

**Southeastern Water Pollution
Biologists Association
Newsletter – Fall 2000**

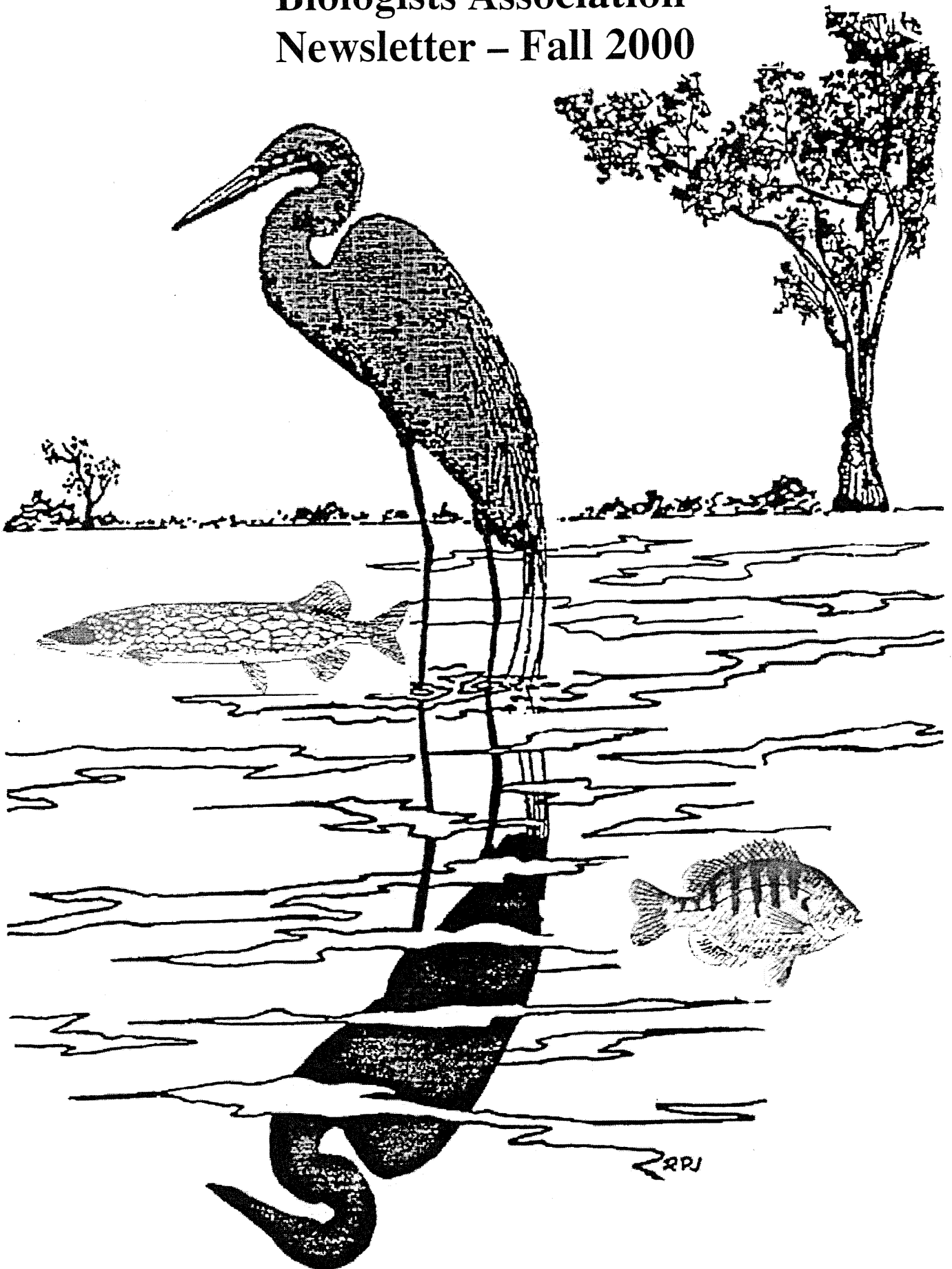


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President's Letter

Busy field season? Long, hot days of carrying sampling gear? Problem bugs? Putting out fires around the office? Sounds like you need to share your experiences with other area biologists at the 2000 Southeastern Water Pollution Association Meeting. Hopefully by the time this last newsletter gets out, everyone will have their plans to attend the meeting set and just be "calmly" wrapping up a few loose ends. There are several items of business that have been mentioned in emails, but here they are again.

I just wanted to remind everybody one last time that Tuesday, November 7th is Election Day. Hopefully, everyone has made arrangements to vote.

It is still not too late to sign up to give a presentation. Please contact Larry Eaton and get your title and abstract to him ASAP. No matter if you are giving a talk or not, if you are attending the meeting, let Larry or I know so that we can get the handouts prepared ahead of time. Also, we need to know if you are eating at the Wednesday night banquet.

In addition to submitting abstracts as early as possible, please get the general state overviews for the past year to Larry a week or so before the meeting so that they can be included in the handout packet.

I know many of you will be driving, so stay safe on the roads. I look forward to seeing everyone in Atlantic Beach in a couple of weeks.

Neil

2000 SWPBA MEETING NOVEMBER 7 – 9

ATLANTIC BEACH, NORTH CAROLINA

Ramada Inn, Salter Path Road (Hwy 58), Atlantic Beach, NC 28512
1-800-338-1533 Fax (252) 247-2670

Room Rates: \$30.00 per night for single, \$36.00 per night for double. All rooms are oceanfront. The block of rooms will be held until October 23.

Registration cost is \$35.00 and will include a seafood dinner on Wednesday night. Registration without the meal is \$30.00.

NEWS FROM ALABAMA

Reservoir Water Quality Monitoring (RWQM) Program

An intensive water quality survey of mainstem reservoir and tributary embayment locations in the Alabama River, Coosa River, and Tallapoosa River (ACT) was initiated during April 2000. Fifty-one tributary embayment locations in these reservoirs were sampled in April, June, and August with thirty-eight mainstem reservoir locations monitored monthly April-October to collect additional data needed for development of lake-specific water quality standards. Twenty-one Algal Growth Potential Tests were conducted on samples collected during August from thirty-eight reservoir stations in the river basins. In addition to the ACT basin monitoring, seventeen mainstem reservoir and tributary embayment locations in the Black Warrior River basin were monitored once during August in accordance with the two-year monitoring rotation of all lakes in the state.

