



**American Fisheries Society**  
Organized 1870 to promote the conservation, development,  
and wise utilization of the fisheries

**Mississippi Chapter**

# **2001 Annual Meeting Program and Abstracts**

## **Mississippi Chapter American Fisheries Society**

**Co-Sponsored by  
The Mississippi Museum of Natural Science**

**14 - 16 February, 2001 - Jackson, MS**

Local Arrangements by:  
Todd Slack  
Martha Cooper



**PROGRAM AND ABSTRACTS**  
**2001 Meeting of the American Fisheries**  
**Society, Mississippi Chapter**  
**Hosted by the**  
**Mississippi Museum of Natural Science**  
**14-16 February, 2001**



**Chet Rakocinski, *President***  
**Jim Franks, *President Elect***  
**Glenn Parsons, *Past-President***  
**Paul Chigbu, *Secretary-Treasurer***  
**Jim Bartlett, *Website Editor***

***Local Committee and Registration***  
**Chet Rakocinski, *USM IMS GCRL***  
**Todd Slack, *MS Mus Nat Sci***  
**Martha Cooper, *MS Mus Nat Sci***  
**Rachel Beecham, *University of Mississippi***  
**Glenn Zapfe, *USM IMS GCRL***  
**Eric Hoffmayer, *University of Mississippi***

***Student Awards***  
**Mark Peterson, *USM IMS GCRL***  
**Hal Schramm, *MS State Univ***  
**Steve Miranda, *MS State Univ***

**2001 Mississippi Chapter American Fisheries Society  
Co-Sponsored by Mississippi Museum of Natural Science**

**MEETING AGENDA**

*(slide, overhead and computer projectors will be available)*

Wednesday, 14 February.

4:00-7:00 PM                      **Registration and Social at Cabot Lodge Hotel**

Thursday, 15 February.

7:30-8:15                         **Registration continued - at MS Museum of Natural Science**

8:15-8:30                         **OPENING REMARKS - Chet Rakocinski**  
*President, Mississippi Chapter AFS*

8:30-8:45                         **WELCOME - Ms. Libby Hartfield**  
*Director, Mississippi Museum of Natural Science*

**SESSION 1: COASTAL FISHERIES**

**MODERATOR: Bryan Cage**

(\*indicates participation in the best student paper competition)

8:45-9:00                         **AVAILABILITY OF THERMAL REFUGE FOR STRIPED BASS IN THE  
PASCAGOULA RIVER ECOSYSTEM. Donald C. Jackson, Eric D. Dibble  
and John F. Mareska.**

9:00-9:15                         **SEASONAL VARIATION IN THE ENERGETIC CONDITION OF THE  
ATLANTIC SHARPNOSE SHARK, *RHIZOPRIONODON TERRAENOVAE*,  
WITHIN NURSERY GROUNDS OF THE MISSISSIPPI SOUND. Eric R.  
Hoffmayer\*, Glenn R. Parsons and Jeff L. Horton.**

9:15-9:30                         **IDENTIFICATION AND CHARACTERIZATION OF SHARK NURSERY  
GROUNDS OF THE NORTHERN GULF OF MEXICO: THE FINAL  
ASSESSMENT. Glenn R. Parsons, Jim Bartlett, Bryan Cage, Angeline  
Haggard, Eric Hoffmayer, Jeff Horton, Dalma Martinovic and Melissa  
Sandrene.**

9:30-9:45                         **GROWTH OF CAPTIVE JUVENILE TRIPLETAIL *LOBOTES*  
*SURINAMENSIS* FROM MISSISSIPPI WATERS. James S. Franks, John  
T. Ogle, J. Read Hendon, Donald N. Barnes, L. Casey Nicholson, and  
Melanie S. Griggs.**

9:45-10:00                       **CHANGES IN THE POPULATION SIZE AND AGE STRUCTURE OF  
SPOTTED SEATROUT, *CYNOSCION NEBULOSUS*, IN MISSISSIPPI:  
EFFECTS OF BAG AND SIZE LIMITS. James "Tut" Warren, Michael  
Buchanan and Read Hendon.**

10:00-10:15                      **COFFEE BREAK**

**SESSION 2: COASTAL FISHERIES (continued)**

**MODERATOR: Justin Hart**

- 10:15-10:30 **POPULATION EXPLOSIONS OF FILTER-FEEDING SEA JELLIES AND FISHERIES SUSTAINABILITY IN THE NORTHERN GULF OF MEXICO.** Harriet M. Perry, Kirsten M. Larsen, Christine Trigg and Tom Van Devender.
- 10:30-10:45 **SETTLEMENT AND COLONIZATION OF THE GREEN PORCELAIN CRAB (*PETROLISTHES ARMATUS*) ON LOW PROFILE ARTIFICIAL REEFS IN CENTRAL MISSISSIPPI SOUND.** Eron L. Coleman\*, Harriet M. Perry and Kirsten Larsen.
- 10:45-11:00 **FIELD GROWTH RESPONSES OF JUVENILE WHITE TROUT (*CYNOSCION ARENARIUS*) TO CONTINUOUS VARIATION IN PHYSICAL HABITAT CONDITIONS.** Chet F. Rakocinski, Bruce H. Comyns, Mark S. Peterson and Glenn A. Zapfe.
- 11:00-11:15 **PREY HETEROGENEITY AND THE ASSOCIATED DISTRIBUTION AND GROWTH OF LARVAL BAY ANCHOVY (*ANCHOA MITCHILLI*) WITHIN MISSISSIPPI SOUND.** Gregory L. Fulling\*, Mark S. Peterson, and Bruce H. Comyns.
- 11:15-11:30 **ICHTHYOPLANKTON DATA AFFIRM IMPORTANCE OF PELAGIC *SARGASSUM* HABITAT.** Bruce H. Comyns, Nicole M. Crochet, James S. Franks, Read J. Hendon, Richard S. Waller and Eric R. Hoffmayer.
- 11:30-11:45 **LARVAL IDENTIFICATION OF FLYINGFISHES (EXOCOETIDAE) IN THE GULF OF MEXICO: A GENERIC REVIEW.** Nicole Crochet\* and Bruce H. Comyns.
- 11:45-12:00 **A CONTRIBUTION TO THE EARLY LIFE HISTORY OF DEEP-SEA SMELTS (FAMILY: BATHYLAGIDAE) IN THE GULF OF MEXICO.** Alonzo N. Hamilton, Jr. and Joanne Lyczkowski-Shultz.
- 12:00-1:30 **LUNCH**

