

Summer 2011

the Thalweg

Watershed Stewardship Program

Volume 8 Issue 3

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Cobb's 5th Annual River Rendezvous on Rottenwood Creek

On May 14, 2011, Sierra Club's Centennial Group and Cobb County Water System held their 5th Annual River Rendezvous, providing a snapshot of water quality in the Rottenwood Creek watershed. Participants performed Adopt-A-Stream chemical and bacteria tests at 30 sites. Samples were brought to the Cobb County Water Quality Laboratory for more extensive testing including turbidity and solids. Ten teams, each lead by a certified Adopt-A-Stream chemical monitor, visited three sites for testing. They were supplied with test kits, sample bottles, maps, trash bags for site cleanup, and disposable cameras to document their work.

During the event, volunteers observed wildlife and noted any potential pollution problems seen at their sites. These records, compiled with the field measurements and lab results, are shared with GA's Environmental Protection Division. As with previous events, all problems are subsequently reported to the appropriate agency (County and/or City of Marietta), typically to Cobb's Stormwater, Environmental Compliance, or Code Enforcement staff for follow-up, mitigating further environmental damage.

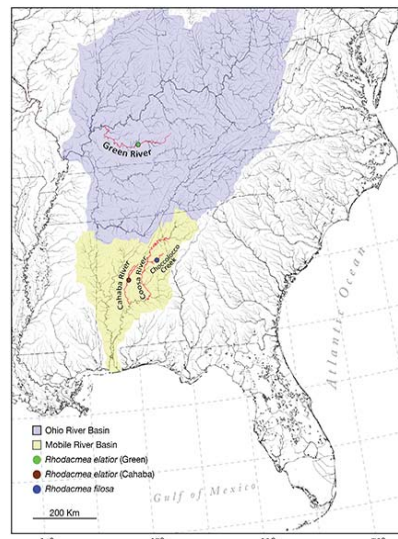
Everyone enjoyed helping the community and meeting other environmentally-minded people. Several volunteers were approached by curious community members and used the opportunity to shed light on the River Rendezvous mission and purpose. Community members walked away with gratitude and awareness. After the data and samples are turned over to the laboratory staff, to close our annual event, the volunteers headed to the gazebo for a cookout where participants enjoyed sharing sampling stories and other adventures.

The River Rendezvous is a fun event for all ages. It is a great way to become more familiar with a watershed and help the community at large. We encourage you to join us in monitoring local waterways near your home or consider participating in next year's River Rendezvous event. Visit our calendar of events for upcoming volunteer opportunities.

Mass Extinction Victim Survives: Snail Long Thought Extinct Isn't

Original article was reproduced from www.sciencedaily.com.

Science Daily (June 3, 2011) — Think "mass extinction" and you probably envision dinosaurs dropping dead in the long-ago past or exotic tropical creatures being wiped out when their rainforest habitats are decimated. But a major mass extinction took place in North America in the first half of the 20th century, when 47 species of mollusk disappeared after the watershed in which they lived was dammed.



Map of the southeastern US watersheds. The Ohio and Mobile River Basins are highlighted to show the locations of all known extant *Rhodacmea elatior* and *R. filosa* populations.

Now, a population of one of those species - a freshwater limpet last seen more than 60 years ago and presumed extinct - has been found in a tributary of the heavily dammed Coosa River in Alabama's Mobile River Basin. Researchers from the University of Michigan, the Alabama Aquatic Biodiversity Center and the Kentucky State Nature Preserves Commission reported the rediscovery May 31 in the online, open-access journal PLoS ONE.

"The story of *Rhodacmea filosa*'s disappearance and reappearance is both a conservation success story and a cautionary tale for other parts of the world where rivers are being dammed," said Diarmaid Ó Foighil, professor of ecology and evolutionary and a curator at the U-M Museum of Zoology. It's also an example of how museum specimens collected generations ago can inform scientists of today.

Limpets are snails with shells shaped like caps rather than coils. They make their homes in the riffles and shoals of fast-flowing rivers and streams, where they graze on microscopic algae. When rivers are dammed, shoals and riffles are replaced with reservoirs, and the swiftly-moving water the limpets require is stilled.



Paul Johnson, Alabama Aquatic Biodiversity Center

A view of Choccolocco Creek, Talledega County, Alabama, where a surviving population of the wicker ancyloid limpet Rhodacmea filosa was recently rediscovered.