The data compilation and analysis for the 1999 Intensive Water Quality Survey of the Chattahoochee and Conecuh River Reservoirs has been completed. The draft report is scheduled for completion in mid-December 2000.

For further information on the RWQM Program contact Fred Leslie at (334) 260-2752 or fal@adem.state.al.us.

Fish Tissue Monitoring Program

The fall collection for the fish tissue monitoring program is underway. The results of the analyses conducted on fish collected in the fall of 1999 have been forwarded to the Alabama Department of Public Health and should be available upon request. For further information on the Fish Tissue Monitoring Program contact Chris Harman at (334) 260-2751 or cdh@adem.state.al.us.

Point / Nonpoint Source Assessment Programs

The field portion of the FY2000 NPS Screening Assessment of selected subwatersheds in the Alabama, Coosa and Tallapoosa basins is complete. The subwatersheds were initially selected utilizing Soil and Water Conservation Districts' Conservation Assessments to focus monitoring efforts in those subwatersheds with the highest potential for nonpoint source impairment. Those subwatersheds were assessed using instream aquatic macroinvertebrate and fish community assessments. Water chemistry samples were collected at those determined to be in 'fair' or 'poor' condition. The macroinvertebrate identifications of the study site samples are completed and reference station samples are currently being identified. Water samples for laboratory analysis were collected at 44 study and reference stations during September. Drafting of the final report is in the initial stages. For more information contact Chris Smith (Tallapoosa Basin), Lisa Houston (Alabama Basin) or Vickie Hulcher (Coosa Basin) at (334) 260-2700

A water quality demonstration study (WQDS) was conducted on Big Wills Creek upstream/downstream of the Fort Payne wastewater treatment plant. Aquatic Macroinvertebrate community, habitat, toxicity and instream chemical assessments were conducted to document water quality prior to upgrade of the treatment plant facility. For more information contact Janet Branch (jlg@adem.state.al.us)

A draft report of the Southeast Alabama Poultry Industry Impact Study has been completed. The final report is scheduled for completion in January 2001.

Alabama Monitoring and Assessment Program (ALAMAP)

Fifty-nine probabilistic ALAMAP sites were sampled in August (not including the coastal ALAMAP sites). Of those approximately 1/3 were dry or non-flowing, symptoms of a VERY DRY year. This year staff from our field offices conducted assessments at approximately one-half of the selected sites.

CWA §303(d) / TMDL Assessment Project

Water quality sampling and habitat assessment of one-hundred-six (106) CWA §303(d) target sites is underway by Field Operations Division. This effort will continue through March of 2001 with a final goal of eight water quality sampling events and two habitat assessments during a 12-month period. Instream aquatic macroinvertebrate and habitat assessments were conducted at 36 of these sites during the May-July sampling window.

An intensive water quality study was conducted on the Tallapoosa River in Cleburne County near the town of Heflin. Eight stations were sampled a total of three times during the intensive study. Water samples were collected for chemical analysis and field parameter data at all stations. Physical Characterization and Habitat Assessment data were also collected at all wadeable stations. Data are currently being received from the laboratory and compiled for reporting to Water Division. Additional monthly sampling is also being conducted on these stations in conjunction with the CWA §303d project. For more information contact Brien Diggs (lod@adem.state.al.us).

Reference Reach Program

Aquatic macroinvertebrate assessments were attempted at thirty-nine (39) candidate reference sites in addition to fifteen (15) established reference sites. Less than half of the candidate sites were flowing during the spring macroinvertebrate assessment visit and two additional sites were dry or non-flowing during the September water quality sampling event. Thirteen of the 15 targeted established sites were assessed during the spring, however five of these were dry by the September visit. Analysis of the data collected (with consideration for the unusually dry weather conditions) will determine whether the sites will be added to our validated reference list. Reconnaissance of ecoregion 71 will be conducted this fall, with the candidate sites being assessed during FY01. Additional information can be obtained from Vickie Hulcher (vjh@adem.state.al.us).

Staff News

Welcome to our newest members of the Environmental Indicators Section, Greg Vinson and Suzanne Butts. Greg was graduated from Auburn University in Montgomery with a degree in Environmental Science. Suzanne earned her degree in biology from the University of Georgia. We also said good-bye Audra Jones as she transfers to the Health Department.

Florida Department of Environmental Protection news

- The final report on *Development of Lake Condition Indexes (LCI) for Florida* should be available in about a month.
- The results of recent studies of the Wekiva and Econlockhatchee River watersheds are completed. They are available, respectively, at <http://www.floridadep.org/labs/reports.htm#Basin> and <http://www.dep.state.fl.us/water/Slerp/bio/biorepts/otherepts/econ2.pdf>.
- Several other basin surveys were completed this summer, including the following:
 - *Tomoka River*—located near Ormond Beach; the survey includes both freshwater and estuarine areas; results are nearly completed; large amounts of siltation were found in some upstream areas, including a long-time reference site
 - *Daisy Creek*—a tributary of the Ocklawaha River; preliminary results indicate large nutrient loadings and high coliforms from this sometimes-intermittent tributary system
 - *Four estuarine systems*—Rose Bay and Spruce Creek estuaries near New Smyrna Beach and Crane and Turkey Creek estuaries near Melbourne; data analysis is in progress
- An eighteen-month quarterly survey of the water quality of canals connecting and flowing into the Alligator Chain of Lakes in Osceola County is under way. As an outgrowth of this study, water quality in a number of streams and canals that flow into Lake Tohopekaliga at Kissimmee is being monitored to try to ascertain significant sources of nutrient and pesticide input into the lake.
- Bioassessments and associated water chemistry sampling at fourteen lakes in the Central District are being completed, including both highly impacted and relatively pristine water bodies.
- The Central District will be participating in intensive studies in the near future on the Ocklawaha River Basin, the first for this district in the department's basin management cycle process. Next year's sampling will focus on the northern part of the Upper St. Johns River Basin.
- Dana Denson is carrying out a study of an herbaceous wetland located in a Seminole County wilderness area northeast of Orlando. By sampling the various vegetation types in this largely unimpacted wetland monthly for one year, he aims to determine the composition of the macroinvertebrate community of this type of system for comparison with other similar but impacted wetland systems. He also hopes to elucidate what effects the drastic natural fluctuations in temperature, dissolved oxygen, water level, etc., that occur in these systems might have on the makeup of the macroinvertebrate community.

