Cobb County Watershed Stewardship Program

Summer 2009

Volume 6, Issue 3

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Special points of interest:

- Butterfly Workshop on 8/29
- Chemical Monitoring Workshop on 9/12
- PLT Workshop on 9/30 & 10/1
- Rottenwood Creek Cleanup on 9/26

The Thalweg is Going Green!

If you've checked your email recently, you might have noticed that you've already received this issue of The Thalweg! In an effort to protect our environment and consume less resources, the Watershed Stewardship Program will be making The Thalweg available in an electronic format. We will continue to send a paper copy if you prefer.

If we had your email address on file, then it was automatically added to our E-Newsletter mailing list. All current subscribers will receive a paper copy until we are notified otherwise. To stop receiving paper copies, please contact us directly at 770-528-1482 or water_rsvp@cobbcounty.org.

If you are not already on our email list and would like to be added, or if your email address has changed, please visit **www.cobbstreams.org** and click on the link on the bottom of the homepage. When you subscribe, we will automatically remove you from our paper distribution list. To unsubscribe from our electronic mailing list, simply click on the "Unsubscribe" link at the bottom of the email.

Thank you for helping us make our program more sustainable!

Changes at the WSP

The Watershed Stewardship Program is bidding a sad farewell to Emily Toriani-Moura, who has worked as our program assistant since January 2008. Emily will be leaving us at the end of July to accept her new position with the Atlanta Audubon Society as their education coordinator.

Emily has been an incredible asset to our group. She was instrumental in developing our anuran monitoring program and household hazardous waste workshops, organizing stormdrain marking volunteers and events, and improving our pollinator garden. Emily was also an integral part of our education outreach programs, teaching about water quality to students across Cobb County.

Although we're sad to see her go, we're also excited that she will be able to pursue her love for birds and teaching with the Atlanta Audubon Society. As their education coordinator, she will be developing programs and workshops for adults and youth.

Why Is My Pond Green?

by Adam Sukenick, Cobb County Watershed Monitoring

The arrival of summer means long days with rising temperatures and, inevitably, people with questions about why their pond turned green. These conditions - lots of sunlight and warm temperatures - are the perfect growing conditions for aquatic vegetation and green algae, the source of the color you see in your local pond. Although algae is not a plant it is photosynthetic. Like plants, they convert energy from sunlight to help produce food. In addition to algae, many invasive aquatic plants take root in local waterways and without natural predators they grow uncontrolled and can quickly overtake a pond.

To understand why plants and algae can grow thick enough to turn a pond green, one must learn about the nutrient cycle – the science behind your green pond. Nutrients are essential for all life. For plants, it's not necessarily the total amount of nutrients, but the total amount of *available* nutrients. For instance, air is 79% nitrogen; however, it must be broken down into a different form for use by plants. Soil and water contain nitrogen fixing microbes that convert atmospheric nitrogen to a form more readily available to plants, typically ammonia. This is known as nitrogen fixation and accounts for 90% of fixed nitrogen. Since ammonia is also a waste product excreted by animals it is a good place to begin the nutrient cycle discussion.

Although ammonia is necessary for life, in higher concentrations it will become an irritant and could be fatal. Anyone who has an aquarium probably has a test kit or in-tank indicator to monitor ammonia levels. In a properly functioning ecosystem, the ammonia molecules should be broken down into *nitrites* by microorganisms. Other microorganisms then break down the nitrites, producing *nitrates*. This process is known as nitrification. Finally, denitrification converts nitrates back into gaseous nitrogen. The cycle is completed during nitrogen fixation when the unusable gaseous state is converted back into a more useful form, typically ammonia.

