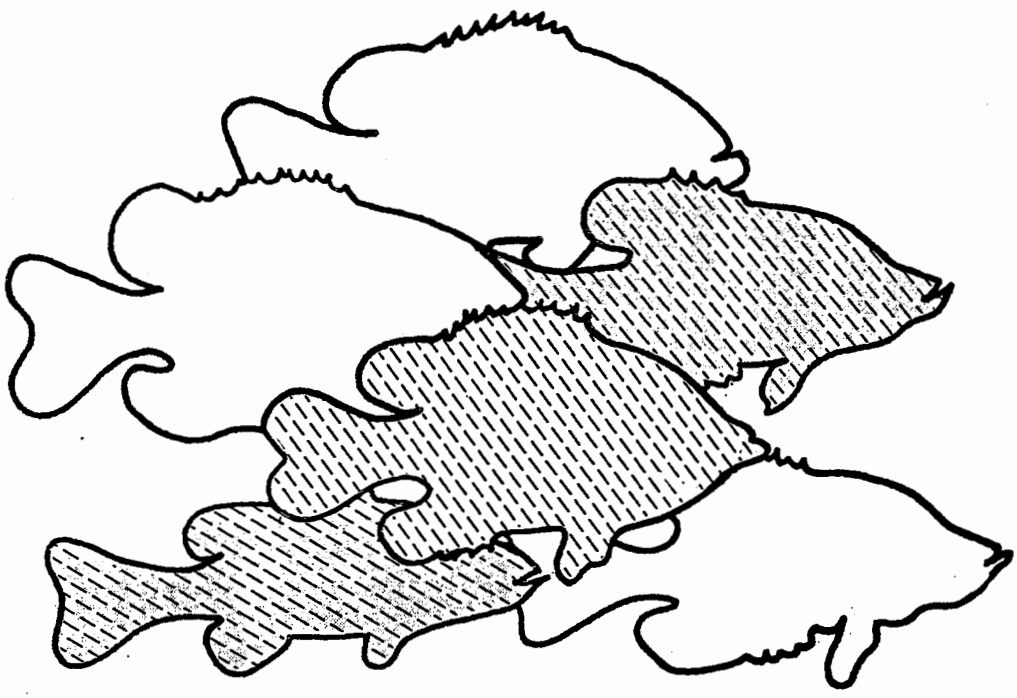
AMERICAN FISHERIES SOCIETY

PROCEEDINGS of the ANNUAL MEETING

Mississippi Chapter



Volume XIV
February 15-16, 1990
Greenville, Mississippi

MINI-SYMPOSIUM ON DELTA FISHERIES AND TECHNICAL SESSIONS

Agenda and Abstracts

JOINT MEETING OF THE MISSISSIPPI AND ARKANSAS CHAPTERS OF THE AMERICAN FISHERIES SOCIETY

February 15 & 16, 1990

Greenville, MS

Meeting Agenda

Thursday, February 15th

8:45 a.m. Tour to Lake Chicot, Arkansas : an overview of the Lake Chicot Restoration Project.

1:00 p.m. Mini-symposium on Delta Fisheries, Garry Lucas, Moderator.

Forrest Payne, FTN Associates. "Limnology of Oxbow Lakes".

David Johnson, U. S. Army Corps of Engineers, Vicksburg District. "History and Renovation of Lake Chicot, Arkansas".

Steve Filapek, Arkansas Game and Fish Commission. "The Effect of the Lake Chicot Renovation Project and Pumping Station on the Fishery of Lake Chicot.

Mike Ewing, Louisiana Department of Wildlife and Fisheries. "Larto Saline Restoration Project".

2:30 - 2:50 p.m. Break

2:50 p.m. Mini-symposium Continued, Mike Armstrong, Moderator.

Nathan Stone, University of Arkansas, Pine Bluff. "Arkansas Aquaculture".

Marty Brunson, Mississippi Cooperative Extension Service. "Mississippi Aquaculture".

3:30 p.m. Question and Answer Session

3:40 p.m. Mini-symposium Continued

Steve Ross, University of Southern Mississippi. "Distribution and Ecology of Delta Stream Fish".

Don Jackson, Mississippi State University. "Fisheries Resources in Two Mississippi Delta Streams".

Ken Shirley, Arkansas Game and Fish Commission. "Arkansas Mussel Industry--Its History and Future".

4:50 p.m. Adjourn

Thursday Evening:

Catfish Dinner at Deer Creek Town and Racquet Club, Leland, Mississippi. Guest Speaker: Gail Carmody, U.S. Fish and Wildlife Service.

FRIDAY, February 16. Technical Sessions

8:00 a.m. Morning Session

James C. Peterson, U.S. Geological Survey, "Occurrence of Pesticides in Surface Waters of the Delta Region of Northern and Central Arkansas".

Jan J. Hoover, K. Jack Kilgore, and F. Douglas Shields, U. S. Army Corps of Engineers Waterways Experiment Station. "Fish Assemblages Associated with Weirs in a Mississippi Stream".

Walter H. Hubbard, Mississippi Department of Wildlife Conservation. "Temporal Catch Patterns of Hoop Nets in the Tombigbee Drainage".

M. S. Schorr and L. E. Miranda, Mississippi Cooperative Fish and Wildlife Unit. "Effects of Selected Physical Factors on Catch of White Crappie in Trap Nets".

Brian K. Wagner and Donald J. Orth, Arkansas Game and Fish Commission. "Use of the Negative Binomial Distribution to Characterize Anglers in Smallmouth Bass Fisheries".