Watershed Planning and Monitoring Program (WPMP)
Water Protection Branch
Environmental Protection Division

Georgia Department of Natural Resources

A sincere hello to all of you SWPBA-ites out there. I know that you missed us in the last newsletter issue. A classic example of too much to do and not enough time to do it! April /May sampling and report deadlines left little time for collecting and submitting a SWPBA article. I hope to make up for it with this issue!

All of us here in Georgia are looking forward to the upcoming meeting in North Carolina. Although no official word has come through for us on whom or how many may attend, we are hopeful that a number of our established as well as new employees will be given the opportunity to participate in the yearly conference. Our thanks go out to North Carolina for accepting host status for the 2000 meeting. Wrightsville Beach is where it all started for me nine years ago. I'm sure that Neil Medlin and crew will put on a conference to remember. He has personally promised me that there will not be a hurricane during our visit. I'm sure that Dave and Jim will enjoy the ability to sit back and just attend the meeting this year, after hosting last.

As always, we've been busy here in Georgia since our last newsletter submission. In case you haven't heard, we are in our third consecutive year of drought. Tributary drought gaging continues again this summer in South Georgia. Habitat and macro invertebrate assessment work continues, in support of the TMDL process. Basin major lakes have been sampled in the Chattahoochee/Flint basin group, and Lake Standards Compliance Sampling has continued, with two lakes added for 2000, to a new total of five. Fieldwork is being conducted, data is being collected, and reports are being written.

SIGNIFICANT ACTIVITIES

In accordance with the "zero tolerance" policy adopted by the Board of Natural Resources, a total of 14 consent orders were issued for the months of July and August, resulting in fines totaling \$152,635. These orders were executed throughout the geographic area of the state and covered permit violations and overflows.

The NPDES General Permit No. GA100000 for storm water discharges associated with construction activity became effective August 1, 2000. It was signed by the Director on June 12 of this year, and faced no administrative appeals. Passage and implementation of this law is a major accomplishment for Georgia. EPD has attempted to issue five different versions of this General NPDES Permit during the past eight years. The passage of this permit will greatly enhance efforts to reduce the amounts of E & S at construction sites. Issuance of the Permit has generated a substantial amount of interest within the regulated community and the Storm Water Unit has received hundreds of calls regarding Permit compliance issues each week since the

permit was issued. Two Environmental Specialists from the NonPoint Source Program have been temporarily reassigned to assist with the volume of information requests.

The Storm Water Unit has received and reviewed eight proposed training courses designed to certify individuals as "qualified personnel" for conducting construction site inspections as required by the General Permit. Sites or common developments on which construction activities began on or after August 2, 2000 must have qualified personnel on site immediately. Site or common developments on which construction activities began prior to August 2, 2000 must have qualified personnel on site by November 1, 2000.

During the month of August, the water Protection Branch continued Total maximum Daily Load (TMDL) implementation activities throughout the state. An agreement was reached with representatives of the 16 Regional Development Commissions (RDCs) in the state to "partner" with EPD in the education of local stakeholders regarding TMDLs, and the development of local TMDL implementation plans for TMDLs that have been completed by the EPD and EPA. Presentations were made in Gainesville, Adel, and Clayton (each RDC represents approximately 25 cities and counties). Presentations to the remaining RDCs will continue and development of local TMDL implementation plans will begin very soon.

On June 29, 2000, draft copies of the Guidance for the Issuance of Variances developed by the Stream Buffer Variance Criteria Technical Advisory Committee were issued. The closing date for comments was July 21, 2000. To date, we have received and forwarded to the Committee 30 responses. A final recommendation was drafted with input from the Directors Office, the Commissioners Office, and the NPS Program. Revisions were finalized, and the final product will be proposed to the DNR Board for incorporation into the Rules and Regulations for the Erosion and Sedimentation Control. This meets the December 31, 2000, deadline set forth in HB 1426.

Water Protection Branch staff assisted the State Attorney General's Office and EPA's legal counsel in preparing for another hearing in federal court concerning the 1997 Total Maximum Daily Load (TMDL) lawsuit. The latest action by the plaintiff environmental groups pertains to the actual implementation of the law. The plaintiffs are concerned about TMDL implementation for nonpoint sources. Two associates from the Branch attended the proceedings July 6.

A representative of the Watershed Planning and Monitoring Program (WPMP) attended a meeting July 25-27, 2000, with representatives of State and Federal Agencies and Tribes in Region 4. The purpose of the meeting was to develop preliminary criteria for the design of an assessment of streams and lakes in the Southeast (in Region 4).

The Georgia Nonpoint Source Management Program was updated and submitted to USEPA on August 31, 2000. This revision is intended to meet the requirements for funding under Section 319(b) of the Clean Water Act and to delineate short and long-term goals and implementation strategies. The Georgia Nonpoint Source management Program describes activities which are currently underway or planned for the time period FFY00 through FFY04.

NPS Program associates attended the 11th Annual Tri-Regional Nonpoint Source Meeting on August 7-11, 2000, in Ardmore, Oklahoma. Topics included NPS management Program Plans, TMDL implementation plans, riparian corridor workshop and field trip, Grant Reporting and Tracking System, and regional breakouts.

The Governors of Alabama, Florida, and Georgia agreed to extend both the ACT and ACF water allocation negotiations until 12:01 AM December 30, 2000. The Governors also agreed to continue States' attempts to reach consensus on a mediation process and a mediator for negotiations. The three States continue to believe that there is a reasonable possibility for a negotiated settlement, and that such a settlement would be preferable to a court decision.

