



TENNESSEE NATIVE PLANT SOCIETY

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A Living Fossil? - Fraser's Magnolia (*Magnolia fraseri*) and Other Magnolias by Larry Pounds

The simplest way to explain how it happens that all life on earth is based on DNA is that all life has a single common ancestor and that DNA has been passed from generation to generation from that ancient common ancestor. If we accept this, then each living thing has evolved over the same very long period of time. With this understanding, all living things are equally evolved.

It could be argued that the opportunity to evolve is proportional to the number of generations rather than the number of years. On this basis, surely fruit flies (generation time a few weeks) are more evolved than humans (generation time many years).

A species that appears to be similar to a fossil from long ago is called a living fossil. This suggests that somehow the living fossil has evolved more slowly than other species. Evolution is often driven by a changing environment which causes selection to change. This might explain the famous fish living fossil, coelacanth. It has changed little in 400 million years. It lives deep in the ocean where perhaps the environment is more constant than elsewhere.

Our magnolias are living fossils in the sense that they share many characteristics with fossils of early flowering plants, for example, spiral arrangement of stamens (male parts).

-Continued page 6

Conservation of the Wolf River Floodplain and the Bouquet Mudplantain (*Heteranthera multiflora*) by Cathy Justis

The bouquet mudplantain (*Heteranthera multiflora*) is a rare wetland plant, quite beautiful especially when flowering, and picky about where it lives. It was recently discovered in west Tennessee on the Cornerstone property, the Wolf River Conservancy's latest land conservation project. This



BOUQUET MUDPLANTAIN
(*HETERANTHERA MULTIFLORA*)
BY DAVID HILGEMAN

patch of bouquet mudplantain is now one of only a few known locations for this species in the state of Tennessee, two of them in the Ghost River section of the Wolf River.

The bouquet mudplantain needs soil that is just right, not too wet and not too dry, conditions not likely to be replicated where wetlands have been damaged or destroyed. The Cornerstone property at the western end of the Ghost River section

near Bateman Bridge encompasses high quality wetlands on both sides of the Wolf River channel. These wetlands offer a diversity of habitats for specialist species such as the bouquet mudplantain. Maintaining this plant population will require ongoing management and stewardship, neither of which would be possible without first protecting its habitat.

On the list of Tennessee rare plants, the bouquet mudplantain is ranked by TDEC as a species of special concern, requiring monitoring. -Cont'd page 6

TNPS Newsletter

This newsletter is a publication of the Tennessee Native Plant Society and is published four times a year, generally in February, June, August, and November.

The Tennessee Native Plant Society (TNPS) was founded in 1978. Its purposes are to assist in the exchange of information and encourage fellowship among Tennessee's botanists, both amateur and professional; to promote public education about Tennessee flora and wild plants in general; to provide, through publication of a newsletter or journal, a formal means of documenting information on Tennessee flora and of informing the public about wild plants; and to promote the protection and enhancement of Tennessee's wild plant communities.

Dues for each calendar year are:

Regular: \$20

Student: Complimentary

Institution: \$50

Life: \$250

Dues may be sent to:

Tennessee Native Plant Society

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Nashville, TN 37215

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Please send comments and material for the TNPS newsletter to
djhilgem@gmail.com

A Letter from the President

HELLO EVERYONE,

It's that time of year that we think of the past year and start planning on the new year.

We've had a great Field Trip schedule this past year. The Field Trip Committee meets in December. We will publicize the new schedule the first of next year. Again, I want to remind you that our Annual Meeting will be July 12-14, 2019 at Reelfoot lake. We will be taking boat excursions to see many rare plants.

Also, if you still have some money left for donations, TNPS will always take good use of your monies.