**SESSION 3: INLAND FISHERIES**

**MODERATOR: Peter "Rocky" Smiley**

- 1:30-1:45 **HABITAT VARIABILITY AND FISHES IN NINE LOW ORDER STREAMS IN THE SAND HILLS OF MISSISSIPPI.** Denise G. Carroll and Eric D. Dibble.
- 1:45-2:00 **DIRECT EFFECT OF A NONINDIGENOUS CICHLID (*CICHLASOMA CYANOGLUTTATUM*) ON REPRODUCTIVE SUCCESS OF NATIVE *CYPRINODON*.** June B. Mire and Stacey Byers.
- 2:00-2:15 **MORPHOLOGICAL ANOMALIES OF RIVER STURGEON (*Scaphirhynchus* spp.).** Jan Jeffrey Hoover and K. Jack Killgore.
- 2:15-2:30 **THE 1992 FISH POPULATION SURVEY OF THE UPPER SUNFLOWER RIVER.** Garry Lucas and Dean A. Pennington.

2:30-3:00      **COFFEE BREAK**

**SESSION 4: INLAND FISHERIES (continued)**

**MODERATOR: John Davis**

- 3:00-3:15      **EFFECTS OF LOW FLOWS ON FISH ASSEMBLAGES IN THE BIG SUNFLOWER RIVER, MISSISSIPPI. Jack Killgore, Jan Jeffrey Hoover and Steven G. George.**
- 3:15-3:30      **ECONOMIC VALUE OF AQUATIC VEGETATION TO FISHERIES. James P. Kirk and Jim E. Henderson.**
- 3:30-3:45      **USE OF VOLUNTARY TRIP REPORT CARDS AT MISSISSIPPI STATE LAKES, AN ASSESSMENT. Craig A. Walker\* and Harold L. Schramm, Jr.**
- 3:45-4:00      **MISSISSIPPI'S COMMUNITY ASSISTANCE PROGRAM: OPPORTUNITIES AND PROBLEMS. Dennis K. Riecke.**
- 4:00-4:15      **THE ANGLER CONNECTION: INCREASING USE OF STATE LAKES. Larry Pugh, Harold L. Schramm, Jr. and Craig A. Walker.**
- 4:15-4:30      **CLOSING COMMENTS.**
- 4:30-5:00      **BEHIND THE SCENES TOUR OF THE MUSEUM.**
- 5:00-6:00      **STUDENT CAUCUS.**
- 5:00-6:30      **POSTER PRESENTATIONS.**
- CHANNEL AND INSTREAM HABITAT CHARACTERISTICS WITHIN A CHANNELIZED STREAM. Peter C. Smiley Jr.\*, Eric. D. Dibble and Andrew. C. Miller.**
- FEEDING HABITS OF JUVENILE POMPANO (*TRACHINOTUS CAROLINUS*) COLLECTED FROM THE EASTERN GULF OF MEXICO. Kersten N. Wheeler\*, Richard W. Heard and Chet F. Rakocinski.**
- FRESHWATER MUSSELS OF THE CYPRESS CREEK WATERSHED (LITTLE TALLAHATCHIE DRAINAGE): A REPRESENTATIVE WATERSHED IN NORTH MISSISSIPPI. Keith Wright\*, Wendell R. Haag, Lawrence Shaffer, Melvin L. Warren, Jr. and Marjorie Holland.**
- 6:30-9:00      **CATERED SOCIAL AT THE MUSEUM.**

Friday, 16 February

8:30-10:30 AM      **Mississippi Chapter Business Meeting and Presentation of Student Awards.**

**ABSTRACTS**  
*(In order of appearance)*

**SESSION 1: COASTAL FISHERIES**

**AVAILABILITY OF THERMAL REFUGE FOR STRIPED BASS IN THE PASCAGOULA RIVER ECOSYSTEM.** Donald C. Jackson, Eric D. Dibble and John F. Mareska. Department of Wildlife and Fisheries, Box 9690, Mississippi State University, MS 39762.

A two-year study (1997-1999) was conducted to locate coolwater thermal refuge for striped bass *Morone saxatilis* in the Pascagoula River ecosystem, Mississippi. Seven adult striped bass captured from the river and 24 striped bass from federal hatcheries were equipped with radio and/or sonic transmitters and released into the river for telemetry. Ninety-five days in 1998 and 99 days in 1999 were spent tracking striped bass by boat. Six days were spent conducting aerial radio telemetry in 1998. Only two locations, Cedar Creek and its effluent into the Pascagoula River (N 30° 41' 58" W 88° 37' 56"), and Bluff Creek at its confluence with Mounger's Creek (N 30° 31' 36" W 88° 40' 54") were confirmed as thermal refuge for striped bass. The striped bass population in this river ecosystem is very small and there is limited availability of coolwater thermal refuge for these fish. The two confirmed thermal refuges should be closed to all fishing during May-September to protect striped bass in these locations and live bait should be prohibited on set lines throughout the system during February-May to minimize by-catch and hooking mortality.

**SEASONAL VARIATION IN THE ENERGETIC CONDITION OF THE ATLANTIC SHARPNOSE SHARK, *RHIZOPRIONODON TERRAENOVAE*, WITHIN NURSERY GROUNDS OF THE MISSISSIPPI SOUND.** Eric R. Hoffmayer\*, Glenn R. Parsons and Jeff L. Horton. Department of Biology, University of Mississippi 38677.