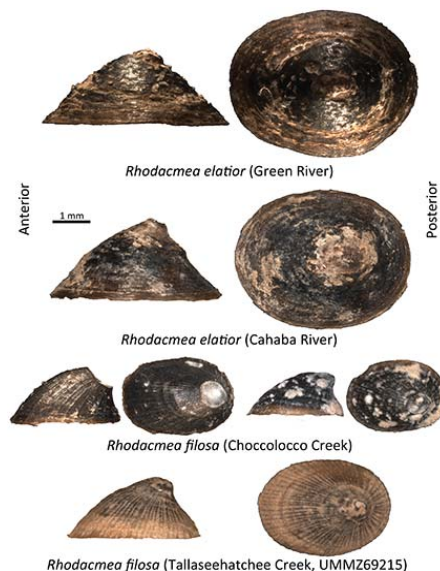
The Mobile River Basin, a "global hotspot of temperate freshwater biodiversity," was extensively industrialized throughout the 20th century, and 36 major dams and locks were built. At the time, few thought much about preserving biodiversity. The prevailing attitude was, "What's not to like about getting electricity from a natural source -- especially in impoverished, rural areas -- and using that to drive industrialization?" Ó Foighil said. "The dams were seen as signs of progress."

But progress came at the expense of mollusks that were found only in that area and nowhere else in the world. "Their habitat was destroyed in huge chunks," Ó Foighil said. The result: 47 of 139 endemic mollusk species were lost, representing a full one-third of all known freshwater mollusk extinctions worldwide.

Then, about 20 years ago, thanks to increased interest in and funding for conservation projects, biologists began searching patches of the drainage that weren't affected by damming, trying to find remnants of the original, rich fauna and save whatever still could be saved. At the Alabama Aquatic Biodiversity Center (AABC), a former catfish experimental research station has been converted into a captive breeding facility, with the aim of breeding survivors of the mass extinction and reintroducing them into unaffected parts of the watershed.

It was through those efforts that AABC director Paul Johnson discovered the surviving population of what he thought might be *Rhodacmea filosa*. But how does one definitively identify a species that hasn't been seen in decades? There are no other living members of the group with which to compare specimens.

That's where the U-M Museum of Zoology collection comes in. It just so happens that 100 years ago, biologists collected multitudes of mollusks from the Mobile River Basin - never envisioning the habitat destruction and resulting extinctions that were to come - and those specimens ended up in the U-M collection. Coincidentally, the mollusk portion of that collection was largely established by Bryant Walker, an early authority on - you guessed it - the limpet genus *Rhodacmea*. Furthermore, the last person to study *Rhodacmea* was a U-M graduate student, some 50 years ago.



Specimens from both extant *Rhodacmea elatior* (Green River; Cahaba River) are shown. Two specimens from the single extant *R. filosa* population (Choccolocco Creek) are also depicted, in addition to a century old museum exemplar (Tallaseehatchee Creek).

But just because survivors have been found, does that mean the species can continue to survive?

"I think they can, because of two things," Ó Foighil said. "We have a persistent population in this little tributary, but we also now have in place the infrastructure for their captive breeding and reintroduction to other tributaries."

This snail tale might well serve as an object lesson, Ó Foighil said. "The industrialization of freshwater watersheds that happened across the U.S. in the last century is now happening all over the world. For instance, right now one of the most egregious examples is the ongoing damming of the Mekong, and there are likely thousands of endemic species there. Even though we're now more aware of this - of the negative downsides - when it comes to issues of economic development, freshwater biodiversity almost always loses."

Using century-old reference specimens, Ó Foighil, professor emeritus John Burch, graduate student Jingchun Li and collection coordinator Taehwan Lee were able to confirm the identity in addition to performing detailed morphometric and DNA analyses. "This is very good news," Ó Foighil said. "With conservation biology, usually it's all gloom and doom, but this is one of those rare events where we have something positive to say."

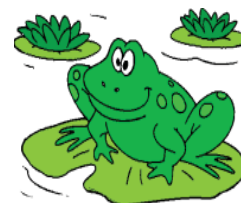
In addition to Ó Foighil, Li, Lee, Johnson and Burch, the paper's authors include Ryan Evans of the Kentucky State Nature Preserves Commission. Funding was provided by the State Wildlife Grant Program, the U.S. Fish and Wildlife Service and the National Science Foundation.

