

the Thalweg

Watershed Stewardship Program

Winter 2013

Volume 10 Issue 1

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Highlights from the Mob: Community Service in Action

The Cobb County Watershed Stewardship Program recently introduced the *Watershed Stewardship Mob* series and we're excited to report success! *The Mob* completed three local community services since October: A stream clean-up; a privet pull; and a stormdrain marking event.

On October 4th, students from North Cobb High School participated in the *Watershed Clean-up Mob* and removed five bags of trash, several large plastic bulky items, pieces of scrap metal, and variety of sports-balls from Butler Creek in Kennworth Park in Kennesaw. The most numerous item found were recyclable plastic sports drink bottles.

On November 1st, students from Lassiter High School and Kennesaw State University participated in the *Privet Pull Mob* at Sweat Mountain Park in Marietta. The Mob spent two hours removing invasive plants (filling our truck to capacity) to make room for native plants to seed and sprout. *The Mob's* efforts will provide better quality habitat for the local wildlife.

On December 6th, the *Storm Drain Marking Mob* marked storm drains in an unincorporated area of the county near Stilesboro Road and Acworth Due West Road. A total of thirty-four drains were marked in four neighborhoods, and seventy-one educational packets were distributed. The markers are placed to remind residents that storm drains are unfiltered, lead directly to our streams, and should remain clear of debris and other types of non-point source pollution such as pet waste, fertilizers, paints, and automobile fluids.

We have more opportunities to participate on the first Thursday of each month from 4:00 - 6:00 PM. The next Stewardship Mob will take place on February 7! Check the Watershed Stewardship calendar at www.cobbstreams.org for upcoming Watershed Mob events.



Georgia's Bogs - Treasures of Diversity

It's ironic, but most plant species in Georgia would have a difficult time surviving in the most species-rich ecosystem of the southeast: the bog. Bogs develop in low-lying, sunny areas with soggy soils. Plants such as pitcher plants, ladies' tresses, spider orchids, butterworts, and coreopsis exhibit a strikingly beautiful display when in full bloom. The main, and often only, source of water is rainfall.

Structurally, a bog is composed of a bottom layer of sand covered with a thick layer of peat and then a layer of sphagnum moss (which eventually decays to form more peat). These absorbent layers trap silt and moisture and, when untouched over millennia, can produce a scientifically valuable record of life, climate, and natural processes of the region. There are two types of bogs in Georgia: the very rare and small pitcher plant bogs of the mountains in the northern parts of the state; and the broader, more sprawled out bogs of the Coastal Plain. In all cases, bogs are disappearing faster than researchers can fully understand them.

It is estimated that 90 percent of all Georgia's mountain bogs have been destroyed, leaving only two known sites that are now carefully protected. Development, falling water tables, invasive plants, and lack of natural fire regimes all play a major role in the decline of this fragile ecosystem.

The *Sarracenia* aren't the only type of plant to thrive in bogs, but they are arguably among the most interesting. Here is a glimpse at the seven species of *Sarracenia* that naturally occur in the state of Georgia.

Sources: "Beauty in the Bogs" article by Laura C. Martin, Atlanta Botanical Gardens; *Sarracenia.com*; *Botany.org*; www.gpca.uga.edu; <http://plants.usda.gov/java/profile>. A special bid of gratitude for Barry Rice of *Sarracenia.com* and Mark Skinner of USDA-NRCS Plants Database for their generosity in allowing us to use their fantastic photographs in this publication.

Georgia's Seven Species of Pitcher Plants

There are seven species of pitcher plant native to Georgia, all of which thrive in bogs. What makes these plants special is how they have adapted the ability to obtain nutrients from sources other than soil. Their modified leaves act as pitfall traps, where the digestive juices dissolve and absorb their prey, allowing these carnivorous plants to live in nutrient-poor areas, where most other plants would perish.



Photo: Mark W. Skinner@USDA-NRCSPLANTS

***Sarracenia flava*: Yellow Pitcher Plant**

S. flava are easily recognized by their tall yellow-green pitcher leaves that grow in dense colonies near rivers in the Atlantic plain. The pitcher's "lid" has reddish or purplish veins, thought to keep out rain, thus preventing the digestive fluid in the pitchers from being diluted, and play a part in the attraction and guidance of prey into and downward inside the modified leaf.