B. E. Hammers and L. E. Miranda, Mississippi Cooperative Fish and Wildlife Research Unit. "A Comparison of Methods Estimating Age and Growth of White Crappie".

9:30 a.m. Break

9:45 a.m. Richard Noble, President, Southern Division American Fisheries Society, Keynote Address

10:00 a.m.
Jack Waide, U. S. Forest Service. "USFS Rise to the Future Program".

10:15 a.m.
U.S. Army Corps of Engineers. "Montgomery Point Lock and Dam".

10:30 a.m.
Chapter Business Meetings

Noon Buffet Lunch at Ramada Inn

1:00 p.m.
Technical Session, Aquaculture

Robert M. Durborow, M. David Crosby, Peter W. Taylor,and Marty Brunson, Mississippi State University. "Fish Kill Investigations of the Mississippi Fish Farming Industry, 1989".

Andrew Whitehurst and H. Randall Robinette, Mississippi State University. "Tolerance of Red Drum Sciaenops ocellatus fingerlings to Rapidly Decreasing Water Temperature".

Jeffrey S. Collins, H. Randall Robinette, and Edwin Robinson, Mississippi State University. "The Vitamin C Requirement of Juvenile Red Drum Sciaenops ocellatus".

David L. Brock and H. Randall Robinette, Mississippi State University. "Evaluation of Larval Diets and Regimes for Hybrid Striped Bass".

Constance H. Young, H. Randall Robinette, and Michael J. Murphy, Mississippi State University. "Growth of Hybrid Striped Bass Related to Three Commercial Production Feeds".

2:15 p.m.
Break

2:30 p.m.

Technical Session Continues

K. O. Meals, Mississippi Department of Wildlife, Fisheries and Parks, and L. E. Miranda, Mississippi Cooperative Fish and Wildlife Research Unit. "Effect of Water Level on Abundance of Age 0 Fish in Arkabutla, Enid, Grenada, and Sardis Reservoirs".

Dawn E. Miller and Nicholas G. Aumen, University of Mississippi. "Effects of Food Quality on Growth of Dorosoma cepedianum".

L. E. Miranda, Mississippi Cooperative Fish and Wildlife Research Unit. "Recruitment of Age 0 Gizzard Shad in Ross Barnett Reservoir".

R. A. DeMauro, R. J. Muncy, and L. E. Miranda, Mississippi Cooperative Fish and Wildlife Research Unit. "Distribution, Movement, and Habitat Association of Hybrid Striped Bass in Ross Barnett Reservoir".

Bradley J. Marler and Donald C. Jackson, Mississippi State University. "Distribution and Abundance Patterns of Largemouth Bass in the Tennessee-Tombigbee Waterway Downstream From Aberdeen and Columbus Dams".

Cynthia A. Annett, Arkansas Cooperative Fish and Wildlife Research Unit. "Predator-Prey Dynamics and Habitat Choice in Largemouth Bass Micropterus salmoides".

Johnny McLain, FTN Associates. "Survey of the Fishes of the L'Anguille River."

American Fisheries Society Endangered Species Committee, James E. Johnson, Arkansas Cooperative Fish and Wildlife Unit, Presentor. "Fishes of North American, Endangered, Threatened, or of Special Concern: 1989".

4:30 p.m. Adjourn

Mini-Symposium

on

Delta Fisheries

Contributed Abstracts

Michael S. Ewing
Louisiana Department of Wildlife and Fisheries
P. O. Box 426
Ferriday, LA 71334

TITLE: A Survey of Factors Affecting Fish Production in the Larto-Saline Area

ABSTRACT:

Representing one of the last remaining large backwater systems in Louisiana, the Larto-Saline area has historically supported excellent sport and commercial fisheries. Backwater lakes are some of the most productive type of freshwater fisheries habitat in Louisiana and this high productivity may be attributed to favorable conditions created by seasonal flooding.

In response to a noticeable decline in recreational fishing in this area during the 1970's, this study was begun in order to identify causative factors for the decline and to determine effective methods to remedy the problem. To this end, field surveys were conducted in the area to collect water quality, fish population, pesticide and benthos data for the study period July 1, 1981, to June 30, 1989. Results of the surveys are presented in this report.

Data collected during early years of the study indicated chronic high turbidity (100 FTU) to be the major factor limiting game fish production. The major source of fine sediments entering the system during the study period was floodwater from Red River. The development of these problems can be related to man-made alterations to natural flood patterns which have changed the major source of flooding from the good quality Black River to the highly turbid Red River.

In September, 1986, the Louisiana Department of Wildlife and Fisheries undertook a constructive project to restore flood patterns to approximate natural conditions. Sampling subsequent to this construction has shown significant improvements in water quality and game fish production.

Martin W. Brunson
P. O. Box 5446
Mississippi State, MS 39762

TITLE: Aquaculture in the Mississippi Delta.

ABSTRACT:

Mississippi has almost 94,000 acres of commercial aquaculture ponds, and 89,000 of these are located in the Delta area of the state. Channel catfish is the predominate species, accounting for 88,188 acres in 1989. There are just over 900 acres of bait minnows, 38 acres of crawfish, and 5 acres of other species in the Delta. Food fish production constitutes the bulk of the catfish acreage, with 78,145 acres. There are 8,501 acres in fingerling ponds, and 1,542 acres of broodfish. Three Delta counties, Humphries, Sunflower, and Leflore, collectively contain over 62,000 acres of catfish. Value at the pond bank was $332 million in 1989, and estimated total economic impact to the state's economy was over $2 billion.