In a stable environment this cycle goes round and round with components being used and discarded without upsetting the balance. However, when you inundate a system with a nutrient such as phosphorus, you can create an imbalance. Phosphorus is the limiting element required for plant growth. In other words, when there's no more phosphorus to stimulate growth, growth stops. Consider what would happen if you added phosphorus to an ecosystem. It's easy to imagine when you consider that phosphorus is one of the three main components in most fertilizers. With the introduction of phosphorus, plant growth is stimulated. In an aquatic system this could easily occur if too much fertilizer is applied to a lawn and the excess is carried away by rain to a local stream or pond. The added nutrients promote vegetation growth and your pond fills with algae and green plants.

In addition to the unsightly green pond, this level of plant growth begins to impact other biological processes and even aquatic life. The most obvious problem is the impact to dissolved oxygen (DO) levels. Oxygen enters water during exchanges between air and water on the surface of ponds, lakes and streams and is critical to aquatic life. If aquatic vegetation covers the surface of a pond the diffusion of oxygen from surrounding air is minimized and there's less DO for fish and other aquatic species.

Plants and algae produce oxygen as a bi-product of photosynthesis, but during the night, algae and decaying organic matter consume oxygen. If there's an excessive amount of vegetation demanding DO the level can drop significantly and essentially suffocate fish and other aquatic organisms. In other words, excessive inputs of phosphorus stimulate plant growth beyond the limits of the natural cycle. Now there is not enough volume in other parts of the cycle to keep up with the additional inputs and eventually the system runs out of available resources and dies, breaking the cycle.

As long as resources remain the plants will continue to grow, absorb nutrients and maintain a balanced cycle. However, if the cycle is disrupted the ecosystem will respond accordingly. A large volume of plants being removed (during harvesting, for example) can alter the nitrogen cycle. Similarly, if a large algal bloom occurs and then dies the cycle is broken and the nutrients are bound in the plants and algae. Both sink to the pond bottom and begin to decompose. This creates a "sink" or reservoir of nutrients no longer needed but available to plants or algae when seasonal growth begins again.

This overproduction and die-off of plants and algae is known as eutrophication and it presents a problem for water quality. Studies show that when nutrient levels rise, even after stopping excess inputs, there may be enough nutrients already in the "sink" to continue the cycle of growth and die-off for many years.

The basic nitrogen cycle is easy to visualize but when it becomes unbalanced things quickly become complicated. The green ponds that so often appear in spring and summer are a result of an unbalanced cycle. The unfortunate part of this problem is that by the time you notice the imbalance there's no immediate solution. Fertilizers are mostly composed of three nutrients that promote plant growth: nitrogen, phosphorus and potassium. Nitrogen and phosphorus are the two main culprits for excessive plant and algae production. With the amount of residential lawn services and availability of fertilizers it should not be surprising that some of these excess nutrients are finding their way into local streams and ponds. Human influences such as agriculture, sewer spills and industrial processes, as well as manmade goods like chemical products and detergents, have all stressed the equilibrium in our ecosystems.

How can we prevent this imbalance of the nutrient cycle? Common sense dictates that we apply the minimum effective amounts of fertilizer to our gardens and lawns so that there is no excess. Always read the application instructions and remember - more is not necessarily better. There are now environmentally friendly, phosphorus-free detergents on the market. Instead of washing your car in the driveway where soapy water can easily make it's way into a stormdrain, take it to a professional carwash where the water is recycled and disposed of properly. If you must wash your car yourself, do it on your lawn so that the soapy water can infiltrate through the soil. Taking the time to reflect on how our everyday actions affect the environment is the first step to preventing problems.

Sources:

http://www.water.ncsu.edu

http://users.rcn.com/jkimball.ma.ultranet/BiologyPages/N/NitrogenCycle.html

Attention All Volunteers!

Sierra Club's Annual Rottenwood Creek Cleanup & Cookout

The Sierra Club Cobb Centennial Group will be hosting it's annual waterway cleanup on September 26, 2009. The cleanup will be headquartered at the 18th Century Village at Life University on Barclay Street. Volunteers will be cleaning Rottenwood Creek, which runs through Marietta and empties into the Chattahoochee River.

