MISSISSIPPI CHAPTER
OF THE
AMERICAN FISHERIES SOCIETY

PROCEEDINGS
OF THE
30TH ANNUAL MEETING

11-13 FEBRUARY 2004

MISSISSIPPI MUSEUM OF NATURAL SCIENCE
JACKSON, MISSISSIPPI

PROGRAM & ABSTRACTS

30TH ANNUAL MEETING
MISSISSIPPI CHAPTER OF THE AMERICAN FISHERIES SOCIETY

HOSTED BY

MISSISSIPPI MUSEUM OF NATURAL SCIENCE
MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES & PARKS
JACKSON, MISSISSIPPI

11-13 FEBRUARY 2004

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MEETING AGENDA

WEDNESDAY, 11 FEBRUARY

5:30 - 7:30 **REGISTRATION AND SOCIAL AT CABOT LODGE HOTEL**

THURSDAY, 12 FEBRUARY

7:00 - 8:00 **REGISTRATION CONTINUED AT MISSISSIPPI MUSEUM OF NATURAL SCIENCE**

8:00 - 8:15 **WELCOME / OPENING REMARKS (LARRY BULL, PRESIDENT)**

SESSION 1: MODERATOR – PAUL MICKLE

UNDERLINED TIME SLOT INDICATES PARTICIPATION IN THE BEST STUDENT PAPER COMPETITION, A * NEXT TO NAME INDICATES STUDENT UNDER CONSIDERATION FOR BEST STUDENT PAPER.

8:15 - 8:30 **CHARACTERISTICS OF FISH COMMUNITIES FROM FIRST-ORDER STREAMS IN NORTH-CENTRAL MISSISSIPPI**. Peter C. Smiley, Jr., Eric D. Dibble, and Stephen H. Schoenholtz.

8:30 - 8:45 **ASSOCIATION OF YOUNG FISHES WITH PELAGIC SARGASSUM HABITAT IN THE NORTHERN GULF OF MEXICO.** Eric Hoffmayer, James S. Franks, Bruce H. Comyns, J. Read Hendon, and Richard S. Waller.

8:45 - 9:00 **USE OF SMALLMOUTH BUFFALO *ICTIOBUS BUBALUS* IN COMMERCIAL CATFISH PONDS TO REDUCE THE INCIDENCE OF PROLIFERATIVE GILL DISEASE.** Jim Steeby, Davis Wise, and Louie Thompson.

9:00 - 9:15 **DISTRIBUTION AND ABUNDANCE OF EARLY LIFE STAGES OF FISH AMONG DIFFERENT MICROHABITATS IN LAKE CHARLIE CAPPS.** Andrew Arrington* and Eric D. Dibble.

9:15 - 9:30 **BREAK**

SESSION 2: MODERATOR - PAUL GRAMMER

9:30 - 9:45 **USING A FISH IBI TO ASSESS THE EFFECTS OF FORESTED RIPARIAN BUFFERS.** Billy M. Teels.

9:45 - 10:00 **EVIDENCE OF PHILOPATRIC BEHAVIOR IN FEMALE BONNETHEAD SHARKS *SPHYRNA TIBURO* IN THE ESTUARINE WATERS OF SOUTH CAROLINA.** William B. Driggers III, Glenn Ulrich, Doug Oakley, and Mark Grace.

10:00-10:15 **NON-HORIZONTAL SWIMMING PERFORMANCE OF CHANNEL CATFISH FINGERLINGS.** Rachel Venn Beecham*, C.D. Minchew, and G. R. Parsons.

10:15-10:30 **PRELIMINARY DATA ON THE EFFECTS ON NON-INDIGENOUS VEGETATION ON CENTRARCHID HABITAT USE IN MINNESOTA LAKES.** Jeremy Slade***** and Eric D. Dibble.

10:30-10:45 BREAK

10:45-11:00 **THE HISTORY OF ALABAMA SHAD AND ITS LIFE STAGES WITHIN THE PASCAGOULA BASIN.** Paul Mickle*****

11:00-11:15 **PRELIMINARY REPORT ON DETERMINING RANGE WIDE STOCK STRUCTURE IN ALABAMA SHAD, *ALOSA ALABAMAE* (JORDAN & EVERMANN 1896): CONSERVATION AND MANAGEMENT IMPLICATIONS FOR AN ANADROMOUS SPECIES.** Bryant R. Bowen*****, Paul F. Mickle, Brian R. Kreiser, and Stephen T. Ross.

11:15-11:30 **ASPECTS OF LIFE HISTORY AND REPRODUCTION OF SILVER PERCH, *BAIRDIELLA CHRYSOURA*, FROM NORTH-CENTRAL GULF OF MEXICO ESTUARIES.** Gretchen L. Waggy*****, Nancy J. Brown-Peterson and Mark S. Peterson.

11:30-1:00 **LUNCH (NOT PROVIDED)**

SESSION 3: MODERATOR - GRETCHEN WAGGY

1:00 - 1:15 **THE HORIZONTAL DISTRIBUTION OF MICROCRUSTACEAN ZOOPLANKTON IN DAVIS LAKE DURING AUTUMN DESTRATIFICATION.** Michael Kashiwagi***** and Donald C. Jackson.

1:15 - 1:30 **DEMERSAL FISHES OF THE LOWER MISSISSIPPI RIVER.** Jack Killgore and Jan Hoover.

1:30 - 1:45 **A SURVEY OF MACRO-COELENTERATES IN MISSISSIPPI COASTAL WATERS.** Kirsten Larsen and Harriet Perry.

1:45 - 2:00 **MOVEMENT OF TOURNAMENT-CAUGHT LARGEMOUTH BASS**. Larry Pugh.

2:00 - 2:15 **IMPROVING SURVIVAL OF TOURNAMENT-CAUGHT LARGEMOUTH BASS.** Aaron R. Walters***** and Harold L. Schramm, Jr.

2:15 - 2:30 **BREAK**

SESSION 4: MODERATOR - BRYANT BOWEN

2:30 - 2:45 **ARMORED AND DANGEROUS: SUCKERMOUTH CATFISHES THAT THREATEN OUR SHORES.** Jan Hoover, Catherine Murphy, and Jack Killgore.

2:45 - 3:00 **SURGIN' STURGEON: MAXIMUM SWIMMING SPEEDS OF *ACIPENSER FULVESCENS*.** Heather Smith***** and Jan Hoover.

3:00 - 3:15 **ALIENS, STORKS AND ALLIGATORS: LIFE IN FLOODPLAIN POOLS.** Tyler Strange*****, Heather Smith, Jan Hoover, and Dena Dickerson.

3:15 - 3:30 **A RAPID ASSESSMENT OF MOBILE BAY, ALABAMA.** Harriet Perry, Kirsten Larsen, Chris Snyder, David Yaeger and Lee Yokel.

3:30 - 3:45 **PADDLEFISH IN THE TENNESSEE-TOMBIGBEE WATERWAY: STATUS, MOVEMENTS, AND HABITAT USE**. Daniel M. O'Keefe***** and Donald C. Jackson.

3:45 - 4:00 BREAK

4:00 - 4:15 **MORPHOMETRIC VARIATION AMONG STURGEON IN THE MISSISSIPPI RIVER BASIN.** Catherine E. Murphy, Steven George, and Jan Hoover.

4:15 - 4:30 **RESULTS FROM THE NOAA FISHERIES SMALL PELAGICS/DEEP WATER TRAWL SURVEY, FALL 2003.** Walter Ingram.

4:30 - 4:45 **BIOLOGICAL AND PHYSICAL REGULATORS MEDIATING A SMALL STREAM COMMUNITY: A LONG TERM STUDY AT VICKSBURG NATIONAL MILITARY PARK.** Eric D. Dibble.