Stephen T. Ross and William M. Brenneman
Department of Biological Sciences
University of Southern Mississippi
Hattiesburg, MS 39406-5018

TITLE: The Distribution of Freshwater Fishes in Mississippi-A Progress Report

ABSTRACT:

Freshwater fish faunas of the southeast are quite diverse, yet there are few states where thorough documentation of fish distributions exist. Mississippi is no exception, with the only general reference to freshwater fishes being Fannye Cook's (1959), Fishes of Mississippi. This book was based on collections generally made prior to the 1940's, and it treated 154 species of primary freshwater fishes. In 1985 we began compiling a computer database of fish distributions in Mississippi. Our database, which now contains over 40,000 records, is based on the examination of material in 29 fish collections located throughout the eastern United States. We have documented the occurrence of 196 species of freshwater fishes in Mississippi, with an additional 54 brackish water forms.

Donald C. Jackson
Department of Wildlife and Fisheries
P. O. Drawer LW
Mississippi State, MS 39762

TITLE: Fisheries Resources in Two Mississippi Delta Streams.

ABSTRACT:

Summer stock assessments in mainstream (Tallahatchie River) and tributary (Yalobusha River) components of the Upper Yazoo River system were conducted with hoopnets (4.3 m long; 7 hoops with 1.07 m diameters; 3.81 cm bar mesh netting). Overall catch rates were 2.24 kg/net-night for the Tallahatchie River and 4.04 kg/net-night for the Yalobusha River. Flathead catfish (Pylodictis olivaris) and smallmouth buffalo (Ictiobus bubalus) collectively contributed 46.0% and 66.9% to the biomass of the catch in the Yalobusha River and Tallahatchie River, respectively. Longnose gar (Lepisosteus osseus) contributed significantly to the catch in the Yalobusha River (25.2%) but were absent from catches in the Tallahatchie River. Common carp (Cyprinus carpio) contributed significantly to the catch in the Tallahatchie River (17.8%) but were relatively uncommon in the Yalobusha River (7.2%). All of these species are important commercial/artisanal fisheries resources. Additionally, flathead catfish are recreational fisheries resources. In this last regard, proportional stock density (PSD) was 84% and 98% for the Tallahatchie River and Yalobusha River, respectively. In the Tallahatchie River, 16% of the flathead catfish were in the trophy classification (≥91 cm, TL) while in the Yalobusha River 2% could be classified as trophy fish.

Ken Shirley
P. O. Box 541
Brinkley, AR 72021

TITLE: Arkansas Mussel Industry-Its History and Future.

ABSTRACT:

In 1989, 263 residents and 64 non-residents purchased shell-takers licenses. Up from only 70 residents and 7 non-resident licenses sold in 1985, resident shell takers fear overharvest. AGF records indicate 597,000 pounds of shell valued at $330,200 were sold to in-state buyers in 1989 up from 45,000 pounds valued at $10,800 in 1985. Lack of information on out-of-state sales resulted in a harvest form to be completed by all shell takers beginning in 1990. A study beginning in 1990 by Arkansas State University will address effects of harvest and environmental factors on mussel populations and the shell industry.

Forrest Payne
FTN Associates, Ltd.
Little Rock, Arkansas

TITLE: Clean Lakes Studies of Mississippi Oxbow Lakes

ABSTRACT:

The Mississippi Bureau of Pollution Control (MBPC) was awarded three grants from the U. S. Environmental Protection Agency to conduct Clean Lakes Studies on three oxbow lakes in the Mississippi Delta: Lake Washington, Moon Lake, and Wolf Lake. Based on the 1982 Mississippi Clean Lake Classification Survey Lakes Moon, Washington, and Wolf were ranked as the 1st, 5th, and 9th worst lakes based on trophic condition. All three lakes have experienced water quality problems. Lake Washington was closed to commercial fishing from 1973 through 1978 and Wolf Lake was closed to commercial fishing from 1971-1982 because of pesticide contamination. FTN Associates, Ltd. is currently conducting the three Clean Lake Studies for the MBPC. Since May 1989, the major inflows, the lakes, and the outflows have been sampled routinely. Monitoring activities include in-situ measurements for dissolved oxygen, conductivity, pH and temperature; the collection of water samples for nutrient samples; and phytoplankton collections. Special studies have included storm event sampling, the collection of sediments for elutriate analyses, intensive fecal coliform and chlorophyll a surveys, and public perception surveys. Various state agencies have supported the projects. The Mississippi Department of Health has conducted septic tank surveys around each lake. The Mississippi Department of Wildlife Conservation has conducted fish population surveys and collected fish for fish flesh analyses. The Mississippi State Chemistry Laboratory has conducted elutriate tests and is presently analyzing fish flesh for pesticides and herbicides. The MBPC has conducted the routine water sample analyses.

Field sampling will end in March 1990 and the data will be summarized in Clean Lake Reports. Lake restoration alternatives will be identified and after public hearings a preferred restoration alternative will identified.

Technical Sessions

Contributed Abstracts

James C. Petersen
U.S. Geological Survey
2301 Federal Office Building, 700 West Capitol Ave.
Little Rock, Arkansas 72201

TITLE: Occurrence of pesticides in surface waters of the Delta region of northern and central Arkansas.

ABSTRACT:

Samples have been collected since the 1970's by the U. S. Geological Survey and the Arkansas Department of Pollution Control and Ecology for analysis of pesticides. These samples have been collected at over 30 water-quality network stations operated by these two agencies in the northern and central Delta. Organochlorine, organophosphorus, and chlorophenoxy acid pesticide data for water and bottom material samples collected during October 1974 through September 1985 are summarized.