Everyone is invited to this event and the post-cleanup cookout! The pre-cleanup safety talk will begin at 9:00am and lunch will be served around noon. Volunteers should wear old clothes and sturdy shoes that can get wet and dirty. Sierra Club will provide gloves, trash bags, bug spray, hamburgers, hot dogs, vegetarian alternatives, and drinks. Volunteers are asked to bring a salad or dessert to share and their own plates and utensils. The cleanup is a great way for citizens of all ages to get their hands dirty for a great cause!

For Sierra Club members, this cleanup is in lieu of "rent" to Life University who generously allows them use of a conference room for their monthly meetings. Sierra Club also participates in monthly water quality monitoring projects at three separate sites along Rottenwood Creek.

For more information about this cleanup or other Sierra Club events,
please contact Didi Johnson at 404-401-4577 or didij@bellsouth.net.

What's Threatening Georgia's Turtles?

by Erin Feichtner, Cobb County Watershed Technician

April through June is prime mating and nesting season for many of Georgia's turtle species. During this time, turtles wander to find food, mates, and suitable nest sites. This travelling sometimes brings them onto roads and into the path of traffic, particularly after rain. The potential for automobile mortality increases as wildlife habitat is fragmented by new roads and development. Of course, human safety should be a motorist's primary concern, but an attentive driver should have time to recognize and safely avoid a slow moving turtle in the road. ***If you stop to help a turtle out of the road, make sure you take it to the side of the road to which it was heading. If not, it will probably try to cross the road again.***

The Common Musk Turtle or Stinkpot (*Sternotherus odoratus*), is named for the musk it exudes.

Spiny Softshell (*Apalone spinifera*)

Not only do Georgia's turtles have to contend with traffic, they are also threatened by export for consumption, collection for the pet trade, loss of habitat and wetlands due to development, and water quality degradation. A serious threat that should be addressed is the unregulated export of freshwater turtles for consumption in Asian countries. Turtle meat is so popular that many streams across Asia have been depleted of the reptiles and importers have turned to the turtle-rich waters of the Southeastern U.S. to satisfy demand. Currently, hundreds of thousands of freshwater turtles — especially softshells, cooters, and sliders — are being shipped annually from the Southeast to Asian countries, primarily China. Georgia law allows the unregulated and unlimited harvest of freshwater turtles except for six species protected as rare, endangered or threatened. This year, after petitioning by conservation groups, the General Assembly proposed legislation to regulate commercial turtle harvests, but the measure failed. Similar legislation is being considered in South Carolina and Florida.

Commercial harvests remove large numbers of adult turtles. Since turtles breed late in life and usually have low reproductive and survival rates, adult turtles are the most important individuals for population stability and persistence. Removing individuals from the wild reduces the genetic diversity and reproductive potential of a population. Once a population is depleted, it may take many years for the species to recover.

River Cooter (*Pseudemys concinna*)

GEORGIA PROTECTED TURTLES

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Caretta caretta	Loggerhead Sea Turtle	threatened	endangered
Chelonia mydas	Green Sea Turtle	threatened	threatened
Clemmys guttata	Spotted Turtle	none	unusual
Dermochelys coriacea	Leatherback Sea Turtle	endangered	endangered
Eretmochelys imbricata	Hawksbill Sea Turtle	endangered	endangered
Glyptemys muhlenbergii	Bog Turtle	threatened(SA)	threatened
Gopherus polyphemus	Gopher Tortoise	threatened	threatened
Graptemys barbouri	Barbour's Map Turtle	none	threatened
Graptemys geographica	Common Map Turtle	none	rare
Graptemys pulchra	Alabama Map Turtle	none	rare
Lepidochelys kempii	Kemp's Ridley Sea Turtle	endangered	endangered
Macroclemys temminckii	Alligator Snapping Turtle	none	threatened
Malaclemys terrapin	Diamondback Terrapin	none	unusual