Happy Holidays,



Susan

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BOARD NOMINATIONS

Contact any TNPS board member or email info@tnps.org to make officer and board of director nominations or challenges. Submittal deadline is January 18, 2019. The current nominees are:

President - Susan Sweetser (one-year)

Vice President - Allan Trently

Secretary - Bettina Ault

Treasurer - Karen Hill

Director - Larry Pounds

Director - Dennis Horn

Director - Suzy Askew

Wintertime Activity

The Secret Winter Lives of Plants by Bart Jones

Most of us probably don't pay too much attention to plants in winter. Sure, we notice the bright red berries of a possum haw (*Ilex decidua*) or an eastern red cedar (*Juniperus virginiana*) in the middle of a field of golden-brown grasses. But there are numerous things hidden and unseen going on with our wintertime flora.

We seldom think of plants growing in winter, but there are some groups of plants that do the majority of their growing in the winter. Many spring-flowering annuals germinate in the fall before the temperatures get too low and then take advantage of warmer winter days to grow the bulk of the plant. This allows these small plants to take advantage of the lack of competition from their neighbors for the available sunlight. Then when the first warm days of spring arrive, they are ready to immediately send up their inflorescences. Probably the most recognized of this group of wildflowers are our glade-cresses (*Leavenworthia spp.*) which can carpet the cedar glades of Middle Tennessee. Several of our native orchids also utilize this strategy, the crane fly orchid (*Tipularia discolor*), puttyroot (*Aplectrum hyemale*), and a few ladies'-tresses (*Spiranthes spp.*). Each plant sends up a solitary leaf (or rosette in the case of ladies'-tresses) in fall and these leaves persist throughout the winter extended just above the leaf litter of the forest floor or grasses. The leaves gather energy from the sunlight and transfer it to the underground tuber which forms the embryonic flowering stem. In spring the leaves wither and the plant basically enters dormancy, for a few weeks in the case of puttyroot and a few months for the crane fly orchid and ladies'-tresses. The orchids break dormancy and the flower spike quickly grows and flowers.

Many plants, notably trees and shrubs, take advantage of the winter moisture to grow new roots, particularly after a very dry summer. This happens when soil temperatures are between 32 and 41 degrees. But if the soil temperature falls below 20 degrees, the new root growth can die, so it is critical for the soil to be insulated by deep leaf litter or persistent snow cover. While deciduous trees grow new roots to repair drought damage, it is even more critical for the root system to function in winter for evergreens. Although photosynthesis slows at this time, it still operates and helps support the plants' health. And since the trees still maintain their leaves, they are even more susceptible to desiccation, so it is essential for the roots to transfer moisture to the leaves.

Underground, the bulbs, corms, and rhizomes of our spring wildflowers are undertaking a process known as vernalization. In this process, the cold temperatures initiate the development of what will become flowering parts. If temperatures are too warm, the cold does not persist long enough, or fluctuates too wildly, then these cues to initiate flowering do not occur and the plant will just grow leaves during the growing season. After vernalization has been completed, it helps the plant maintain dormancy through the rest of the winter and ensures the plants do not emerge too early.

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POSSUMHAW (*ILEX DECIDUA*)
BY BART JONES

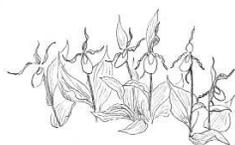


Do you have photos from trips you'd like to share? Are you interested in other TNPS News? Stay up to date and follow us on facebook! facebook.com/tennesseanativeplantsociety

Annual Conference



Friday & Saturday,
July 12-13, 2019
Reelfoot Lake State Park
Details Coming Soon



Fall Hike Summary

September 15, 2018 - Fall Flowers of Daddy's Creek Cobblebars by Larry Pounds

Our September 15th adventure combined asters, goldenrods and Daddy's Creek's glorious rocks and rushing water. The cobble bars were the prime places to find the fall flowers. Unfortunately though we found some soapwort gentians they were not mature enough to have their full deep blue color. You can never see it all even all the fall flowers with one trip. We were able to get a peek at the Devil's Breakfast Table from the parking area. There will be a full view after the leaves fall. The "table" is an enormous rock sitting on the top of a thirtyish-foot pillar of stone. The table appears to be ready to fall any second as it is well off center.

