

POTOWMACK NEWS

Potowmack Chapter of the Virginia Native Plant Society

VOLUME 41, No. 3, JUNE-AUGUST, 2023

Why Black Oak?

By Karla Jamir



BLACK OAK (QUERCUS VELUTINA) FALL COLOR. ALL PHOTOS FOR THIS ARTICLE BY KARLA JAMIR

“I guess we all have to plant White Oaks” I once thought to myself, after hearing a talk by Doug Tallamy, author of *Bringing Nature Home* and later books. It turned out that I had misinterpreted Tallamy’s research, which emphasizes the extraordinary number of pollinators that oaks support, making them “keystone species” in local ecosystems. What I *thought* I heard was that the White Oak (*Quercus alba*) topped the list by hosting well over 550 species of caterpillars --- instead of understanding that it is oaks in general that far exceed other tree species in the number of insects that use them. Perhaps jumping to this conclusion is not surprising, since White Oaks are undisputed champions in so many ways – for their longevity, large size, usefulness to humans and wildlife, and for just being magnificent trees. Even so, in my own back yard, the leaves that I see turning red-gold and bronze in the fall belong to a Black Oak (*Quercus velutina*), and scattered further back are a few small Blackjack Oaks (*Quercus marilandica*) which I cherish. My fondness for these less lauded “underdog” species made me wonder what role they might play in the landscape, both now and in the future.

Both Black Oaks and Blackjack Oaks belong to the ‘red oak’ group of oaks, with bristle-tipped leaves and acorns that take two years to mature. Both tend to grow in drier sites, and have bark that is very dark, blocky, and rough — although Black Oak bark has a bright yellow layer beneath the surface. Black Oak leaves have 2-4 pairs of shallow or more deeply cut

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Upcoming

Springfield Forest Park Acidic Seepage Walk with Nelson DeBarros

Friday, June 9, 1-3 pm
6400 Kalmia St, Springfield

Join FCPA Vegetation Ecologist Nelson DeBarros to explore a globally uncommon Acidic Seepage Swamp (G3//S3) at Springfield Forest Park. Encountered species will include a number of sedges, ferns, poison sumac, and several blueberry species. With any luck, swamp azalea and sweetbay magnolia will be in bloom. We will follow an established, unpaved trail and should keep our feet dry.

Pre-registration required: watch for announcements or check the VNPS website. Narrow trail dictates a limit of 10 participants (no pets), but if there’s enough demand, a morning session may be opened.

Riverbend Meadow Walk with the Grass Bunch

Monday, July 3, 9 am-12 noon

We’ll look at grasses and sedges and rushes, oh, my! along a natural surface trail with lots of sun and no steep slopes. But the real reason for this walk at this time in this place is to see the field of Butterfly Weed, perhaps being visited by zebra swallowtails. Meet in the parking area for the Riverbend Nature Center, beyond the main entrance.

Pre-registration required: watch for announcements or check the VNPS website. Limit 20 participants, no pets.

All events are free and open to the public. Walks require preregistration. For email notices of upcoming events, subscribe to <https://vnps.groups.io/g/potowmack>. Or send a blank email to potowmack+subscribe@vnps.groups.io

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Hemlock Overlook Park Joins the Old Growth Forest Network

By Margaret Chatham

A portion of Hemlock Overlook Regional Park was designated part of the Old Growth Forest Network in a ceremony beside Bull Run on April 18, 2023. Its Hemlocks (*Tsuga canadensis*) illustrate the truth that you can't tell a tree's age by its size. Two-hundred-year-old Hemlocks may easily be dwarfed by fifty-year-old Tulip trees (*Liriodendron tulipifera*.) The Hemlocks come into their own on the steep slopes above Bull Run, where larger, hungrier trees are at a disadvantage. The ceremony also celebrated the installation of a new interpretive sign on forest succession, which states that while most of the forest in the park is regrowth since 1937, some of the Hemlocks are several hundred years old, and can potentially live nearly one thousand years.

While others were excited about the out-of-reach Hemlocks or the birds to be heard along Bull Run, I was delighting in the wildflowers brought almost to eye level by the steep slope beside the trail. There were Woodland Stonecrop (*Sedum ternatum*), Sessile Bellwort (*Uvularia sessilifolia*), Early Saxifrage (*Micranthes virginensis*), and new to me, Twisted Sedge (*Carex torta*) — shown below in full, riotous bloom, as Alan Ford likes to say.