4:45 - 5:00 **OCCURRENCE OF STONECAT (*NOTURUS FLAVUS*) IN THE LOWER MISSISSIPPI RIVER.** Steven George, Catherine Murphy, and Jack Killgore

5:00 - 5:30 **STUDENT CAUCUS MEETING**

5:45 - 7:00 **BANQUET AND STUDENT RAFFLE (MS MUSEUM OF NATURAL SCIENCE)**

7:00 - until **30TH ANNIVERSARY CELEBRATION AND PROGRAM: "A LOOK BACK: MISSISSIPPI FISHERIES AND FISH FOLK", JIM FRANKS & LARRY BULL**

FRIDAY, 13 FEBRUARY

SESSION 5 **MODERATOR - MARISA WEBER**

8:00 - 8:15 **FIRST RECORD OF GOLIATH GROUPER *EPINEPHELUS ITAJARA* IN MISSISSIPPI COASTAL WATERS.** James S. Franks.

8:15 - 8:30 **REPRODUCTION OF THE NONINDIGENOUS NILE TILAPIA *OREOCHROMIS NILOTICUS* IN COASTAL WATERSHEDS OF SOUTHERN MISSISSIPPI.** Mark S. Peterson, William T. Slack, Jennifer L. McDonald and Nancy J. Brown-Peterson.

8:30 - 8:45 **DEVELOPMENT OF MISSISSIPPI'S INSTREAM FLOW PROGRAM: A COOPERATIVE EFFORT.** Dennis Riecke.

8:45 - 9:00 **BREAK**

9:00 - 12:00 BUSINESS MEETING

8:00 – 5:00 POSTER PRESENTATIONS (FEBRUARY 12 & 13)

PROGRESS REPORT ON CATFISH/CARP REMOVAL AT LAKE CHARLIE CAPPS. Garry Lucas, Keith Meals, Arthur Dunn and Megan Ellis.

BROWN SHRIMP DISTRIBUTION ON MISSISSIPPI'S HISTORICAL SHRIMPING GROUNDS: AN ARCMAP-GIS PERSPECTIVE. James Warren.

HOOKING MORTALITY OF SPOTTED SEATROUT *CYNOSCION NEBULOSUS* IN MISSISSIPPI. James Warren, William D. Dempster, Gary J. Gray and Jason D. Tilley.

STATUS AND REPRODUCTION OF THE GULF COAST STRAIN WALLEYE IN A TOMBIGBEE RIVER TRIBUTARY. Amy B. Spencer, Harold L. Schramm, Jr., Justin Hart, Larry A. Hanson.

EVALUATION OF HATCHERY AND GROWOUT FACTORS FOR THE SUCCESSFUL PRODUCTION AND STOCKING OF JUVENILE GULF COAST WALLEYE. Justin Wilkens, Louis D'Abramo

PRESENTATION ABSTRACTS
THURSDAY, FEBRUARY 12, 2004

CHARACTERISTICS OF FISH COMMUNITIES FROM FIRST-ORDER STREAMS IN NORTH-CENTRAL MISSISSIPPI

Peter C. Smiley, Jr.: Forest and Wildlife Research Center, Mississippi State University, P. O. Box 9690, Mississippi, MS 39762; pcs1@ra.msstate.edu;

Eric D. Dibble: Department of Wildlife and Fisheries, Mississippi State University

Stephen H. Schoenholtz: Department of Forest Engineering, Oregon State University

Previous studies have described the fishes from headwater streams in the southeastern United States, but information on the fish communities of headwater streams in north-central Mississippi is lacking. We sampled fishes from 14 first-order streams to obtain baseline data on characteristics of fish communities in this region. Eight streams were sampled from September 1999 until November 2002, while six streams were sampled from March 2001 until November 2002. Fishes were sampled at least three times a year using a backpack electroshocker. We documented 36 species and 11 families from 6943 captures. Species richness among our study streams ranged from 2 to 26 species, while the total number of captures ranged from 5 to 1193. The five most abundant species were *Semotilus atromaculatus, Lampetra aepyptera, Fundulus olivaceous, Erimyzon oblongus*, and *Lepomis cyanellus*. We also observed that most streams (>50%) were numerically dominated by: 1) Cyprinidae, 2) fishes having a maximum body size between 300 - 399 mm TL, 3) insectivores, and 4) fishes that construct nests and guard the eggs and young offspring. Fish species composition from our study streams is similar to the fish species composition of other medium and low gradient headwater streams in the Gulf Coastal Plain.

ASSOCIATION OF YOUNG FISHES WITH PELAGIC SARGASSUM HABITAT IN THE NORTHERN GULF OF MEXICO

Eric Hoffmayer: The University of Southern Mississippi, Gulf Coast Research Laboratory, 703 East Beach Drive, Ocean, MS 39564, eric.hoffmayer@usm.edu

James S. Franks: The University of Southern Mississippi, Gulf Coast Research Laboratory Center for Fisheries Research and Development

Bruce H. Comyns: The University of Southern Mississippi, Department of Coastal Sciences

J. Read Hendon: The University of Southern Mississippi, Gulf Coast Research Laboratory Center for Fisheries Research and Development

Richard S. Waller: The University of Southern Mississippi, Gulf Coast Research Laboratory Center for Fisheries Research and Development

Little is known about the abundance of pelagic Sargassum in the Gulf of Mexico throughout the year and even less is known about which fish species utilize this essential fish habitat during their early life stages. The information reported herein, which was obtained as part of a larger study, pertains to the identification and enumeration of larval and juvenile fishes associated with pelagic Sargassum in the northern Gulf of Mexico. From 2000 to 2002, over 18,000 pelagic larval and juvenile fishes were collected using bongo and neuston nets. The diversity of fishes was high, with 110 species collected representing 69 genera and 57 families. The dominant families, in order of numeric abundance of specimens, were Exocoetidae, Carangidae, Clupeidae, Gerreidae, Mugilidae, Scombridae, Balistidae, and Monacanthidae. The family Carangidae was represented by the greatest number of species (n = 16) followed by Scombridae (n = 9), Exocoetidae (n = 9), and Monacanthidae (n = 8).

USE OF SMALLMOUTH BUFFALO *ICTIOBUS BUBALUS* IN COMMERCIAL CATFISH PONDS TO REDUCE THE INCIDENCE OF PROLIFERATIVE GILL DISEASE

Jim Steeby: National Warmwater Aquaculture Center, Mississippi State University Extension Service, Belzoni, Mississippi 39038, jsteeby@ext.msstate.edu

David Wise: National Warmwater Aquaculture Center, Stoneville, MS

Louie Thompson: Thompson Fisheries Inc., Tchula, MS

Three species of buffalo (bigmouth-*Ictiobus cybrinellus*, smallmouth-*Ictiobus bubalus*, black-*Ictiobus niger*) are present in waters of the southeastern U.S. The smallmouth buffalo and black buffalo are reported in the literature to consume benthic macroinvertebrates. One of the benthic worms present in commercial channel catfish ponds is *Dero digitata* which harbors the parasite (*Aurantiactinomyxon sp*.) known to cause severe gill damage (PGD) and disease losses in commercial channel catfish ponds. No known control for the benthic worm or the treatment for the disease currently exists. In the spring of 2002 smallmouth buffalo were obtained from a commercial fisherman and spawned. These fish were grown to 6 " size fish by the fall of that year. In October of 2002 smallmouth buffalo fingerlings were stocked into 11 commercial channel catfish ponds (total of 250 acres) at the rate of 100 fish per acre. Survival of the buffalo appeared good in all ponds with no reports of buffalo eating floating catfish feed. The buffalo grew from 6" to 17" (2.5-3.5 lb) in 12-14 months. Gills removed from channel catfish from treatment and control ponds indicated that there was no degree of PGD disease control in spring 2003 but some control did exist in the fall of 2003. Further tests may be conducted to explore the possibility of using smallmouth buffalo to limit PGD losses in commercial channel catfish ponds.