Pesticides were seldom detected in water in the study area. However, dieldrin, silvex, 2,4-D and 2,4,5-T were the most frequently detected pesticides. These pesticides were most frequently detected at four stations on Bayou DeView and the L'Anguille, Cache, and White Rivers. Median dieldrin and silvex concentrations did not exceed 0.01 micrograms per liter and median 2,4-D and 2,4,5-T concentrations ranged from non-detectable to 0.08 micrograms per liter at these four stations.

Median pesticide values in water were highest in the L'Anguille River, Cache River, and Bayou DeView. Samples from these rivers also contained higher concentrations of suspended sediment and higher percentages of silt and clay than other streams in the Delta.

However, relatively high concentrations of suspended sediment and percentages of silt and clay were present in other streams where pesticide concentrations in water were low. Pesticides were detected more frequently and in higher concentrations in bottom material. Although organochlorine pesticide analyses were conducted much more frequently than organophosphorus or chlorinated phenoxy acid pesticide analyses, it appears that the organochlorine pesticides have been much more prevalent than other pesticides in bottom material. Highest median pesticide concentrations in bottom material generally were for the chlorinated pesticide DDT and its metabolities. Highest median concentrations occurred in the Flat Bayou and L'Anguille River basins.

Correlation between bottom-material particle size and pesticide concentration could not be investigated because of a lack of data. However, comparison of total median pesticide concentration in bottom material with the median percentage of silt and clay in suspended sediment

indicates that stations where the total median pesticide concentration in bottom material is highest (L'Anguille River at Colt, Bayou DeView at Morton, and Cache River at Patterson) are stations where silt and clay percentages are higher.

Jan Jeffrey Hoover K. Jack Kilgore
F. Douglas Shields
US Army Engineer Waterways Experiment Station
ATTN: CEWES-ER-A, 3909 Halls Ferry Road
Vicksburg, MS 39180-6199

TITLE: Fish Assemblages Associated with Weirs in a Mississippi Stream

ABSTRACT:

Chiwapa and Twentymile Creeks are small, lowland, partially channelized tributaries of the Tombigbee River, but Twentymile Creek differs in having two weirs that reduce streambed erosion. Blacktail shiner, bluntnose minnow, orangefin shiner, pretty shiner, and bluegill are numerically dominant in both streams, but diversity of fish assemblages in Twentymile Creek is higher than in Chiwapa Creek, especially at weirs. Higher fish diversity in Twentymile Creek is correlated with increased variability in flow, depth, and substrate, factors directly influenced by weirs.

Walter D. Hubbard
1403 Glen Iris Dr.
Aberdeen, MS 39730

TITLE: Temporal Catch Patterns of Hoop Nets in the Tombigbee Drainage.

ABSTRACT:

Monthly samples were taken with 1"-mesh hoop nets in the Upper Tombigbee Drainage from 1981-1987. Seasonal catch patterns are shown for fish species having the highest catch rate. Percent composition (by number) of the total catch was highest for catfish (47%), crappie (16%), suckers (9%) and sunfish (9%). Catch composition was consistent with the literature on hoop-net selectivity. Catch per effort values (no./netday) indicated peak catch for channel catfish and suckers occurred in February. Flathead catfish and sunfish were highest in May while crappie catch was consistently high during spawning months. Concern for our stream resources has intensified as the consequences of pollution and channelization are better realized. Information concerning catch expectancies for this passive gear can enhance sampling strategies for assessing stream populations.

M. S. Schorr L. E. Miranda
P. O. Drawer BX
Mississippi State, MS 39762

TITLE: Effects of Selected Physical Factors on Catch of White Crappie in Trap Nets.

ABSTRACT:

We investigated the effect of water depth (range 1-7 m), clarity (10-76 cm), temperature (10-27°C), bottom slope (0-17%), and net orientation (perpendicular or parallel to shore) on the number and size of white crappie (Pomoxix annularis) caught by trap nets in 4 Mississippi lakes. Catch/day was usually higher when nets were fished no deeper than 5 m and in bottoms with slopes 12%. Water clarity appeared to be inversely related to catch/day, and catch/day was highest at 15-21°C. Catch/day of small (<130 mm) fish was higher in nets set perpendicular to shore, but net orientation apparently had no effect on catch of larger fish.

Brian K. Wagner[1] Donald J. Orth

Department of Fisheries and Wildlife Science
Virginia Polytechnic Institute and State University
Blacksburg, VA 24061

TITLE: Use of the Negative Binomial Distribution to Characterize Angler Harvest in Smallmouth Bass Fisheries

ABSTRACT:

The probability distribution of the daily harvest per angler is required to determine the effect of varying creel limits. We hypothesized that the distribution of daily harvest per angler could be characterized by a negative binomial distribution, which is defined by two parameters, the arithmetic mean (harvest/angler/day) and a coefficient, k. Ten sets of creel survey data were obtained for smallmouth bass harvest from the New and Shenandoah Rivers. All sections were regulated by a daily creel limit of 8. The estimated values of k ranged from 0.064 to 0.352 and were positively related to the mean daily harvest (4-0.93), which ranged from 0.23 to 2.52. Seven of ten estimated distributions were not significantly different from the actual distributions ($p < 0.05$). Based on the observed frequency distributions, the reduction in harvest achieved by reducing the daily creel limit from 8 to 3 averaged 22.1% (SD = 4.26). A reduction in daily creel limit from 3 to 1 resulted in a mean reduction in harvest of 59.8% (SD = 4.63). With a reduction in daily creel limit from 8 to 3, the reduction in harvest based on the negative binomial distribution differed from the observed by only 1.1 - 13.6% (mean = 5.8%). For a reduction from 8 to 1, the difference was 5.2 - 21.2% (mean = 13.4). While it may be more accurate to use the observed frequency distribution, representative complete-trip creel survey data may be too expensive or time-consuming to obtain for many fisheries. In these cases, the use of a negative binomial distribution would be fairly accurate for assessing small to moderate changes in creel limit.