Eighteen exceedences of the 8-Hour air quality standard were registered for metro Atlanta and four exceedences of the one-hour standard in July.

The 1998-1999 Georgia 303(d) list received approval from the USEPA August 28, with comments. These comments were addressed August 29, and a final 305(b) report is expected in the near future.

Drought Assessment

During July, drought conditions tended to worsen for municipal water systems that rely upon surface water sources located toward the headwaters of river and streams. Particularly hard hit are municipalities in the headwater regions who have comparatively small water supply storage reservoirs upon which to depend during extended dry periods, and few, if any, interconnections with adjoining water utilities who might have excess water supplies. Examples of such cities include Griffin (Spalding County), Eatonton (Putnam County), Monticello (Jasper County), Thomaston (Upson County), and Hogansville (Troup County). If drought conditions persist much as they have done over the past several months, these and other similarly situated cities are expected to exhaust their available supplies over the next 1-4 months. Quite appropriately, many of the more severely impacted water systems have implemented water use restrictions that are much more severe than those announced by EPD in June. In addition to more restrictive demand management actions, some of these water utilities are hastily pursuing other options (e.g., drilling exploratory wells, preparing water rationing plans, etc....) in order to reserve water for essential human needs.

Some rains have come to the southwest Georgia agricultural belt over the month of July and provided scattered relief to some farmers. The rain has however been much too sporadic and scattered to allow real drought recovery to begin in the region. Streams continue to flow in the region at or below record lows, and there continue to be reports of dry domestic wells and some dry irrigation wells.

Intensive Surveys Unit

Lake Standards Monitoring has continued for 2000 with the addition of two lakes. Lake Allatoona and Lake Lanier were added to the list of Standard Lakes that already included Lake Jackson, West Point and Walter F. George. Each of these lakes is sampled once a month, April through October. The number of sites varies from lake to lake, from one to five. Chlorophyll *a* standards have been established for each site. Composite samples are collected from each site,

as well as water column data, including DO, pH, Conductivity, and water temperature. A report on the Standard lakes should be available by the first of the year.

Basin Major Lakes monitoring was conducted on seven lakes in the Chattahoochee/Flint basin group. These lakes were Harding, Goat Rock, Oliver, and Andrews in the Chattahoochee Basin and Blackshear and Worth in the Flint basin. Lake Seminole was the seventh Basin Lake to be sampled. The Chattahoochee and the Flint both contribute to it. These "Basin" lakes were sampled once a quarter throughout 2000. The same field parameters and samples were collected as with the Standards lakes. A report on the 2000 data should be available February 2001.

The ISU welcomes two new employees to our ranks for 2000. Joe Fievet transferred in from another program with a biology background to fill one of our two vacant positions. Michael Carter was hired on as a newbie to fill a vacant EE position. A sincere welcome to both of these guys. Hopefully you will get to see their eager faces at an upcoming SWPBA meet.

Ambient Monitoring Unit

AMU has a new member of their team. His name is Brock Page, and he is a recent graduate from Wofford University in South Carolina. He will be collecting chemical samples from the trend-monitoring network. We are very happy to be working with him. Also, AMU has just finished the 2000 sampling of TMDL sites in the Chattahoochee and Flint River basins. Subsamples are being prepared to start the identification process. Ecoregion reference site work has just begun. AMU staff spent three days with Jim Gore and his graduate students from Columbus State University going over field and laboratory methods.

Kentucky News

Ecological Support Section

The Reference Reach crew sampled over 40 headwater streams in the spring and another 50 sites scattered across the Upper/Lower Cumberland and Tennessee/Mississippi drainages this summer. Macroinvertebrate index development for the headwater streams in the eastern coalfield region is almost complete (check out Greg Pond's presentation at the conference). Greg, Stretch Compton and John Brumley are working up data from this year. Stretch will be figuring out what makes the fish community IBI assessment tick in the Coastal Plain region (did you know KY had a coastal plain??). Stretch has been considered the "sainted-one" because he and John have collected several rare and unique fishes once thought extirpated from the Commonwealth, and strange and new distributions of oddball species. John and Lythia will be tweaking the Diatom Bioassessment Index as this wealth of data is teased and massaged by our EDAS database. They are kicking around a *Cymbella*-based metric (ooh-aahh). Out of this year's watershed collection effort, many new sites will be added to the Exceptional and Reference Reach network, which by the next triennial review will become protected waters of the Commonwealth.

The Watershed Sampling crew sampled 45 4th order and above sites in the Upper/Lower Cumberland and Tennessee/Mississippi drainages. We were lucky this year to be able to sample most of our targeted sites; unlike last year we didn't suffer from a drought. Fish tissue samples were collected along with the biological samples from the 12 Biological Monitoring Program fixed network sites. We took digital photos of all our sites this year to put into EDAS (so when we go back we'll know we're in the right place!) Ain't technology grand!!!

Bioassay Section

We have recently completed this season's schedule of toxicity tests, which included 12 municipal and 7 industrial facilities. WET tests were performed using both *Ceriodaphnia dubia* and *Pimephales promelas*. Ten tests were chronic and 7 were acute. Four of the facilities were required to perform follow-up tests as a result of failing DOW's compliance tests. All four facilities passed their retest.

The section has reviewed over 600 DMR WET reports at this time. These reports frequently include results for both test species and are submitted on either a monthly or quarterly basis.

There are currently 9 facilities undergoing the TRE process. Six are municipals and 3 are industrials.

The Section's web site is currently being updated to FrontPage. If you would like any information contact Susan Cohn, or talk to her at the SWPBA meeting this year.

Sediment toxicity tests are being conducted in the Upper Cumberland River Basin. *Hyalella azteca* tests as well as benthic macroinvertebrate collections and sediment chemistry are being used to characterize potential impacts to the system.

High flow samples are being collected in the Benson Creek drainage and analyzed for suspended solids. This study is being undertaken in order to locate the source of sediment loading to this stream. For more information on either of these studies, talk to Betty Beshoar.