The Atlantic sharpnose shark is a small coastal species that inhabits the northern Gulf of Mexico. Annually, these sharks migrate inshore to the Mississippi Sound in the early spring and migrate offshore in the early fall. The objectives of this study were two-fold, to determine if the energetic condition of the Atlantic sharpnose shark changes throughout the year while they are inshore and to determine if simple indices are related to energy content in these sharks. In this study we decided to use two simple estimates of energetic condition, Fulton's condition factor (CF) and hepatosomatic index (HSI), which were then analyzed to determine if they are related to a direct measurement of the total energy content in these sharks. A significant change in the energetic condition was found to occur in the Atlantic sharpnose shark while they inhabited the Mississippi Sound. This seasonal variation was consistent in all three measurements of energetic condition.<sup>2</sup> The condition of these sharks was high when they moved inshore in the spring, lowered during the summer months and then increased back to higher levels in the early fall. In addition, both HSI and CF were significantly related to the total energy content in the Atlantic sharpnose shark.

\* Student Presentation

**IDENTIFICATION AND CHARACTERIZATION OF SHARK NURSERY GROUNDS OF THE NORTHERN GULF OF MEXICO: THE FINAL ASSESSMENT.** Glenn R. Parsons, Jim Bartlett, Bryan Cage, Angeline Haggard, Eric Hoffmayer, Jeff Horton, Dalma Martinovic and Melissa Sandrene. Department of Biology, The University of Mississippi, University, MS 38677.

From October 1997 until September 2000 we conducted a survey of shark nursery grounds along the Mississippi and Alabama coasts. Our objectives were (1) to identify shark nursery/pupping areas in the northern Gulf of Mexico, (2) to establish long term sampling sites in these areas (3) to compare abundance and diversity of sharks between sites, seasons and years, (3) to characterize the nursery areas in terms of environmental parameters, and (4) to tag and release sharks. Sampling was conducted using gill nets fished from 1500 to 2200 hours from March to October of each year of the study. At each sampling station temperature, salinity, dissolved oxygen, Secchi turbidity, current speed and depth were recorded. All sharks collected were identified to species, sexed, measured (total length), and, when possible, tagged and released. In 1998, 1999 and 2000 we collected 522, 517, and 1650 sharks, respectively. A significant increase in captures was observed in the last year of the study despite the fact that sampling ended in September of that year. The most abundant species were found to be *Rhizoprionodon terraenovae*, *Carcharhinus limbatus*, and *Carcharhinus isodon*. These three species represented about 91 to 98% of the total catch. Other species collected were *Carcharhinus leucas*, *Sphyrna tiburo*, *Carcharhinus acronotus*, *Sphyrna lewini*, and *Carcharhinus plumbeus*. We tagged about 300 sharks in each of 1998 and 1999, and about 700 in 2000. Juveniles and neonates were captured in greatest numbers in May and June. Nursery grounds were identified in a number of areas along the coasts of Mississippi and Alabama. Most notably, the Mississippi Sound and the waters surrounding the barrier islands serve as important habitat for neonates and juveniles of all of the above species.

**GROWTH OF CAPTIVE JUVENILE TRIPLETAIL *LOBOTES SURINAMENSIS* FROM MISSISSIPPI WATERS.** James S. Franks<sup>1,2</sup>, John T. Ogle<sup>2</sup>, J. Read Hendon<sup>1,2</sup>, Donald N. Barnes<sup>2</sup>, L. Casey Nicholson<sup>2</sup> and Melanie S. Griggs<sup>2</sup>. <sup>1</sup>Center for Fisheries Research and Development, <sup>2</sup>Institute of Marine Sciences, The University of Southern Mississippi, P.O. Box 7000, Ocean Springs, Mississippi 39566-7000.

The tripletail, *Lobotes surinamensis*, is a circumtropical, pelagic marine fish which typically occurs from March through October in the northern Gulf of Mexico. Early-juvenile tripletail ( $n = 27$ ) captured by dip net from pelagic *Sargassum* algae off the coast of Mississippi during July 1999 were reared for 210 days in a 1,890 liter recirculating system. All fish were reared in the same tank, and were not individually identifiable throughout the study. Water temperature ranged from 25.2 - 29.0 °C, and salinity was 28.0 ‰. Fish were fed commercial feed three times per day until satiated. Total length (TL) and total weight (TW) were recorded for all fish on days 1, 60, 135 and 210. Highest rate of growth in length occurred during the first 60 days of the study. Mean daily length growth rates were: days 1- 60, 2.2 mm/day; days 61 -135, 1.2 mm/day; days 136 - 210, 1.0 mm/day. Overall mean length growth rate was 1.4 mm/day. At termination of the study, specimens ranged from 272 - 431 mm TL (mean = 359 mm). Rate of weight gain was highest during the last 75 days of the study. Mean daily weight growth rates were: days 1 - 60, 2.9 g/day; days 61 - 135, 4.3 g/day; days 136 - 210, 7.1 g/day. Overall mean weight growth rate was 4.9 g/day. At termination of the study, specimens ranged from 443.9 - 2,380.0 g TW (mean = 1,049.5 g).

**CHANGES IN THE POPULATION SIZE AND AGE STRUCTURE OF SPOTTED SEATROUT, *CYNOSCION NEBULOSUS*, IN MISSISSIPPI: EFFECTS OF BAG AND SIZE LIMITS.** James "Tut" Warren<sup>1</sup>, Michael Buchanan<sup>2</sup> and Read Hendon<sup>1</sup>. <sup>1</sup>The University of Southern Mississippi, Center for Fisheries Research and Development, Gulf Coast Research Laboratory, Ocean Springs, Mississippi 39566-7000 and <sup>2</sup>Mississippi Department of Marine Resources, Bureau of Marine Fisheries, Biloxi, Mississippi 39560.