CRANE-FLY ORCHID (*TIPULARIA DISCOLOR*)
BY BART JONES



The Secret Winter Lives of Plants continued from page 3

Probably the most important event that takes place during the winter happens to seeds. Stratification is the process of weakening and damaging the hard coats many seeds have until they are able to take up water which initiates germination. This is accomplished by the many freeze/thaw cycles and subsequent scratching by soil particles a seed endures during the winter. For most seeds, just one winter will do the trick, but for some nuts like walnuts, hickory nuts, pecans, and even some acorns, it may take multiple winters to breach the woody shells. Many gardeners utilize a shortcut called scarification where the seed coats are mechanically damaged by scratching or filing and then soaking in water to speed up germination.

There are even plants that flower in winter. Most of us are familiar with our Tennessee native witch hazel (*Hamamelis virginiana*), but unless you have one in your landscape, you may have missed their flowers. In late November or early December the yellow flowers unfurl along the branches, the petals resembling ribbons. In the Ozarks of Arkansas, Missouri, and Oklahoma another species (*H. vernalis*) blooms in January and February and has reddish flowers. This species has been used to create numerous hybrids that keep the late winter bloom time. These hybrids have become very popular landscape plants because of the added garden interest these late winter flowers can provide. The invasive Oregon grape (*Mahonia aquifolium*), which is native to the Pacific northwest, also flowers in late winter in Tennessee.

I hope this has spurred your interest to a few of the aspects of what is happening underneath the leaves in your local woods, or what is taking place beneath the snow. So take an opportunity to visit your favorite haunts this winter and look for some of these cold weather miracles.

Tennessee Native Plant Society

A Living Fossil continued from Page 1 -

Magnolia-like plants show up in the fossil record from about 120 million years making them our early flowering plant living fossils. I have no idea why magnolias have evolved slowly.

There is an outstanding place on the Cumberland Trail (CT) to see magnolias. As you hike from Tank Springs heading toward Eagle Bluff, look for magnolias as you start to climb the hill after leaving the streamside. There are four magnolias here, umbrella, big-leaf, Fraser's and cucumber. Another member of the magnolia family but not the magnolia genus, tulip poplar is also here. These four are the entire CT magnolia list.

Elsewhere, I'm starting to see another magnolia, the popular southern magnolia, spreading from cultivation. We should expect it to eventually turn up along the CT. The sweetbay magnolia is another one that occasionally spreads from cultivation. The southern and sweetbay magnolias in the wild are mostly found on the coastal plain.

To recognize our CT magnolias from their leaves, look for large, simple (one blade area per leaf), alternate (leaves alone at their stem position) and entire (smooth edged) leaves. Clustering of leaves for umbrella, big-leaf and Fraser's make the leaves look whorled rather than alternate, but a close look should clear that up. Cucumber magnolia is clearly alternate. Cucumber magnolia leaves are smaller than the other magnolias and can easily be confused with paw-paw leaves. The leaf shapes are a bit different and the buds are distinctive, but perhaps the best way to separate them is smell. Crush up a leaf. If it has a strong odor which is often described as oilcan, then it is paw-paw.

Here's my hopefully easy key for CT magnolia leaves. Start with the "1" and follow the indentation.

1. Leaves clearly alternate and not clustered.....Cucumber magnolia (*Magnolia acuminata*)
1. Leaves clustered, often very large
 2. Leaf blade bases v-shapedUmbrella magnolia (*Magnolia tripetala*)
 2. Leaf blade bases with "ear" lobes (cont. below)
 3. Leaves very whitened underneath (bud and twigs hairy)...big-leaf magnolia (*Magnolia macrophylla*)
 3. Leaves not so whitened underneath (bud and twigs hairless).....Fraser's magnolia (*Magnolia fraseri*)

Of all the magnolias along the Cumberland Trail, Fraser's is the hardest to find. It is much more common in the Blue Ridge Mountains, the mountains along the North Carolina border, than on the Cumberland Plateau. Our records of Fraser's for the Plateau are few and recent. I suspect some botanists saw it but assumed it was big-leaf with unusually small leaves.