DISTRIBUTION AND ABUNDANCE OF EARLY LIFE STAGES OF FISH AMONG DIFFERENT MICROHABITATS IN LAKE CHARLIE CAPPS

Andrew Arrington*: Department of Wildlife and Fisheries, Box 9690, Mississippi State University, Mississippi State, MS 39762, USA, apa1@msstate.edu

Eric D. Dibble: Department of Wildlife and Fisheries, Mississippi State University

Aquatic plants provide important structural habitat for early life stages of fish such as forage and cover. With the absence of all aquatic vegetation in a system, early life stages of fish will use other structural habitat to meet their needs for survival. Lake Charlie Capps, Mississippi, is a public lake and managed for sport fish, primarily centrarchids. A current experiment is underway to restore structural habitat by introducing native aquatic plants in the lake to enhance shoreline habitat. We sampled early life stages of fishes using light traps from three microhabitat types: riprap, inundated vegetation, and no vegetation during May to July 2001, 2002, 2003. We collected 3,492 fish representing three families (Centrarchidae, Clupeidae, and Cyprinidae). Significant differences were noted in fish abundances across the shoreline habitats we sampled. Total abundance for all three families was highest in the riprap habitat suggesting that structure provided by near shore habitat may be mediating distribution patterns by young fish. These data will serve as a baseline to evaluate restored habitat relative to established plants.

USING A FISH IBI TO ASSESS THE EFFECTS OF FORESTED RIPARIAN BUFFERS

Billy M. Teels: USDA, NRCS, Wetland Science Institute, Laurel, MD 20708, bteels1@comcast.net

One of the more recent and successful techniques for monitoring aquatic resources is the Index of Biotic Integrity (IBI) (Karr et al. 1986), a multi-metric approach that uses fish assemblages to assess aquatic health. Because the IBI is capable of integrating the effects of multiple human influences, it affords a convenient measure for the effects of conservation in context with other human activities in a watershed. In a previous study, a regional IBI was developed from over 150 stream segments in the Occoquan, Goose Creek, and upper Rappahannock Watersheds of northern Virginia (Teels and Danielson 2001). In this study, before and after conditions were measured for 36 forested riparian buffer projects established in that region since 2000, using the previously developed IBI and the NRCS Stream Visual Assessment Protocol. Improvements in stream condition were observed for certain projects within one year of buffer establishment. Variation in local (stream reach) and watershed conditions prior to buffer establishment, attributes of the established buffers, and other factors play into the effectiveness of individual projects. This study will identify some of the factors influencing buffer effectiveness and facilitate improvements in the design and siting of future projects.

EVIDENCE OF PHILOPATRIC BEHAVIOR IN FEMALE BONNETHEAD SHARKS *SPHYRNA TIBURO* IN THE ESTUARINE WATERS OF SOUTH CAROLINA

William B. Driggers III: NOAA Fisheries, 3209 Frederic St., Pascagoula, MS 39567, william.driggers@noaa.gov

Glenn Ulrich: South Carolina Department of Natural Resources

Doug Oakley: South Carolina Department of Natural Resources

Mark Grace: National Marine Fisheries Service

Numerous species of animals show the propensity to return to a given area on a predictable cycle. This behavior, termed philopatry, is well documented in marine organisms such as sea turtles, marine mammals and some species of teleosts. Recent research has suggested that several species of sharks have philopatric tendencies. Most of this research is based on limited tag recapture data and generally fails to show a close association to a discrete area. Other researchers have employed genetic techniques to examine philopatry in elasmobranchs but often lack tag recapture data to support their conclusions. Bonnethead sharks (*Sphyrna tiburo*), which are seasonally abundant from May through October in the near shore and estuarine waters of South Carolina, were tagged and released from 1998 through 2002 during a fixed station, fishery independent survey. Of the 520 bonnethead sharks that were tagged, 64 have been recaptured, with 29 being at liberty over at least one subsequent calendar year. Our data indicates that female bonnethead sharks show a high degree of philopatry to specific estuaries. Analysis of recreational tagging data further supports this trend.

NON-HORIZONTAL SWIMMING PERFORMANCE OF CHANNEL CATFISH FINGERLINGS

Rachel Venn Beecham*: University of Mississippi & Mississippi State University, Thad Cochran National Warmwater Aquaculture Center, PO Box 195, Stoneville, MS 38776, rbeecham@drec.msstate.edu

C.D. Minchew: Mississippi State University, Thad Cochran National Warmwater Aquaculture Center, Stoneville, MS

G. R. Parsons: University of Mississippi, Biology Dept., University, MS

Historically, swimming studies have been conducted in horizontal swimming chambers. However, fish often swim in a manner other than horizontally during daily activities. The purpose of this study was to examine the non-horizontal locomotion of channel catfish fingerlings. Ten individual channel catfish were swum at each of nine angles (0°, ±15°, ±30°, ±45°, ±60°) using a critical swimming speed protocol. Critical swimming speed (U_{crit}), metabolic rate, cost of transport, and gill and tail beat frequency were determined for each fish and regression curves were constructed. Optimal swimming angles were found to be 15° for fish swimming on an incline and 60° for fish swimming on a decline. U_{crit} decreased linearly as angle of incline increased, while U_{crit} for declining angles made a U-shaped curve. The results of this study indicate that measurable differences exist between swimming performance relative to angles of incline or decline. Further studies are needed to explain why these differences exist and what advantages these differences may confer to the individuals in their natural habitat.

PRELIMINARY DATA ON THE EFFECTS ON NON-INDIGENOUS VEGETATION ON CENTRARCHID HABITAT USE IN MINNESOTA LAKES

Jeremy Slade*: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi State, MS 39762, jeremyslade@hotmail.com

Eric D. Dibble: Department of Wildlife and Fisheries, Mississippi State University

Aquatic plants in littoral zones of lakes provide critical habitat for fish populations. This study investigates the effect that exotic plant species have on fish habitat in the littoral zone of clear water temperate lakes, and the hypothesis that a structural habitat shift from predominantly non-indigenous plant species to native plant species will alter the abundance, size and richness of fish and their food base. An aquatic plant manipulation was conducted in two Minnesota lakes to experimentally measure impacts on the plant, macroinvertebrate, and fish communities. The treatment consisted of a selected herbicide application (Aquathol K and 2,4-D) to remove two exotic plant species, Eurasian watermilfoil (*Myriophyllum spicatum*) and Curly-leaf pondweed (*Potamogeton crispus*). Pre-treatment measurements were made in June and September 2003, and post-treatment measurements are planned for the same months of 2004. Plants were measured for stem density (#/m), macroinvertebrates measured for species richness and abundance and fish measured for species richness, abundance (number/popnet), and size. A preliminary analysis using multi-variate procedures was conducted to evaluate differences in vegetated habitats and its impact on fish.