On the more leisureed walk back afterwards, plants we had hurried past on the way in drew my eye: Smooth Yellow Violets (*Viola eriocarpa*), Cream violets (*Viola striata*), Azure

Bluets (*Houstonia caerulea*), Striped Wintergreen (*Chimaphila maculata*), the striking leaves of Rattlesnake Weed (*Hieracium venosum*), and another plant new to me: Hispid Buttercup (*Ranunculus hispidus*).

Old Growth Forest is about so much more than "just" the wonderful trees.

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BLACK OAKS CONTINUED FROM PAGE 1

lobes, which when fresh and young can be confused with the leaves of oaks that are similar, such as those of Northern Red Oaks. When leaves are fully mature the difference is clear, since Black Oak leaves stand out for being noticeably thick and firm, lustrous on the upper surface, and yellowish and minutely hairy or flakey underneath.

Blackjack leaves are even more leathery, as well as glossy on top and pubescent beneath. When growing in shade they can be large, roundish, and basically unlobed, but the classic leaf shape has three shallow bristle-tipped lobes above a narrower base. Although this kind of leaf is unusual among oaks, some Southern Red Oak (*Quercus falcata*) leaves fit the same description. One way to tell the two apart is by petiole (leaf stem) length. Blackjack petioles are shorter, less than three-fourths of an inch long. Southern Red petioles supposedly range from three-quarters of an inch to two inches. Unfortunately, I find that young shade leaves on Southern Red Oaks – the very ones most likely to be mistaken for Blackjack Oak – haven't always "read the book" and often measure exactly three-quarters of an inch - or less. Is the solution to just toss out the leaves that won't conform? Maybe... but it does illustrate that it is better to look at the whole tree and its habitat rather than an individual leaf.



SOUTHERN RED OAK LEAVES AT LEFT; A VARIETY OF BLACKJACK OAK LEAVES AT RIGHT.

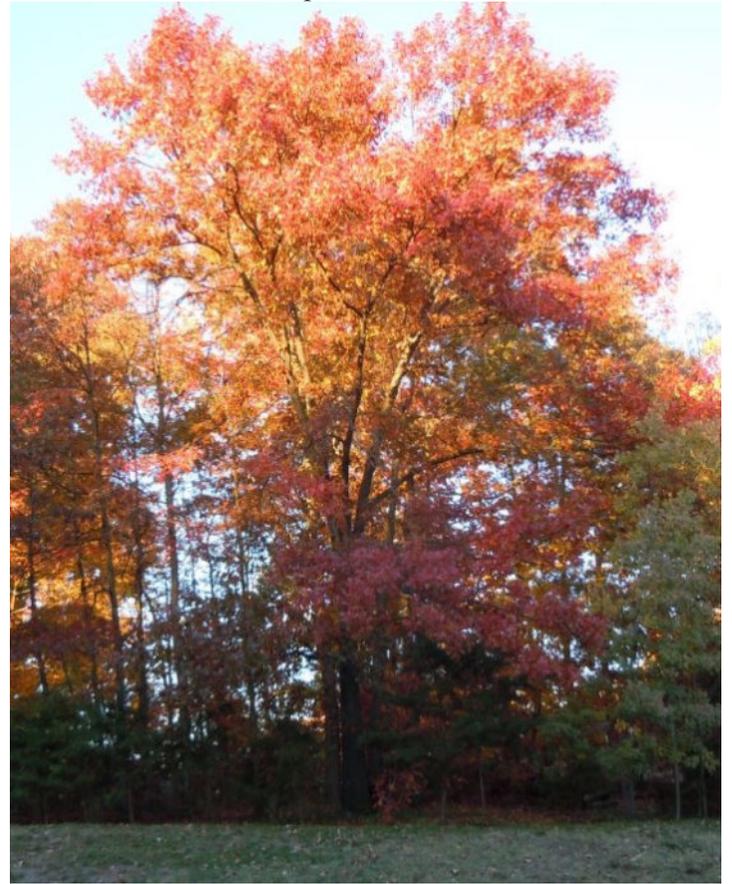
Under ideal conditions, Black Oaks can grow over 100 feet tall, equaling the height at least of a well-grown White Oak, but in trunk diameter and branch spread they usually linger far behind. They don't live as long, at a maximum maybe 150 or 200 years. Although a common component in forests, they are not used much in landscaping.