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Lonoke, Arkansas 72086

B. E. Hammers L. E. Miranda
MS. Coop. Fish & Wildlife Research Unit
P. O. Drawer BX
MS State, MS 39762

TITLE: A Comparison of Methods for Estimating Age and Growth of White Crappie.

ABSTRACT:

White crappie Pomoxis annularis collected in 4 Mississippi lakes were aged using otoliths (N=2, 179), scales (N=2, 535), and length-frequency modes (N=4, 196). Scales and otoliths were aged independently by two readers, and length-frequency modes separated statistically using the software MIX. Rate of disagreement between readers was 9% for otoliths and 22% for scales, suggesting otoliths were easier to age. MIX was difficult to use when length frequencies did not show well-defined modes, and required 1-10 hours to obtain a solution. The known age of white crappie agreed with that determined from otoliths, but disagreed with that determined from scales. Relative to otoliths, the scale and length-frequency methods underestimated the mean length at ages 1 and 2 by an average of 12%, and at older ages overestimated mean length by an average of 7%. The scale and length-frequency methods generally underestimated the variability of lengths at each age. We suggest that unless the application allows for reduced accuracy, otoliths is the preferred method for ageing white crappie.

Robert M. Durborow
Peter W. Taylor
M. David Crosby
Martin W. Brunson
Timothy D. Santucci

Area Extension Fisheries Specialist
P. O. Box 142
Stoneville, MS 38776

TITLE: Fish Kill Investigations of the Mississippi Fish Farming Industry in 1989.

ABSTRACT:

The 1989 summary of fish disease cases examined by the Mississippi Cooperative Extension Service diagnostic laboratories is presented. The leading cause of mortality was enteric septicemia of catfish (ESC) caused by Edwardsiella ictaluri bacteria. 44% of cases examined had ESC. External Flexibacter columnaris, systemic Aeromonas sp. and systemic F. columnaris infected 28%, 27%, and 26% of cases, respectively. External fungus and the protozoan parasite, Trichodina each affected 13% of cases examined. Winter Kill (9%), ammonia (6%), and channel catfish virus disease (3%), were also responsible for fish mortalities.

Andrew Whitehurst H. R. Robinette
P. O. Drawer LW
Mississippi State, MS 39762

TITLE: Tolerance of red drum Sciaenops ocellatus fingerlings to rapidly deceasing water temperatures.

ABSTRACT:

Little is known about the potential mortality to pond-reared juvenile red drum Sciaenops ocellatus from rapidly decreasing water temperatures associated with cold front activity. A recirculating aquarium and filter system with an in-line chiller was constructed which was capable of rapidly decreasing water temperature. Fish were held in an earthen pond and subjected to ambient temperature and photoperiod before being removed and introduced into the bioassay system when pond water reached target temperatures of 20, 18, 16, 14, 12, and 10°C. Ten fish assorted by four length groups were placed into each of ten aquaria containing 9 o/oo ±1 salinity in which temperature matched the appropriate pond temperature. The fish were acclimated for three days then subjected to a 6°C decrease over 24 hr and then held for 72 hr. Mortality data are presented as well as multiple-regression analyses utilized to evaluate effects of length of fish on mortality.

Jeffrey S. Collins H. R. Robinette
Edwin H. Robinson
P. O. Drawer LW
Mississippi State, MS 39762

TITLE: The Vitamin C requirement of juvenile red drum (Sciaenops ocellatus).

ABSTRACT:

Red drum fingerlings (x = 2.2g) were fed one of seven semi-purified diets for 12 weeks in a re-circulating brackish water (6 o/oo) aquarium system to evaluate their vitamin C requirement. L-ascorbyl-2-polyphosphate was substituted on an equimolar basis for ascorbic acid (A_sA) so that diets contained 0, 15, 30,45, 60, 75, and 90 mg A_sA/kg diet. Each diet was replicated 4 times. The vitamin C requirement is 60-75 mg A_sA/kg diet based upon weight gain, survival, feed efficiency, blood alkaline phosphatase, liver and muscle ascorbate levels, and ocular and vertebral histology.

D. L. Brock H. R. Robinette
P. O. Drawer LW
Mississippi State, MS 39762

TITLE: Evaluation of Larval Diets and Feeding Regimes for Hybrid Striped Bass.

ABSTRACT:

28-day trials were conducted under intensive conditions to test 4 commercial diets, 1 live diet, and the effect of feeding regime on the survival and growth of larval hybrid striped bass. 100% mortality occurred by day 28 in triplicate lots of hybrid striped bass fed either Fry Feed Kyowa B (FFKB), AP100, Provesta's X-11, or Frippaks experimental diet from the initiation of feeding. Survival of those larvae initially primed for 4 days on Artemia sp. and converted to those larvae initially primed for 4 days on Artemia sp. and converted to FFKB and Provesta X-11 were significantly greater ($P<0.05$) than those converted to AP100 and Frippaks experimental diet. Final survival and average length (61% and 21.7 mm, respectively) of larvae reared on zooplankton were significantly lower ($P<0.05$) than for Artemia (85% and 26.4 mm). In subsequent trials, various feeding regimes using FFKB and Provesta X-11 were evaluated using 2 strains of larval hybrid striped bass. Growth and survival results of these trials are presented.

