

the Thalweg

Watershed Stewardship Program

Fall 2015

Volume 12 Issue 4

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Follow our boards on Pinterest for environmental education and stewardship resources.



Follow our company page on LinkedIn.



Read our Rain & Wildlife Garden Phenology Blog

A Call for Garden Volunteers

The Cobb County Water System Wildlife & Rain Garden has been growing for over a decade! The site, a former railroad yard and compacted field of turf, has been transformed into a nearly one-half acre rain garden, urban wildlife demonstration, and pollinator habitat. While the Watershed Stewardship Program staff oversees the site, the success of the project depends on many helping hands. Thank you to all those who have participated in our work days, donated plants and expertise, and continue to show up week after week to help with upkeep. Maintenance of the Wildlife & Rain Garden is a sizable, ongoing endeavor. We depend on the collective effort of our garden friends to continue growing this project.

We need your help!! If you are interested in joining the volunteer crew on this Cobb County Master Gardener Project (no need to be a master gardener to volunteer), let us know. As with any garden, there are many tasks. Volunteers can choose responsibilities that best suit your interests.

Give us a call or come on by and see the garden, especially if you have a special interest in:

- Urban wildlife monitoring
- Monarch butterfly migration monitoring
- Rain gardens
- Pollinators
- Composting
- Guiding tours
- Ethnobotany



We would greatly appreciate your assistance with pruning, weed removal and general garden maintenance. All are welcome. You don't have to have experience or tools. We'll help you learn about gardening and provide the tools needed for the project.

We typically have a garden work day each Thursday morning from 8:30 to 10:30 a.m. (9 to 11 during the cooler months). It's always best to call ahead and make sure the work day is scheduled. We hope to see you in the garden!

Where: Cobb County Water System Wildlife & Rain Garden, 662 South Cobb Drive, Marietta, GA 30060

When: Spring/Summer Thursdays 8:30-10:30 AM, Fall/Winter 9-11 AM

Call: (770) 528-1482 or email Water_RSVP@cobbcounty.org

We hope to see you at the garden soon!!



Partnership Makes Headway Conserving Creek Rich in Rare Fish

From Georgia Department of Natural Resources
Wildlife Resources Division

Brent Womack has roots in Raccoon Creek. He grew up in Paulding County and occasionally fished the creek. Now, as a wildlife biologist with the Georgia Department of Natural Resources, he is helping conserve and restore it as part of a State Wildlife Grants project.

"I kind of have a vested interest in working on protecting it," Womack said.

He isn't alone. DNR Wildlife Resources Division's Game Management and Nongame Conservation sections are part of a team committed to conserving the northwest Georgia stream and its watershed, the most biologically diverse in the Etowah River basin below Lake Allatoona. Partners include The Nature Conservancy, Paulding County, Georgia Power Co., the U.S. Fish and Wildlife Service, and others.

The State Wildlife Grants program is the main federal funding source to help states keep common species common and protect other species from becoming imperiled and more costly to recover.

Raccoon Creek is home to some 45 fishes and rated critical for the long-term survival of federally endangered Etowah and threatened Cherokee darters. Georgia's State Wildlife Action Plan, a comprehensive strategy guiding DNR conservation efforts, lists the stream as one of the best sites for protecting Cherokee darters.

Adding to the promise, 27 percent of the 35,000-acre watershed is protected on public lands or through easements. "This is one of the few places where we have the opportunity to achieve watershed-level conservation," said Brett Albanese, senior aquatic zoologist with the Nongame Conservation Section.

The challenges are significant. Although the stream winds through Paulding Forest and Sheffield wildlife management areas, land clearing in the watershed has degraded some stretches through loss of stream buffers, increased sedimentation and altered flows. Metro Atlanta's growth also looms. The Raccoon Creek watershed is mostly in Paulding County, long one of the nation's fastest-growing counties.