As Donald Peattie bluntly puts it in his delightful 1948 book *The Natural History of Trees*: "Too often the trunks are short and crooked, knotty, cracked..... inwardly decayed. And Black Oak is too heavy in form, too narrow in the crown, too unkempt in its winter outline, ever to be a favorite for planting. It has none of the benignant grace that makes White Oak, Bur Oak, and Live Oak the perfect dooryard trees."

Given these standards, Blackjack Oak is even less likely to be a front yard favorite. Less than 50 feet tall, or even

growing in a dwarfed shrublike form, it has an uneven crown and a contorted branching structure. Traditionally labeled a "scrub oak", it was historically considered useful only as firewood. It lives in infertile soils that are dry, eroded, shallow, and stony, or poorly drained and alternately either too wet or too dry. The *Flora of Virginia* lists its habitat as "alternately wet and droughty shrink-swell clays, xeric hardpans, deep sands, and shallow, nutrient-poor soils over acidic bedrock." It performs as a pioneer species when there has been a disruption such as fire, but it cannot tolerate shade at all and will be ultimately outgrown by taller species. It has characteristics that are considered unattractive, such as retaining its down-sweeping lower branches for several years after they die. One wonders, does it shade out and kill its own lower branches, and then, due to a tough and stubborn character, perversely refuse to let them go?

Far from being a rare species lingering in a few marginal habitats, the Blackjack Oak can be found from New Jersey to northwestern Florida, west to Iowa, and southwest halfway across Texas. Black Oak has nearly the same range, but it also reaches into the high mountains and more northern states where the Blackjack doesn't grow. Both species are more abundant in drier and less fertile places, often on arid southern and western facing slopes and ridges, not because they are limited to these areas, but because there is less competition.



BLACK OAK, QUERCUS VELUTINA

Black Oak is an important member of many deciduous forest types, but there has been a significant decline since European occupation. This is not directly due to any preferential logging, although the wood is harvested as generic "red oak", and the bark was valued previously for

yellow dye and tannin. One of the multiple and complex causes of decreasing population is that fire suppression practices do not favor the regeneration of Black Oak and other slow growing species with only “medium” shade tolerance. White Oaks have this problem too, but there is at least one difference. Although both species need light to advance from seedlings to a sapling stage and beyond, White Oak seedlings have been known to linger under a shady forest understory for up to ninety years waiting for an opening in the canopy. By this time similarly aged Black oak seedlings have already died.

Thinking about the variety of traits among these species, I became curious about the conditions in which they might have developed over time. To begin with, were there major differences in adaptive abilities that led to a “white oak” group and a “red oak” group? An attempted plunge into the evolutionary history of oaks was incredibly daunting -- and fascinating. Recent genetic research confirms that oaks first evolved around 56 million years ago, when the world was warmer, and continents were still connected by land bridges. The genus began to separate into two branches “remarkably soon” after it arose, one in Eurasia and North Africa, the other mostly in North America, although there was still considerable intermingling between the two. Further division of the North American branch led to the “red oak” and “white oak” lineages we still recognize today. Starting 52 million years ago the climate began to cool, and the lineages became restricted to their respective parts of the world. By 40 million years ago, decreased temperatures and greatly increased differences between seasons had changed the North American climate from a tropical to a temperate one. As Scientific American puts it:

“The resulting abundance of open habitat enabled oaks to diversify. Increased ecological opportunity allowed oaks to undergo an adaptive radiation, in which nascent species rapidly fill spaces that other species are not occupying...

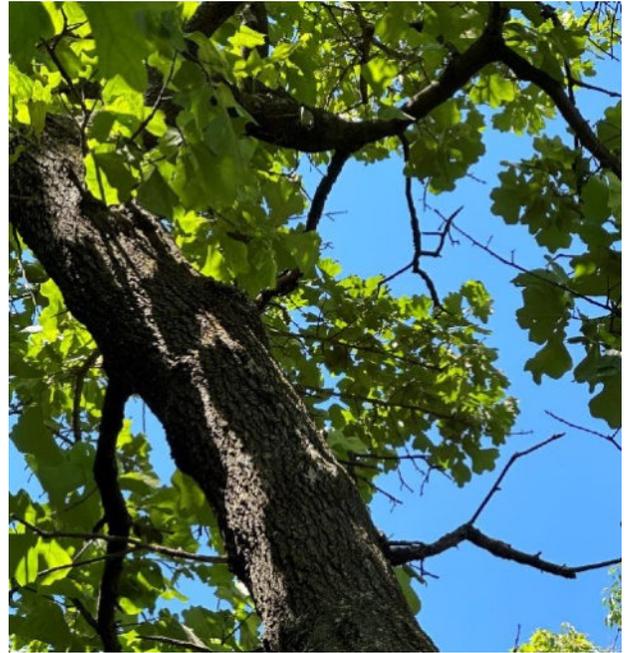
“As climate change extirpated tropical forests from North America... The red and white oaks moved south into this newly opened territory ...