The spotted seatrout, *Cynoscion nebulosus*, is the most sought fish by sports fishers on the Mississippi Gulf Coast. As the perceived fishing pressure has increased over the past 2 decades, progressively more stringent regulations in the form of bag limits, minimum size limits and seasonal closures have been enacted to help reduce fishing mortality and have provided increased conservation of the standing stock. Since 1995, Mississippi's recreational fishery has been governed by a 14 inch (total length) minimum size and 15 fish per day bag limit with no seasonal closures. Catch-per-unit-effort of spotted seatrout in the recreational fishery has been less than 0.5 annually since 1990, indicating that the bag limit of 15 fish per day would have had minimal effect in reducing catch over this time. The 14 inch minimum size regulation has probably been the most influential action that has reduced fishing mortality. Marine Recreational Fishery Statistical Survey data have indicated a shift to a larger modal size of spotted seatrout taken by Mississippi fishers with an attendant increase in catch numbers since 1995. Fishery independent gill net data indicate a corresponding increase in both the size of fish collected and the abundance of age-1 fish in the population for 1995 through 1999. Older age classes were similarly more abundant over this time. The increase of the minimum size has resulted in greater numbers of fish below the minimum size being released, and the questionable survival of these sub-legal fish has prompted several requests by certain fishing groups to return to an allowance of a small number of undersize fish. To address these concerns, hooking mortality studies are underway to provide insight into the potential effect of releasing damaged fish that subsequently die and become part of the overall mortality even though not part of the catch.

**POPULATION EXPLOSIONS OF FILTER-FEEDING SEA JELLIES AND FISHERIES SUSTAINABILITY IN THE NORTHERN GULF OF MEXICO.** Harriet M. Perry<sup>1</sup>, Kirsten M. Larsen<sup>1</sup>, Christine Trigg<sup>1</sup> and Tom Van Devender<sup>2</sup>, <sup>1</sup>The University of Southern Mississippi, Center for Fisheries Research and Development, Gulf Coast Research Laboratory, Ocean Springs, Mississippi 39566-7000 and <sup>2</sup>Mississippi Department of Marine Resources, Biloxi, Mississippi 39560.

Blooms of the filter-feeding sea jellies, *Aurelia aurita* (Linnaeus, 1758) and *Phyllorhiza punctata* von Lendenfeld 1884, occurred in coastal waters of the north-central Gulf of Mexico in the summer of 2000. *Phyllorhiza punctata*, a scyphomedusa native to the Indo-Pacific, and introduced to the tropical Atlantic and Caribbean in the 1960s, was initially sighted in Mississippi coastal waters in mid-June, 2000. These scyphomedusae are thought to have been transported from the Caribbean into the Gulf of Mexico via the Loop Current. Large populations of the native moon jelly, *A. aurita*, peaked in abundance following the initial invasion of *P. punctata*. Immediate effects on area fisheries included clogging of shrimp nets with resultant gear damage and a decrease in trawling effort in areas where sea jellies were most numerous. Because *P. punctata* and *A. aurita* are voracious filter feeders, potential impacts include a decrease in zooplankton biomass as a result of their high and constant filtering capacity. Peak abundance of meroplankton was coincident with bloom conditions of these species. Many of Mississippi's fishery resources have planktonic larvae and there is concern that larval numbers may be reduced and overall abundance of these species affected.



**SETTLEMENT AND COLONIZATION OF THE GREEN PORCELAIN CRAB (*PETROLISTHES ARMATUS*) ON LOW PROFILE ARTIFICIAL REEFS IN CENTRAL MISSISSIPPI SOUND. Eron L. Coleman\*<sup>1</sup>, Harriet M. Perry <sup>2</sup> and Kirsten Larsen <sup>2</sup>.**

<sup>1</sup> Department of Biology, Jackson State University, <sup>2</sup> University of Southern Mississippi, Center for Fisheries Research and Development, Gulf Coast Research Laboratory.

The porcelain crab, *Petrolisthes armatus*, can occur in extremely high densities and in some areas is considered an invasive species. The purpose of this study was to survey settlement, colonization, and utilization of low profile limestone and oyster shell artificial reefs by *P. armatus* in Mississippi Sound. Trays containing either limestone or shell were placed near a reef off Gulf Park Estates in the Central Sound. These artificial habitats were sampled in the winter, spring, summer and fall of 1999. Density, sex, reproductive patterns, and substrate preferences were assessed. Recruitment began in the spring and continued through the fall. Highest densities (93/0.025m<sup>3</sup> or 443/m<sup>2</sup>) occurred in the fall. Crabs were more abundant on shell substrates.

\*Student Presentation

**FIELD GROWTH RESPONSES OF JUVENILE WHITE TROUT (*CYNOSCION ARENARIUS*) TO CONTINUOUS VARIATION IN PHYSICAL HABITAT CONDITIONS.**

Chet F. Rakocinski, Bruce H. Comyns, Mark S. Peterson and Glenn A. Zapfe. Department of Coastal Sciences, Institute of Marine Sciences, The University of Southern Mississippi, 703 East Beach Drive, Ocean Springs, Mississippi 39564.

Recruitment of early life stages of many species into shallow inshore estuarine habitats is responsible for high fisheries production. Estuarine habitats are also subject to wide fluctuations in physical conditions, which can influence recruitment success through effects on the growth and survival of early life stages. In order to examine field-growth responses of juvenile white trout with respect to continuous variation in physical habitat conditions, we related modal shifts in length distributions of recruiting cohorts to continuous changes in abiotic variables. Weekly shoreline collections of juvenile white trout were made over a five week period between 12 May and 16 June, 1997 at Marsh Point in Mississippi Sound. Using a DataSonde IV, hourly changes in water temperature, salinity, dissolved oxygen, turbidity, depth, and pH were also recorded throughout the five week recruitment period. Weekly modal shifts in length distributions of white trout reflected proportional changes in length ranging from 0.20 to 0.54; and changes in weekly growth were strongly tied to changes in weekly mean water temperature ( $P = 0.013$ ). Other abiotic variables were unrelated to water temperature on the weekly scale. However, abiotic variables may show different interrelationships depending on the temporal scale on which they are considered, suggesting that their effects on recruitment processes need to be analyzed on the same temporal scale on which recruitment is measured. Comparison of these findings and previous work showed that within-site-temporal variability and between-site-spatial variability in growth rates can be driven by different abiotic variables. Whereas within-site-variability in growth of juvenile white trout was primarily driven by water temperature, former work with juvenile mullet in the same system suggested that inter-site-variability in growth was primarily determined by salinity.