The partnership provides a needed counter-balance. Three years ago, the state and county bought 6,500 acres of Paulding Forest WMA, including much of Raccoon Creek's headwaters. The Nature Conservancy then led development of a watershed plan that prioritizes conservation actions and properties, and syncs with conservation planning for the larger Etowah basin. Work in the field has varied from monitoring rare fish populations to restoring a mile-long stretch of the stream under a Georgia Power transmission line.

Here, a 30-foot buffer along the creek has been planted with low-growing trees and other vegetation to provide shade and stem erosion. Steep banks as tall as 15 feet have been re-contoured, allowing the mid sized stream to spill into the floodplain when levels surge, according to Katie Owens, Upper Coosa River Program director for The Nature Conservancy. Boulders have been placed to shore up streambanks. Cobbled streambeds have been restored to provide riffles needed by darters and other fishes.

"Our main goals were to stabilize the stream and reach, and create more habitat," Owens said.

She realized the partnership had at least partially succeeded in March when heavy rains pushed the creek into the floodplain, as they would naturally. Impacts to fish populations may take years to register. Yet, seining of Raccoon Creek's darter populations already shows what Albanese calls a "robust" pattern.

Grants are helping fund the work. The latest, a Recovery Land Acquisition Grant announced by the U.S. Fish and Wildlife Service in August, awards the DNR \$656,000 from the Cooperative Endangered Species Conservation Fund to acquire property along a tributary. Such buffers are vital to watershed protection.

Paulding Forest and Sheffield WMAs are managed primarily for public hunting and secondarily for other outdoor recreation. Some funds for land acquisition and recurring maintenance costs at these WMAs are made possible through the purchase of hunting licenses by Georgia's sportsmen and women.

Brent Womack knows the conservation needs at Raccoon Creek. Though the recession has slowed growth in the watershed, "It's not a question of if it's going to get developed," he said.

Help conserve rare, endangered and other nongame wildlife in Georgia. Buy or renew a bald eagle or hummingbird license plate, contribute to the Wildlife Conservation Fund state income tax checkoff or donate directly to the fund. All support DNR's Nongame Conservation Section, which receives no state general funds for its mission to conserve wildlife not legally hunted, fished for or trapped, as well as Georgia's rare plants and natural habitats.

Details at www.georgiawildlife.com/conservation.

Source: <http://www.georgiawildlife.com/node/2797>
This press release, describing the project, was published on October 5, 2011

Georgia Department of Natural Resource's most recent bulletin, published on August 28, 2015 provided the following update on the project:

More than 90 Etowah darters were collected in annual monitoring at Raccoon Creek, according to cooperators The Nature Conservancy, Kennesaw State University, Corblu Ecology Group and DNR. The partnership working to restore and conserve the northwest Georgia stream and its watershed reports that catch rates for the endangered fish had been near zero since 2011.

Source: <http://content.govdelivery.com/accounts/GADNR/bulletins/1169c2b>



Paulding Forest Wildlife Management Area
DNR wildlife biologist Brent Womack prepares to do some seining, or drag net testing, for fish in Raccoon Creek in the Paulding Forest Wildlife Management Area. (Contributed photo by Bill Harbin, DNR)
<http://tinyurl.com/pxdsnc>



The federally endangered Etowah darter, found in Raccoon Creek, has helped to bring additional dollars to protect the Paulding Forest-Sheffield Wildlife Management Areas. (Contributed photo by Bill Harbin, DNR)
Source: <http://tinyurl.com/onl3p6b>

Raccoon Creek at a glance

- Raccoon Creek is a tributary to the Etowah River, downstream of Lake Allatoona. This creek, which flows south to north, is well known by hunters, anglers and other outdoor enthusiasts because a large part of the watershed occurs within Paulding Forest WMA.
- Although the watershed is relatively small, more than 40 native fish species have been recorded from the creek and its tributaries. This represents more than half of the native fishes known from the Etowah watershed.
- Several fishes known from Raccoon Creek are endemic to the Etowah system, including the federally threatened Cherokee darter and the federally endangered Etowah darter. Raccoon Creek is one of five population areas for the Etowah darter and has the only significant population known downstream from Lake Allatoona.