THE HISTORY OF ALABAMA SHAD AND ITS LIFE STAGES WITHIN THE PASCAGOULA BASIN

Paul Mickle*: University of Southern Mississippi, 29 Park Place Apt. #605, Hattiesburg, MS 39402, micklepf6@cs.com

Information about the history of the Alabama Shad, *Alosa alabamae*, and its presence along the Gulf coast is limited. Although the species is not listed as threatened or endangered, declines in populations have raised concerns and projects are currently underway to conduct stock assessments within the rivers that in which they reproduce. The Pascagoula drainage is unique to comparable other drainages in that it is the only major waterway in the lower forty eight states that has not been dammed. In my beginning field season, first year Alabama Shad have been caught in summer holding areas. The type of habitat that the fish appear to be using is a combination of heavy current and a clear current break that has a defined edge. The spawning grounds have not yet been documented but several sites are labeled as candidates. Adults have been captured entering the river January through March on their way to the spawning grounds. Understanding the life stages of the Alabama Shad and its habitat preferences in the river will provide crucial information for its conservation.

PRELIMINARY REPORT ON DETERMINING RANGE WIDE STOCK STRUCTURE IN ALABAMA SHAD, *ALOSA ALABAMAE* (JORDAN & EVERMANN 1896): CONSERVATION AND MANAGEMENT IMPLICATIONS FOR AN ANADROMOUS SPECIES

Bryant R. Bowen*: The University of Southern Mississippi, Hattiesburg, MS 39406, bryant.bowen@usm.edu

Paul F. Mickle: The University of Southern Mississippi

Brian R. Kreiser: The University of Southern Mississippi

Stephen T. Ross: The University of Southern Mississippi

Anthropogenic effects have resulted in population declines for many anadromous fish species. Some of these impacts include eutrophication, nonnutrient loading, overfishing, exotic species invasions, loss of essential habitat, and the degradation of the watershed. The goal of my research is to use mitochondrial DNA (mtDNA) and microsatellite markers to determine the phylogeographic relationships among Alabama shad populations, thus determining if drainage specific stocks exist. Genetic techniques have proven to be useful tools in conservation biology by delimiting stock structure in other anadromous species such as salmon, sturgeon, and the closely related American shad (*Alosa sapidissima*). One aspect of my project is to assess stock structure through sequencing and restriction fragment length polymorphisms of mtDNA. The second part of my project is to employ microsatellite markers. We have successfully amplified and sequenced portions of the cytochrome b gene, control region (D-Loop), and cytochrome oxidase I (COI). For the microsatellite analyses we have established that published primers for *Alosa sapidissima* work well for *Alosa alabamae*. Understanding the geographic structure of populations of Alosa alabamae will help identify unique populations for management considerations as well as allow us to assess the health of populations and ecosystems that this species inhabits.

ASPECTS OF LIFE HISTORY AND REPRODUCTION OF SILVER PERCH, *BAIRDIELLA CHRYSOURA*, FROM NORTH-CENTRAL GULF OF MEXICO ESTUARIES

Gretchen L. Waggy*: The University of Southern Mississippi, Department of Coastal Sciences, 703 E. Beach Dr., Ocean, MS 39564, gretchen.waggy@usm.edu

Nancy J. Brown-Peterson: The University of Southern Mississippi, Department of Coastal Sciences

Mark S. Peterson: The University of Southern Mississippi, Department of Coastal Sciences

Adult and juvenile silver perch (n = 485) ranging between 70.0 – 171.0 mm standard length (SL) were collected from April 2002 through June 2003 in estuaries along the coast of Mississippi. Estimated ages using sagittal otoliths ranged from young-of-the-year (YOY,0+) to 4+ yrs. Gonadal recrudescence begins in February for both sexes with peak spawning in April (mean female gonadosomatic index (GSI) = 12.00). Female GSI values decrease to 1.63 in July. Silver perch are sexually mature at the end of their first year of life (0+) and appear to have a 4.5 month spawning season in the north-central GOM. Dietary preferences of young silver perch (2.5 – 30.0 mm SL) were also examined. An ontogenic prey shift occurred with the smallest fish consuming mostly calanoid copepods while the larger fish ingested mysids in addition to calanoid copepods. Larval and juvenile silver perch taken in collections from 1995 to 1997 in Mississippi (3.1-29.4 mm SL) appeared along the marsh edge during the spring and summer months. This period was correlated with low salinity (Spr. mean = 3.9 psu; Sum. mean = 10.3 psu), moderately high water temperatures (Spr. mean = 21.2 C; Sum. mean = 29.3 C), and moderate dissolved oxygen levels (Spr. mean = 8.7 mg/L; Sum. mean = 6.1 mg/L). Abundance of young silver perch did not significantly differ between altered and unaltered shoreline sites. This suggests silver perch may not be seriously affected by anthropogenic alterations to shoreline areas.

THE HORIZONTAL DISTRIBUTION OF MICROCRUSTACEAN ZOOPLANKTON IN DAVIS LAKE DURING AUTUMN DESTRATIFICATION

Michael Kashiwagi*: Department of Wildlife and Fisheries, Mississippi State University, PO Box 9691, Starkville, MS 39762, mkashfrost@hotmail.com

Donald C. Jackson: Department of Wildlife and Fisheries, Mississippi State University

Freshwater zooplankton exhibit a heterogeneous horizontal distribution in lotic ecosystems. Autumn destratification of warm water impoundments is a period of changing abiotic conditions. Zooplankton abundance and horizontal distribution was monitored in Davis Lake, Mississippi during destratification in autumn 2003. Zooplankton biomass and copepod abundance did not change during this period perhaps as a result of competition for limiting phytoplankton resources. The heterogeneity of the horizontal distribution of adult copepods and naupli increased in association with increased vertical mixing of the water column with the break down of stratification. The zooplankton community in Davis Lake during destratification is likely a product of the combination of abiotic and biotic factors of the environment.

DEMERSAL FISHES OF THE LOWER MISSISSIPPI RIVER

Jack Killgore, U. S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180, jack.killgore@erdc.usace.army

Jan Hoover: U. S. Army Engineer Research and Development Center,Vicksburg, Mississippi

The main channel and channel border comprise the majority of the wetted area of the Lower Mississippi River (LMR), but fish composition has been poorly studied in these habitats primarily because of sampling and funding constraints. However, the recent interest in pallid sturgeon has resulted in a more comprehensive evaluation of Mississippi River fishes. Trotlines, gill nets, and trawls have been employed to determine species composition, habitat preference, and seasonal abundance. Since 2000, 43 species have been documented. Overall, approximately 70% of the individuals collected were comprised of blue catfish (50%) and shovelnose sturgeon (20%). In order of decreasing abundance, nine species represented 1-7% of the catch: channel catfish, freshwater drum, gizzard shad, threadfin shad, goldeye, silver chub, flathead catfish, and smallmouth buffalo. Other notable species that were periodically collected included sauger, American eel, blue sucker, and mooneye. Protected species were occasionally collected (paddlefish and pallid sturgeon), and invasive species (grass and silver carp) were documented in the channel. Marine fishes were also documented, but were mostly confined to the river below New Orleans. These data are being used to identify habitat restoration measures that can further enhance species diversity in the LMR.

A SURVEY OF MACRO-COELENTERATES IN MISSISSIPPI COASTAL WATERS

Kirsten Larsen: Center for Fisheries R&D, Gulf Coast Research Lab, The University of Southern Mississippi, PO Box 7000, Ocean, MS 39566, kirsten.larsen@usm.edu

Harriet Perry: Center for Fisheries R&D, Gulf Coast Research Laboratory,The University of Southern Mississippi

In the summer of 2000 huge blooms of the native moon jelly, *Aurelia aurita*, and the invasive Australian spotted jelly, *Phyllorhiza punctata*, occurred in Mississippi waters. High densities of *P. punctata*, a large robust species, damaged fishing gear and prohibited shrimp trawling in many areas. Both species are characterized as voracious filter feeders and zooplankton biomass was reduced in areas of jellyfish abundance. The early life stages of many important fishery resources are planktonic and there was concern that larval abundance as well as the food supply for these larvae may have been reduced. Active planula larvae were found in association with *P. punctata*, thus there was potential for establishment of a permanent population in the northern Gulf. There is evidence that population levels of the common sea nettle, *Chrysaora quinquecirrha*, and other jellyfish species are increasing, which may impact tourism. Coastal waters of Mississippi were monitored for distribution and abundance of macro-coelenterates during 1971-72. Monthly trawls and beach surveys were taken at inshore and offshore stations. This study was repeated in 2003 and abundance and distribution of dominant jellyfish species were compared to the earlier data. The first occurrence of *Rhacostoma atlanticum* was recorded from Mississippi state waters.