**PREY HETEROGENEITY AND THE ASSOCIATED DISTRIBUTION AND GROWTH OF LARVAL BAY ANCHOVY (*ANCHOA MITCHILLI*) WITHIN MISSISSIPPI SOUND. Gregory L. Fulling\*<sup>1</sup>, Mark S. Peterson <sup>2</sup> and Bruce H. Comyns <sup>2</sup>. <sup>1</sup> Johnson Controls, Inc., NOAA / National Marine Fisheries Service, Pascagoula, Mississippi, <sup>2</sup> Department of Coastal Sciences, The University of Southern Mississippi, Ocean Springs, Mississippi.**

Spatial heterogeneity of prey can affect the feeding efficiency of larval fishes due to unpredictable rates of encounter resulting in variable growth, predator avoidance and potential recruitment success. Our objective was to examine the relationship of prey heterogeneity and length-at-age of bay anchovy larvae (BAL). Monthly samples were taken within Mississippi Sound from May to August 1998 along two permanent transects (50 stations each, ~40m apart), one onshore, ~2km S of the mainland and one offshore, ~2km N of a near-shore barrier island. Traditional indices of dispersion and patch size estimates for BAL and copepod nauplii indicated that both taxa were contagious and patch sizes were variable. From the perspective of BAL, prey fields appeared more heterogeneous during July than in May. Analysis-of-covariance showed no difference in the slopes of length-at-age regressions of BAL within high and low density patches of copepod nauplii from the May transects. However, during July BAL grew faster in areas with low prey densities than in areas with high prey densities. Our data indicate that the spatial heterogeneity of both BAL and prey from July collections may be responsible for significant differences in growth of BAL, variability which could affect bay anchovy recruitment success.

**\*Student Presentation**

**ICHTHYOPLANKTON DATA AFFIRM IMPORTANCE OF PELAGIC *SARGASSUM* HABITAT. Bruce H. Comyns, Nicole M. Crochet, James S. Franks, Read J. Hendon, Richard S. Waller and Eric R. Hoffmayer. Institute of Marine Sciences, The University of Southern Mississippi, 703 East Beach Drive, Ocean Springs, Mississippi 39564.**

Plankton sampling was conducted next to pelagic *Sargassum* located both along convergence zones (fronts), and in areas not associated with particular hydrographic features. Surface collections were taken during May, July and August 2000 in the northcentral Gulf of Mexico. In addition, collections were taken up to a mile away from the sampled *Sargassum* as a control. A total of 1453 larvae/postlarvae comprising 22 families were collected. Collections were dominated by carangids and exocoetids, but also included several specimens of tuna (including bluefin), billfishes and dolphin. Twenty three larval billfishes were collected in one of the 10 minute surface collections taken adjacent to *Sargassum* located along a front. In contrast, the few collections taken adjacent to floating *Sargassum* that was not associated with a convergence zone contained relatively few fish larvae, none of which were billfishes. Several collections were taken along a front with no associated *Sargassum*. There was a distinct difference in the ichthyoplankton assemblage on either side of the front, but none of these collections contained larval billfishes.

**LARVAL IDENTIFICATION OF FLYINGFISHES (EXOCOETIDAE) IN THE GULF OF MEXICO: A GENERIC REVIEW.** Nicole Crochet\* and Bruce H. Comyns.  
Department of Coastal Sciences, Institute of Marine Sciences, The University of Southern Mississippi, 703 East Beach Drive, Ocean Springs, Mississippi 39564.

Larval exocoetids have been studied for over a century, but identification of larvae to the generic level remains difficult because most data is scattered and many papers are published in foreign languages. Undescribed larval stages also add to difficulty in identification. The purpose of this study is to synthesize all published information on larval exocoetids found in the Gulf of Mexico to enable identification of larvae to the generic level. In the Gulf of Mexico, 13 species constitute eight genera: *Oxyporhamphus*, *Fodiator*, *Parexocoetus*, *Exocoetus*, *Cheilopogon*, *Cypselurus*, *Prognichthys*, and *Hirundichthys*. *Oxyporhamphus* and *Fodiator* larvae are distinguishable by the formation of a beak on the lower jaw in larger larvae. *Parexocoetus* larvae have a highly compressed body and resemble adults early in development. *Exocoetus* larvae have only been described in Russian, but illustrations indicate that fins are well developed and the body is densely pigmented. Larvae of two of the four species of *Cheilopogon* have been described and are identifiable by a pair of chin barbels in the larval and juvenile stages. *Hirundichthys* is characterized by a dense aggregation of melanophores over the intestines. Larvae of *Cypselurus* and *Prognichthys* remain undescribed.

\*Student Presentation

**A CONTRIBUTION TO THE EARLY LIFE HISTORY OF DEEP-SEA SMELTS (FAMILY: BATHYLAGIDAE) IN THE GULF OF MEXICO.** Alonzo N. Hamilton, Jr. and Joanne Lyczkowski-Shultz. National Marine Fisheries Service, Southeast Fisheries Science Center, Mississippi Laboratories.

Five species in a single genus of deepsea smelts occur in the central western Atlantic and among these the larvae of only three species have been described; *Bathylagus bericoides*, *B. longirostris*, and *B. compsus*. Southeast Area Monitoring and Assessment Program (SEAMAP) ichthyoplankton collections are taken in the deep ocean habitat of these fishes within the Gulf of Mexico only during April to June with infrequent observations during winter months. Under current SEAMAP protocols bathylagid larvae are initially identified to the family level by scientists at the Polish Sorting and Identification Center in Szczecin, Poland. A recent synthesis of existing literature on the Bathylagidae uncovered numerous questions concerning their nomenclature, species validity and larval identification. Reexamination of archived bathylagid larvae from Gulfwide collections has allowed us to describe the distribution of the larvae of these fishes and to investigate their occurrence relative to oceanographic conditions and features in the deep Gulf.