***Sarracenia leucophylla*: White-topped Pitcher Plant**

S. leucophylla is classified as an endangered species and grows in the sandy openings among pine groves near the gulf coast and inland. These plants only possess a few leaves and have a reddish rim that attracts insects. The multi-colored pitcher tube possibly attracts and confuses trapped prey, making escape extremely difficult. Typically, prey cannot escape the downward-facing hairs inside the pitchers. This feature tends to make insects walk downward into the pitcher, while preventing them from walking back upwards and out.



Photo: Mark W. Skinner@USDA-NRCSPLANTS

***Sarracenia oreophila*: Green Pitcher Plant**

S. oreophila is the most endangered of all the Sarracenias and can only be found in a few locations throughout Georgia, North Carolina, and Alabama. During the dry summer months, the plant produces flatter leaves instead of tubes, possibly making it easier to maintain when less water is available. Due to habitat loss from rural industry, urban development, and over-collection by the commercial plant trade, this species has just over 30 naturally occurring locations remaining, most with fewer than 50 individual plants within the community.



Photo: sarracenia.com

***Sarracenia psittacina*: Parrot Pitcher Plant**

S. psittacina can be found in boggy low-lying areas of pine forests from Georgia to Louisiana. The modified leaves have a prominent wing on the side facing the center of the plant. The hood opening faces downward, and has purple veining with translucent green patches that allow sunlight into the interior of the hood. If an insect flies into the hood, it will see the "window-like" patches and confuse them for the sky, causing it to fly upward inside the pitcher instead of downward and out of the hood. The dense lining of hairs keeps the prey moving downward towards the pool of liquid at the bottom, where it drowns.



Photo: Mark W. Skinner@USDA-NRCS PLANTS

***Sarracenia rubra*: Sweet's Pitcher Plant**

The Sweet Pitcher Plant, also endangered, ranges in North Carolina, South Carolina, Georgia, Alabama, and California. *S. rubra* has sleek-looking maroon pitcher leaves that do not flare out at the top like many other species. As with many of the Sarracenia, the color pattern lures and tricks insects into a digestive liquid at the bottom of the pitcher. The Exyra moths spend the larval stage their lives within the pitchers of this and other Sarracenia species, feeding on the leaf tissues as caterpillars.



Photo: sarracenia.com

***Sarracenia minor*: Hooded Pitcher Plant**

S. minor, the Hooded Pitcher Plant, grows in acidic soils of open bogs and sphagnum seeps of swamps from North Carolina to Florida. The inside of the hood has nectar glands that offer food for the insect and initially attract it inside. Once feeding, the prey is attracted to the bright reddish patterns and translucent white windows down inside the pitcher. The curved hood and downward facing hairs trap the prey inside. Although this plant can be found in 50 of Georgia's coastal plain counties, its population is in decline due to fire suppression and the drainage of wetlands.



Photo: sarracenia.com

***Sarracenia rosea*: Burk's Pitcher Plant**

Sometimes called Burk's Southern Pitcher Plant, *S. rosea* is the only Sarracenia to produce light pinkish flower petals and has a somewhat unique pitcher structure with a larger, thicker lip around the rim. Found from Mississippi to Georgia in the southern portions of these states, *S. rosea* is more shade-tolerant than the other members of the genus and is considered a threatened species because the areas the plants occur in are being developed. *S. rosea* can colonize in drainage ditches, but this is not a substitute for the typical and natural habitat of this species.

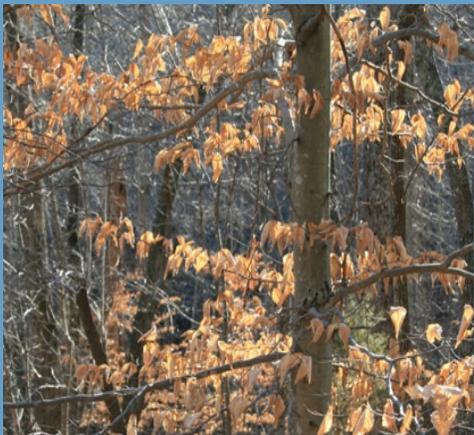


Photo: sarracenia.com

Marcescence - A Winter Leaf



Photos this page:
American beech (*Fagus grandifolia*)



We often dismiss the winter woods to be a bleak and leafless place. When you are out and about, make an opportunity to peek in at a native stand of trees, take a close look at what is going on after the colorful autumn leaves have fallen. Better yet, seek a spot to sit amongst them for a while. Listen to the wind blow through the bare branches, no longer leafed out and hidden beneath thick bundles of green. With close attention, you may notice a dry rustle of spent leaves still clinging to a few trees here and there, interrupting the steady resonance of the whispering breeze. It might seem odd that some trees are still holding onto their leaves when the others have dropped.

