickening soups and are made into mush. Acorns can also be used as a coffee substitute.

Gordon Mitchell works for the Columbus, Ohio Metroparks and was a member of the Central Ohio Native Plant Society, which merged with the Columbus Historical Society in the Spring of 2010.

Photos in this article were added by *OTF* editors and were taken from the USDA website.



USDA Plant Database Range for Red oak trees



USDA Plant Database Range for White oak trees

Blackhand Gorge State Nature Preserve

Blackhand Gorge State Nature Preserve is a 970-acre area that was dedicated as an interpretive nature preserve in 1975. This dedication insures that the area's scientific, educational and aesthetic values will be preserved indefinitely for use by all Ohioans. The prime feature of the preserve is a narrow east-west gorge cut by the Licking River through the Blackhand sandstone formation. This cross-bedded, conglomeratic sandstone, which is well exposed in many places, creates a rugged topography. The dry hilltops are dominated by oak, hickory, Virginia pine and mountain laurel. Mixed hardwoods and a lush spring flora abound on the wooded slopes and ravines. The flood plain is predominantly sycamore, cottonwood, willow and box elder.

The name "Blackhand," for which the preserve is known, originated from a large, dark hand-shaped petroglyph that was engraved on the sandstone cliff face. Many Indian legends were passed on to early pioneers about the origin of the "black hand," but possibly the most prominent is that it marked the boundary of a sacred Indian territory where no man was to raise his hand against another. The engraving was destroyed in 1828 when canal builders dynamited the cliff face, during construction of the Ohio-Erie Canal towpath.



Historically, the area around the gorge was very important to both the modern Indian and the Mound Builders. The rich deposits of flint found nearby at Flint prehistoric Ridge made the Licking River system a strategically important transportation route even before the advance of white settlers. By 1929, the gorge had already witnessed the passing of the Ohio-Erie Canal, the steam powered Central Ohio Railroad, and finally the electric interurban trolley car.

Today, the canal boats, trolleys and steam locomotives are gone, but a modern railroad has been relocated to higher ground and the stark remains of canal locks dot the preserve. The interurban tunnel is on private property.

Nature preserves are open all year, from daylight to dusk. Notices about regularly scheduled hikes or programs are posted on bulletin boards in each parking area. Special programs or guided interpretive walks are available for groups upon request.

Taken from the Division of Natural Areas and Preserves pamphlet. February, 1998

Photo taken from ohiodnr.com, October, 2013.

Taxonomy Notes
Why Tree Names are 'Girls'

By Shirley Mah Kooyman

In botanical Latin, plant names consist of a genus and a species epithet. The specific epithet, an adjective describing the genus, has to match in gender with the genus, a noun. The concept of matching genders exists in languages such as Spanish, Italian, French, Dutch and others. However, in English it doesn't exist, so it is a foreign concept to grasp.

Once that is understood, botanical Latin becomes a very useful tool for plant names. In Latin, the general rule is: male = "us," neuter = "um," female = "a" (examples: *Elymus virginicus*, *Allium stellatum*, *Hepatica acutiloba*).

But you'll notice that generic names of trees don't seem to follow those rules. The genera (plural of genus) don't match in gender with their specific epithets (examples: *Fraxinus americana*, *Morus rubra*). So the question is: Why is that?

In Latin the rules are: Names of most rivers and mountains (unless they end in “a” or “e”) are masculine. Most countries, islands, cities and trees are feminine. Here’s a little rhyme to aid with remembering that:

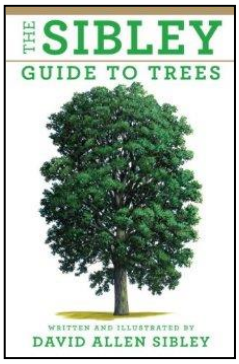
A woman, island, country, tree
and city feminine we see:
Penelope, Cyprus, Germania,
laurus, Athenae.

It turns out that Carl Linnaeus (creator of the binomial system) kept some of the classical tree genera instead of creating new ones, even though they ended in “us.” Remember that trees in Latin are feminine, regardless of whether or not the genus has a masculine ending. This is the reason why tree names are “girls.”

Shirley Mah Kooyman is a botanist and the Vice President of the Minnesota Native Plant Society.

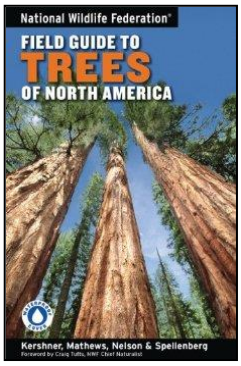
Reprinted from the *Minnesota Plant Press*, the newsletter of the Minnesota Native Plant Society. Fall 2012, Vol 31, No 4.

Book Review:



The Sibley Guide to Trees
By David Allen Sibley

New York: Alfred A. Knopf, 2009
426 pages
ISBN-10: 037541519X
ISBN-13: 978-0375415197
Paperback, $35.00



National Wildlife Federation Field Guide to Trees
By Bruce Kershner, Craig Tufts, Daniel Mathews and Gil Nelson

New York: Sterling Publishing Co., 2008
528 pages
ISBN-10: 1402738757
ISBN-13: 978-1402738753
Paperback, $13.73

Reviewed by Jane Hill

Two beautiful new field guides to North American trees have been published in the past two years. The more recent one, which appeared in September 2009, is by David Allen Sibley, who is well known as the author of numerous bird guides. This tree book, his fledgling venture into plant guides, follows the same format as his bird guides. It is comprehensive and attractively illustrated with his own paintings. It covers "668 native and commonly cultivated trees found in the temperate areas of North America north of Mexico," including all native tree species except those limited to southern Florida. *The National Wildlife Federation Field Guide to Trees of North America*, published in 2008, is illustrated solely with photographs. This multi-authored book covers native and non-native trees of North America north of Mexico, including (unlike Sibley) the trees of southern Florida, for a total of 700 species and varieties.