“The oaks' southward journey actually played out twice, simultaneously and in the same places. Because white and red oaks had already separated from each other by the time they started moving south, this diversification history happened in parallel in both the red and white oaks. Two distinct but very closely related lineages, not one, traced the biogeographical history... This history may explain part of the species richness and abundance of oaks in the Americas. They essentially double-dipped as they ventured south.

“As oaks spread south and diversified in different regions, the white and the red oaks encountered similar habitats and repeatedly solved the same ecological problems in novel ways. As a result, we often find red and white oaks growing together in the same habitats. For example, on poor rocky soils and bluffs in the eastern U.S., you can find the white oak *Quercus stellata*, also known as the post oak, growing next to the red oak *Quercus marilandica*, commonly called the blackjack oak...”

The complex story of the genetic history of oaks goes on, involving interbreeding, hybridization, introgression, genomic regions and much, much more. For now, the vision of the varieties of oak species forming a dynamic whole whose strength depends on its diversity is inspiration enough.

And it demonstrates that is certainly a worthy cause to invite members of any of our native oak species, even the quirky and less obviously majestic ones, out of the forests and into our humanized landscapes.



BLACKJACK OAK TRUNK

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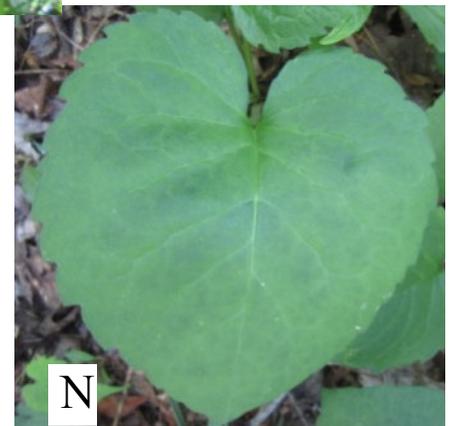
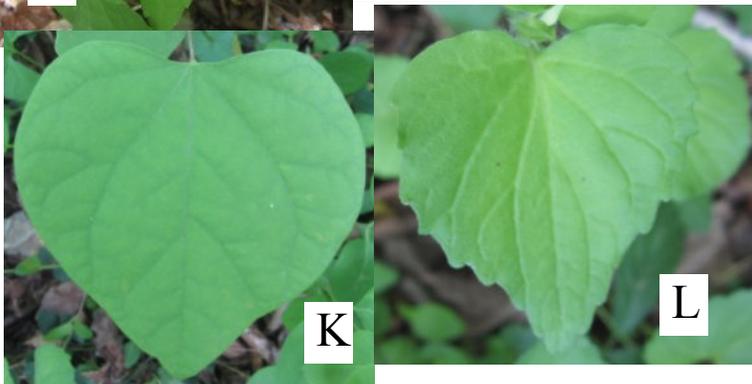
