AFA 2008 Abstracts
Contributed Papers Session

COMMUNITY-BASED WATERSHED STEWARDSHIP…FROM ALABAMA WATER WATCH TO GLOBAL WATER WATCH-MEXICO

Dr. Bill Deutsch

Abstract:
The Alabama Water Watch (AWW) program began in 1992 and has cumulatively had participation from more than 250 citizen groups who have monitored 2,000 sites on 700 waterbodies statewide. More than 50,000 data records of physical, chemical and biological conditions of streams and lakes have been submitted. This information has been quality assured, summarized, posted online and used in action strategies that include environmental education, protection, restoration, advocacy and policy. The AWW model has been extended internationally to several countries via the Global Water Watch (GWW) program. Community groups in Veracruz, Mexico have joined GWW and have established ties with AWW groups for mutual support, exchange of ideas and protection of the shared Gulf of Mexico.

Bio-data:
Dr. Bill Deutsch has been a Research Fellow in the Department of Fisheries and Allied Aquacultures at Auburn University for 20 years, with degrees in Zoology, Biology, Anthropology and Aquatic Ecology. He previously worked 11 years as a Research Biologist and Director of Aquatic Research with environmental consultants in Pennsylvania. Bill has been the Program Manager of the citizen volunteer water monitoring program called Alabama Water Watch since it began in 1992. He has worked on several watershed projects of the International Center for Aquaculture and Aquatic Environments and has made about 50 international trips to 20 countries. Bill directs Global Water Watch, a network of international water monitoring groups, and SWaMP, the Saugahatchee Watershed Management Plan Implementation Project.

THE EFFECTS OF SEDIMENT RISK INDEX RANKED UNPAVED ROAD STREAM CROSSINGS ON SMALL STREAMS IN SOUTHEASTERN ALABAMA.

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Abstract: The sediment risk index (SRI) ranks unpaved road stream crossings based on factors that control sediment input. Improper culvert installation and road approach leads to excessive sediment deposition, altered water flow, and fish movement barriers. This

ongoing study examines streams containing the best and worst SRI ranked crossings by sampling fish assemblages upstream and downstream of crossings. There was a significant difference in upstream vs. downstream fish abundance at all sites and low vs. high-ranked site fish abundance. Higher ranked road crossings provide a reduced barrier to fish passage. Management agencies should pay attention to factors that reduce the SRI.

MUSSEL SURVEY OF CANDIDATE SPECIES IN THE YELLOW, CONECUH/ESCAMBIA, AND CHOCTAWHATCHEE RIVERS IN SOUTHERN ALABAMA AND NORTHWEST FLORIDA.

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Abstract: Candidate mussel species are declining in the Gulf Coast drainages, with little information regarding their status and trends. This study examined mussel assemblages at 19 deep-water sites, with candidate species historically present, along the lower reaches of the Conecuh/Escambia, Yellow, and Choctawhatchee rivers. Over 9,000 mussels from 24 taxa were collected. Four candidate mussel species were collected in the Conecuh/Escambia: *Elliptio mcmichaeli*, *Fusconaia rotulata*, *F. escambia*, and *Pleurobema strodeanum*. The Yellow River collections found one individual of the candidate species *F. escambia*, and the Choctawhatchee River collections contained four candidate species: *E. mcmichaeli*, *Hamiota australis*, *F. burkei*, and *P. strodeanum*.

ECOSYSTEM TYPE AS A DETERMINANT OF MERCURY CONCENTRATIONS IN FISHES

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Abstract: Accumulation of mercury (Hg) in consumable fishes is a global, environmental problem that affects humans in Alabama. In this study, we compared Hg concentrations of fishes from the regulated Black Warrior River (5 species) and the unregulated Sipsey River (8 species) in west Alabama. These neighboring watersheds receive equivalent atmospheric Hg deposition, but average fish fillet Hg concentrations were 3-fold higher in the Sipsey River. Between-system differences in Hg fish concentrations likely arise from structural (species composition) and functional (energy flow) disparities between lentic and lotic ecosystem types. We tested the generality of these findings by comparing largemouth bass (*Micropterus salmoides*) Hg concentrations among unregulated rivers (n = 6 systems) and reservoirs (n = 11 systems) throughout the southern Coastal Plain

geologic region. Analysis of covariance (ANCOVA) showed that after accounting for the significant influence of fish length ($P < 0.0001$), Hg concentrations were consistently and significantly higher ($P < 0.0001$) in unregulated floodplain rivers compared to regulated rivers (e.g., reservoirs). Estimates of aerial deposition of Hg did not correlate to largemouth bass Hg concentrations. Unregulated floodplain-rivers in the south have some of the highest fish Hg concentrations on record (sometimes in spite of low aerial deposition rates) and need to be intensely monitored to establish human consumption advisories.

THE DIDSON – AN EFFECTIVE TOOL FOR EVALUATING FISH DETERRENT SYSTEMS AT POWER PLANT INTAKES

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Abstract: Alabama Power Company and the Electric Power Research Institute (EPRI) have pursued a cooperative research effort in order to test the efficacy of a light and sound fish deterrent system at Plant Barry, Alabama for the reduction of fish impingement. A full array of light and sound deterrents were installed in Units 4-5 cooling water intake structure (CWIS) during the spring of 2006. The evaluation of the effectiveness of the deterrents was two-fold: (1) perform conventional impingement collection from traveling screens and (2) utilize hydroacoustics monitoring techniques (split-beam and multi-beam sonar). The DIDSON, a multi-beam sonar, is a new hydroacoustics tool capable of monitoring fish behavior and abundance in environments where typical cameras are not practical. The DIDSON, deployed in front of the CWIS trash racks, did not show a significant difference in fish counts with or without the deterrent system. In addition, there was no observed change in fish behavior, by DIDSON monitoring, with or without the deterrent system. A discussion of field use including set up and deployment, monitoring capabilities, and post-processing from this evaluation study will also be presented.