

WINTER

POTOWMACK NEWS

Potowmack Chapter of the Virginia Native Plant Society

VOLUME 40, NO. 1, JAN-MAR, 2022

American Holly

By Margaret Chatham



“THE HOLLY BEARS A PRICKLE AS SHARP AS ANY THORN” THE PRICKLES ARE DRIP POINTS, WHICH CAN CREATE ICICLES. ALL PHOTOS IN THIS ARTICLE BY MARGARET CHATHAM

When we moved into our house in 1986, we saw numerous American holly, *Ilex opaca*, seedlings in the yard, and resolved to let the seedlings grow into trees. Thirty-five years later, I’m wishing we had been a little more selective in our “let-grow” policy, as hollies have taken over substantial portions of the yard, and nothing else grows in their dense evergreen shade. It’s past time to thin them out. Still, they are pretty, provide screening and shelter, host over 40 species of Lepidoptera, and feed birds with their berries.

American holly is a slow-growing, evergreen, understory tree, which may eventually reach a height of 60-90 feet. (None of mine are over 20 feet yet.) It bears stiff, mostly horizontal branches. *Flora of Virginia* describes its leaves as “4-10 x 2-5 cm, elliptic to elliptic-obovate or oblong or ovate, rounded to cuneate at the base, acute to acuminate with spiny tip, dentate with few to many strongly salient spine-tipped teeth or, sometimes, entire with only a single apical spine, revolute, coriaceous, dull above, evergreen.” Michael Dirr’s *Manual of Woody Landscape Plants* cites the existence of over 1,000 registered cultivars, all of which had to come from somewhere. This all makes it very hard to tell which plants are native and which are hybrids with whatever European or Asian species may be around.

Evergreen leaves don’t last forever: holly drops old leaves in the spring around the time it’s growing new ones. Most of my trees currently hold leaves

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Upcoming

Charles Smith: The Healing Power of Nature

Thursday, Jan 13, 7:30 pm

Zoom Meeting. See <https://vnps.org/potowmack/events/> for registration connection closer to the date

Nelson DeBarros: New Botanic Finds in Fairfax County

Thursday, Feb 10, 7:30 pm

Zoom Meeting. See <https://vnps.org/potowmack/events/> for registration connection closer to the date

Clare Walker: How Climate Change Alters Phenology (It’s not as straight-forward as you expect!)

Thursday, Mar 10, 7:30 pm

Zoom Meeting. See <https://vnps.org/potowmack/events/> for registration connection closer to the date

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

Surprising Seeds!

By Donna Murphy



SEED OF ERAGROSTIS SPECTABILIS, PURPLE LOVEGRASS. PHOTO BY TONI GENBERG.

I recently separated a variety of seeds, packaged each species in a small envelope and labeled them with the satisfaction of a labor-intensive job completed. I love to study seeds. When I started collecting them for propagation, I didn't expect I would find the characteristics of the seeds themselves so entertaining and interesting.

The towering Cardinal flower, *Lobelia cardinalis*, with its royal spike of gorgeous red flowers has such tiny seeds, they collectively look like ground cinnamon or paprika. They're easy to collect and pour like dust out of the open capsules. A daintier plant, Jacob's Ladder, *Polemon reptans*, has bigger seeds, more like apple seeds. They're tricky to collect, because when the seed capsule opens, the seeds are ejected. Other plants that eject their seeds are Flowering Spurge, *Euphorbia corollata*, and Carolina Wild-Petunia. *Ruellia caroliniensis*.

The seeds of Turtlehead, *Chelone glabra*, are brown, papery, flat discs with black centers. When you spill them out of the capsule, very tiny granules also appear. Under a handheld magnifier, they appear as duplicates of the larger seeds. Will they germinate?

Some seeds look almost like insects and even behave (!) like them. Grass seeds may cling to their bracts, which often sport a hairlike awn. When touched, the seeds appear to spring away on their own power.

Plants store energy in the form of oil, particularly in their seeds, which use this high-energy food during germination. In the field, a simple identification characteristic of the native grass Purpletop, *Tridens flavus*, is the oily feel of the inflorescence where the seeds are formed inside the florets on the spikelets.

