

## **SWPBA 2014 Georgia Newsletter**

### **Changes in GA Watershed Protection Branch**

In January, the Watershed Protection Branch (WPB) moved from its former offices on International Parkway to offices within the Twin Towers (Floyd Building) and the State Agricultural Building in downtown Atlanta. This move puts the WPB in close proximity to the rest of the GA Environmental Protection Division (EPD).



*James H. "Sloppy" Floyd Veterans Memorial Building, also called "Twin Towers"*



*Georgia's Department of Agriculture Building*

WPB's Ambient Monitoring Unit (AMU) has seen further changes with the addition of four new staff members in the last year. Joshua Jones, Matt Mundy, Leslie Piper, and Matthew Read have all joined the North Monitoring Unit, which is responsible for the regular monitoring of streams and lakes across the northern part of Georgia.

### **Ambient Monitoring**

The Georgia Environmental Protection Division (GA EPD) Watershed Planning and Monitoring Program (WPMP) is in its fifth year of state-wide monitoring, working out of the main Atlanta office and 3 district offices. In 2014, the ambient monitoring staff collected monthly water quality and nutrient data at 161 streams, 25 lakes, and 10 estuarine sites. Quarterly metal samples were collected at 70 of the stream sites, and quarterly, 30-day geometric means for fecal coliform were collected at 58. Pesticides were sampled at 25 stream locations. Lake and estuarine sampling is conducted from April to October and includes Chlorophyll a monitoring. The estuarine sites are sampled for Algal Growth Potential throughout the growing season. Wadeable stream sampling included 19 diatoms sites, 38 planned macroinvertebrate sites, and 83 fish sites. (Fish sampling is conducted by the Georgia Wildlife Resources Division.)

### Ocmulgee River Project

This past August, Ambient Monitoring Unit and Facilities Monitoring Unit staff members braved sweltering temperatures and hordes of gnats to conduct a special monitoring project on the Ocmulgee River. Our Water Quality Modeling Unit is in the process of developing a hydrodynamic water quality model for the Ocmulgee, and requested that weekly water quality and nutrient samples be collected at 19 main stem/ tributary sites and 7 WPCP facilities located between Lake Jackson and Lumber City.



*The Ocmulgee River at SR16 near Jackson, Georgia*

In addition, 13 continuous monitors were deployed throughout the watershed collected hourly in-situ data for seven weeks. Using our YSI RiverSurveyor, stream bank slope and bathymetry measurements were measured at multiple points along the Ocmulgee. AMU and FMU are currently compiling and analyzing all collected data; EPD intends to complete the model calibration in early 2015.

### Groundwater

In 2012, we welcomed GA EPD's ground water monitoring personnel to the Ambient Monitoring Unit. Originally a component of the now-defunct Georgia Geologic Survey, the ground water crew now conducts ambient monitoring of the Floridan, Southeastern Coastal Plain, and Piedmont/Blue Ridge aquifers. This year they are collecting in-situ, nutrient, anion, metal and VOC data at 83 wells statewide. Annual reports detailing the findings of each year's monitoring efforts are available upon request.

### **Facilities Monitoring Unit**

Georgia Environmental Protection Division (GA EPD) would like to welcome Myron Petro to the Facilities Monitoring Unit. Myron previously worked for an environmental firm in Gwinnett County, Georgia and has his Master's Degree in Geography and Atmospheric Science from the University of Georgia. We are looking forward to a productive year with Myron on our team.



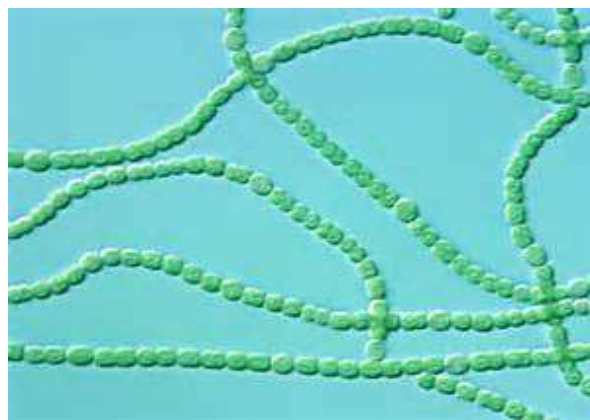
## Wetlands Unit

The Wetlands Unit performs assessment work, conducting soil and botanical surveys of forested wetland sites throughout each ecoregion of Georgia. The purpose of this work is to determine possible metrics of wetland condition and function and to develop a rapid assessment method based on those metrics. Ultimately, the data will be used to inform water quality standards for wetlands throughout the state.