NONPOINT SOURCE SECTION

The final report on our fourth original watershed demonstration project is now available. For a copy of the "Fleming Creek Watershed Nonpoint Source Demonstration Project" contact Danny Peake at Danny.Peake@mail.state.ky.us. This is the last final report from the original watershed demonstration projects we began with in 1989! Along with the Reference Reach biologists, we have completed the identifications of the 43 macroinvertebrate samples from headwater streams in the upper Cumberland and Kentucky watersheds. This will result in the development of macroinvertebrate metric criteria for Kentucky's Macroinvertebrate Bioassessment Index (MBI) for 1st and 2nd order streams in the Central Appalachian Ecoregion. This research will be presented at the annual meeting in November. We are still working on the macroinvertebrate identifications from our stream restoration project, and expect to have those completed by the annual meeting. The sites for that project will be sampled again next year to have two sets of pre-restoration macroinvertebrate and habitat data. We have also been giving a helping hand in the field, assisting with sampling for the watershed approach activities in the Cumberland River basin. The entire section has been quite busy working on ways to streamline our 319(h) grant application process. We hope to have most of the work completed on this soon so that we can pilot it for our FFY 2002 grant – keep your fingers crossed! With luck, at least one of our biologists will be able to attend the annual meeting.

MISSISSIPPI HAPPENINGS

We are in anticipation of beginning the summer sampling season, with much to accomplish: we have several projects in progress to evaluate the effectiveness of some agricultural BMP's; the continuing efforts related to the oil spill on the Leaf River; we are in the process of developing a fish IBI for use in our water quality studies, and much fish tissue to collect.

THE BIGGEST (AND BEST!!) NEWS

Last newsletter we reported on some changes at the top of the Department of Environmental Quality with the announcement that Charles Chisolm had advanced to Executive Director of the Department and had vacated his old position as Head of the Office of Pollution Control.

Mr. Chisolm's replacement as Head of the Office of Pollution Control is PHIL BASS, a BIOLOGIST and longtime SWPBA Member. Phil has been with the Department for nearly 30 years, and served as Laboratory Director for 19 years. For the past 9 years, he has been Chief of the Field Services Division. Phil served as SWPBA President in 1981, and remains an ardent supporter of SWPBA. In his new job, Phil is responsible for the operations of the Office of Pollution Control, which has over 350 staff members divided into seven major divisions.

Needless to say, those of us who have been privileged to work closely with Phil during our time here are elated at his success, and proud to have a biologist running the show. Phil has not only been an outstanding administrator and mentor, but also a good friend to all of us. Under his capable leadership, we look forward to even more significant accomplishments in the future. We are sure that the rest of the SWPBA membership will want to join us in extending to Phil a hearty and well-deserved congratulations!

Mississippi's Largest Oil Spill

We continue to make good progress on the resolution of the Leaf River oil spill of December, 1999. Plans are underway for separate studies to determine if the spill affected the macroinvertebrate community and to determine if the spill had an effect on the palatability of the fish fauna.

Ambient Monitoring and Whole Basin Studies

Monthly sampling of a physical/chemical ambient network consists of 63 sites within the state. An additional sampling network, consisting of 31 sites, mostly on large reservoirs, the Mississippi River, and the Mississippi Sound were also sampled on a quarterly basis. Biological assessments are scheduled to be conducted at 48 sites statewide.

Data analysis and interpretation is well underway and should soon be completed for the macroinvertebrate portion of the Big Black and Tombigbee Whole Basin studies.

St. Martin Bayou Fecal Coliform Study

This study, to document levels of coliform bacteria was begun in February 1997. Twenty-six sites throughout the St. Martin Bayou watershed (which feeds the Back Bay of Biloxi) continue to be sampled on a quarterly basis. Much of the infrastructure for connection to a treatment facility has been completed. Monitoring will continue as we strive to document the effect of the upgrading of the sewage disposal on the fecal coliform levels in the local water bodies.

Pfiesteria Monitoring

Later this summer our efforts to locate areas within the Mississippi Sound and associated estuaries where physical-chemical conditions favor outbreaks of *Pfiesteria* and *Pfiesteria*-like organisms will begin. South Regional Biologist Barb Viskup will be leading this project. Once "favorable" areas are located, the collection and analysis of sediment samples, and analysis of the algal community present in these areas will follow.

Wasteload Allocation (WLA) Studies

Identification of the macroinvertebrates samples during last year's wasteload allocation studies is progressing. This year we have several additional studies planned from sites within the Tombigbee and Big Black River basins.

TAINTED FOOD???

This spring we received two separate reports of dead and dying birds in agricultural fields. The cause of the mortality was determined to be pesticide-laced corn placed in the field to keep the birds from feeding on corn seedlings. In one incident, hundreds of birds were affected, including at least 10 wild turkeys, and numerous raptors. Biological Section staff are working to determine replacement values for the affected fauna. Anyone who can supply some guidance, please contact us.

FISH TISSUE MONITORING

Fish tissue collections made were for Mercury analyses, Dioxin monitoring, Basin monitoring, Ambient monitoring, and some special investigations. These efforts are summarized below:

Ambient and Whole Basin Studies Fish Tissue Collection

There were a total of 60 samples from 25 sites to satisfy monitoring requirements dictated by the ambient and basin monitoring networks collected last year. The tissue samples have been processed, and some of the analyses completed.

Dioxin in the Leaf River Basin

We received results from Georgia Pacific from fish tissue collected last year, and all samples were below advisory levels. Fish tissue collections began in July, 1999, and were completed and submitted for analysis.

Dioxin in the Escatawpa River Basin

International Paper has contracted a private firm to collect fish tissue to fulfill their NPDES fish tissue monitoring requirements. Fish collections were made during this period and tissue was sent to a contract lab for analysis. Results have been received and evaluated.

Mercury Studies

There is currently Mercury advisories on 8 waterbodies throughout the state: Enid Reservoir, the Yocana River, the Yockanookany River, the Escatawpa River, the Pascagoula River, Archusa Creek Water Park, the Gulf of Mexico, and the Bogue Chitto River. Most of the samples collected last year are awaiting analysis.

Fish Tissue Collection at Country Club Lake

A fish consumption advisory is still in effect for Country Club Lake due to elevated levels of Dioxin and PCP's. Additional samples will be collected this summer, as we continue to monitor contaminant levels in the tissue.