RECOMMENDED RESOURCE

Coloring Isn't Just For Kids. It Can Actually Help Adults Combat Stress by Elena Santos

Coloring is an activity that we tend to associate with children. However, it turns out coloring can be beneficial for adults - namely for its de-stressing power. The practice generates wellness, quietness and also stimulates brain areas related to motor skills, the senses and creativity. In fact, publishers have lately been launching coloring books specifically for adults. The trend is alive and well in countries in Europe and North America.

When coloring, we activate different areas of our two cerebral hemispheres, says psychologist Gloria Martinez Ayala. "The action involves both logic, by which we color forms, and creativity, when mixing and matching colors. This incorporates the areas of the cerebral cortex involved in vision and fine motor skills [coordination necessary to make small, precise movements]. The relaxation that it provides lowers the activity of the amygdala, a basic part of our brain involved in controlling emotion that is affected by stress."

In simplest terms, coloring has a de-stressing effect because when we focus on a particular activity, we focus on it and not on our worries. But it also "brings out our imagination and takes us back to our childhood, a period in which we most certainly had a lot less stress." This leads us immediately and unconsciously to welfare, exposes the specialist. "I recommend it as a relaxation technique," says psychologist Antoni Martínez. "We can use it to enter into a more creative, freer state," he assures. We can also use it to connect with how we feel, since depending on our mood we choose different colors or intensity. "I myself have practiced that. I recommend it in a quiet environment, even with chill music. Let the color and the lines flow."

Source: http://www.huffingtonpost.com/2014/10/13/coloring-for-stress_n_5975832.html