I noticed something novel about the seed of *Eragrostis spectabilis*, Purple Lovegrass, while trying to separate it from the chaff. The inflorescence (seed head) resembles miniature wheat. These miniscule seeds, when separated from the florets, are smooth, rounded and brown or chestnut in color. When magnified with an eyepiece (10X is good) and observed in the right light, they evoke natural amber (fossilized tree resin from which oil can be extracted). You can see their translucence with their store of golden oil and the gradations of their colors from dark to reddish brown to amber.

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SEED OF *ERAGROSTIS SPECTABILIS*, PURPLE LOVEGRASS, MAGNIFIED TO SHOW TRANSLUCENCE. PHOTO BY TONI GENBERG

It's not necessary to separate the seed from the chaff, if you're confident there is seed attached to or mixed in with the chaff. But if you are packaging seed to sell, cleaning the seed is a lot more important, plus it's fun to figure out ways to do this. Some seeds are smooth and round and will roll out of the chaff when you tip the container. Some chaff can be blown away, but you risk blowing away some of the seed too. Using a sieve works, but only if the bits of chaff and seed are different enough in size. A good way to separate small seeds from hard capsules is to use a mortar and pestle to gently tap the capsules. Then screen them through the right size sieve, and the bare seeds magically appear. This happens with seed capsules from *Hypericum stragulum*, Low St. Andrews Cross.

Another good way to separate or clean seeds is to collect them gently in the first place. By tapping lightly and not stripping the seed head, you can avoid a lot of chaff. The gentler approach may not gather as much seed, but certainly saves time. Choosing the peak harvest time (ripeness) should ensure a better yield.

And finally, seeds are distinctive and hard. You can almost always feel even the tiniest seeds with your fingertips. Oh, and when I process seeds, I keep a small container nearby to catch the tiny insects and spiders that crawl out of the litter, so I can return them to the habitat they came from.

When I finished packaging the seeds, I noticed a strong bitter taste in my mouth. Was it caused by handling or breathing volatile organic compounds from the seeds and bits of plant material? And if so, which ones? I suspected it was Common Sneezeweed, *Helenium autumnale*, the last seed I had packaged. A day or two later I handled the Sneezeweed seeds one more time and again noticed the bitter taste. It was a little scary, knowing that some plants are poisonous.

The bitter compound, I found, is among a multitude of chemical compounds comprising sesquiterpene lactones (SLs). These are natural products commonly found in various plants of the Asteraceae (Daisy) family, although also found in the Apiaceae, Magnoliaceae, and Lauraceae families—and even some liverworts.

Most of these bioactive compounds have been isolated from Asteraceae, also known as Compositae, the largest and most diverse family of flowering plants on earth.



HELENIUM AUTUMNALE, SNEEZEWEED. PHOTO BY GARY P. FLEMING.

SLs have been studied in the last decade for their biologically potent anti-inflammatory effects and have potential to treat cardiovascular disease and cancer. Their antimicrobial, antiviral and antioxidant properties are also under study, as well as potential for possibly treating tuberculosis, ulcer, parasites, HIV, diabetes, fever, depression, and for protecting the liver.

Historically, Native Americans used Sneezeweed roots and stems to treat fever, but the amusing common name comes from another use. Some Native Americans inhaled a snuff of its dried, ground leaves to induce sneezing, which was supposed to rid the body of evil spirits. However, in the outdoor environment, Sneezeweed does not cause allergic sneezing.

Sneezing aside, the plant is poisonous if consumed in large amounts. It can be fatal to horses and other grazers if they don't have preferable forage.

On a hopeful note, drugs made from SLs might someday (if not already) prevent and treat serious medical conditions —with

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SEED CONTINUED FROM PAGE 3

lower side effects than current drugs—and/or be recognized as part of a balanced diet. Of course, these diverse chemical compounds are not produced by plants for the benefit of humans, but rather in reaction to microbial attack, to serve as antifeedants to deter herbivores (as in milkweed), and conversely as attractants of pollinators and/or pest predators. They can also provide allelopathic properties that repress the growth of competing vegetation nearby.

However, the benefit of these compounds to humans is more likely to ensure their survival.