Diarmuid Ó Foighil, Jingchun Li, Taehwan Lee, Paul Johnson, Ryan Evans, John B. Burch. Conservation Genetics of a Critically Endangered Limpet Genus and Rediscovery of an Extinct Species. PLoS ONE, 2011; 6(5): e20496 DOI: 10.1371/journal.pone.0020496



Outdoor Romping & Creek Stomping Summer 2011 Family Series

Looking for some fun and enriching outdoor activities to do with your kids this summer? Join staff from Cobb County Water System and Parks, Recreation and Cultural Affairs this July for our Outdoor Romping and Creek Stomping Series. Educators from the Watershed Stewardship Program will be facilitating adventure sessions at local parks from 9:00am -11:00am this summer. Sessions will discuss various wildlife topics, heritage and history of the area, and include an environmental scavenger hunt. Registration is required, cost is \$2.00 per person/event, and space is limited. Contact Karen.Faucett@cobbcounty.org for more info or to register.



July 12

Hiking, Heritage, & History
Hyde Farm in Marietta
Ages 7 & up

July 26

Family Scavenger Hunt
Kennworth Park in Acworth
All ages



Periodical Cicadas

Have you ever heard of insects keeping time? After a 13-year nap, the periodical cicadas are waking up in the South, and with them come an ear-splitting mating call that will soon fill the air across the southern U.S. No other insect in North America generates as much interest and curiosity as do periodical cicadas when they make their sudden, springtime emergence. It is the longest-lived insect in North America. The periodical cicada is a native North American species. They are widely distributed over the eastern half of the United States and occur nowhere else in the world. The summer of 2011 is the year of emergence for the 13-year Periodical Cicada; the last 13-year brood emerged in Georgia in 1998 and the 17-year brood in 2004.

Generally, cicadas are called either annual or periodical. Annual cicadas are present each year, and are larger than periodical cicadas with dark green or black bodies and dark eyes. Annual cicadas are typically seen in late summer, and some of them are called dog-day cicadas. The periodical cicadas emerge in masses either on a 13 or 17-year cycle. The adult insect is about 1.5 inches long with a black body, red legs, and red eyes. They have piercing and sucking mouthparts and feed on a variety of woody vegetation. Each



Periodical cicadas such as this member of the Great Southern Brood, Brood XIX, have emerged after living underground for 13 years.

Rebecca Bearden

adult may live five or six weeks. They do not sting or bite and are non-toxic.

Periodical cicadas spend 13 or 17 years buried 18 to 24 inches deep in the soil of forested areas feeding on sap from tree roots. They dig their way out of the soil during late May and June and climb up tree trunks, posts, and poles to molt into adults. When thousands emerge at once, the cicadas can sacrifice some individuals without impacting the survival of their species. Periodical cicadas utilize their massive numbers for defense. Male cicadas “sing” or call for females from morning until dark. Male cicadas sing by vibrating membranes on their sides. The male courtship songs attract females for mating while the females remain silent. After mating, the females deposit their eggs in twigs $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter. One to several dozen eggs can be laid in each branch. Up to 600 eggs can be laid by each female! Cicadas can damage small, immature trees during the egg laying period; however, large, established trees can withstand twig dieback. The eggs will hatch after six to seven weeks and the newly hatched nymphs (about the size of an ant) fall to the ground and burrow until they find a tree root, where they feed and wait. The nymphs will undergo five molts in their 13 or 17 years.

Facts about the Periodical cicadas:

- The periodical cicadas, which live on a 13-year cycle, are smaller than the so-called dog day cicadas that emerge every summer. Their numbers make them seem louder.
- This year's periodical cicadas come from eggs laid in 1998 - when this year's high school graduating class was in kindergarten.
- Cicadas are not locusts: Locusts eat all plants - cicadas sip plant sap without damaging plants.
- Female cicadas lay their eggs in slits in twig tips; this can cause the end of the branch to die and fall off.
- Cicada nymphs emerge from the ground, crawl up trees, shed their skins, and fly to the treetops from which the males call for mates. Females reply with wing clicks to lure in the males.
- Cicadas are not pests, so there is no reason for alarm.

If you were not able to hear or see the spectacular event, you have 13 years to prepare for the next emergence in 2024!



UConn Lab

Three healthy periodical cicada eggs removed from an eggnest.