COBB COUNTY TURTLES

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Chelydra serpentina	Common Snapping Turtle	none	none
Chrysemys picta	Painted Turtle	none	none
Pseudemys concinna	River Cooter	none	none
Terrapene carolina	Eastern Box Turtle	protected	none
Trachemys scripta	Slider Turtle	none	none
Kinosternon subrubrum	Eastern Mud Turtle	none	none
Sternotherus minor	Striped/Loggerhead Musk Turtle	none	none
Sternotherus odoratus	Common Musk Turtle	none	none
Apalone spinifera	Spiny Softshell	none	none

Sources:

http://www.uga.edu/srelherp/turtles/index.htm

http://georgiawildlife.dnr.state.ga.us/conservation.aspx

Photo Credits:

Cobb County Watershed Monitoring

Eastern Box Turtles (*Terrapene carolina*) are protected by law and may not be kept as pets.

Common Snapping Turtles (*Chelydra serpentine*) are found in Cobb County.

Rivers Alive is Around the Corner!

It's almost that time of year again! Autumn marks the kickoff for 2009 Rivers Alive events. Rivers Alive is Georgia's volunteer waterway cleanup event, where volunteers all over the state help restore their local rivers, streams, and lakes. Registration is now open for 2009 at **www.riversalive.org**. If your event is registered before July 31, you can get free t-shirts and promotional materials for your group. What a great way to get the word out to your neighbors about the importance of keeping our water litter-free!

And Don't Forget to Report Your Cleanup Data!

Don't be fooled though, Autumn is not the only time you can clean-up your stream. In fact, we know that our volunteers are always cleaning-up during their monthly monitoring events! In order for us to keep track of your volunteer hours, we are asking volunteers to report cleanup data at the same time you report your monitoring data. Volunteers can now register monthly site cleanups through the Adopt-A-Stream online database at the same time they are entering their monitoring data.

Schedule of Events

Butterfly Bonanza

Date: Saturday, August 8th
Time: 9:30 am - 11:00 am
Location: Smith-Gilbert Gardens
Cost: $4/child $5/adult
Call: 770-919-0248

http://www.kennesaw-ga.gov/index.aspx?nid=295

Monarchs Across Georgia Workshop

Date: Saturday Aug. 29th
Time: 9:00 am - 3:00 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-1482

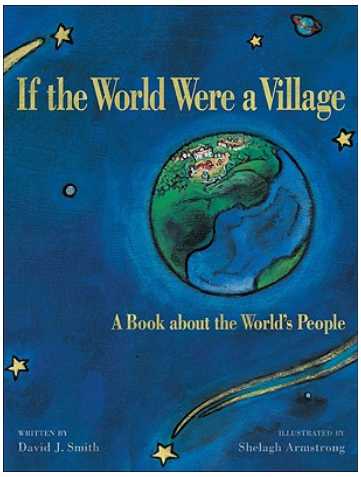
August 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8  Butterfly Bonanza
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29  Monarchs Across Georgia Workshop
30	31					

Recommended Reading

If the World Were a Village

by David J. Smith



This publication, like all those profiled in our *Recommended Reading* feature, is available for checkout from the Watershed Stewardship Library, housed in the Water Quality Laboratory.

There are currently more than six billion people on the planet! This enormous number can be difficult to grasp, especially for a child. But what if we imagine the whole world as a village of just 100 people? In this village…

- 22 people speak a Chinese dialect
- 20 earn less than a dollar a day
- 32 are of Christian faith
- 17 cannot read or write
- 39 are under 19 years old

In a time when parents and educators are looking to help children gain a better understanding of the world's peoples and their ways of life, *If the World Were a Village* offers a unique and objective resource. By exploring the lives of the 100 villagers, children will discover that life in other nations is often very different from their own. The shrunk-down statistics -- some surprising, some shocking -- and David Smith's tips on building "world-mindedness" will encourage readers to embrace the bigger picture and help them to establish their own place in the global village.