References

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3709812/>

<https://vnps.org/johnclayton/2016/12/28/common-sneezeweed-november-2016-wildflower-of-the-month/>

with four sterile anthers surrounding a round, green ball in the center that will grow into the fruit. Male flowers look like this:



with four obviously pollen-bearing anthers and no green fruit-to-be in the center. If your trees are volunteers from seed, as all of mine are, there's no way to tell which are male and which are female until they are old enough to bloom. And how old is that? Many of mine have yet to bloom, but some (in slightly sunnier spots?) have been blooming for perhaps 15 years.

How close together do the male and female plants need to be? Within a bee's flight, so if you have both in your yard, you'll most likely get pollination — as long as bloom times overlap. Personally, I have no problem with *Ilex opaca*, but my *Ilex verticillata* male and female are completely out of synch, so both bloom but I have yet to see any fruit.

American hollies are endozoochors: they spread by having their seed go through the gut of a bird. William Cullina in *Native Trees, Shrubs, & Vines* says that hollies are moderately difficult to propagate by cuttings (so you would know which sex you're getting); difficult to propagate by seed. The birds seem to have no problem getting seeds to grow, though of course one has no way to count how many of their seeds fail. Robins are the most obvious consumers of holly berries, but I've also seen flickers and catbirds eating mine, and Loudoun Wildlife Conservancy's booklet *Planting for Wildlife in Northern Virginia* also lists Brown Thrasher, Eastern Bluebird, Cedar Waxwings, Northern Mockingbird, Wild Turkey, and Yellow Sapsucker as well as raccoons, skunks & squirrels as consumers of holly berries.

Holly's thick, spiny leaves don't strike me as particularly appetizing, but I have seen evidence of deer browsing on new growth. And looking for a good example of a revolute leaf edge just now, I rejected quite a few leaves that had been nibbled on or partially mined out. Henry's Elfin butterfly and Polyphemus moth are two of the Lepidoptera known to use holly as a host plant.

American holly grows in sun or shade, clay or loam, moist or dry soils, but you probably won't want it where you expect to brush up against its spiny leaves on a regular basis.

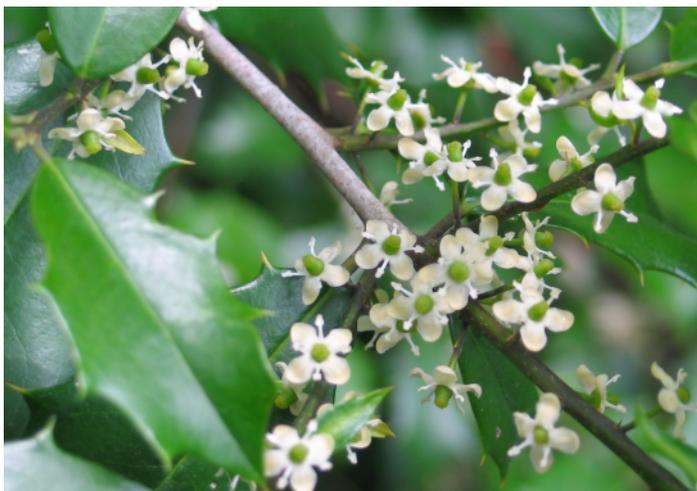
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on first- and second-year growth, with a scattering of third-year leaves still hanging on. Elsewhere I've seen trees with only a few second year leaves among leaves that first grew this past spring.

American holly is dioecious, so those pretty red fruits only grow on female trees. Female flowers look like this:

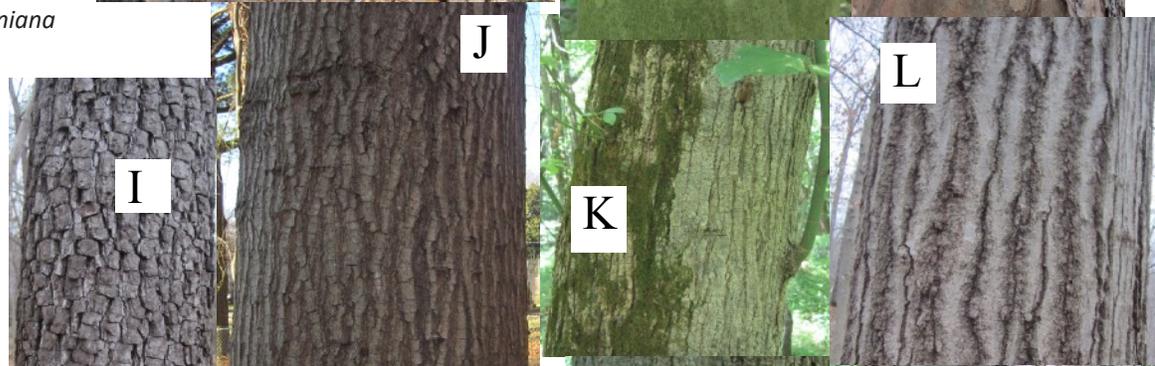
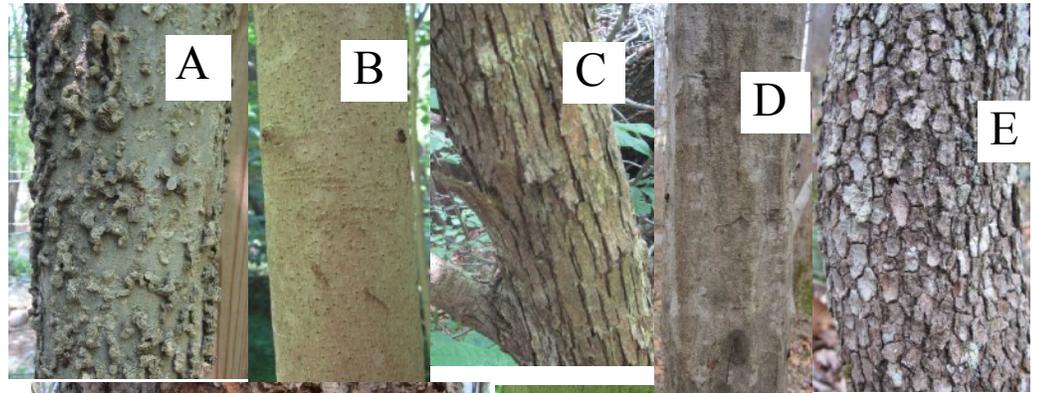


Bark

Woof! All local trees, not all native.

All photos taken near eye level.

- 1 Boxelder, *Acer negundo*
- 2 Norway Maple, **Acer platanoides*
- 3 Red Maple, *Acer rubra*
- 4 Pawpaw, *Asimina triloba*
- 5 River Birch, *Betula nigra*
- 6 Musclemwood, *Carpinus caroliniana*
- 7 Mockernut Hickory, *Carya tomentosa*
- 8 Hackberry, *Celtis occidentalis*
- 9 Dogwood, *Cornus florida*
- 10 Persimmon, *Diospyros virginiana*
- 11 American Beech, *Fagus grandifolia*
- 12 Black Walnut, *Juglans nigra*
- 13 Eastern Red Cedar, *Juniperus virginiana*
- 14 Hophornbeam, *Ostrya virginiana*
- 15 Loblolly Pine, *Pinus taeda*
- 16 Sycamore, *Platanus occidentalis*
- 17 Black Cherry, *Prunus serotina*
- 18 White Oak, *Quercus alba*
- 19 Pin Oak, *Quercus palustris*
- 20 Red Oak, *Quercus rubra*
- 21 Slippery Elm, *Ulmus rubra*



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Word of the Month: Revolute



Of leaves: with edges rolled under.

**AMERICAN HOLLY (ILEX OPACA)
LEAF WITH REVOLUTE EDGE.
PHOTO BY MARGARET CHATHAM.**

Answers to quiz on page 5: 1-K the hint here is the green twig; 2-P; 3-M this photo catches the transition from smooth bark above to broken bark below; 4-B; 5-F have to look up for the lovely peeling bark; 6-D; 7-O; 8-A; 9-E; 10-I “alligator bark”; 11-G; 12-U; 13-T; 14-C “cat-scratch bark”; 15-Q; 16-H; 17-N lenticels still visible on the plates; 18-S; 19-J; 20-L “ski trails?”; 21-R compressible bark.