After six to ten weeks, the eggs hatch and the new first-instar nymphs drop from the trees, burrow underground, locate a suitable rootlet for feeding, and begin their long 13- or 17-year development.



Every now and then as the periodical cicada grows, it's exoskeleton splits open, and an enlarged edition of the cicada emerges, leaving the old exoskeleton behind.

Below are Comparison Photos of the Periodical and Dog-Day Cicadas:



Periodical Cicada



Dog-Day Cicada

References

Dog day cicada
<http://www.musicofnature.org>

Georgia Forestry Commission
<http://www.gfc.state.ga.us>

Penn State Entomology Department
<http://ento.psu.edu>

University of Georgia Center for Urban Agriculture
<http://www.ugaurbanag.com>

University of Connecticut Ecology & Evolutionary
Biology website
<http://hydrodictyon.eeb.uconn.edu>

The Wetumpka Herald website
<http://www.thewetumpkaherald.com>

State-By-State GARDENING Newsletters website
<http://statebystategardening.com>

Dog-day Cicada image
www.musicofnature.org

Periodical Cicada image
www.edupic.net

Periodical Cicada Header Image
<http://www.asknature.org>

welcome

new watershed stewards

The Kraj family

will be monitoring anurans in the
Noonday Creek watershed

Girl Scout Troop 2583

marked storm drains in the
Sope Creek watershed

Brownie Troop 2280

marked storm drains in the
Little Noonday Creek watershed

Garden Volunteers:

Lisa Bone, Edward Cammann,
Gloria deVarennes, Suzanne Dlugosz,
Catherine Lacy, Frank Marmurowicz,
Carina O'Bara, Sharon Parry,
Tim Phillips, Diane Powell, Marci Rehg,
Eddie Rhoades, Frances Sommerville,
Diana Whitlock, and Hubert Wieland -
are rain garden volunteers in the
Rottonwood Creek watershed

CONSERVATION TIP

You could reduce your annual cooling costs by up to 25 percent by building extended eaves, planting leafy trees, constructing an arbor, or installing awnings to shade the south or west faces of your home. For the average home, the savings could equal seven hundred kilowatt-hours per year of energy, or roughly \$56. Across five percent of owner-occupied homes in the United States, the annual energy savings from increased shade could total nearly two billion kilowatt hours of energy - enough to fly nearly every resident of Phoenix to the shady beaches of the Sunshine State.

From the Green Book

RECOMMENDED RESOURCE

If the World Were a Village by David J. Smith

This updated edition of the popular book for 7 to 12 year-olds is filled with current facts and interesting info.

The concept of this book is wonderful: there are more than 6,900,000,000 people on the planet, but to comprehend that number of people is difficult for any of us - enter the global village.

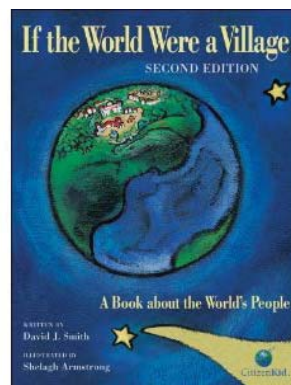
We are taken through the facts and figures of a village consisting of just 100 people (each representing 69,000,000 people in the world). Of these 100 - 61 are from Asia, 14 from Africa, 11 from Europe, 8 from South America, 5 from North America, and just 1 from the Oceania countries.

The people of our village speak a number of languages, their age varies, religions are many, and food tastes are staggering. Some have access to water safe for drinking, some of the children attend school but others must work, some have money and others don't.

This book is filled with facts and figures, and some shocking truths, but it's far from being doom and gloom. It also looks at the positives and the ways we can help the other 'villagers', and does so with lovely and interesting language suited to the target age group.

The concept really works, making the world feel more accessible and real to kids. It helps highlight some issues, differences and creates an opening for many discussions around those topics.

From the Kids Book Review



WELCOME TO RACHEL SMALL

Rachel Small joined our team in April. Her training is in wildlife biology and secondary science education. She has worked as a science educator with school children, with USDA Forest Service, and at a nature center. She will continue the school programs, community programs, and workshops throughout Cobb County. She is very excited to get to know the Cobb County Community!