MOVEMENT OF TOURNAMENT-CAUGHT LARGEMOUTH BASS

Larry Pugh: Mississippi Department of Wildlife, Fisheries and Parks, 272 CR 995, Tupelo, MS 38804, larryp@dwfp.state.ms.us

The Mississippi Department of Wildlife, Fisheries and Parks tagged 421 largemouth bass (*Micropterus salmoides*) following several bass tournaments at Columbus Lake, Mississippi, in 2002 to monitor dispersal of tournament-caught largemouth bass. Tagged bass were originally caught on Aliceville, Columbus, and Aberdeen Lakes; all tagged bass were released at the same site on Columbus Lake. Six bass were recaptured on Aliceville Lake, located one lock downstream. The remaining recaptures were on Columbus Lake; no recaptures were recorded for Aberdeen Lake, located one lock upstream. Seventy-nine percent of the 88 bass recaptured on Columbus Lake were caught within 4 km of the release site. The maximum distance from the release site that a tagged fish was recaptured was 16 km. Tournament anglers made up 72% of the recaptures, 17% of the recaptures were non-tournament bass anglers, 7% were bank anglers fishing near the release site, and 4% were sampling recaptures. Recommendations to tournaments organizers are to utilize a live-release boat to redistribute fish away from high-use areas and to rotate weigh-in sites throughout the year to more evenly distribute released fish.

IMPROVING SURVIVAL OF TOURNAMENT-CAUGHT LARGEMOUTH BASS

Aaron R. Walters*: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi State, MS 39762, arw111@msstate.edu

Harold L. Schramm, Jr.: USGS, Mississippi Cooperative Fish and Wildlife Research Unit, Mississippi State University

Mortality of largemouth bass (*Micropterus salmoides*) was measured in six fishing tournaments on Mississippi and Alabama reservoirs during July--September 2004 to evaluate the effect of livewell conditions. We compared recommended livewell conditions (treatment), which required the regulation of water temperature, continuous aeration, and use of 0.5% salt in boat livewells, to customary livewell procedures (control) that employed the use of aeration, but did not include temperature regulation or the addition of salt. Initial, pre-release, and 5-day post-release mortality averaged 2.2%, 3.8%, and 62.8% for treatment livewells and 6.9%, 4.2%, and 75.9% for control livewells. No significant difference was detected in initial, pre-release or post-release mortality ((alpha)=0.10) between fish held in treatment livewells and those held in control livewells. In contrast to previous post-release tournament mortality studies, severe bacterial infections began on day three and contributed to the 5-day post-release mortality.

ARMORED AND DANGEROUS: SUCKERMOUTH CATFISHES THAT THREATEN OUR SHORES

Jan Hoover: U. S. Army Engineer Research and Development Center, Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, Jan.J.Hoover@erdc.usace.army

Catherine Murphy: US Army ERDC-WES, Vicksburg, MS

Jack Killgore: US Army ERDC-WES, Vicksburg, MS

Suckermouth catfishes (*Loricariidae*), prevalent in the aquarium hobby for decades, are established and spreading throughout disturbed waters of the southern United States. Armadillo del rio (*Hypostomus spp*.) appear innocuous. Sailfin catfishes (*Pterygoplichthys spp*.), however, impact aquatic ecosystems at multiple levels. They disrupt food chains, compete with native herbivorous fishes, erode banks, and induce mortality of shorebirds. Body armor, large pectoral spines, extreme longevity, high fecundity, extraordinary parental care, anoxia- and desiccation-tolerance make these fishes formidable threats to native species and hamper traditional control techniques. Data from populations in the San Antonio River, Texas and in south Florida are used to suggest sampling protocols, priorities for future study, and management options.

Sailfin catfish collected from San Antonio River May 2003

SURGIN' STURGEON: MAXIMUM SWIMMING SPEEDS OF *ACIPENSER FULVESCENS*

Heather Smith*: St. Andrews Episcopal School, 116 Eva Circle, Vicksburg, MS 39180

Jan Hoover: US Army ERDC-WES, Vicksburg, MS

Dredges can entrain sturgeon if current flowing into the dredge head exceeds swimming speed of the fish. Engineers are developing models for flow fields around dredge heads, but little information exists on swimming speeds of sturgeon. Using a laboratory swim tunnel, we determined swimming speeds for juvenile lake sturgeon (*Acipenser fulvescens*). Endurance (time-to-fatigue) and behavior (method of station-holding) were measured for 44 fish (114-195 mm TL) tested at water velocities of 45-85 cm/s. Velocities approximated upper limits of prolonged swimming speed and burst speed for fishes of comparable size. Most lake sturgeon swam 45-55 cm/s for 1-10 min (prolonged speed) and 65-85 cm/s for 6-30 s (burst speed). Decreasing endurance with increasing water speed was significant ($p < 0.05$) but variability was high ($r2 = 0.21$), possibly due to variable nutritional states and sensitivity of fish to slight changes in water temperature. More than half of the fish tested used station-holding behaviors other than free-swimming in the water column (e.g., hunkering). Results were comparable to those for juvenile lake sturgeon in Canada and higher than those for pallid sturgeon. Differences in swimming performance between populations of sturgeon are much smaller than those between species having different body shapes.

Juvenile lake sturgeon in laboratory swim tunnel.

ALIENS, STORKS, AND ALLIGATORS: LIFE IN FLOODPLAIN POOLS

Tyler Strange*: Oak Grove High School, 1205 Cook Road, Oak Grove, LA 71263

Heather Smith: St. Andrews Episcopal School, Vicksburg, MS

Jan Hoover: US Army ERDC-WES, Vicksburg, MS

Dena Dickerson: US Army ERDC-WES, Vicksburg, MS

Ninety percent of small floodplain pools once occurring in the lower Mississippi Basin have been eliminated by human activity. These distinctive wetlands are rarely studied and fish-habitat relationships infrequently described. In summer 2003, we surveyed pools on or near Tara Wildlife in Warren County, MS. Twenty-six species of fish were collected. Western mosquitofish, bluegill, and bantam sunfish were numerically dominant. In the two largest pools, three exotic species were collected: common, grass, and silver carps. Deeper pools were important feeding grounds for wood stork, harboring three times more species than shallower pools not visited by wood storks. Two pools of moderate size, connected temporarily with a large lake, and adjacent to extensive hardwoods, were inhabited by alligator gar. One pool contained a single individual, another more than 15 individuals. Injuries on gar indicate attacks by birds and conspecifics. Prior to the pool drying, alligator gar were removed, externally tagged and relocated to a nearby permanent slough. Three individuals were retained to monitor tag retention and test methods for effective radio-tag attachment. Our data indicate that floodplain pools (or borrow pits) can be created with minimal impacts from aquatic nuisance species and maximum benefits for imperiled fish and wildlife.

Wood storks and ibis feeding in floodplain pool at Tara.