**HABITAT VARIABILITY AND FISHES IN NINE LOW ORDER STREAMS IN THE SAND HILLS OF MISSISSIPPI.** Denise G. Carroll and Eric D. Dibble. Forest and Wildlife Research Center, Mississippi State University.

Freshwater ecosystems have been the focus of numerous federal laws designed to maintain the integrity of water quality. Often times, guidelines are established without an empirical basis. Before we can set standards it is important to understand environmental variation. This study quantified variability in habitat and species richness, abundance and frequency of fish in nine first- and second-order streams in the Sand Clay Hills subsection of Mississippi. Streams were sampled for three months, over a period of two seasons, for two years. Fish diversity and abundance were determined using a Smith-Root backpack shocker and dip-nets. Physicochemical data were collected concurrently with fish samples. We collected over 1,181 fish representing a total of 38 species and eleven families. Prominent fish species were in the Cyprinidae and Percidae families.

5 Rio Grande Total

**DIRECT EFFECT OF A NONINDIGENOUS CICHLID (*CICHLASOMA CYANOGUTTATUM*) ON REPRODUCTIVE SUCCESS OF NATIVE *CYPRINODON*.**  
June B. Mire<sup>1</sup> and Stacey Byers<sup>2</sup>, <sup>1</sup>Department of Biological Sciences, University of New Orleans, New Orleans, Louisiana; <sup>2</sup>McGill School of Environment, McGill University, Montreal, Quebec, Canada.

Variegatus  
Culley 5-7  
Should have  
seen up  
seen  
or something

The Rio Grande cichlid (*Cichlasoma cyanoguttatum*) was introduced into drainage canals in the New Orleans area in the early 1990's, and has since spread throughout the canal system south of Lake Pontchartrain. Native to northeastern Mexico and the lower Rio Grande, this cichlid can tolerate low temperature and dissolved oxygen, as well as high salinity. Although the invasive nature of the Rio Grande cichlid is well documented, and circumstantial evidence suggests it displaced native fishes in the canals, little is known about the direct effects of the cichlid on any native fishes. We compared the reproductive success of the native *Cyprinodon variegatus* in the presence and absence of YOY Rio Grande cichlids. Four female and three male adult *Cyprinodon* were placed in 10 pools outdoors and allowed to spawn freely. Nine young of the year Rio Grande cichlids were added to half of the pools. Fish were matched for size among controls and treatments. After 6 weeks, all fish were recovered and preserved. Adult *Cyprinodon* and all cichlids were measured, and *Cyprinodon* fry were counted. A strong direct effect of the cichlid on reproductive success of *Cyprinodon* was shown. None of the 5 treatment pools yielded fry. Follow-up experiments will also be discussed.

**MORPHOLOGICAL ANOMALIES OF RIVER STURGEON (*SCAPHIRHYNCHUS* SPP.).** Jan Jeffrey Hoover and K. Jack Killgore. U.S. Army Engineer Research and Development Center, Waterways Experiment Station, Vicksburg, MS, 39180-6199.

We collected sturgeons from three locations in the lower Mississippi River 29 Nov – 01 Dec 2000, and documented prevalence, types, and behavioral effects of morphological anomalies. None of three pallid sturgeon (*S. albus*) exhibited overt deformities, but 11 of 168 shovelnose sturgeon (*S. platyrhynchus*) showed a wide range of anomalies. These included: eyes overgrown by skin (1), reduced pectoral fins (1), missing dorsal scutes (2), stricture of head or body (2), absent peduncle (4), spinal curvature (1), and absent rostrum (1). Previously, we observed strictures in pallid and shovelnose sturgeons, a well-documented anomaly of sturgeons, caused by growth around rubber or plastic bands that girdle the fish. Tailless sturgeon were novel, but probably result from encounters with predators such as large catfish. The rostrumless sturgeon was the first known to us and, based on the prominent invagination at the front of the skull, is likely a result from abnormal development. Two tailless shovelnose sturgeon (one with spinal curvature) and the rostrumless sturgeon occupy a laboratory stream. All three are mainly sedentary (vs. normal congenetics) but exhibit distinctive methods of locomotion. These and other anomalous specimens provide information on biological resilience of species, but may also indicate effects of anthropogenic disturbance.

1965

**THE 1992 FISH POPULATION SURVEY OF THE UPPER SUNFLOWER RIVER.**  
Garry Lucas<sup>1</sup> and Dean A. Pennington<sup>2</sup>. <sup>1</sup>Mississippi Dept. Wildlife Fisheries & Parks (MDWFP), <sup>2</sup>Yazoo Mississippi Delta Joint Water Management District (YMD).

Over the past years there has been a decline in the base flows in the Sunflower River. The multiple uses of this river make the decrease in these flows a significant issue with both YMD and MDWFP. The initial cooperation on this issue between YMD and MDWFP began with a rotenone survey as a preliminary endeavor to future survey work. On September 24 and 25 1992 the fish population of the Sunflower River was surveyed using rotenone applied to sections of stream confined by block nets. The River was sampled at the Hopson Bridge (near Clarksdale) and at Zumbro Plantation (east of the MPL Power Station in Renova, north of Cleveland). Both sites were close to sites surveyed in July and August of 1972 by MDWFP. The fish population at the Hopson site was dominated (numerically) by channel catfish, bullhead minnows, blacktail shiners, and Y-O-Y common carp. Flathead catfish and centrachids were absent. The fish population at the downstream site (Zumbro) had more species present with flathead catfish, freshwater drum, sunfish, and crappie present. Bullheads were not collected at Zumbro. Channel catfish Y-O-Y (catfish 1-4 inches in length) were abundant with the Hopson site having 1530 Y-O-Y per acre and the Zumbro site having 1125 per acre. At the Zumbro site there were 72 flathead catfish Y-O-Y per acre. Standing stock at Hopson Bridge and Zumbro Plantation was 71 and 259 pounds per acre, respectively. In 1972, equivalent sites had only 18 and 39 pounds of fish per acre, respectively. Hopson's Bridge site had 9 species and was dominated in weight by channel catfish (68 lbs./ac.). Whereas, the equivalent site in 1972 had only 4 species, was dominated by carp, with yellow bullhead the only catfish collected. Zumbro Plantation had 21 species and catfish were a substantial component of the population, as were buffalo and freshwater drum (17 lbs. per acre of channel catfish, 7 lbs. of flathead, 19 lbs. of buffalo, and 82 lbs. of drum). The equivalent site in 1972 had 11 species and was dominated in weight by gizzard shad (21 lbs./ac.). A site a few miles downstream from Zumbro was sampled in 1965 by MDWFP. At that time bluegill, redear, largemouth bass, smallmouth buffalo, bigmouth buffalo, and bullheads seemed to be more abundant, whereas, drum, gar, flathead catfish, and warmouth that were collected in 1992 were not collected in 1965. Standing stock comparisons could not be made using the 1965 data.