NORTH CAROLINA

BIOASSESSMENT UNIT

In August, the Bioassessment Unit bid adieu to Nancy Guthrie. Nancy, our GIS guru, good sport and non-whining sampler, has gone to the Center for Geographic Information and Analysis (CGIA), where her job will be to groundtruth maps churned out by the map geeks there and keep them rooted in reality. Good Luck Nancy!

Basin Assessment

Most of the summer has been spent collecting invertebrate samples at sites in the Broad, Neuse, Chowan and Pasquotank basins. Work is progressing on sample identification, data entry, and data analysis. As usual, it will be a challenge to separate out true long-term changes in water quality from changes associated with between-year differences in flow. Just to make things interesting, there has been a remarkable spatial and temporal patchwork of rainfall during the summer of 2000. Collections from the beginning of the summer may reflect drought conditions, while collections at the end of the summer may have occurred after a flood. Even for collections taken within the same week, rainfall has been so patchy that adjacent streams may be simultaneously in drought and flood conditions.

This year's studies included two "overlap" sites for Quality Assurance. At these sites, two different teams collected in the same stream reach. In spite of some seasonal differences in the invertebrate community, both EPT taxa richness and biotic index values were similar for both teams.

Special Studies

*Effects of Construction Sediment. At the request of field offices, we have conducted two studies on minute streams affected by poor erosion control at construction sites. These data are successfully being used to support substantial fines against developers. Such studies almost always occur on very small streams, usually about 1-2 meters wide. We consider such streams to not nonratable, but the amount of impact can be determined by comparing upstream/downstream sites. Small streams may be the last refuge of biodiversity in urban landscapes.

*303d streams. Streams that receive a Fair bioclassification may go on the 303d list, but current policy is that a second sampling (within one year) is required to confirm the Fair rating. A number of streams were resampled to confirm problems, with the Fair rating confirmed in most cases. Other streams, however, appear to fluctuate between a Fair and Good-Fair rating depending on the antecedent flow conditions. We also have conducted similar studies to confirm Poor or Fair ratings for government groups trying to find areas that might respond to restoration efforts.

*HQW surveys. One request for a High Quality Water classification was received for a stream in the Sandhills ecoregion: Mill Creek. This stream received an Excellent bioclassification, substantiating the HQW request.

*Post Landfill Fire. In early 1999 the Dare county landfill caught fire. Assessments made at the time found that water used to put out the fire found high levels of metals, hydrocarbons, phosphorus and ammonia. Some of this water escaped into surrounding drainage canals, including canals in the Alligator River National Wildlife Refuge. Almost two years later, FWS is conducting a comprehensive survey to assess long term impacts from the fire. Since DWQ

documented water quality problems using macroinvertebrates during a survey while the fire burned, we were asked to perform another survey at four of the 14 sites FWS had sampled for water column, sediment and pore water chemistry, plus running acute and chronic toxicity tests. Data analysis is pending.

FISH COMMUNITY

Fish community sampling from the small shocker boat has been completed for the year. Identification of the samples has been completed. Due to high water level, turbidity, and time restraints, not as many streams were sampled as originally hoped.

After agreement was reached on what constituted a reference location, progress has been made on revising the NC IBI metric criteria for piedmont and foothill streams. Fish community data collected from reference sites during the past several years were used to calibrate the metric scores. Work on the coastal plain streams will be next.

ECOSYSTEMS ANALYSIS UNIT

The Ecosystems unit now adds Phil Bethea to its list of losses. Phil has moved to the NC State Employees Credit Union to run their web site. Phil follows Norm Bedwell who resigned in June to work for SAS in Cary, NC.

We welcome Susan Gale to the Environmental Technician position vacated by Niki Flint. Susan has been whipping our ambient station management process into shape and is growing quickly into data management to help fill the gap left by Phil. Susan has assisted with development of a regional water quality monitors workshop to discuss internal standard operating procedures for ambient data collection.

Zi-Qiang Chen has been involved with all of our discharger monitoring coalitions and is now in the process of field audits of sampling techniques.

Ecosystems has been working with the NC Dept. of Health and Human Services in developing response procedures for harmful algal blooms including cyanobacteria which we have experienced several of this year. As we continue to develop unmanaged watersheds draining to urban stormwater ponds and build multi-\$100K houses facing them for the pastoral setting, we are increasingly likely to have to answer to a disgruntled young urban professional class.

We are now getting preliminary sediment sampling data returned from Hurricane Floyd sampling and expect to begin summarizing results from a variety of projects that were allocated \$2 million by the legislature following the storm. This synopsis should be completed by spring 2001.

South Carolina

Department of Health and Environmental Control

Aquatic Biology Section

Macroinvertebrate Group

We finished our 2000 summer trend monitoring in September. We collected a record 80 stations this year and duplicated an additional 8 for QA/QC purposes. We also finally finished identifying our 1999 samples and hopefully will have a report out before the end of this year. We were very pleased with the results of last years duplicate station sampling. For QA/QC purposes we try to sample 10% of our stations twice. We typically sample about a 100-meter stretch of stream using our standard qualitative technique and then sample a different 100-meter section on the same stream. We did not meet our goal of 10% in 1999 but were able to get 4 replicate stations completed. The results are as follows.

Metric	Station A	Replicate A	Station B	Replicate B	Station C	Replicate C	Station D	Replicate D
Count	323	364	261	297	500	531	463	491
Taxa Richness	55	55	51	43	49	52	58	62
EPT Index	20	21	14	11	18	18	20	17
Biotic Index	4.9	4.5	5.8	5.4	4.5	4.7	4.9	5.2
EPT Score	3	3	2.4	2.0	3	3	3	2.6
BI Score	5	5	3.6	4.0	5	5	5	4.4
Combined Score	4	4	3.0	3.0	4	4	4	3.5
Bioclassification	Good	Good	Good/Fair	Good/Fair	Good	Good	Good	Good
Aquatic Life Use	Fully Supporting	Fully Supporting	Partially Supporting	Partially Supporting	Fully Supporting	Fully Supporting	Fully Supporting	Fully Supporting

One of the concerns I have heard in the past is that a qualitative collecting technique is subjective and would add too much variability to produce reliable results. Many quantitative and semi-quantitative techniques have been developed in an attempt to reduce this perceived variability. It has been our opinion for many years now that a qualitative/field picking collecting technique actually reduces variability because it eliminates the need to subsample and allows the collector to target specific microhabitats. While we have been confident in our procedures, even we were amazed at how close many of the metrics were in the above data set. Even the counts (total number of organisms) were remarkably close. Admittedly, three biologists that have been working closely together for many years took all four samples and their replicates. However, the replicates taken in 2000 involved six biologists randomly assigned to groups of three. All eight stations involved eight different teams. We have not, as of yet, analyzed these data but are hopeful that they will be as precise as those taken in 1999.