A RAPID ASSESSMENT OF MOBILE BAY, ALABAMA

Harriet Perry: Center for Fisheries R & D, Gulf Coast Research Lab, University of Southern Mississippi, PO Box 7000, Ocean, MS 39566-7000, harriet.perry@usm.edu

Kirsten Larsen: Center for Fisheries R&D, Gulf Coast Research Laboratory, University of Southern Mississippi

Chris Snyder: Marine Education Center and Aquarium, University of Southern Mississippi

David Yaeger: Mobile Bay National Estuary Program

Lee Yokel: Mobile Bay National Estuary Program

A rapid assessment is a sampling effort of short duration in a targeted, well-defined geographic area. The approach is to collect as many different organisms as possible and return them to a laboratory for identification to the lowest taxonomic level. Rapid assessments are effective, efficient, and timely approaches to establishing baseline faunal and floral inventories and they serve as a mechanism for the identification of non-native and invasive species. Identifying non-native aquatic species, describing them along with the conditions in which they are found, assessing their impact and predicting likely future migration will assist us in finding ways to mitigate the potentially devastating impacts of some invasives on coastal and ocean resources, including important fisheries. Such an assessment was conducted by a multi-institutional, multi-disciplinary team of scientists from Mississippi and Alabama from September 2-6, 2003 in Mobile Bay. Over 60 participants from 15 agencies took part in the sampling effort. Although non-indigenous jellyfish (*Phyllorhiza punctata, Drymonema dalmatinum*), crabs (*Callinectes bocourti, Cardisoma guanhumi*), and molluscs (*Mytilus edulis* and *Brachidontes domingensis*) have been previously reported from the area and were listed as target species, these organisms were not encountered in the survey. Over a dozen invasive plant species were noted including common water hyacinth (*Eichhornia crassipes*), hydrilla (*Hydrilla verticillata*), cogon grass (*Imperata cylindrica*), purple loosestrife (*Lythrum salicaria*), Eurasian water-milfoil (*Myriophyllum spicatum*), and giant salvinia (*Salvinia molesta*). In addition, a change in the distribution of some native plant species was observed. In many areas, *Spartina alterniflora* was replaced by the invasive species, Phragmites. A similar assessment will take place within select Mississippi estuarine systems during September 2004.

PADDLEFISH IN THE TENNESSEE-TOMBIGBEE WATERWAY: STATUS, MOVEMENTS, AND HABITAT USE

Daniel M. O'Keefe*: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi State, MS 39762, danokeefe@hotmail.com

Donald C. Jackson: Department of Wildlife and Fisheries, Mississippi State University

Paddlefish are currently absent from or extremely rare in the Mississippi portion of the Tennessee-Tombigbee Waterway. Prior to the initiation of paddlefish reintroduction, gill nets were set bi-monthly in tailrace and side-channel habitats in four impoundments: Columbus Lake, Aliceville Lake, Gainesville Lake, and Demopolis Lake. A total of 367 gill nets (101.6-, 127-, and 152.4-mm bar mesh) were set in 2003. No paddlefish were captured in Columbus or Aliceville Lake. Three paddlefish were caught in Gainseville Lake and 29 were taken in Demopolis Lake. Fish less than 800 mm EFL were not fully recruited to gear. No fish of memorable (1040 mm) or trophy (1300 mm) size were recorded, suggesting high mortality and/or slow growth. Average W_r for combined sexes was 91, indicating fairly good condition. Sex ratio was skewed; 71% of fish were males. Paddlefish from Demopolis Lake were implanted with radio transmitters in 2003 and 2004. Telemetry revealed that paddlefish often used tailrace habitats from June through October. Paddlefish congregated in a deep (>10 m) hole when water temperatures fell below 8°C. Spawning migrations took fish into the Noxubee River (a fourth-order tributary) and Oktok Creek (a second-order tributary of the Noxubee River).

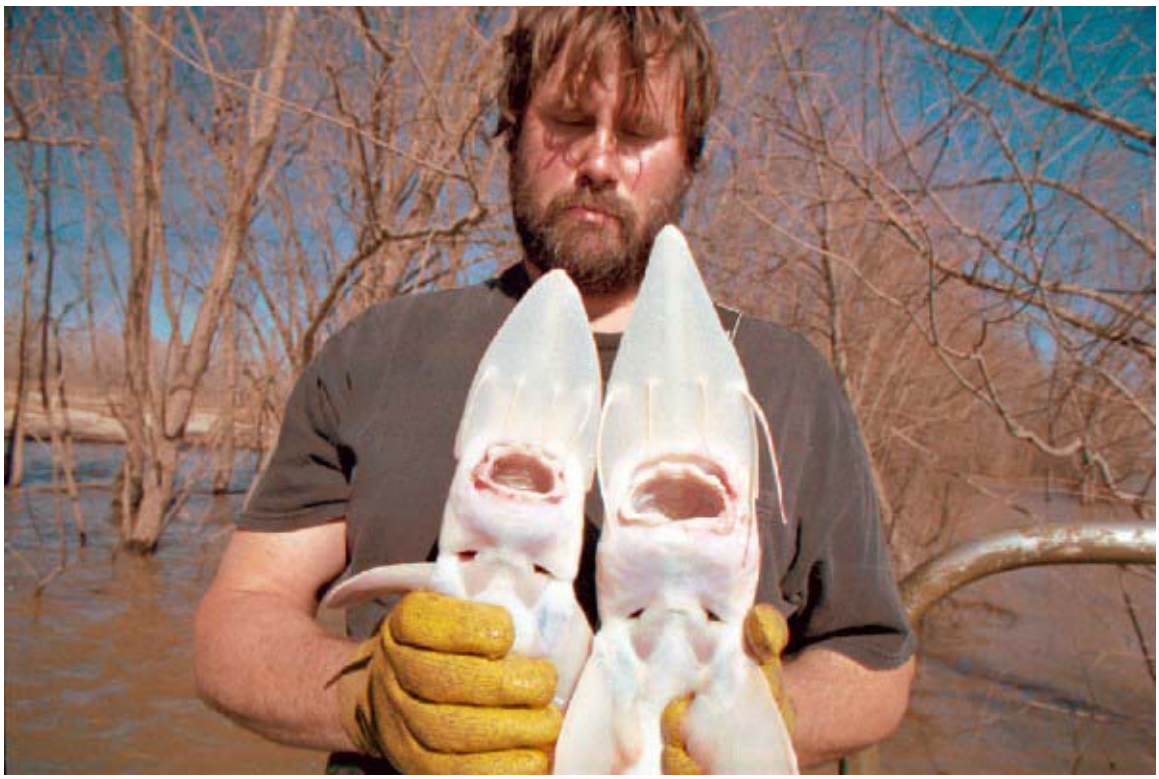
MORPHOMETRIC VARIATION AMONG STURGEON IN THE MISSISSIPPI RIVER BASIN

Catherine E. Murphy: U. S. Army Engineer Research and Development Center, Waterways Experiment Station, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, Catherine.E.Murphy@erdc.usace.army.mil

Steven George: US Army ERDC-WES, Vicksburg, MS

Jan Hoover: US Army ERDC-WES, Vicksburg, MS

The pallid sturgeon (*Scaphirhynchus albus*), a native of large rivers in the Mississippi River Basin, has been listed as a federally endangered species since 1990. Available empirical data on the species is based on relatively few specimens. Collection of life history data in the field is challenging since distinction from shovelnose sturgeon (*Scaphirhynchus platorynchus*) is difficult even to the trained eye. Geneticists are currently searching for features that will differentiate between the two species, but the need for unequivocal species-specific field characters remains. Morphometric data were compared from three different groups of specimens: vouchered mature sturgeon collected in 1997-1998, hatchery-reared juvenile pallids, and sturgeon tagged and released during 2000-2003. Measurements are presented as a proportion of standard length and compared for each group of specimens. Clustering of data points is used to determine a critical value for each character that differentiates between pallid and shovelnose sturgeon of various size classes. Results to date indicate that interrostral length, height of the tenth lateral plate and mouth width may provide apparent separation between the two species.