Conservation of the Wolf River Floodplain and Heteranthera multiflora continued from page 1 -

It is also listed as extremely rare, a category of plants with 5 or fewer occurrences in the state. Because this plant also occurs in several other states and in some South American countries, it has a global rank of G4, i.e., apparently secure but of long-term concern because of its rarity in parts of its range. With your help, we will add the Cornerstone property to our portfolio of protected lands, thereby helping the Bouquet Mudplantain and many other sensitive species.

Right now, with your help, we have an exciting opportunity to preserve another critically important property on the Wolf River. The Cornerstone Property, located off Bateman Road in Fayette County, is the final scenic stretch of the Ghost River section of the Wolf River before the take-out at Bateman Bridge. This property also represents the cornerstone of the Wolf River Conservancy mission – Conservation, Education and Recreation – and includes the following highlights:

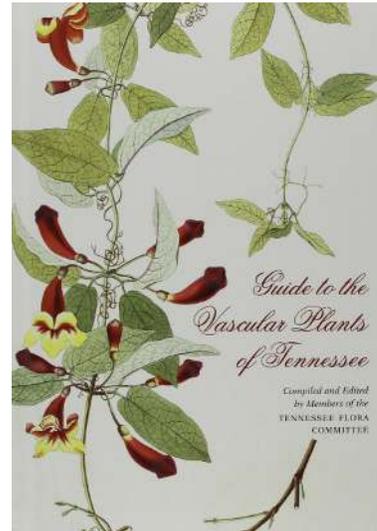
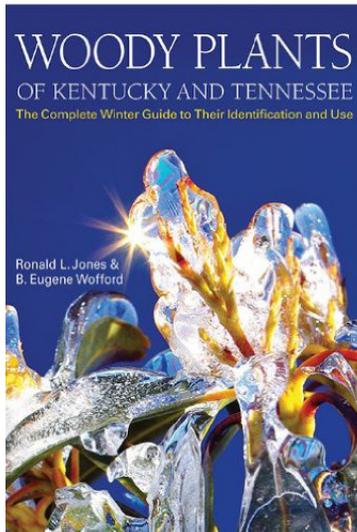
- Protects both banks of the Wolf River, completing the western extent of the Ghost River State Natural Area
- Increases access for paddlers, anglers, birdwatchers and hunters
- Contains a rare plant community and diverse habitats for birds, fish, amphibians, mussels and other species
- Protects scenic wetlands that recharge the Memphis Sand Aquifer
- Acts as the outdoor education and recreation hub in Fayette County

Contact the Wolf River Conservancy for donation details.

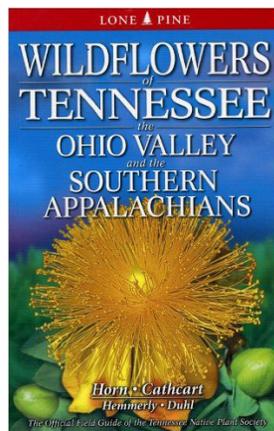
Native Plant References

Don't forget to purchase field guides before spring!

All books available through TNPS.



Wildflower books are back in stock. The Lone Pine sales office has received their new order. Reach out to one of our board members or purchase directly from www.lonepinepublishing.com.



2019 Hike Schedule Coming Soon

Check www.tnps.org and Facebook for upcoming details on 2019 events.

When Dues Are Due?

Unless you are an email subscriber, check your mailing label for your membership date. You are paid through the year listed just above your name. You can pay TNPS dues at any time, and now you can pay online at the TNPS Website. Just go to www.tnps.org, click "Membership," and follow directions there. If your address has changed, you can email the new address to info@tnps.org. We cannot print the newsletter in full color, but you may be pleased to find all the color in email copies and at the website. www.tnps.org

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