Fisheries

The fisheries section has been busy collecting for routine tissue monitoring. We have also been involved in collections the EPA's National Study of Chemical Residues in Lake Fish Tissue. In July and August, we attended three King mackerel tournaments and collected over 60 fish to be analyzed for Hg. SCDNR provided us with Spanish mackerel for the study and the

data from both will be used to supplement data from >99. We have been working cooperatively with SCDNR in establishing and testing IBI metrics for the Piedmont of SC. We hope have this cooperative effort expand into a program both agencies can use to access the health of our streams in SC.

Phycology Program

The Phycology Program staff has had another busy spring and summer season in this year 2000. For the ambient monitoring program, fifty-four lake stations were sampled once per month May-October, and sixty estuarine stations were sampled once during the summer. We analyzed about 1200 individual chlorophyll samples (3 replicates per station plus blanks for quality control). Phytoplankton samples from 17 selected lake stations collected monthly May-October were preserved for analysis.

There were a number of phytoplankton samples submitted for investigations of algal blooms and fish kills. Fish kills evidently did not increase in frequency even though the majority of the spring and summer saw a continuation of a two to three year period of drought. One phytoplankton sample of particular interest was submitted when a child developed an extensive skin rash on her body after wading in a coastal pond. The sample from this incident contained a heavy bloom of the blue-green algae *Microcystis aeruginosa* and *Anabaena* spp. Our SCDHEC epidemiologist subsequently concluded that the girl had experienced a reaction to blue-green algal toxins or an allergic response to the algal pigments. Both of these types of reactions by people to blue-green algae have been previously documented in the literature.

Pfiesteria activity has been relatively quiet in that there have been no significant estuarine fish kills thus far this year. Again, most of the fish kills that have been investigated on the coast have occurred in brackish water ponds and lagoons that have some tidal exchange. For fish kills that have been investigated for possible *Pfiesteria piscicida* activity, PLO numbers have been too low (< 20 cells/ml) for *Pfiesteria* to be considered a factor. Lesioned fish, however, are still being observed in an area of the Cooper River near Charleston. Lesions on fish, primarily menhaden, evidently increase in late September and October and have exceeded 50% of fish sampled at some locations. *Pfiesteria*-like organism numbers have remained very low at the Cooper River sites, and the South Carolina Department of Natural Resources is conducting extensive research regarding all possible causes for the lesions in fish.

The saga of nuisance algal blooms in the Reedy River arm of Lake Greenwood has continued with a somewhat better outcome in the year 2000. There has been some good news and some bad news. Because of eutrophication, massive blooms of *Hydrodictyon reticulatum* and *Pithophora* sp. in 1999 spoiled the water resource in the Reedy River arm of Lake Greenwood. A major discharger in the watershed had also sued SCDHEC to obtain increased limits on their phosphorus discharge. The good news is that when the legal and political process worked its way through (based on the science, of course), the discharger agreed to adhere to the original phosphorus limits requested by SCDHEC. A TMDL will be determined for phosphorus in the Reedy River watershed. Also, for short-term relief from the degraded water quality from algal blooms, the South Carolina Department of Natural Resources initiated an aquatic plant control program in the Reedy River arm of Lake Greenwood. The not-so-good news is that the *Pithophora* sp. bloom continued to persist, with only the algicide spraying program keeping it from becoming a very big problem again. Everyone involved in this issue realizes that

improving water quality in the Reedy River watershed will require long-term efforts. Fortunately, there are many individuals and organizations presently determined to work towards this goal.

Nonpoint Source

Macroinvertebrate assessments, identifications, and report writing have been the main focus for the last six months in the NPS Group. We threw in a few enforcement investigations and 319 monitoring studies for fun, and have stayed pretty busy. We have been working diligently on various aspects of our 303(d) List through biological assessments, both macroinvertebrate and bacterial. We have completed five studies this year, with four final reports in print thus far.

We continued with the second study period of the concentrated waterfowl bacteria assessment on Lake Murray this summer. The results were congruent with the first study period in the fall of 1999, no negative impacts to water quality at this time. Our data revealed no standards violations at any of the 20 stations during either study period. Concentrating waterfowl (feeding the geese) in small coves of the Lake has not caused a water quality problem yet. Nevertheless, we do not encourage landowners to feed waterfowl. This has become a volatile subject between homeowners on Lake Murray, as well as with State departments and law makers.

We look forward to seeing you all in Atlantic Beach in a few weeks.

For questions or more information on NPS projects, please contact Peyton Sasnett at 803-898-4397, or e-mail: sasnetpb@columb32.dhec.state.sc.us; Natalie Constantino at 803-898-4096, or e-mail constanm@columb32.dhec.state.sc.us; or Kristine Hoskins at 803-898-4400, or e-mail hoskinkc@columb32.dhec.state.sc.us.

WATER QUALITY MONITORING SECTION

Aquatic Toxicology Program

In addition to WET tests on discharges, we have been involved in risk assessment of organotins following a spill. The factory alleged to be responsible for the spill was a pretreater on a POTW. The spill forced the POTW to permanently close because tin adsorbed to surfaces within the plant prevented successful reseeding. The spill was first identified by a fish kill in a downstream impoundment. We assessed toxicity in the watershed using *Ceriodaphnia dubia* and *Daphnia ambigua* and sediment using *Hyallela azteca*. We sampled water and sediment from two upstream stations and seven downstream stations. At the time of each test, an aliquot of the test medium was analyzed for a variety of organotins. Concentrations of organotins were initially very high in the water column, but decreased to non-detectable levels. Sediment concentrations of organotins increased considerably at the down stream stations. We observed acute toxicity to *C. dubia* in the first test following the spill. Sub-lethal effects in later *C. dubia* tests were likely caused by low ion concentrations in Red Bank Creek water. When we receive organotin analysis results, we will look for a relationships between organotin concentrations and toxicity.