RESULTS FROM THE NOAA FISHERIES SMALL PELAGICS/DEEP WATER TRAWL SURVEY, FALL 2003

Walter Ingram: NOAA, National Marine Fisheries Service, 3209 Frederic Street, Pascagoula, MS 39567, Walter.Ingram@noaa.gov

Small pelagic fish are an important ecological component of marine ecosystems in the Gulf of Mexico. Basic information pertaining to the life history distribution and abundance of many species is poorly understood, particularly those species whose ranges extend beyond the coverage of historical groundfish and shrimp surveys. In Fall 2002, the NOAA Fisheries, Pascagoula Lab, began an annual trawl survey to assess the distribution and abundance of these fishes, and this presentation summarizes our latest cruise (NOAA Ship Gordon Gunter, Cruise 03-04, Oct. 7 through Nov 17, 2003). Trawls were conducted at 148 stations for 30 minutes with a 27.5 m high-opening bottom trawl, with environmental data being collected at all stations. One hundred and forty successful trawls were made between 90 and 600 m in depth, and over 400 species of fishes and invertebrates were collected. The five teleosts with highest catch were rough scad, Gulf butterfish, wenchman, shortjaw lizardfish, and longspine porgy, listed by descending catch weight. Catch summaries on predominate elasmobranchs and invertebrates will be discussed. In the future, this survey will provide both valuable abundance indices and increased distributional and life history data for species ranging beyond current groundfish surveys.

BIOLOGICAL AND PHYSICAL REGULATORS MEDIATING A SMALL STREAM COMMUNITY: A LONG TERM STUDY AT VICKSBURG NATIONAL MILITARY PARK.

Eric D. Dibble: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi State, MS 39762, edibble@cfr.msstate.edu

Physical components of stream morphology and biological effects of predation can have significant influence on the structure of stream communities. A long-term investigation of these factors continues in Mint Springs Creek at the National Military Park in Vicksburg (1995-2004). Stream morphology was used to conduct a natural experiment in the stream to evaluate effect that fish predation has on habitat use by Fathead minnows (*Pimephales promelas*) and the structure of the invertebrate community. Green sunfish (*Lepomis cyanellus*) introductions served as an experimental treatment to determine predator effects. Pre- and post- data on invertebrate and fathead minnow populations were measured and compared. Significant differences were observed in habitat use by the minnows and in the community composition of the macroinvertebrates between reaches with green sunfish and among reaches of the stream where no green sunfish were present. In conclusion, I hypothesize that these differences across experimental treatments were due to the influence of predation by green sunfish and that a trophic-cascade mediates community structure within Mint Springs Creek.

OCCURRENCE OF STONECAT (*NOTURUS FLAVUS*) IN THE LOWER MISSISSIPPI RIVER

Steven G. George: U.S. Army Engineer Research and Development Center, Vicksburg, MS 39180-6199. Steven.G.George@ERDC.USACE.ARMY.MIL

Jack Killgore: US Army ERDC-WES, Vicksburg, MS

Catherine E. Murphy: US Army ERDC-WES, Vicksburg, MS

Stonecat (*Noturus flavus*) were obtained recently as bycatch during sturgeon surveys. Previously, this species was represented in the lower Mississippi River by only a few collections. During the period Jan-Nov 2003, eight specimens were collected. Six adult fish (106-171 mm TL) were caught on trotlines baited with worms. Two young of year (24-28 mm TL) were taken in a trawl. These specimens represented seven new localities extending from Natchez, MS (RM 358) to New Madrid, MO (RM 903). They were collected from a variety of habitats: dike tip, flooded island, natural bank, riprap bar, flooded sandbar and flooded willows. Depths ranged from 2.4-14.4 meters, surface velocities from 34-123 cm/sec. Substrates were sand, gravel, and riprap. Stonecat are described as "rare" in the Mississippi River where they exhibit smaller eyes and paler coloration than elsewhere in their range. Our data suggest that biology of these infrequently seen fish could be investigated concurrently with that of sturgeon.

PRESENTATION ABSTRACTS
FRIDAY, FEBRUARY 13, 2004

FIRST RECORD OF GOLIATH GROUPER *EPINEPHELUS ITAJARA* IN MISSISSIPPI COASTAL WATERS

James S. Franks: The University of Southern Mississippi, Center for Fisheries Research and Development, Gulf Coast Research Laboratory, 703 East Beach Drive, Ocean, MS 39564, jim.franks@usm.edu

The first occurrence of the goliath grouper, *Epinephelus itajara*, in Mississippi coastal waters is reported. The specimen was collected from the Mississippi Sound on 15 June 1999 by large dip net while swimming at the surface of the water near a debris line. The specimen, an immature female estimated from otolith analysis to be 4 years old, measured 861 mm TL and weighed 12.4 kg TW. Speculation is offered as to the processes that resulted in this unusual occurrence.

REPRODUCTION OF THE NONINDIGENOUS NILE TILAPIA *OREOCHROMIS NILOTICUS* IN COASTAL WATERSHEDS OF SOUTHERN MISSISSIPPI

Mark S. Peterson: University of Southern Mississippi, 703 East Beach Drive, Ocean, MS 39564, mark.peterson@usm.edu

William T. Slack: Mississippi Museum of Natural Science

Jennifer L. McDonald: University of Southern Mississippi

Nancy J. Brown-Peterson: University of Southern Mississippi

The release of non-indigenous species into natural waters has the potential to directly or indirectly impact native communities. We investigated the biology and ecology of non-indigenous Nile tilapia (*Oreochromis niloticus*) in coastal Mississippi for 3 years. Over 3,300 individuals ranging from 4.5 to 430 mm TL have been collected from numerous sites in the Pascagoula River watershed and select Coastal Rivers. Length of adult wild caught tilapia indicates larger individuals are 5 to 6 yrs old based on published literature. Mean gonadosomatic index (GSI) values suggest peaks in spring and fall for both males and females; however, mean GSI of both sexes were rarely > 1%. Nile tilapia have group synchronous oocyte development and there is a strong, positive correlation between total length (TL) and clutch size ($r = 0.905$, $p = 0.001$, $n = 11$). The smallest individual with maturing eggs was 79.9 mm TL. Discerning the impacts of non-indigenous species on native fauna is difficult because of the complex interactions between ecological and environmental variables but it is clear that the Nile tilapia has established a reproducing population in Mississippi coastal watersheds, both in fresh water and low salinity areas.

DEVELOPMENT OF MISSISSIPPI'S INSTREAM FLOW PROGRAM: A COOPERATIVE EFFORT

Dennis Riecke: Mississippi Department of Wildlife, Fisheries & Parks, 1505 Eastover Dr. Jackson, MS 39211-6374, dennisr@mdwfp.state.ms.us

The Mississippi Department of Environmental Quality (MDEQ) has sole responsibility for determining minimum stream flows. Until 1994, Mississippi statutes defined "established minimum flow" as the average stream flow over seven consecutive days that may be expected to be reached as an annual minimum no more frequently than one year in ten. Commonly called 7Q10, this was the only method that MDEQ could use. The Mississippi Department of Wildlife, Fisheries and Parks (MDWFP) contends that use of 7Q10 is seriously outdated since it only recognizes one instream flow need - maintaining water quality. Potential legal battles loomed because altered hydrologic regimes prevent the valid use of 7Q10. In 1994 state law was amended to allow the use of other accepted scientific methodologies and required MDEQ to consult with MDWFP. Regarded by both agencies as a positive step, the revised law provides several opportunities to improve Mississippi's instream flow program through the use of desktop and field methodologies to establish base flows that mimic the natural hydrograph. MDEQ and MDWFP are working to develop an effective instream flow program that adequately supports all stream uses and sustains biologically viable fish and wildlife populations for enjoyment by all citizens.