Beginning in early 2014, our crew returned to the sites to conduct benthic macroinvertebrate and amphibian surveys. Next year will also mark the second year of the use of wildlife song meters, which are deployed at every site, in an attempt to gain a more comprehensive picture of the frog populations within each wetland. WPMP will also continue field testing the recently completed statewide Wetland Condition Index, which ranks known wetlands in the state based on relative interactivity to various anthropogenic stressors, connectivity to conservation areas, and hydrologic connectivity to other wetlands. The monitoring group plans to visit the Coastal Plains Ecoregion this year, followed by the Blue Ridge in 2015.

## Cyanobacteria

For the past three years (2012-2014), GA EPD personnel from the Tifton, Cartersville and Atlanta offices have been involved in a cyanobacteria sampling project with Alan Wilson from Auburn University. The cyanobacteria project is a large-scale collaborative effort designed to enhance Auburn University's existing database aimed at forecasting toxic algal blooms in freshwater habitats throughout the Southeast. During this project, GA EPD has collected samples from lakes Blackshear, Walter F. George, Seminole, Chehaw, Alatoona, Carters, West Point, Jackson and Oconee for analysis of cyanobacterial toxins (microcystin, cylindrospermopsin and saxitoxin), phycocyanin, off-flavors and phytoplankton enumeration. As of this writing, all of GA EPD's sampling has been completed and personnel are in the process of data submission.



*Cyanobacteria chain. Cyanobacteria rank among the oldest organisms alive, quietly absorbing CO<sub>2</sub> for 3.5 billion years.  
(James Golden/University of California, San Diego)*

## **Paddle Georgia and Adopt-A-Stream Coordination**

### Georgia Adopt-A-Stream presenting at SWPBA

Georgia Adopt-A-Stream (GA AAS) is a state-wide volunteer water quality monitoring program that is housed in the EPD's Nonpoint Source Program and funded by a Section 319(h) Grant. We will be presenting at the SWPBA conference to provide an overview of our monitoring program that currently supports over 60 local programs and 2,500 active monitoring volunteers. We are looking forward to engaging water professionals from other states in the southeast on how we can serve as a model program that is part of a state agency.

### Paddle Georgia 10 Year Anniversary and Adopt-A-Stream Involvement

Paddle Georgia 2014, coordinated by the Georgia River Network (GRN), took over 450 paddlers down a 110-mile stretch of the Chattahoochee River. The Chattahoochee River flows through three physiographic provinces including the Blue Ridge, Piedmont and Coastal Plain region. The name "Chattahoochee" is derived from a Native American word meaning "painted" or "marked rocks" that may refer to the beautiful rock outcrops one would encounter while paddling through certain sections of the river. River adventure enthusiasts today have nicknamed it "The Hooch". Sections of the river serve as suitable habitat for trout, making the Chattahoochee only one of two trout streams in the country that flows through an urban area.



*AAS and Ambient Monitoring Team*



*Chattahoochee River*

The flow of the river is controlled by hydroelectric dams that form lakes along its journey over 430 total miles. It drains a total area of 8,770 square miles and is widely known for providing metro-Atlantans around 70 percent of their total drinking water. Rapid growth within the metro area has greatly affected the water quality and instream flow of the river. Flowing closer to Atlanta, the Chattahoochee River is influenced primarily by urban development with concerns of water withdrawals used for drinking water in addition to contributions of wastewater discharge and nonpoint source pollutants such as sediment, bacteria and nutrients. Most stretches of the river near Atlanta and further downstream are on

Georgia's 305(b)/303(d) list of impaired waters (refer to <http://gaepd.org/Documents/305b.html> for more information). The Chattahoochee River and its tributaries are designated for the use of fishing. Some waterways are listed for violations of fecal coliform bacteria, dissolved oxygen, metals and for not supporting fish communities due to nonpoint source pollution.

Once again, we were fortunate to have one of EPD's Ambient Monitoring Unit managers along. Jeremy Smith was able to contribute resources and knowledge during the event. Jeremy brought members of his team to assist with monitoring and sample processing. AMU also had goals to collect additional data pertaining to heavy metals and nutrient content. Floating along the river, the sampling strategy targeted tributaries and sections of the mainstem that were listed as impaired or had major discharges that might influence the water quality. We sampled before and after these streams and inputs to determine if there were any major influences to the river. In-situ (DO, pH, conductivity, temperature) measurements and chemical samples (nutrients, heavy metals, BOD, alkalinity, ect.) were taken at 88 locations along the river and major tributaries. To help with our outreach and monitoring goals, we recruited AAS certified trainers, active volunteers, board members and PG alumni. Our small, but mighty team this year made it all possible by collecting and processing many water quality samples, and certifying twenty-two PG participants in AAS chemical monitoring methods. With a small team and averaging around 16 miles to paddle each day, this made for long hours in our portable "lab" processing samples. We are sure the team was dreaming about pulling samples in their sleep.