We have examined and revamped our approach to setting toxicity limits in NPDES permits in an effort to reduce and account for variance within and between tests. South Carolina now uses maximum likelihood regression to quantitate biological effects in toxicity tests. Regression eliminates false failures seen in NOEC's due to low group means and Type I errors at low concentrations. Limits are placed on average biological effect percentages rather than on effect concentrations, and consist of a 25% average and 40% maximum limit. Limiting an average rather than a confidence limit or P-value removes the low variance penalty, and makes low variance favorable to a discharger that is not toxic. Three tests per quarter are required, instead of one test per month, to allow the permittee to take advantage of averaging effects. While not required in regulation, additional test acceptability criteria are allowed. These include requiring 80% of controls to have released a third brood, requiring control group reproduction to be within 95% confidence limits of culture performance and limiting control group percent minimum significant difference. Efforts to improve regression confidence limits and determine detection power are continuing.

Identification and Mitigation of NPS Fecal Coliform

Due to the addition of 10 extra samples the Phase II deadline of October 31st will be extended to November 10th. The sampling will consist of 21 Stations, 9 Waste Water Treatment Facilities, 10 Known Fecal Samples, and 3 End of Pipes from permitted facilities. API, MAR, Ribotyping, and coliphage methods will continually be used to aide in verifying initial pollution source identifications. PFGE methodologies will be used to further analyze 15 of the repeat sites. Phase II will be followed by the compilation of all the data into a final report due out April 17, 2001.

T E N N E S S E E

News from the BEST*

DEPARTMENTS: Agriculture (TDA), Environment and Conservation (TDEC), and Health (TDH)

** Biologist and Environmental Specialist Teams*

This newsletter article from Tennessee is dedicated to one of our SWPBA founding fathers. In September, Robert retired after 33 years with the state. Robert worked for many years as an Aquatic Biologist helping make our world a better place.

ALOHA ... SWPBA

by

ROBERT ALLEN WORTHINGTON



There's shouting and rejoicing in the ranks of the SWPBA members in Tennessee. The old man with all the baby biologist stories is finally getting out of the way. As of the end of September, I will officially retire from my duties as Director of the Environmental Laboratories of Tennessee. There aren't just a whole lot of us old timers that were around in the early 70's when this organization first started. The early meetings were held in Athens, Ga. but were soon moved out to the member states on a rotating basis just like it is today.

Having been formed to be a place where professional water pollution biologists could interact with folks from other states and EPA, it has served its mission well. The meeting is the highlight of any member's year. It is the most informative meeting that we can attend and never before has a learning and sharing experience been so much fun. As I think about it I think about the time that Tim Forrester(AL) was giving his presentation and everybody in the group had placed black tape on a couple of their front teeth and on the count all smiled with a toothless face and broke him up. How about that talent contest in Chattanooga---- I heard it was "utter" disaster for Pat Dobbe. I will never believe that there is any group of professional whatever's that can party like biologists. Beer, wine, dancing, shrimp boils, seafood buffets---we have had it all, and then more of it. Where is it written that you can't have a little fun along with the serious stuff?

It is my hope that the principles, which brought this organization together, will continue to be the focal point. If no other lesson is learned at our meetings, it is that you are not alone in the fight. It is important to realize this when your efforts to clean up or maintain our environment seem to stall or be fruitless. This may sound corny but after all most of us got into this field because we want to have a clean environment---at least for me it certainly hasn't been about fame and fortune (especially fortune). The victories seem so few and far between that we need to share the success stories. It's good therapy!

It 's up to you guys left here on the line to continue the fight to maintain and improve what we inherited and pass it on in better shape than we got it. As for Tennessee Environmental Labs, I leave a staff that is young, energetic and tremendously dedicated. They work hard, long and

continuous though the hours are long and the resources are short. The Aquatic Biology Section has a great leader in Debbie Arnwine and I expect great things from that section.

In the last 33 years, I've seen a lot of improvements but there is so much more to do and there are new "challenges" every day. Don't let the so and so's wear you down. This organization is a great way to preserve that resolve. Keep it strong in the principles upon which it was formed and be the best batch of biologists yet---me and many others are depending on it!

ROBERT ALLEN WORTHINGTON

As with many "mature" SWPBA members, Robert moved to bigger (not necessarily better as all field biologists know) things when he became director of the Environmental Laboratory in the Department of Health. Robert was also a valued member of the Tennessee Water Pollution Control Board. We found many pictures of Robert and could not resist our own interpretation of the events at hand. I'm sure many of you will have fun coming up with additional ones. Robert is loved and respected by all who know him. He has spent a long career dedicated to improving the quality of water in Tennessee and we thank him for it. He is leaving our corner of the world with a space that will be hard to fill.



Baby Biologist

- ω You want me to sample what !!!.
- ω You mean only engineers carry mechanical pencils?!
- ω SWPBA? I always wanted to start a club.
- ω Would this face lie to you?



Field Work

- ω Investigation? I thought this was a picnic! I brought the beer.
- ω O.K., now where did I leave the truck?
- ω It's going to be hard to find a tree on this bank.
- ω I should've brought play clothes. I could get dirty out here.



Training future Tennessee Biologists

- ω Hey, somebody's gotta look busy.
- ω Keep an eye on the ethanol.
- ω Robert said I didn't get the dishes clean enough.
- ω Poor guy. He thinks he's a Chemist now.
- ω I'm not gonna be the one to tell him he skewed up!!

- ω Think we could get our own cooking show?
- ω We'll make sushi out of the rest of it.
- ω (If I act impressed, Robert will fillet all the fish!)
- ω Wear the coat. It will keep the guts off your jeans.
- ω They're taking a picture, look professional.