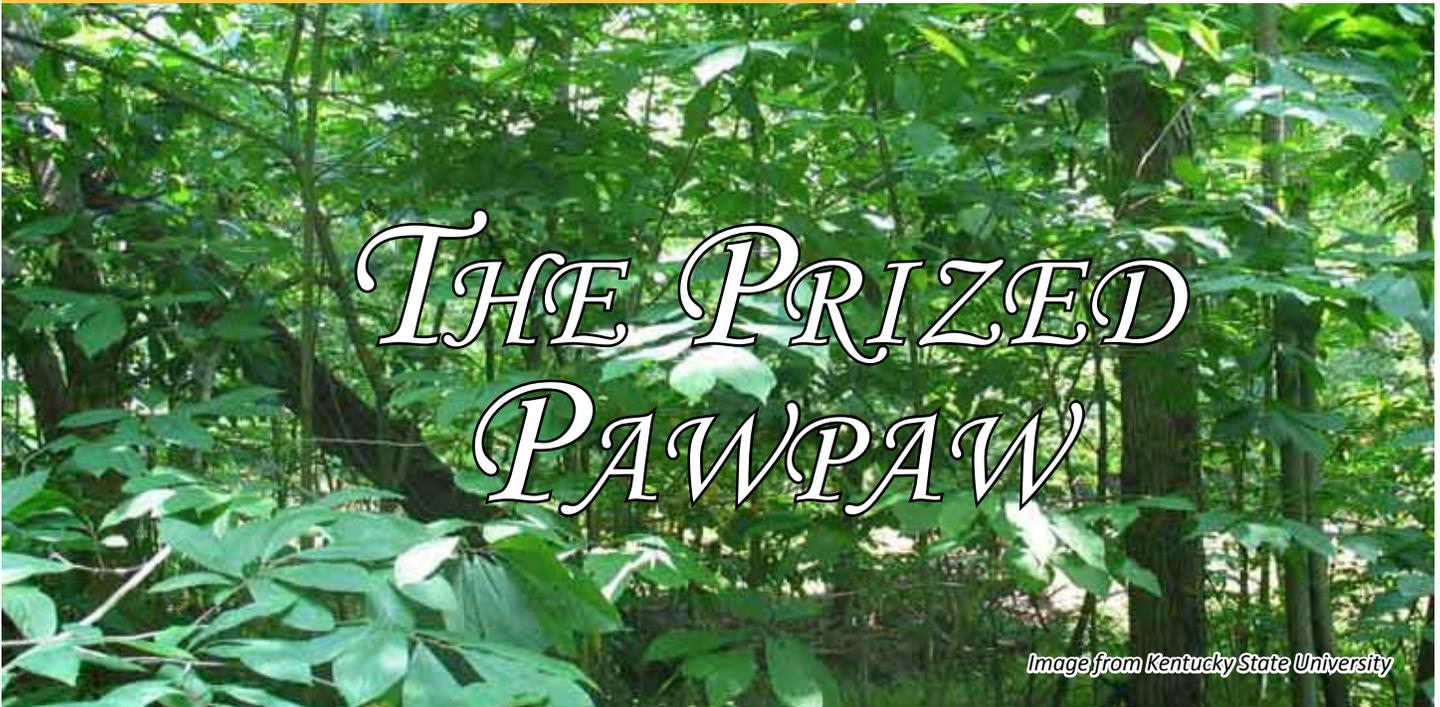


Image from Kentucky State University

Growing in the woods of Georgia and 25 other states is an amazing tree. This is not just any tree, but a native plant with tropical ancestry. Towns and festivals are named for this plant but the fruit has never been sold in your box grocery store. Beloved by hikers, kayakers, and wildlife as a tasty snack, the Pawpaw is seldom known outside of these close knit circles.

The Environment

Pawpaws, from the genus *Asimina*, are understory trees that reach heights of 35 feet. In areas of direct sunlight, the tree can have a cone shape trunk, like a Christmas tree and will produce copious quantities of fruit. Since the pawpaw grows from shoots more so than seeds, they are found in thickets, with one large tree sending shoots to form smaller surrounding trees. Transplanting the younger shoots is ineffective because the shoots do not produce enough root mass to survive on their own. Easily spotted in the fall, due to the vibrant yellow leaves, or the spring, due to the late blooming murky purple flowers, pawpaw's can be found year round. Pawpaw's like humidity with well draining soil, so they are commonly found along river banks and streams. Finally, they must have 160 days without freezing temperatures to flourish in their environment. The humidity and the warm environment are in keeping with the rest of the pawpaw's family. Custard apples, sweetsop, and ylang-ylang are all fruiting tree's that enjoy humidity, warmth and are all found in the tropics. The pawpaw is the only member of this tree family that makes its home in temperate forests.



Zebra Swallowtail (spring form), *Eurytides marcellus*
Image by Megan McCarthy
<http://tinyurl.com/nk4bquv>

The Host Plant

Pawpaws are not the most hospitable of plants. In fact many animals avoid the tree due to the rank smell of the flowers. Toxic chemicals are found in the leaves and bark called acetogenin. Pawpaws are the only host plant for Zebra Swallowtail caterpillars. As the caterpillar munches on the leaves, the toxic acetogenin metabolizes in their body. When predators approach, the caterpillar will release his osmeterium, a v-shaped organ at the base of the neck that emits a putrid smell. Derived from the pawpaw tree's acetogenin, the smell will scare off many predators. As the Zebra Swallowtail matures, they will pupate, forming a chrysalis, underneath the leaf of a pawpaw. Once the butterfly emerges, they leave to pollinate other flowers like milkweed, blackberry, and redbud. The swallowtail does not pollinate pawpaw flowers but rests on the tree and returns to lay eggs on the leaves.



Full-grown larva of zebra swallowtail, *Eurytides marcellus* (Cramer), with osmeterium extruded.
Image by Jerry F. Butler, University of Florida.
http://entnemdept.ufl.edu/creatures/bfly/zebra_swallowtail.htm

Growing the Pawpaw

As stated earlier, we know the pawpaw grows from shoots. In order to be found in 26 different states, this forest dwelling tree is also dispersed by seed, likely with human help. It's believed the fruit was enjoyed by Native Americans who transported the tasty treat during their travels. As a result the large, heavy seeds were dropped where the fruit was eaten, creating new pawpaw patches across the landscape. Humans were not the only ones enjoying the fruit, and helping spread the seeds. Pawpaws are also thought to be a favorite treat of the raccoon.