**EFFECTS OF LOW FLOWS ON FISH ASSEMBLAGES IN THE BIG SUNFLOWER RIVER, MISSISSIPPI.** Jack Killgore, Jan Jeffrey Hoover and Steven G. George. U. S. Army Engineer Research and Development Center, Waterways Experiment Station, Vicksburg, MS.

Effects of low flow on the fish community of the Big Sunflower River were evaluated from field surveys of fishes and physical habitat. Juvenile and adult fishes were collected using seines, hoop nets, and gill nets; 114 collections were made. Fifty-seven species of fish were documented in the Big Sunflower River and represent a substantial fraction (65%) of the taxa known to occur in the encompassing Yazoo River basin. Ichthyofauna was taxonomically dominated by minnows and sunfishes (13 species each) and to a lesser extent, by catfishes (7 species). The Upper Reach above the confluence of the Quiver River is hypoxic and shallow; the Lower Reach below the Lock and Dam was also hypoxic. The Middle Reach between the abandoned Lock and Dam up to the confluence of the Quiver River was deeper and wider than other reaches and contained higher numbers of species including exploitable fishes, indicating the importance of the Lock and Dam on maintaining habitat quality. Fish-habitat models predict that augmentation of low flows will have a direct and positive effect on species richness in the Upper Reach, but further increases in water depth will be necessary to substantially increase biotic diversity.

Blacktail shiners (abundant)  
Ghost Shiners (most common)  
Gambusia

**ECONOMIC VALUE OF AQUATIC VEGETATION TO FISHERIES. James P. Kirk and Jim E. Henderson. U. S. Army Engineer Research and Development Center, Environmental Lab.**

Work has been initiated under the auspices the Corps of Engineers' Aquatic Plant Control Research Program to evaluate the economic importance of aquatic vegetation to fisheries. Three reservoirs in South Carolina (Lakes Marion, Moultrie, and Murray) have been selected for study. Last year, angler creel surveys were initiated by the South Carolina Department of Natural Resources in Lakes Murray and Moultrie. Trip expenditures, determined during angler interviews, will be linked to changes in aquatic vegetation. Preliminary analysis suggests that boat anglers remaining overnight in local accommodations near Lake Moultrie expended an average of \$352.00 per trip. Such expenditure information will then be utilized to estimate total economic value of angling using regional economic models. Angler perceptions and preferences for aquatic vegetation will also be measured. Initial results suggest that boat anglers view the value of aquatic vegetation very differently from bank anglers. In future years, the economic impacts of aquatic vegetation to property owners, boaters, waterfowl users, and power generation will be studied. Taken together, this information should allow managers to evaluate the return on their expenditures for aquatic plant management as well as the economic value of aquatic vegetation for angling.

**USE OF VOLUNTARY TRIP REPORT CARDS AT MISSISSIPPI STATE LAKES, AN ASSESSMENT. Craig A. Walker\* and Harold L. Schramm, Jr. Mississippi Cooperative Fish and Wildlife Research Unit, Mississippi State University.**

Angler use of Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) State lakes has declined since the mid-1970s. In light of this decline, an objective of MDWFP is to increase fishing at State lakes to 25-30 trips/water acre/year. The MDWFP maintains that enhancing angler satisfaction with fishing opportunities will increase angler use of State lakes. Angler surveys are needed to determine the fishing experience preferences of anglers and to measure their satisfaction. Due to the large and likely unattainable amount of staff time involved in site specific surveys, less labor intensive alternatives are needed. Voluntary trip reporting is one alternative. We measured the response rates and accuracy of voluntary trip report cards at seven State lakes. Response rates were low, with fewer than 10% of interviewed anglers voluntarily obtaining, completing, and returning cards. Response rates increased at three State lakes where MDWFP personnel encouraged anglers to obtain, complete, and return report cards. We found the completed report cards provided similar fishery estimates to creel surveys. Future use of voluntary trip reporting should focus on ways to improve participation.

**\*Student Presentation**

**MISSISSIPPI'S COMMUNITY ASSISTANCE PROGRAM: OPPORTUNITIES AND PROBLEMS. Dennis K. Riecke. Mississippi Department of Wildlife, Fisheries and Parks, 1505 Eastover Dr., Jackson, MS 39211.**

The objective of this program is to encourage the development and fisheries management of small community waters for public use by providing, technical advice, and fish. The goal is that conveniently located waters will provide successful fishing experiences (i.e. high catch rates) which will attract new anglers, especially children. Since 1995 we have received 41 inquiries and executed 7 agreements involving 9 ponds totaling 35.9 acres. Reasons for failing to sign agreements include: unsuitable sites, inability to obtain land, funding problems and decreased interest. The period from initial contact to agreement execution has averaged 14 months with a range of 6-21 months. New/renovated waters are stocked with fingerling bass, bluegill and channel catfish at rates recommended for farm ponds and closed to fishing for 2 years. Twelve acres are open to fishing with 2.5 acres of new/renovated waters scheduled to open in 2002. Internal (agency) problems include: a narrow objective and goal; low priority; inconsistent funding; and use of fingerlings due to limited hatchery capacity. External (cooperator) problems include: loss of interest after initial contact; lack knowledge/commitment to perform routine management activities and poor communication. The agency should reconsider program goals to emphasize the noncatch benefits these waters provide; increase communication and provide formal training of cooperators.