Constance H. Young H. R. Robinette
Michael J. Murphy
Department of Wildlife and Fisheries
P. O. Drawer LW
Mississippi State, MS 39762

TITLE: Growth of hybrid striped bass as related to three commercial production feeds.

ABSTRACT:

Hybrid striped bass averaging 96 g were stocked at a rate of 9884/ha into 6 freshwater ponds and fed either a 38% protein trout feed or a 35% protein catfish feed for 6 months. At the same time, hybrid striped bass averaging 190 g were stocked into 4 brackish (7-8 ppt) water ponds and fed either a 38% protein trout feed fed at 2% body weight, or a 44% striped bass feed fed at 1.5% body weight for 7 months. Fish in the freshwater ponds fed the trout feed, gained significantly ($P<0.05$) more weight (387%), although not significantly ($P>0.05$) more than those fed the striped bass feed (326%). An outbreak of red tide occurred in one pond fed the striped bass diet. Proximate analyses for feeds and sampled fish are presented.

L. E. Miranda K. O. Meals
P. O. Drawer BX
Mississippi State, MS 39762

TITLE: Effect of Water Level on Abundance of Age-0 Fish in Arkabutla, Enid, Grenada, and Sardis Reservoirs.

ABSTRACT:

Abundances of age-0 sunfish Lepomis spp., largemouth bass Micropterus salmoides, and crappie Pomoxis spp. were determined in Arkabutla, Enid, Grenada, and Sardis reservoirs in northern Mississippi, in years with high and low water levels. Fish were collected with rotenone in littoral zones of coves, sloughs, and areas in the main body of each reservoir characterized by sand, gravel, or clay shoreline. Cove and slough habitats generally harbored the greatest numbers of age-0 fish, whereas sand habitats harbored the least. Largemouth bass, crappie, and sunfish were more abundant in the year with high water level. Although the rankings of abundance among habitat types remained similar during the high and low water years, relative increases in abundance were disproportional. Habitat types with low fish abundance during low water level generally benefited more from increases in water level. These results suggest that high water level can increase recruitment of age-0 gamefish in these 4 reservoirs, and that variation in abundance among habitat types could be used to implement mitigation programs for increasing abundances in years of low water level.

Dawn E. Miller Nicholas G. Aumen
Freshwater Biology Program
Dept. of Biology, Univ. of Mississippi
University, MS 38677

TITLE: Effects of Food Quality on Growth of Dorosoma Cepedianum.

ABSTRACT:

Laboratory studies were conducted to determine relative growth of young-of-year (YOY, Age:0) gizzard shad (Dorosoma cepedianum) on diets of varying quality. Gizzard shad were maintained at a concentration of 5 shad per aquarium at 20°C. The following diets were administrated at 1% body weight daily for 28 days: Tetra Min (commercial fish food), Scenedesmus quadricauda (green algae), naturally occurring detritus collected from Sardis Reservoir, Miss., and no food. Growth was measured by changes in total length, weight, and muscle lipid content. All treatments resulted in shad weight loss. The average weight loss was greatest for the starvation treatment (2.97 g/fish) followed by detritus (2.78 g/fish), algae (2.49 g/fish), and Tetra Min (0.30 g/fish). Significant ($P<0.001$) treatment effects were demonstrated among feeding regimes. YOY gizzard shad in Sardis Reservoir simultaneously declined in weight by an average of 1.1 g/fish over the duration of the laboratory experiment. Muscle tissue lipid content decreased in all treatments; initial lipid content was 5.8% and fell to 2.2%, 3.1%, 3.1%, and 5.2% for starvation, detritus, algae, and Tetra Min treatments, respectively. Although detritus represented an average of 60% of the organic material in Sardis Reservoir shad diets in 1986-1988, this study suggests that the presence of this material is of limited nutritional value.

L. E. Miranda
P. O. Drawer BX
Mississippi State, MS 39762

TITLE: Recruitment of Age-0 Gizzard Shad in Ross Barnett Reservoir.

ABSTRACT:

Rotenone samples collected annually in late summer and early fall from 1963 to 1989 in Ross Barnett Reservoir indicated recruitment of age-0 gizzard shad Dorosoma cepedianum averaged 4,191/acre and ranged from 54 to 15,948. Recruitment was reduced at low adult gizzard shad abundance, peaked at densities near 400 adults/acre, and decreased at higher adult densities. The amount of rainfall between January and July ranged from 3.4 to 10.8 inches and was directly related to recruitment. A non-linear model including the independent variables adult density and January-July precipitation accounted for 60% of the variation in recruitment. I suggest recruitment of gizzard shad in Ross Barnett Reservoir is controlled by density dependent factors which are moderated by nutrient influx from tributary discharge. Adult gizzard shad stock densities of 300 to 500/acre should be targeted to maximize forage production.

R. A. DeMauro R. J. Muncy
L. E. Miranda
P. O. Drawer BX
Mississippi State, MS 39762

TITLE: Distribution, Movement, and Habitat Associations of Hybrid Striped Bass in Ross Barnett Reservoir.