Overall, tributary sites had a broader range of values than the mainstem sites. Two tributary sites had elevated E.coli and turbidity readings. Both sites reside in counties with strong local AAS programs, so response time was quick to do site investigations. A significant rain event occurred after sample collection that may have played a role in high levels due to both sites being in urban areas that are subjected to increased runoff after rain events. The complete results of our findings can be found in our Jul-Sep AAS newsletter.

## **Georgia Fish IBI**

The Georgia Department of Natural Resources, Wildlife Resources Division, Stream Survey Team (SST) participated in two federal projects this year, comprising the majority of their fieldwork. Biologist Paula Marcinek assisted the U.S. Geological Survey with their National Water Quality Assessment (NAWQA) Program's Southeast Stream Quality Assessment (SESQA). Marcinek provided fish collection and taxonomic expertise to the USGS during the 11 day, 16 site sampling event in Georgia.

The SST also partnered with Georgia EPD to complete the boatable portion of the U.S. Environmental Protection Agency's National Rivers and Streams Assessment (NRSA) project, which included 16 sites and 18 sampling events. In addition, the SST has been collecting fish for displays at the Go Fish Education Center in Perry, GA, and has begun revising/updating the statewide Fish Index of Biotic Integrity.



*A snapshot of the aquarium at Go Fish Education Center*

Georgia EPD has secured multiple Wetland Program Development Grants with which to implement a wetland monitoring and assessment program. The program aims to assess wetland quality and function throughout the state. The purpose of this work is to investigate various metrics as potential indicators of wetland condition and to develop a rapid assessment method based on those metrics. Ultimately, the data will be used to inform EPD's consideration of water quality standards for wetlands in Georgia.

The project design focuses on five of the six ecoregions occurring within the state. Fifteen sample sites are chosen per ecoregion on an annual basis. These fifteen sample sites are categorized into two classes, impaired sites or reference sites. Impaired versus reference sites are determined by the use of the Wetland Condition Index, a GIS tool developed by the University of Georgia Natural Resources Spatial Analysis Laboratory (NARSAL) which ranks known wetlands in the state based on relative influence by various anthropogenic stressors, connectivity to conservation areas, and terrain and hydrologic connectivity to other wetlands. After determining a collection of potentially suitable sample sites, we reach out to landowners for permission to access the sites and thereafter perform continuous monitoring at a final set of fifteen sites. This monitoring consists of multiple site visits, and spans a full year.

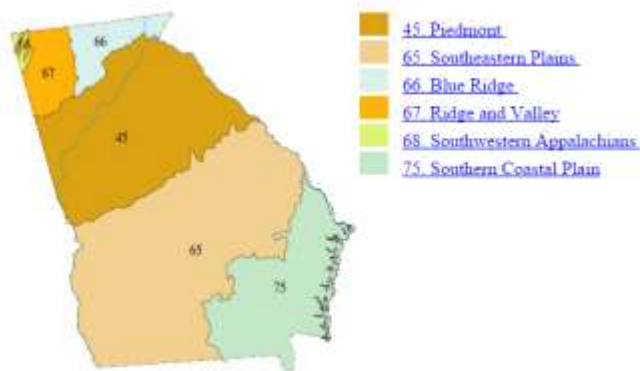
Our wetland monitoring investigations begin in late summer by performing a detailed on-site assessment of the wetland soils and vegetation community at each site. Our assessment approach is based on protocols established by the EPA National Wetland Condition Assessment. It includes documentation of hydric soil characteristics and collection of soil samples for laboratory analysis through a depth of 60 centimeters at five designated sampling points within each wetland site. The vegetation community is characterized by species identification and estimation of percent cover within five 10-meter square plots situated along compass cardinal point transects. The general characteristics of the surrounding vegetation buffers are also recorded at designated locations extending along these transects.