**THE ANGLER CONNECTION: INCREASING USE OF STATE LAKES. Larry Pugh<sup>1</sup>, Harold L. Schramm, Jr.<sup>2</sup> and Craig A. Walker<sup>3</sup>. <sup>1</sup>Mississippi Department of Wildlife, Fisheries and Parks, <sup>2</sup>Mississippi Cooperative Fish and Wildlife Research Unit, Department of Wildlife and Fisheries, Mississippi State University, <sup>3</sup>Department of Wildlife and Fisheries, Mississippi State University.**

The primary objective of the Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) State lakes program is to provide fishing opportunities for anglers. Angler use at State lakes has declined during the last 10 years statewide and at the four State lakes in District 1. The Mississippi statewide angler survey indicated the most important factors in selecting a fishing site were clean water, easy and clean access, and knowing that many and good-size fish were available to be caught; of least importance were catching and keeping a lot of fish or catching large fish. We began a fishery improvement program at two of four lakes in District 1 and an aggressive marketing program for all four lakes in 1999. We focused on the quality of the fishing trip; new boat ramps, courtesy piers and universally accessible fishing piers were constructed or renovated. Habitat improvements, which included construction of gravel beds in areas of high bank fishing and installation of additional fish attractors throughout the lakes, were done to improve angler success, not necessarily benefit fish populations. We publicized our efforts in newspapers, magazines, *Mississippi Outdoors* and local television programs, and developed brochures for mail requests. The number of anglers and permit revenue increased at three lakes in 2000. Our results indicate that a fishery improvement program coupled with aggressive marketing may increase usage at MDWFP state fishing lakes.

## POSTERS

**CHANNEL AND INSTREAM HABITAT CHARACTERISTICS WITHIN A CHANNELIZED STREAM.** Peter C. Smiley Jr.\*<sup>1</sup>, Eric D. Dibble<sup>1</sup> and Andrew C. Miller<sup>2</sup>. <sup>1</sup>Department of Wildlife and Fisheries, Mississippi State University, <sup>2</sup>Environmental Laboratory, U. S. Army Engineer Waterways Experiment Station.

Channel and instream habitat characteristics are factors that are interdependent of one another and altering one factor results in changes in the other. Stream channelization and restoration projects alter channel form, but past research has not examined local patterns between channel and instream habitat characteristics. Understanding the relationship between these two factors may lead to a greater understanding of the impacts of stream alteration projects on aquatic communities. We examined how channel and instream habitat characteristics fluctuated within Luxapalila Creek, a stream that has been altered as a result of recent and historical channelization projects. Measurements of habitat variables were obtained during May and July 2000. Multivariate analyses revealed a significant relationship between channel and instream habitat characteristics during both May and July, but the nature of the relationship changed between sampling periods. As bank width, bank height, bank angle, and percent trees varied among sampling sections corresponding variation in water velocity, wet width, percent gravel, depth, and percent woody debris was observed. Future research will assess how aquatic communities (fishes and macroinvertebrates) vary with respect to these habitat changes.

\*Student Poster Presentation

**FEEDING HABITS OF JUVENILE POMPANO (*TRACHINOTUS CAROLINUS*) COLLECTED FROM THE EASTERN GULF OF MEXICO.** Kersten N. Wheeler\*, Richard W. Heard and Chet F. Rakocinski. Department of Coastal Sciences, University of Southern Mississippi, Gulf Coast Research Laboratory Campus, Ocean Springs, MS 39566-7000.

Relatively little information is available on the feeding habits of the Florida pompano (*Trachinotus carolinus*) from the eastern Gulf of Mexico. From July to October 2000, juvenile pompano were collected from coastal habitats in Mississippi, Alabama, and Florida, and their feeding habits compared based on their size and collection site. The digestive tracts of the pompano were found to contain at least 45 different prey taxa. Crustaceans, primarily juvenile mole crabs (*Emerita* sp.), were the dominant food item of the juvenile pompano from all 15 of the collection sites. During the summer/fall months, juvenile pompano are opportunistic feeders utilizing the most readily available food resources within the habitats in which they forage. In addition, we found that the diversity of the pompano diet increases as the fish matures. Shallow water habitats offer a diverse array of potential prey items for this commercially important fish.

\*Student Poster Presentation



**FRESHWATER MUSSELS OF THE CYPRESS CREEK WATERSHED (LITTLE TALLAHATCHIE DRAINAGE): A REPRESENTATIVE WATERSHED IN NORTH MISSISSIPPI. Keith Wright<sup>1,2</sup>, Wendell R. Haag<sup>1,3</sup>, Lawrence Shaffer<sup>2</sup>, Melvin L. Warren, Jr.<sup>3</sup>, and Marjorie Holland<sup>1,2</sup>. <sup>1</sup> Biology Department, University of Mississippi, University, MS, <sup>2</sup> University of Mississippi Field Station, Abbeville, MS <sup>3</sup> Center for Bottomland Hardwoods Research, USDA Forest Service, Oxford, MS.**

We conducted a survey of the freshwater mussels (Unionidae) at 17 sites in the Cypress Creek watershed (Little Tallahatchie River drainage) in Lafayette County, Mississippi. Mussels were widely distributed in the system, occurring at 15 of 17 sites. Mussel density was generally low, averaging 5.6 live mussels/20 minutes search time, but ranged from 0-19 mussels/20 minutes. We found a total of 14 species (mean number of species per site = 3, range = 1-10). Only three sites supported more than five species. The most widely distributed species was *Lampsilis siliquoidea*, which occurred at nine sites, followed by *Ligumia subrostrata*, *Toxolasma texasensis*, and *Villosa lienosa*, each of which occurred at eight sites. The rayed creekshell, *Anodontoides radiatus* was found at 3 sites; these populations represent the first known occurrence of this species in the Mississippi River basin. Highest mussel density was found in unchannelized, non-incised stream reaches that flowed through a forested landscape.

**\*Student Poster Presentation**