POSTER PRESENTATION ABSTRACTS
THURSDAY & FRIDAY, FEBRUARY 12-13, 2004

PROGRESS REPORT ON CATFISH/CARP REMOVAL AT LAKE CHARLIE CAPPS

Garry Lucas: Mississippi Department of Wildlife, Fisheries & Parks, 1999 CR 145, Greenwood, MS 38930, garryl@mdwfp.state.ms.us

Keith Meals: Mississippi Department of Wildlife, Fisheries & Parks

Arthur Dunn: Mississippi Department of Wildlife, Fisheries & Parks

Megan Ellis: Mississippi Department of Wildlife, Fisheries & Parks

The fish population of MDWFP State Lake Charlie Capps has declined in recent years. The lake was turbid in 2001 and 2002. Turbidity, along with reduced lake area from a drawdown in 2002 and discontinued fertilization, drastically lowered productivity. Populations of bream and bass nearly crashed. Bass year class strength was weak in 2001 and 2002 despite heavy stocking. The lake appeared to be at or above carrying capacity and the fish community was dominated by common carp, gizzard shad, and channel catfish. Carp and catfish were overpopulated and stunted; both were likely exacerbating turbidity. The lake did have a good fishery in 2001 and 2002 for crappie.

BROWN SHRIMP DISTRIBUTION ON MISSISSIPPI'S HISTORICAL SHRIMPING GROUNDS: AN ARCMAP-GIS PERSPECTIVE

James Warren: Center for Fisheries Research & Development ,Gulf Coast Research Laboratory, University of Southern Mississippi, 703 East Beach Drive, Ocean, MS 39564, tut.warren@usm.edu

The distribution of brown shrimp, *Farfantepenaeus aztecus*, by size and number on the shrimping grounds of Mississippi Sound during the spring and summer of 2000, 2001 and 2002 was investigated during this study. Geo-referenced samples were obtained from 30 sampling sites across Mississippi Sound for five weeks prior and five weeks after the opening of the shrimp season. Salinity was obtained at each sample site. Brown shrimp were measured for total length and separated into legal (>97 mm TL) and sub-legal (< 97 mm TL) size categories. Weekly areal distribution of these size categories was evaluated using ArcMap's surface analysis, raster interpolation routine. Distribution maps indicated that sub-legal shrimp appeared first near the outlets of bays. A general tendency for numbers of both sub-legal and legal shrimp to be more abundant in the western areas was apparent in each year and was most apparent during 2001. This is also the year when the most shrimp were taken in samples. Data indicated sub-legal and legal shrimp were mixed in areas where they were most abundant. Salinity distribution maps, also using the surface analysis routine, indicated a general west to east increasing salinity gradient.

HOOKING MORTALITY OF SPOTTED SEATROUT *CYNOSCION NEBULOSUS* IN MISSISSIPPI

James Warren: Center for Fisheries Research & Development, Gulf Coast Research Laboratory, University of Southern Mississippi, 703 East Beach Drive, Ocean, MS 39564, tut.warren@usm.edu

William D. Dempster: Center for Fisheries Research & Development, Gulf Coast Research Laboratory, University of Southern Mississippi

Gary J. Gray: Center for Fisheries Research & Development, Gulf Coast Research Laboratory, University of Southern Mississippi

Jason D. Tilley: Center for Fisheries Research & Development, Gulf Coast Research Laboratory, University of Southern Mississippi

Mortality of 478 spotted seatrout (<14 in. TL) caught by hook and line was evaluated during 2001-2003 in Mississippi's coastal waters. Fish taken during 79 separate sampling trips at three primary locations on the Mississippi Gulf Coast during June-November were placed in cages and held for 72 hours. Natural or artificial baits with barbed "J" hooks were used during all three years, and with treble hooks during 2003. Hooking mortality for fish less than fourteen inches TL was 8.6% for "J" hooks and 9.5% for treble hooks. A 13.5% mortality rate was observed for treble/natural bait compared to 8.2% mortality for treble/artificial bait. Water temperatures ranged from 20 to 34°C. No apparent relationship was observed between water temperature and mortalities. The low proportion of fish that died from the hooking experience indicate that mortalities inflicted by catch and release do not add significant numbers to the overall recreational fishing mortality. There was little difference in the mortality using "J" hooks or treble hooks and only a minor difference between artificial and live baits.

STATUS AND REPRODUCTION OF THE GULF COAST STRAIN WALLEYE IN A TOMBIGBEE RIVER TRIBUTARY

Amy B. Spencer: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi, MS 39762

Harold L. Schramm, Jr., USGS, MS Cooperative Fish and Wildlife Research Unit, Mississippi State University

Justin Hart: Department of Wildlife and Fisheries, Mississippi State University

Larry A. Hanson: College of Veterinary Medicine, Mississippi State University

Walleye (*Sander vitreus*) are native to rivers and streams in the Mobile River basin in Mississippi and Alabama. These populations comprise a genetically unique strain (Gulf coast walleye, GCW) and represent the southern-most distribution of walleye in the United States. Luxapallila Creek was considered an important spawning site for GCW prior to and shortly after impoundment of the Tombigbee River in 1980. Extensive sampling efforts in Luxapallila Creek in 1992-1998 and 2002 failed to collect larval walleye, and morphometric and genetic analysis identified only one larval walleye collected from Luxapallila Creek during the 2001 walleye spawning season. Microsatellite DNA analysis suggested 14 of 16 adult walleye from Luxapallila Creek were hatchery-produced fish or their progeny. Catch rates of adult walleye have decline since 1997. The scarcity of wild-spawned walleye and the similarity of wild-caught and hatchery broodstock walleye indicates that the GCW population in, or spawning in, Luxapallila Creek is sustained by stocking and recruitment from these stocked fish may be diminishing.

EVALUATION OF HATCHERY AND GROWOUT FACTORS FOR THE SUCCESSFUL PRODUCTION AND STOCKING OF JUVENILE GULF COAST WALLEYE

Justin Wilkens: Department of Wildlife and Fisheries, Mississippi State University, P.O. Box 9690, Mississippi, MS 39762, jlwilkens@hotmail.com

Louis R. D'Abramo: Department of Wildlife and Fisheries, Mississippi State University

The effect of water temperature on growth of juvenile Gulf Coast walleye and thermal tolerance were determined. Juvenile walleye were cultured in flow through aquaria at water temperatures of 15, 20, 25, and 30 C and fed bloodworms in excess. There were five replicates per treatment and five fish per tank. Specific growth rate ($P=0.0018$), percent increase in weight ($P=0.0001$), and weight ($P<0.0001$) were significantly higher for walleye in the 20 and 25 C treatments. Specific growth rates and percent increase in weight did not differ significantly for walleye in the 20 and 25 C treatment or for walleye in the 15 and 30 C treatments. Walleye grown at 20, 25, and 30 C in aquaria were subjected to a temperature increase of 1 C/day until death. Fish grown at 20 and 30 C showed higher rates of mortality as temperature increased. At 35 C, over 80% of the fish grown at 30 C were dead, whereas 20% of the fish from the 25 C treatment were dead. Fish grown at 25 C appear less susceptible to abrupt mortality due to physiological stress associated with rising temperatures. This information will be helpful in establishing stocking strategies.

NOTES