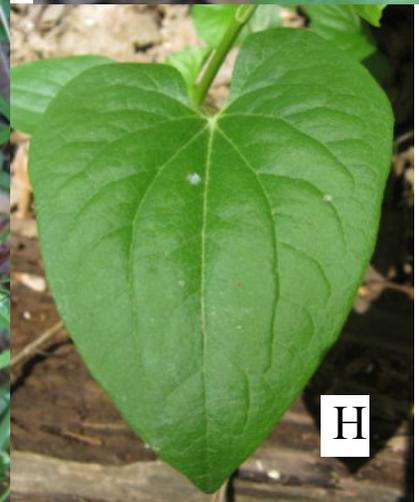
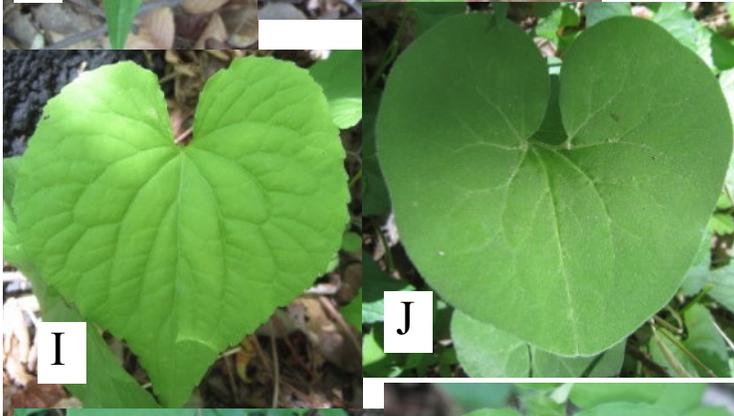
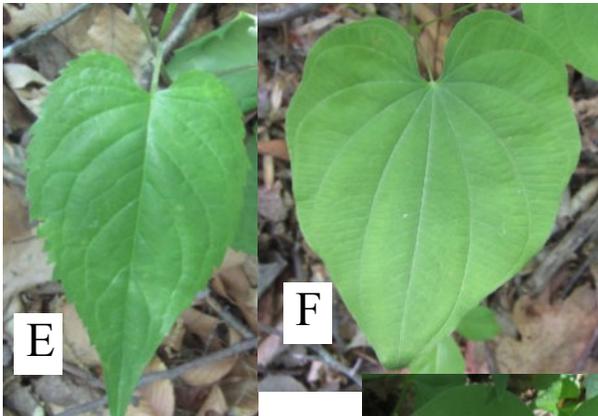
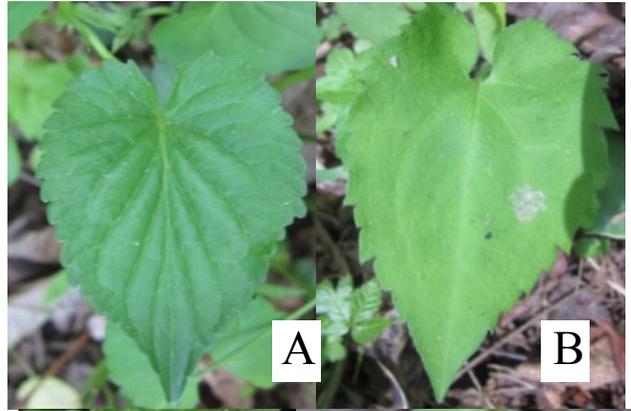
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Heart-Shaped Leaves

No two hearts are exactly the same. How many do you recognize? Answers on page 6.

1. *Asarum canadense*, Wild Ginger
2. *Cercis canadensis*, Redbud
3. *Circaea canadensis*, Enchanter's Nightshade
4. *Dioscorea villosa*, Wild Yam
5. *Eurybia divaricata*, White Wood Aster
6. *Eurybia macrophylla*, Big Leaf Aster
7. *Saururus cernua*, Lizard's Tail
8. **Silphium perfoliatum*, Cupplant
9. *Symphyotrichum cordifolium*, Heart-leaved Aster
10. **Syringa vulgaris*, Lilac
11. *Viola canadensis*, Canadian Violet
12. *Viola eriocarpa*, Smooth Yellow Violet
13. *Viola sororia*, Common Blue Violet
14. *Viola striata*, Cream Violet



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Word of the Month: Cordate



Of a leaf, shaped like a stylized heart, particularly referring to the notched leaf base.

Photo by Margaret Chatham:
 Smooth Yellow Violet, *Viola eriocarpa*, formerly *Viola pennsylvanica*. There also exists a Downy Yellow Violet, *Viola pubescens*. Contrary to what I used to think, both of them can have fuzzy seed capsules. The difference between the species lies in the smooth or fuzzy character of stems and leaves.

Answers to puzzle on page 5: 1-J; 2-K; 3-D; 4-F; 5-E; 6-N; 7-H; 8-G; 9-B; 10-M My really heart-shaped, really common Lilac died years ago; this is a cultivar that survives Virginia summers but is less heart-shaped; 11-I Notably larger leaves than other violets; 12-L; 13-C; 14-A Notably smaller leaves than other violets.