ABSTRACT:

Distribution, movement, and habitat associations of hybrid striped bass (HSB) were examined using radio telemetry in Ross Barnett Reservoir, 1987-1989. Of a total of 84 HSB captured by gillnetting and electrofishing, 45 were never found or died within 14 days of radio implantation, and 39 were tracked for periods ranging from 4 to 262 days. Each year, during late February-March, tagged fish migrated upstream concurrently with increasing water flows, temperatures, and photoperiod. Tagged fish began downstream migrations into the upper reservoir in late April-May with the onset of increasing water temperatures and decreasing dissolved oxygen and water flow in the river. In late May, fish moved into the middle and lower reservoir, which provided lower temperatures and higher dissolved oxygen levels during summer, and remained there for the rest of the year. Hybrid striped bass preferred 21-27 C water with dissolved oxygen >4 mg/1. When water temperature was <27 C, fish utilized wider ranges of depth (2-9m), than when it was >27 C (4-8m). Log jams, stumps, rivercuts, and deep river bends were used in the Pearl River. Submerged sloughs with standing timber, adjacent to the submerged river channel, were used in the reservoir.

Bradley J. Marler
Dept. of Wildlife and Fisheries
P. O. Drawer LW
Mississippi State, MS 39762

Donald C. Jackson

TITLE: Distribution and abundance patterns of largemouth bass in the Tennessee-Tombigbee Waterway downstream from Aberdeen and Columbus Dams.

ABSTRACT:

Largemouth bass were collected by electrofishing each month from reaches downstream from Aberdeen and Columbus Dams from January 1987 through December 1988. In the Aberdeen system mean catch per unit effort (CPUE) was 6.42 kg/h in the immediate tailrace area below the dam, 1.84 kg/h in the navigation channel and ranged from 3.01 kg/h to 3.37 kg/h in bendways (original Tombigbee River stream reaches cut off by construction of the waterway). In the Columbus system mean CPUE was 5.57 kg/h in the tailrace, 1.99 kg/h in the navigation channel and ranged from 2.77 kg/h to 3.10 kg/h in bendways. Proportional stock densities (PSD) in the Aberdeen system were 48%, 29%, and 33-50% in the tailrace, navigation channel and bendways, respectively. PSD in the Columbus system were 38%, 31%, and 29% for the tailrace, navigation channel and bendways, respectively. Mean weights for fish collected from the Aberdeen system were 0.5 kg, 0.2 kg, and 0.2-0.3 kg for tailrace, navigation channel and bendway habitats, respectively. In the Columbus system, mean weights were 0.3 kg, 0.2 kg, and 0.2-0.3 kg for tailrace, navigation channel and bendway habitats, respectively.

Cynthia A. Annett
Arkansas Cooperative Fish & Wildlife Research Unit
Department of Zoology
SCEN 632
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TITLE: Predator-prey dynamics and habitat choice in largemouth bass, Micropterus salmoides.

ABSTRACT:

Vegetation is known to influence predator-prey interactions in laboratory studies of centrarchid fishes, but little is known about the behavior of these fishes in the field. The way in which habitat alterations such as channelization effect behavior such as predator-prey interactions is particularly interesting to fisheries manager. Behavioral observations were conducted on free-living largemouth bass in South Florida flood control canals to examine habitat use patterns of both predators and prey. Vegetation in the study canals occurs mainly on the bottom and sides, and 75% of 1014 observed bass were found in close association with vegetation (<15% of total habitat volume), rather than the water column (85-90% of total volume). Nearly all attacks by bass were directed from the vegetation (25%) or at prey in vegetation (75%). The chief prey of bass in these canals are introduced chichlids. These biparental caretaking fishes alter their habitat use depending on the age of their offspring and upon the most threatening predators to offspring at different ages.

MINUTES OF THE 1990 MEETING

MISSISSIPPI CHAPTER

AMERICAN FISHERIES SOCIETY

MINUTES OF THE 1990 MEETING OF THE MISSISSIPPI CHAPTER OF

THE AMERICAN FISHERIES SOCIETY

The meeting was called to order by President, Garry Lucas, at 11:05 AM, February 16, 1990, at the Ramada Inn, Greenville, MS.

The President determined that a quorum was present. The minutes of the 1989 meeting were approved as written.

President Garry Lucas addressed the chapter on the following items:

1) Reported that the chapter executive committee submitted a position statement in favor of license fee increases.

2) Executive letter has been sent to the President of the United States in support of implementation of the EPA memorandum on wetlands.

3) Coffee urns had been purchased for the meeting.

4) Framed prints had been purchased for awards and silent auction.

5) No action had been taken on upper Yazoo project.

REPORT OF AWARDS COMMITTEE

Chairman Bennie Rohr reported no nominations from the Committee and asked for nominations from the floor. Report was approved.

MEMBERSHIP COMMITTEE REPORT

Report was read aloud by President Lucas, outlining steps taken to invite other fisheries professionals to the meeting. Report was approved as read.

REPORT OF RESOLUTIONS COMMITTEE

Henry Fulmar read both resolutions and action was deferred to new business at request of President Lucas.

REPORT OF NOMINATING COMMITTEE

Scott Knight and Kieth Meals were nominated for President/Elect. Larry Nicolson and David Crosby were nominated for Secretary/Treasurer.

Nominations were closed as presented from Committee. Ballots were distributed, collected and turned over to Committee Chairman Jack Herring for tabulation. Scott Knight and Larry Nicolson were elected.

OLD BUSINESS

Resolutions on saltwater fishing license and increased fees for licenses were discussed extensively. Chapter approved dealing with these issues by letter rather than resolution. After much discussion, President sent items to a committee and said that he would inform membership by newsletter.

Jack Herring briefed chapter on current status of license fee increases.

NEW BUSINESS

Membership accepted invitation of Bennie Rohr to hold 1991 meeting at MSU/NMFS Seafood Lab in Pascagoula in March 1991.

Bennie Rohr was recognized with appreciation by the chapter for his service as past president, and was presented a past president's certificate.

Resolutions to support formation of lower Mississippi River Commission was presented to the chapter.