Some trees, particularly the beech and the oak, cling to their dead leaves throughout the coldest season. If this is the first winter you've noticed them, there likely won't be another winter when you *won't* take notice. Often times these lone beauties stand out as delicate figures, adding a silhouette of softness to the bare woods around them.

Marcescence: When parts of a plant remain attached when withered or dead

So why do some deciduous trees remain partially clothed through the winter months? There are several theories. It seems that the younger beech trees keep the majority of their leaves on most branches. The White Oak (*Quercus alba*) holds on to the dry and seemingly useless leaves on branches near the lower portions of the trunk. This phenomenon is known as marcescence.



Display for Deciduous Trees

Some ecologists propose that marcescence is a response to poor soil conditions. If the tree holds its dead leaves throughout the winter, when spring comes, marking the beginning of the growing season, the leaves would drop and provide a layer of mulch for the tree.

Other scientists suggest the leaves are mechanisms for holding snow, allowing moisture to drip down to the trees base, sort of a slow-release watering system, during the thaw.

Another theory brings about the possible reason trees hold leaves only on the lower branches as a response to the possibilities of losing buds to browsing animals such as deer. These remaining leaves act as a shield to hide the newly-formed buds from the browsers.

Marcescent leaves will drop when new leaf buds push them off in the spring, provided heavy gusts of wind haven't caused them to already fall. Marcescent leaves also fail to produce the hormones that cause the formation of the abscission layer, or the weak spot where a leaf will break away from the branch. The mystery remains why some trees display marcescence among only individuals, not species-wide.

One thing is for sure - the simple act of not dropping dead leaves reminds us how wonderfully diverse our natural world is and how little we really understand about the responsive nuances happening all around us, every day, in every season.

SOURCES: www.northernwoodlands.org, Michael Snyder - November 22, 2010;
<http://earthfriendlygardening.wordpress.com/2008/02/12/science-lesson-marcescent-leaves>

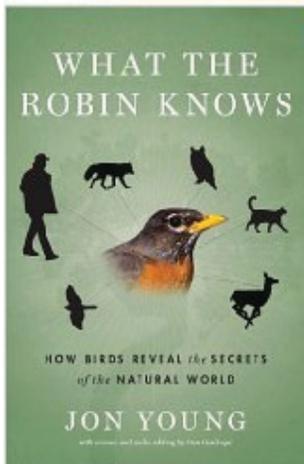


Photos on this page:
White Oak (*Quercus alba*)



RECOMMENDED RESOURCE

What the Robin Knows: How Birds Reveal the Secrets of the Natural World by Jon Young



A lifelong birder, tracker, and naturalist, Jon Young is guided in his work and teaching by three basic premises: the robin, junco, and other songbirds know everything important about their environment, be it backyard or forest; by tuning in to their vocalizations and behavior, we can acquire much of this wisdom for our own pleasure and benefit; and the birds' companion calls and warning alarms are just as important as their songs.

Birds are the sentries—and our key to understanding the world beyond our front door. Unwitting humans create a zone of disturbance that scatters the wildlife. Respectful humans who heed the birds acquire an awareness that radically changes the dynamic. We are welcome

in their habitat. The birds don't fly away. The larger animals don't race off. No longer hapless intruders, we now find, see, and engage the deer, the fox, the red-shouldered hawk—even the elusive, whispering wren.

Deep bird language is an ancient discipline, perfected by Native peoples the world over. Finally, science is catching up. This groundbreaking book unites the indigenous knowledge, the latest research, and the author's own experience of four decades in the field to lead us toward a deeper connection to the animals and, in the end, a deeper connection to ourselves.

Source: Houghton Mifflin Harcourt



Anoushka Gandotra, grade 2
Casa Montessori School
Marietta

Teacher: Hedwig O'Brien
Georgia Art Winner River of Words 2012

w e l c o m e

Foundations For the Future- Allatoona Creek
Devereux GA Treatment Center - Noonday Creek Basin

Jennifer Pramuk - Noonday Creek Basin

Andrew Wright - Rubes Creek Basin

Allatoona High School - Allatoona Creek Basin

Will Powell - Nickajack Creek Basin

Adopt-A-Stream Stars: Excellence in Data Collection

We would like to recognize volunteers who have monitored every month in the previous quarter. The following volunteers have submitted data each month during the June, July, and August quarter:

Rick & Sharon Donato - Monitoring in Rubes Watershed (Anuran)

Sierra Club Centennial Group - Monitoring Rottonwood Creek (Chemical, Bacterial, & Biological)