Pawpaws are particular when it comes to pollination. Flies are the number one pollinator with bow flies and carrion beetles being the major pollinator of pawpaws. They are drawn in by the putrid smell. However, they are not known for spending any other time around the tree.

The pollinator must have recently visited a genetically different pawpaw tree (one from another thicket) in order for pollination to be successful; in other words, they are not self-pollinating. Nor can pollen from a hereditarily similar tree be used to pollinate a pawpaw. So to have fruit, hereditarily diverse pawpaws must be within a short flight of one another.

Another way to pollinate the pawpaw is by hand. Using a fine paintbrush, growers move from tree to tree brushing the stamens. In a few pawpaw orchards this is the preferred method of guaranteeing fruit since the insect pollinator might not move from grove to grove to nectar at the flowers and thereby transfer the pollen.

Once fruit develops, the seed will need to be harvested. Germinating of the seed takes time and patience because the trees can take up to 8 years to reach 6 feet tall. Seeds need to be kept moist, but care must be taken to ensure they are not too wet. Saplings should be planted in a shady spot or wrapped in burlap to protect them from the sun during the first 3 years.



Pawpaw *Asimina triloba*
A deciduous tree from the
Annona Family (Annonaceae).
Image from Ohio DNR
<http://forestry.ohiodnr.gov/pawpaw>

The Fruit

What sets the pawpaw tree apart from any other understory tree is the irresistible fruit, the largest native to North America. Described as a “custard stand in the woods” or “mango meets banana” the fruit has a unique flavor and is highly prized by those who know what to look for. Growing in bunches of 2-5 fruit, the pawpaw grows like a banana and has been given names like the “poor man’s banana.” The homely mottled skin turns a slight yellow when ripe. The best way to tell if the fruit is ripe is to gently squeeze the pawpaw. If there is a little give like in a peach, the tasty snack is ready to be eaten. According to many outdoor lovers it is best eaten off the tree in early fall.



Pawpaw fruit
Image on flickr by Alice Crain
<http://tinyurl.com/px4l5le>

During pre-revolutionary times, pawpaws were a beloved fruit. Two of our first presidents were huge fans including George Washington, who claimed it was his favorite dessert. Thomas Jefferson cultivated the tree on his estate, Monticello, and even sent seeds to friends in France. It has been reported that the pawpaw fruit sustained the Lois and Clark expedition when they ran out of supplies.

Sadly, as with quills and three cornered hats, pawpaws disappeared from the American diet. Why haven’t you been able to find this tasty fruit in your supermarket? Pawpaw’s have an incredibly brief shelf life after they have been picked. If they are under ripe they can last up to a week in refrigeration. However if they are picked ripe, after 2-3 days tops, the pawpaw is no longer sellable. Mashing then freezing the fruits has become a recent business venture that has expanded the life of a pawpaw fruit. So, next time you are walking a trail along a stream be on the lookout for the prized pawpaw!



Pawpaw flower *Asimina triloba*
Image on wikimedia commons
<http://tinyurl.com/ns5cwrz>

From Pawpaw by Kemos...

“The pawpaw was first documented in 1557 by a Portuguese narrator, traveling with DeSoto during his expedition in the Mississippi valley in 1541, who reported encountering aboriginal American tribes that cultivated the fruit. In 1736, Quaker botanists John Bartram and Peter Collinson arranged for specimens to be sent to England for its delicious yellow pulp. The pawpaw was instrumental for the survival of western moving pioneers during the 18th and 19th centuries:

We can never realize what a great blessing the pawpaw was to the first settlers while they were clearing the great natural forest and preparing to build cabins. Planting fruit trees was rather an experiment for a number of years. The pawpaws, and a few other wild fruits of less value, were all their dependence had, so far as fruit is concerned. Well do I remember sixty or more years ago my father would take his gun and basket and go to the woods and return in the evening loaded with pawpaws, young squirrels and sometimes mushrooms of which he was very fond. But there will never be a recurrence of those days which were the happiest of my life.”