GOODBYE AND GOOD LUCK TO VICKI CULBRETH

In 2007, Vicki Culbreth joined our team bringing in-depth knowledge of ecology and science. She played an integral role in designing and implementing the school outreach programs. Her passion for the environment was transferred into the community and took root in classrooms, outreach events, and workshops throughout Cobb County. Vicki will now serve as the Environmental Coordinator for the City of Roswell. While we are incredibly sad to see her leave, we are happy to see her moving forward! Thank you for your dedication and passion, and we wish you the best of luck in the future.

LOCAL ECO-ARTIST



Submission from:
Cobb Water's 2011 Student Design Contest

Polyphemus Moth
Laura Murphey
Marietta, Georgia
Kennesaw State University
Teacher: Jason Snape



Perhaps you have heard that “the daddy-longlegs is the most poisonous spider, but it can’t harm humans because its mouth is too small.” Although this comment sounds interesting, it is completely false. Daddy-longlegs (also called harvestmen) have 8 legs like other arachnids, but they are not true spiders. True spiders have 2 body parts and 8 eyes while daddy-longlegs only have 1 body part and 2 eyes. You will never find a daddy-longlegs spinning a web because they cannot make silk. Also, daddy-longlegs eat decomposing plants and animals since they have no fangs, no venom glands, and no other way to attack prey.

Linda May, Environmental Outreach Coordinator
Georgia DNR, Wildlife Resources Division

ECOPEDIA

Succession - The world of life changes constantly and without end. We humans seek to find patterns in these changes, and thus we have discovered regular patterns in how plants and other organisms take each other’s place - how they “succeed” each other. After a significant disturbance in an ecosystem, such as an avalanche, a major fire or hurricane, the clear-cutting of a forest, or the bulldozing of a meadow, a process of succession begins. Many plants, along with the animals that depend on them, have vanished. So new species move in - although some disturbances, like a lava flow from a volcano or the setting off of a nuclear bomb, are so severe that this takes a very long time.

First come pioneer species - fast-growing, fast-spreading plants adapted to life in harsh conditions, and a few birds and insects that can live off them. Among the pioneer plants are seedlings from the original vegetation, too, but in seriously disturbed situations they have a hard time until the pioneers provide better conditions: the pioneers’ decaying roots, leaves, and stems enrich the soil, and they may also provide shade and wind protection for the seedlings of other species. In time, something like the original vegetation is reestablished, though in the natural world nothing ever precisely repeats itself.

From Ecology: A Pocket Guide

REMINDERS

Do you enjoy listening for wildlife? Join the Anuran Monitoring Program to monitor frog and toad call activity in your community. Many species are actively calling right now! You should be hearing American bullfrogs, eastern narrowmouth toads, green frogs, Cope’s gray treefrogs, squirrel treefrogs, northern cricket frogs, and Fowler’s toads. We hold Anuran Monitoring training in the fall and spring. Look for the next workshop on our calendar. If you have any questions about the program email water_RSVP@cobbcounty.org or call 770-528-1482

Cobb County
Watershed Stewardship Program
662 South Cobb Drive
Marietta, Georgia 30060



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

July

- 6 Wildlife and Rain Garden Work Day · 8:30am - 10:30am · Water Quality Lab
- 12 Summer Family Program - Hiking, Heritage, and History · 9am - 11am · Hyde Farm in Marietta, ages 7+, \$2.00/person · contact: Karen.Faucett@cobbcounty.org to register
- 13 Wildlife and Rain Garden Work Day · 8:30am - 10:30am · Water Quality Lab
- 15 Rain Barrel Workshop · 9am - 10am · Water Quality Lab RSVP required
- 20 Wildlife and Rain Garden Work Day · 8:30am - 10:30am · Water Quality Lab
- 23 AAS Biological Monitoring Workshop · 9:30am - 2:30pm · Water Quality Lab
- 26 Summer Family Program - Scavenger Hunt · 9am - 11am · Kennworth Park in Acworth, all ages · \$2.00/person contact: Karen.Faucett@cobbcounty.org to register
- 27 Wildlife and Rain Garden Work Day · 8:30am - 10:30am · Water Quality Lab

August

- 3 Wildlife and Rain Garden Work Day · 8:30am - 10:30am · Water Quality Lab
- 9 Rain Barrel Workshop · 9am - 10am · Water Quality Lab RSVP required
- 10 AAS Chemical Monitoring Workshop · 6:00pm - 8:30pm · Water Quality Lab

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