Although Sibley has produced a good tree guide, he is not authoritative on the subject of trees. He makes errors, as, when, in defining a tree in his introduction, he states that box-elder is "usually multi-trunked (like a

shrub)." He also calls Callery (Bradford) pear "naturalized," although it is far better described as invasive, as the NWF guide labels it.



Sycamore (*Platanus occidentalis*) in winter. Sycamore has only one fruit ball on each stalk, whereas London Planetree (*Platanus x acerifolia*) normally has two.

Nevertheless, Sibley's treatment of escaped exotic trees is an advance over that of other field guides, including the NWF: Sibley provides range maps for these species. In contrast, the NWF guide, like most previous field guides to trees, includes maps for most of the native trees but none for the non-natives. In the NWF guide, the species accounts include some verbal information on the spread of exotics, but Sibley's approach enables a reader to comprehend at a glance where non-native trees are dispersing from cultivation. Unfortunately, the only way he distinguishes visually between natives and escaped exotics is by depicting native trees' ranges in a dull green, and exotic trees' ranges in a pale tan. The difference does not exactly jump off the page. In both guides, non-native trees could have been flagged by, say, marking their names with an asterisk in the species-account headings, or using a different typeface, as is common practice in technical manuals and floras. Older field guides to trees do no better in this regard, however.

The two guides also contrast in their interpretations of species' ranges. Sibley's range maps show where each species, native or not, "is known to be reproducing in the wild with no assistance from humans." The NWF guide shows what its authors call "natural geographic distribution" – presumably meaning historic, pre-European-settlement range. Thus, for such species as northern and southern catalpa (*Catalpa speciosa* and *C. bignonioides*), black locust (*Robinia pseudoacacia*), and osage-orange (*Maclura pomifera*), Sibley's guide shows much more extensive ranges than does the NWF book, because these species have spread widely from their pre-settlement distributions. Knowledge of both kinds of ranges is useful. For one thing, it provides fodder for discussions of what constitutes a "native" plant. Another difference is that the mapped ranges in the NWF guide present more detail. The NWF book shows two different ranges: where the species is "commonly or regularly found," and where distribution is "rare, scattered, or local." In Sibley, in contrast, there is only one mapped range, encompassing both kinds of distributions.

The illustrations of tree parts present another contrast between the two guides. Sibley's paintings portray much more of the within-species variation, especially in leaf and fruit forms, that can cloud identification. For example, for the tree he calls "common post oak" (*Quercus stellata*), Sibley shows seven examples of leaf shape, two of acorns, and two of twigs. For southern live oak (*Q. virginiana*), he depicts ten leaf shapes, four acorns, and a flowering and a nonflowering twig. In contrast, the NWF guide shows, for *Q. stellata*, only a single leaf, a single acorn, and no twig; and, for *Q. virginiana*, two photos of twigs, each bearing several leaves that do not represent well the wide variety in leaf form, and a photo of a pair of very similar acorns and no twig. (Both guides also show bark and overall tree form for these species.) Still, the NWF photos are plentiful and generally high quality, and often show plant parts more effectively than do Sibley's paintings. This is particularly true for bark, which in general Sibley renders much less successfully than he does leaves and fruits.



Hackberry (*Celtus occidentalis*) bark.

A welcome feature of both guides is the inclusion of all the information for each species on the same page. This is more convenient than the organization of some older tree guides, such as *Eastern Trees* in the Peterson Field Guide series, or the *National Audubon*

Society Field Guide to Trees, in which some of the illustrations are relegated to separate sections of the book.



Gallion*Witchhazel (Hamamelis) flowers.*

An advantage of the NWF guide is that, unlike the Sibley, it contains identification keys and a visual glossary. Further, the organization of the species accounts in the NWF guide, under four-part page headings describing leaf and fruit features, tree or group of trees, and geographic location, aids in the identification of an unknown tree. Sibley arranges his species accounts by family, an advantageous organization for learning taxonomic relationships but less helpful for those who have no idea which family a tree in question belongs to and must leaf through looking for a pattern match.

Both guides will be useful additions to our libraries. Of the two, the Sibley is the more aesthetically appealing, with its beautiful and abundant paintings. Both, however, are packed with information and illustrations, which probably explains why neither fits readily in a pocket. The NWF, at 7-3/4" x 4-3/4" x 1-1/2", is thicker but more compact overall than the Sibley, which is approximately 9-3/4" x 6" x 1". Both have soft, semi-flexible covers.

Reprinted from *Marilandica,* A publication of the Maryland Native Plant Society, Fall 2010, Vol. 1, Issue 1.

Photos by Albert Hartley.

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Gott Fen Stewardship Day Summary– Judy Barnhart
The NPSONEO Awards, Judy Semroc – Kathy Hanratty
Folklore: Holiday Greenery, Mistletoe, *Phoradendron leucarpum* – Kathy Schlosser
Eastern Larch Beetles are Threat to Tamarack Forests – Fraser R. McKee
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Sharp-Lobed Hepatica. *Hepatica acutiloba* – Gene Bush
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Acorns – Gordon Mitchell
Blackhand Gorge State Nature Preserve
Taxonomy Notes, Why Tree Names are 'Girls' – Shirley Mah Kooyman
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Volume 31, No. 4 December 2013