David Zandstra - Monitoring Rubes Creek (Chemical & Bacterial)

Simon Locke - Monitoring Butler Creek (Chemical & Bacterial)

Eric Lee - Monitoring Bishop Lake (Chemical)

Mike Seeley - Monitoring Noonday Creek (Chemical)

Donna-n-Carmen - Monitoring Olley Creek (Chemical)

Lewis Elementary Target Streamers - Monitoring Butler Creek (Chemical)

Jennifer Pramuk - Monitoring in the Noonday Watershed (Chemical)

Sedalia Park Target - Monitoring Sope Creek (Chemical)

Anne Ledbetter - Monitoring in the Rottenwood Creek Watershed (Chemical)

Friends of Mulberry Creek - Monitoring Mulberry Creek and Crooked Branch (Chemical & Bacterial)

Wishing Rachel Small a heart-felt farewell



For the past year and a-half Rachel has held the position of Environmental Programs Specialist here at the Watershed Stewardship Program, bringing educational programs and trainings to Cobb citizens of all ages. She has been an incredible source of knowledge and inspiration, and her laughter, wit, and easy-going spirit will surely be missed by the thousands of students, volunteers, citizens, and especially her colleagues, who have had the pleasure of working with and learning from her.

Please join us in wishing Rachel a successful and happy new beginning as she heads to Nashville, Tennessee, where undoubtedly the endeavors she pursues will become better and brighter with her presence.

Best wishes and good luck Rachel!

Petrichor (pet-rick-kur)

Petrichor is the pleasant smell that often accompanies the first rain after a long period of warm, dry weather in certain regions.

The oils are given off by vegetation during dry spells and are adsorbed on to the surface of rocks and soil particles, to be released into the air again by the next rains. The Macquarie Dictionary citation suggested that in Australia it is released by the leaves of eucalyptus trees; when it's washed by rain into watercourses it becomes a signal to fish, invertebrates, and other creatures that the season is sufficiently wet to support breeding.

The word comes from Greek petros, a stone, plus ichor, from the Greek word for the fluid that flows like blood in the veins of the gods. Petrichor is a poetic creation that means something like "essence of rock." Alas, it is encountered only very rarely.

Source: www.WorldWideWords.com



OBSERVATIONS



Georgia is home to two species of skunks: the Striped Skunk and the Spotted Skunk. The Striped Skunk (pictured top left) is about the size of a house cat and looks like the character "Flower" in the movie "Bambi." The Spotted Skunk (pictured bottom left) is much smaller and has black fur with white spots near the ears and down the back. Both species are active mostly at night and eat plants as well as small animals. Peak breeding activity occurs in February and March, so you may see them moving about more this time of year. To prevent getting sprayed with a putrid musk, keep your distance!



Linda May
Environmental Outreach Coordinator
Georgia DNR, Wildlife Resources

CONSERVATION TIP

Laundry Soap

Look for laundry liquids that contain vegetable-based cleaners instead of those that are petroleum based. They're gentler on your skin and won't contribute to the depletion of fossil fuels. If all of the babies born this year had their clothes laundered in vegetable-based detergent, the petroleum saved would equal 1.5 million gallons of gasoline, or the equivalent amount of energy to wash about ten million loads of laundry.

From: *The Green Book*





Cobb County...Expect the Best!

This is an official publication of the Cobb County Water System, an agency of the Cobb County Board of Commissioners.

Calendar of Events

January

- 10 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 16 Adopt-A-Stream Chemical Monitoring Workshop • 6pm - 8:30pm • Cobb County Water Quality Laboratory
- 17 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 24 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 31 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory

February

- 7 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 7 Watershed "Bird Feeder" Mob • 4pm - 6pm • Location TBD
- 9 Adopt-A-Stream Biological Monitoring Workshop • 9am - 3pm • Cobb County Water Quality Laboratory
- 14 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 21 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 20-21 Monarchs In The Classroom - Teacher Workshop • 4:30pm - 7:30pm • Cobb County Water Quality Laboratory
- 28 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory

March

- 7 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 7 Watershed "Stream Bank Stabilization" Mob • 4pm - 6pm • TBD
- 13 Adopt-A-Stream Bacterial Monitoring Workshop • 6pm - 8:30pm • Cobb County Water Quality Laboratory
- 14 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 16 Adopt-A-Stream Confluence • Gwinnett Environmental and Heritage Center • Buford, Georgia
- 21 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory
- 28 Garden Work Day • 9am - 11am • Cobb County Water Quality Laboratory