Stream's (AAS) volunteer monitoring protocols, we examined factors that affected the diversity of macroinvertebrates at various sites located within the upper Ocmulgee watershed. Our study sites included various headwater streams and larger tributaries of the South River in parking lots, wetlands, forests, and parks within Clayton and Henry counties, including *Panther Creek*, *Big Cotton Indian Creek*, *Bush Creek*, *Martin Creek*, and an unnamed tributary of *Alexander's Lake* at Panola Mountain State Park. Sampling was done at different locations once a month from January 2007 to July 2007. Despite theoretical predictions, our results suggest that land usage may affect macroinvertebrate diversity more than increasing stream order.

BIO-17 The effects of potable water withdraw on benthic invertebrate communities: A summary of Before-After-Control-Impact (BACI) monitoring in Tampa Bay tributaries. D.J. KARLEN, T.L. DIX, B.K. GOETTING and S.E. MARKHAM. Environmental Protection Commission of Hillsborough County 3629 Queen Palm Drive Tampa, FL 33619. Tampa Bay Water (TBW) is the regional water supplier for Hillsborough County, Pinellas County, Pasco County and their incorporated municipalities. TBW has recently implemented several surface water withdrawal projects on three main tributaries to Tampa Bay in order to meet increasing demand for drinking water and to reduce the dependency on ground water sources. The three tributaries affected by these projects include the Hillsborough River, Alafia River and the Palm River/Tampa By-pass Canal. The Environmental Protection Commission of Hillsborough County implemented the Hillsborough Independent Monitoring Program (HIMP) in order to monitor potential environmental impacts on these tributary systems from freshwater withdrawals. The HIMP sampling regime was based on a Before-After-Control-Impact (BACI) design, with a four year "Before" sampling period (1999-2002) prior to the start of the water withdrawals and used the Little Manatee River as the "Control". This presentation will focus on results from the benthic monitoring component of the HIMP, comparing changes in the benthic community structure between the "Before" sampling period, after the withdrawals were initiated (2003-2006) and trends observed in Little Manatee River "Control" site. Short-term effects from the water withdrawals were not apparent, however there were observed changes in the benthic community structure due to environmental variability from year to year.

BIO-18 Sea Surface Temperature as a habitat defining parameter. T. CUBA. Stillwater Research Group, 447 3rd Ave North, Suite 309, St Petersburg, Fl, 33701. The frequency of using Sea Surface Temperatures (SST) by Environmental Managers and Researchers to account for ecological events and observations as well as to predict the ecological future has increased steadily. Observations by the author have raised the question of how definitive the reported SST is when used to infer habitat parameters for organisms living at depth. Asking the question, "How thick is the Sea Surface?" led to the installation of 30 temperature loggers at depths ranging from the surface to 120 feet in the lower Florida Keys. Other data from the Tampa Bay area were already available. These data were compared to the published SST data commonly used by managers and researchers. Data were dissimilar and significant. Results indicate that the broad use of SST to reflect habitat conditions should only be conducted when the local relationship between surface temperatures and those at depth are extremely well understood.

BIO-19 Global climate change and the importance of monitoring phenology in the southeastern United States. G.R. KISH (1) and M.V. LOSLEBEN (2). (1) U.S. Geological Survey, 10500 University Center Drive, Tampa, FL, 33612, (2) University of Arizona, 1955 East 6th Street, Tucson, AZ, 85719. Phenology is the study of seasonally recurring biological events and how these events are influenced by environmental changes and is increasingly recognized as a vital aspect of understanding how ecosystems will respond to climatic change. Spatially extensive patterns of phenological observations have been closely linked with climate variability and various studies have demonstrated a trend of earlier leaf emergence and bloom dates over the last several decades for lilac and clone lilac species in the northern U.S. A new national network, the USA National Phenology Network (USA-NPN) has been established to integrate phenological event observations on a national level with remotely-sensed weather and vegetation data. Establishing the network in the southeastern United States confronts probably the most difficult of regions in the United States to distinguish climate effects from the variability imposed by local weather effects. Climate effects in the southeast will likely be less dramatic than in colder regions but no less important to ecosystem dynamics. The Intergovernmental Panel on Climate Change projections for the southeastern U.S. indicate future periods of warmer summer maximum temperatures, higher evapotranspiration, and more intense rainfall periods with longer dry periods between rainfall events. Projected climate change effects of particular importance for the southeastern U.S. are: (1) accelerated wildfire frequency (2) reduced availability of soil moisture to plants (3) increased insect epidemics in southern forest stands by pine bark beetles and (4) changes in ecosystem community dynamics. The Southeastern Coastal Plain is relatively flat and a significant portion of the landscape serves as water-storage areas in the form of swamps, marshes, and wetlands in floodplains of slow-moving streams. Plant community structure and ecosystem

dynamics have developed around the availability of water that is close to the land surface in the southeastern United States. Prolonged droughts, warmer summer maximum temperatures, and higher evapotranspiration would stress ecosystems first at the plant community level. The USA-NPN consists of four tiers representing different levels of spatial coverage and related environmental information: 1) Networks of locally intensive sites focused on process studies; 2) Spatially extensive environmental networks focused on standardized observations; 3) Volunteer and Education Networks; 4) remote sensing products that can be assimilated to extend surface observations. The southeastern extension of the national network will address these tiers but will emphasize phenology changes related to water stress.