A shallow groundwater monitoring well is also installed during our initial monitoring visit. This device allows for continuous recording of groundwater levels at one-hour intervals for a full year. We also endeavor to take water quality samples at stream locations upstream and downstream of the wetland site, if access and reasonable connectivity to the wetland can be established. We return to each site quarterly to download the well data and obtain additional water quality samples (where appropriate). We also return to physically collect macroinvertebrate samples and establish ongoing amphibian (frog call) monitoring in late winter/early spring. Our macroinvertebrate samples are collected and sent to taxonomic labs for processing. The amphibian surveys are performed through the use of automatic recording wildlife song meters. These devices are taken out to each site and installed to continuously record calls for a 3 month period. After this period, we return to the site to download final well readings, collect water quality samples, and retrieve the audio devices. The recording devices are then sent out for processing.

At the end of the year-long sample period, data is compiled and analyzed to formulate conclusions about the relative quality of the wetlands in the state. These conclusions will be used to help develop appropriate monitoring protocols, assessment methodologies and inform regulatory decision-making.



To date, EPD has completed wetland monitoring in the Piedmont ecoregion (45), and we are closing out our monitoring of wetlands in the Southeastern Plains ecoregion (65). Continuous monitoring of the Ridge and Valley ecoregion (67) is in process and we are currently beginning site selection for wetland locations on the Southern Coastal Plain ecoregion (75), to be conducted in 2014/2015. The fifth ecoregion on our agenda is the Blue Ridge (66).



*Level III Ecoregions of Georgia, Revised April 2000  
National Health and Environmental Effects  
Research Laboratory  
U.S. Environmental Protection Agency*

## **NRSA**

A team from Georgia recently completed field work for the 2013/2014 National River & Streams Assessment (NRSA). The NRSA is a probability-based survey of our Nation's rivers and streams and is designed to assess the condition of the Nation's rivers and streams, evaluate changes in condition from the 2008/09 NRSA, and help build State and Tribal capacity for monitoring and assessment and promote collaboration across jurisdictional boundaries. Thirty-two (32) rivers and streams, both wadeable and non-wadeable, were assessed by Georgia's team over the past two summers.

The NRSA is one of a series of water assessments being conducted by states, tribes, the U.S. Environmental Protection Agency (EPA), and other partners. In addition to rivers and streams, the water assessments will also focus on coastal waters, lakes, and wetlands in a revolving sequence. The purpose of these assessments is to generate statistically valid reports on the condition of our Nation's water resources and identify key stressors to these systems.

*The NRSA Crew on the last day of sampling*

*Summer, 2014*



## **305(b) and 303(d)**

Georgia placed our draft 2014 305(b)/303(d) list of waters on public notice on May 30, 2014. 2,297 waters are included in the 2014 List of Waters (1,019 Supporting, 1,175 Not Supporting, 103 Assessment Pending). Some of the highlights of our 2014 list include the following. The most frequent causes of impairments continue to be fecal coliform bacteria, listings due to impaired biotic integrity (fish and/or macroinvertebrate) and dissolved oxygen. The designated uses of approximately 100 waters were changed based on revisions made to Georgia's designated uses in the 2010 Triennial Review. Most of the changes involved changing the designated use from "Fishing" to "Drinking Water". Eighty newly assessed waters were added to the 2014 List. In 2014, EPD began to use the narrative water quality criteria, found in Chapter 391-3-6-.03(5)(a) – (e) of the Rules and Regulations for Water Quality Control, to list waters that may be impaired by excessive nutrients. The violation provided for these waters is "objectionable algae". A listing determination of "objectionable algae" was made for waters where field staff noted excessive algae, duckweed, or other aquatic plant life along with other factors including DO and pH measurements that indicate excessive photosynthetic activity and high nutrient levels in the water compared with other waters in the same river basin. Four waters were listed as impaired for objectionable algae on the draft 2014 list.

A public meeting was held on June 24, 2014 in Atlanta in order to answer questions and to receive comments regarding the draft 2014 list of waters. A total of five comments were received on the draft list. Georgia submitted the final 2014 305(b)/303(d) package to USEPA for approval on October 7<sup>th</sup>.

## Standards

The Georgia Environmental Protection Division (GAEPD) has several revisions planned for its triennial review of water quality standards. GAEPD plans on switching its bacteria indicator from fecal coliform to *E. coli* for freshwater and Enterococci for marine water. GAEPD also plans on updating its ammonia criteria based on EPA's latest recommendations. Based on watershed and lake modeling, GAEPD also plans on establishing water quality standards for Lake Oconee and Lake Sinclair, including nutrient criteria. The headwaters of the Conasauga River have been nominated as an Outstanding National Resource Water (ONRW), and GAEPD plans on moving forward with this designation. GAEPD may also adopt site-specific copper criteria based on the biotic ligand model (BLM).



*The Conasauga River*