- From Amazon.com

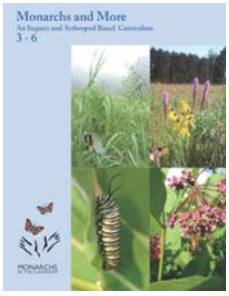
Also explore David J. Smith's companion website, **www.mapping.com**, which provides resources to educators, students, and anyone else wishing to expand their geographic horizons.

September 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12 Adopt-A-Stream Chemical Workshop
13	14	15	16	17 Grafting Demonstration	18	19
20 Clean Up the World Weekend http://www.cleanuptheworld.org/	21	22	23	24	25	26 Rottenwood Creek Cleanup
27	28	29	30 Project Learning Tree Workshop			

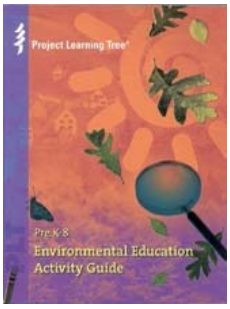
Curriculum Workshops for Teachers:
Monarchs Across Georgia, Project Learning Tree

CCWS will be offering curriculum workshops this Fall for PreK-8 teachers. Space is limited to 15 participants. Please call 770-528-1482 to register!



Monarchs in the Classroom (K-8)
Saturday. August 29 • 9:00am - 3:00pm
Location: Water Quality Lab

Age specific lessons focus on life cycles, systematics, ecology, conservation, and monarch migration, and include extensive background information with sections on monarch biology, practical tips for rearing and observing insects, and conducting inquiry-based lessons in the classroom. Bring a sack lunch!



Project Learning Tree (PreK - 8)
Wednesday, September 30 & Thursday, October 1
4:30pm - 7:30pm
Location: Smith-Gilbert Gardens

Use the forest as a "window on the world" to increase students' understanding of our environment and help them acquire an appreciation and tolerance of diverse viewpoints on environmental issues. PLT encourages creativity, originality, and flexibility to resolve environmental problems and issues.

Schedule of Events

Adopt-A-Stream Chemical Monitoring Workshop

Date: Saturday, Sept. 12th
Time: 9:00 am - 12:00 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-1482

Grafting Demonstration

Date: Thursday, Sept. 17th
Time: 6:30 pm - 8:30 pm
Location: Water Quality Lab
Cost: Free
Call: 770-528-4070

Rottenwood Creek Cleanup

Date: Saturday, Sept. 26th
Time: 9:00 am - lunch
Location: Life University
Cost: Free
Call: 404-401-4577

Project Learning Tree Workshop

Date: Sept. 30 - Oct. 1
Time: 4:30 pm - 7:30 pm
Location: Smith-Gilbert Gardens
Cost: Free
Call: 770-528-1482 to RSVP
http://www.kennesaw-ga.gov/index.aspx?nid=295

Cobb County Watershed Stewardship Program

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Cobb County...Expect the Best!

Welcome New Watershed Stewards!

Ric and Sharon Donato are monitoring a tributary of Rubes Creek in Marietta as well as participating in Anuran Monitoring.

Holly Martin & her daughter marked stormdrains in Kennesaw during our Stormdrain Marking Day.

Robin Kranz & her son marked stormdrains near Fullers Park during our Stormdrain Marking Day.

Kim Pierce has been marking stormdrains in the Glen Leigh Park subdivision in Mableton.

Susan O'Neal marked stormdrains in Marietta during our Stormdrain Marking Day.

Cesar Zapata & his neighborhood HOA will be marking stormdrains in Acworth.

John Warren will be monitoring the lakes in the Loch Highland subdivision.

Paul Threatt is monitoring Willeo Creek in Roswell.

Thanks to ALL of our volunteers for everything that you do!

To thank those completing service projects for Cobb Water...

2009 T-shirts are here! KSU student Tiffanni Spann created the original design in 2005. If you haven't received your 2009 volunteer t-shirt, please contact our office.