- James A. Little, *The Paw Paw*, 1905.

Source: <http://www.druidry.org/library/trees/pawpaw>

Resources:

- <http://www.arboretum.harvard.edu/wp-content/uploads/2014-72-1-the-pawpaw-a-forgotten-north-american-fruit-tree.pdf>
- <http://extension.uga.edu/publications/detail.cfm?number=B992>
- <http://wild.enature.com/blog/whats-a-pawpay-taste-like-and-where>
- <http://naturalsciences.org/prairie-ridge-ecostation/what-time-is-it-in-nature/archive/pawpaw>



Fox
Nate Wilkinson
Grade 2
Atlanta Classical Christian Academy
Marietta, Georgia
State Winner Georgia River Of Words 2015

welc  me
new watershed stewards

Stoneheath Mews - Chemical Monitoring on Willeo Creek

Seigla - Chemical Monitoring on Buttler Creek

Sope Creek Sentry - Chemical Monitoring on Sope Creek

River Rendezvous 2015 Update

This year we were lucky to have a picturesque day for River Rendezvous 2015 (RR15). 21 volunteers came out for a day dedicated to water quality on Rottenwood Creek. Volunteer groups traveled to 30 different stream sites, collecting chemical data, measuring bacteria levels, and recording visual observations. Each group performed chemical tests at the stream including dissolved oxygen, pH, temperature, and conductivity. In addition, they collected water for further analysis including metals, nutrients, and turbidity. The samples were processed by scientists at the Cobb County Water Quality Laboratory. Volunteers also collected over 14 bags of litter during the event.

Thank you to our partners (Sierra Club Centennial Group and Georgia Adopt-A-Stream) and all our volunteers for participating in the fun and informative activity!

The data from RR15 has been published on the Georgia Adopt-A-Stream website. Look under data views/watershed surveys/ Rottenwood Creek at:

<http://www.georgiaadoptastream.com/db/index.html>

**Watershed Stewardship Program
Annual Report 2014-2015**

available online at:
www.cobbstreams.org

Located under resources/publications.

Thank you to all those that support our programs throughout the year.

WSP is on social media:

 Find us on Facebook We post twice weekly updates, workshop information, natural history tidbits, and more!

 Follow our boards on Pinterest for environmental education and stewardship resources.

Follow us on  Follow our company page on LinkedIn.

 Read our Rain & Wildlife Garden Phenology Blog

Welcome Angie!



We are delighted to announce Angie Marcus has joined the Watershed Stewardship Program as a Program Assistant. Angie will be coordinating the Brooke and Branch Puppet Show, a third grade assembly program we facilitate across the county every school year.

Angie brings 5+ years of environmental education experience to the unit, having worked as a Program Coordinator at The Northern Virginia 4-H Educational Center in Front Royal, Virginia, and as a Field Instructor at Learning Tree Farms in Delaplane, Virginia.

She has earned a Masters in Education and a Masters in Social Work. Please help us welcome Angie to the program!

Stewardship Stars Excellence in Data Collection

The following volunteers have submitted data each month during the June, July, and August quarter:

Butler Creek Kennesaw

Chemical, Bacteria & Visual Monitoring in the Butler Watershed

Eric Lee

Chemical & Bacteria Monitoring in the Willeo Watershed

ERM Atlanta

Chemical Monitoring in the Etowah Watershed

Friends of Gable Creek

Chemical Monitoring in the Sope Watershed

Keep Smyrna Beautiful Adopt-A-Stream

Chemical Monitoring in the Nickajack Watershed

Lakewood Colony

Chemical & Bacteria Monitoring in the Rubes Watershed

Pope High School

Chemical Monitoring in the Sewel Mill Watershed

Richard's Creek

Chemical Monitoring in the Allatoona Watershed

Sharon & Rick Donato

Anuran Monitoring in the Rubes Watershed

Sierra Club Cobb Centennial Group

Chemical, Bacteria & Macroinvertebrate Monitoring in the Rottenwood Watershed

Village North Highlands Subdivision

Chemical, Bacteria & Macroinvertebrate Monitoring in the Willeo Watershed

Walton High School Environmental Club

Chemical Monitoring on Sope Creek

**Thank you for getting out every month
in the heat & humidity!**

CONSERVATION TIP

Cell Phones - If 10 percent of cell phone users kept their next cell phones for 3 years before replacing it, an average of 5.2 million phones could be saved from disposal each year.

From: The Green Book

ECOPEDIA

Heliotrophism- the growth of plants or plant parts (especially flowers) in response to the stimulation of sunlight, so that they turn to face the sun. Sunflowers are an example.

From: dictionary.com



ANNOUNCEMENT

Chattahoochee Challenge Is Back!

Attention classrooms, scouts, clubs, and families...it's time to compete in the 2nd Annual Chattahoochee Challenge. The group that accrues the most volunteer hours by collecting stream data, marking storm drains, pulling privet, and cleaning up waterways will receive a free rafting trip (30 person maximum), floating down the Chattahoochee River with Park Ranger Jerry Hightower from the National Park Service, Chattahoochee River National Recreation Area.

Register your group now at www.cobbstreams.org

Log your service as you go and we will provide status updates on Facebook and in the newsletter. Our first event is a River Clean-up on Olley Creek, September 19 at Fair Oaks Park 9:30am-noon.

To RSVP or get more information, call 770-528-8214

Eastern & Carolina Hemlocks

Eastern and Carolina hemlocks are a keystone tree species, providing food and habitat for hundreds of vertebrates and shade for native plants and trout streams. In addition, they provide protection for watersheds and water quality and remove pollution from air and water. However, our hemlocks are in peril due to the damage caused by an introduced aphid-like insect called the wooly adelgid. This Asian pest was accidentally introduced to Virginia in 1951 and was dispersed by birds, forest dwelling mammals, wind and by humans transporting infected nursery stock. By 2005 it had spread to 16 states from Maine to Georgia and is now found in 19 North Georgia counties. While chemical and biological controls have helped, they come with a heavy price tag so there is an urgent need for more funding.

Lori Watterson
Master Naturalist

OBSERVATIONS



Hemlock wooly adelgid infestation
Connecticut Agricultural Experiment Station Archive
Image on USDA EFETAC: <http://tinyurl.com/nb84e8d>



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

October

- 1 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 8 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 10 AAS Visual Stream Workshop • 9:00am- 2:00pm • Cobb County Water Quality Laboratory
- 15 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 22 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory
- 21 Rain Barrel Make & Take Workshop • 12:00pm - 1:00pm • Cobb County Water Quality Laboratory
- 21 Adopt-A-Stream Bacteria Monitoring Workshop • 6:30pm - 9:00pm • Cobb County Water Quality Laboratory
- 22 Garden Work Day • 8:30am - 10:30am • Cobb County Water Quality Laboratory

November

- 5 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 11 Adopt-A-Stream Chemical Monitoring Workshop • 6:30pm - 9:00pm • Cobb County Water Quality Laboratory
- 12 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 13 Outdoor Learning Symposium • 8:00am - 4:00pm • Fortson 4H Center • Hampton, Georgia • <http://www.eealliance.org>
- 14 Privet Pull on Nickajack Creek • 10:00am - 12:00pm • Heritage Park
- 19 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory

December

- 3 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 5 Storm Drain Marking • 9:00am - 12:00pm • Cobb County Water Quality Laboratory
- 10 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory
- 17 Garden Work Day • 9:00am - 11:00am • Cobb County Water Quality Laboratory

Events in **BROWN** are Cobb County Watershed Stewardship events.
More information can be found on our Calendar at www.cobbstreams.org.