BIO-20 Molecular phylogeography of *Characodon* (Goodeidae) from the Mexican High Plateau. D.C. HOWELL, M. MARTIN and S.A. WEBB. North Georgia College & State University, Dahlonega, GA 30597. *Characodon lateralis* and *C. audax* are livebearing, freshwater fishes of the family Goodeidae. Their distribution, disjunct from all other members of the Goodeinae, is limited to the upper Rio Mezquital and its adjacent springs on the Mexican high plateau. This study will reconstruct a molecular phylogeny of the genus and assess current taxonomy. Approximately 420 bases of the mitochondrial control region was amplified and sequenced for at least two individuals from seven localities (six *C. lateralis* and one *C. audax*) distributed across the range of *Characodon*. Sequences of these individuals and six outgroups (three goodeines, two empetrichthyines, and *Profundulus*) were aligned and phylogenetic relationships inferred. Gene genealogies were also reconstructed using statistical parsimony. *Characodon* was recovered as monophyletic, and strong support was found for two clades. However, this locus was not found to support the two species as now recognized. *C. audax* was strongly supported within a clade that includes four of the six *C. lateralis* localities, thereby rendering *C. lateralis* paraphyletic. If this locus reflects the evolutionary history of *Characodon*, then the nomenclature may need reevaluation. Additionally, greater genetic diversity was found in the clade occurring below the waterfalls on the Rio Mezquital. Biogeographic implications and the timing of diversification within the genus will be discussed.

BIO-21 Preliminary results on diet composition of swordfish, *Xiphias gladius*, within the U.S. Florida Straits. A.M. HEEMSOTH and D.W. KERSTETTER. Nova Southeastern University Oceanographic Center, 8000 North Ocean Drive, Dania Beach, FL 33004. Despite the year-round abundance of swordfish in the Florida Straits and the hypothesized importance of this area as a nursery habitat, little is known about the diet composition or ecological role of swordfish in these waters. To address this gap in our knowledge of the trophic ecology of swordfish we plan to collect 150-200 stomachs over a full calendar year to study seasonal and ontogenetic changes in the diet. To date, 54 stomachs have been collected from different locations in the Florida Straits by commercial buoy and pelagic longline fishermen, swordfish tournaments throughout South Florida, and individual recreational swordfish anglers using rod-and-reel gear. Swordfish collected range in length from 53 cm to 196 cm, in weight from 28 kg to 109 kg. Preliminary results show that fish and cephalopods are the chief components of the diet. We expect to observe both seasonal and ontogenetic changes in diet composition reflective of shifting prey availability and trophic status of swordfish. Ultimately, determining seasonal and ontogenetic changes in diet will further our understanding of the ecological role of swordfish within the Florida Straits. As fisheries management increasingly becomes ecosystem-oriented this information is essential to managing both predator and prey.

BIO-22 Parasite-effects on male mating preferences in the bicolor damselfish, *Stegastes partitus*. M.P. ROBINSON (1), S. MACIÁ (2) and N. GLASS (3). (1) Department of Biology, University of Miami, Coral Gables, FL 33124, (2) School of Natural & Health Sciences, Barry University, Miami Shores, FL 33161, (3) Department of Biology, University of West Florida, Pensacola, FL 32514. Male choice of female mates is a potentially important source of variation in mating success within and among populations. Male mate choice has been historically overshadowed by female choice of males, however, and its importance is still questioned. Male mate preferences have been demonstrated in some *Stegastes* damselfishes. We examined the effect of a large, externally parasitic isopod (*Anilocra partiti*) on male mate choice in the bicolor damselfish, *S. partitus*. Previous research demonstrated that this parasite makes males less attractive to females. We presented males with parasitized and unparasitized females. Males preferred unparasitized females in paired-female presentations. The preference for unparasitized females was also present during single-female presentations, but the preference was less obvious. During observations on natural courtship patterns, we found parasitized females were courted less often than expected. In addition, unparasitized males courted unparasitized females more often than expected. Correspondingly, parasitized males courted parasitized females more often than expected. It appears that although the effect of *A. partiti* on preferences of male *S. partitus* is not as dramatic as on females, this parasite can still play an important role in the reproductive success of females. Parasites, which are known to play an important role in female choice of males, apparently can also have an effect on male choice behavior.