Resolution was amended to include Missouri and Kentucky.

Resolution was further amended at the request of Dr. Steve Ross to include "wise use of all fishery resources".

Resolution was passed as amended, by the chapter.

President Lucas proposed sending bylaws resolution to committee. Action was approved by the chapter.

Bob Durborow was recognized with appreciation for his work as local Arrangements Chairman.

Henry Folmar passed out a questionnaire from Dennis Riecke.

Steve Miranda read a letter from the Parent Society requesting donations for new Editorial Department. Chapter voted to contribute $100.

Bennie Rohr informed membership of current controversy concerning problems on the Lower Pascagoula River.

President Lucas adjourned the meeting at 12:28 PM.

Respectfully,

Mike Murphy, Secretary/Treasurer

THE MISSISSIPPI CHAPTER OF THE AMERICAN FISHERIES SOCIETY

ANNUAL REPORT ON THE ACTIVITIES OF THE MISSISSIPPI CHAPTER
COVERING THE PERIOD 10 SEPTEMBER 1989 TO 31 JULY 1990

July 23, 1990

The Mississippi Chapter of the American Fisheries Society held it's Annual meeting on February 15 and 16, 1990. This meeting was a joint meeting with the Arkansas Chapter. The focus of the meeting was a mini-symposium on Delta fisheries with sessions on restoration of oxbow lake fisheries, aquaculture in the Delta, and Delta stream fisheries. The Chapter is anticipating that this joint meeting with the Arkansas Chapter will be the beginning of increased communication between the two chapters, which hopefully in the future will be extended to the other chapters that border Mississippi.

Don Jackson and Mike Armstrong (of Arkansas) put together an excellent mini-symposium on fisheries of the Delta (Both Arkansas and Mississippi). There were 9 papers presented during the mini-symposium grouped into Lake Fisheries, Aquaculture, and River Fisheries. And they did not stop there, for the quality of the 19 papers presented in the Technical sessions were superb. Best paper awards were presented to Jan Hoover and David Brock.

There were several special speakers and presentations during the Annual meeting. Ms. Gail Carmody of the Upper Mississippi River Conservation Committee talked about that organization and how it relates to the interstate cooperative agreement. Mr. Jack Waide discussed the U.S. Forest Services' "Rise to the Future Program" as it relates to Arkansas, Louisiana, and Mississippi. The U.S. Army Engineers made a presentation on their proposed Montgomery Point lock structure on the Lower White River in Arkansas. Our Keynote Speaker was Dr. Richard Noble, President, Southern Division, AFS.

Sixty-Four people registered with the MS. Chapter at the Greenville Annual Meeting. Nineteen of these people are new faces (nine of them students). Arkansas had 40 or so registered.

Bob Durborow did an excellent job on local arrangements. We had a good meeting site at the Ramada Inn. And Bob did an excellent job arranging the Thursday evening social at the Leland Racquetball Club. Ms.Gail Carmody of the Upper Mississippi River Conservation Committee was our guest speaker for the dinner and presented to us an informative talk on the environment and conditions of the Upper Mississippi River.

Al Agnew of Cedar Creek publishers donated 5 prints to the chapter once again this year. The Chapter purchased 3 prints for the auction at the South East Assoc. Fish and Wildlife Agencies meeting in St. Louis. Money was raised for the chapter from a silent auction for the prints.

At the business meeting the Chapter adopted a resolution asking that the states along the lower Mississippi River, along with respective federa agencies/entities to meet and discuss the need to form an environmental committee to address the needs of the fishery and recreational resources o the lower Mississippi River. At this time the resolution has been sent to the following agencies/entities: Directors of the Conservation (Fisheries) Agencies of Mississippi, Arkansas, Louisiana, Tennessee, Missouri, and Kentucky; Mississippi River Commission (U.S. Army Engineers); U.S. Fish an Wildlife Service, Congressman Espy and Senators Cochran and Lott.

We also discussed at the business meeting support of the Mississippi Dept. of Wildlife Fisheries and Parks request for a license increase. The The Chapter ExComm sent a letter in early February to the legislature requesting them to support the Department's request for a license increase. The Legislature did not vote on an increase in license revenues. They did support the Dept. with General Funds much of which came from taxes on moto boat fuel.

Next years annual meeting will be held sometime in March on the Coast tentatively scheduled for the new Alternative Marine Resource Products Lab in Pascagoula.

Chapter officers were elected at the annual meeting. The Chapter officers for 1990-1991 are: President Don Jackson, Mississippi State Univ; President-Elect Scott Knight, of USDA Soil Sedimentation Lab in Oxford; an Secretary-Treasurer Larry Nicholson, Gulf Coast Research Lab. They take office September 1.

The Chapter ExComm committee voted to purchase raffle tickets with the $100 the chapter decided to donate to the Permanent Home Expansion Fund.

Past revisions to the by-laws have not been incorporated into the document and Chapter President Garry Lucas is trying to correct that situation. Proposed By-Law "changes" will be presented in the next newsletter to be voted on at the next meeting.

More than half of the AFS members in Mississippi are not members of the Mississippi Chapter. An invitation was sent to those individuals to attend the meeting in Greenville and join the chapter. A portion of those non-chapter AFS members were associated with Mississippi's marine fisheries. Recruiting these marine fishery workers into the chapter would both broaden and strengthen the chapter. Membership in the Mississippi Chapter is well represented by freshwater fisheries workers and academia, but marine fisheries and aquaculture workers are not well represented. To strengthen the aquacultural segment of the chapter, invitations to attend the Annual meeting were sent to members of the Board of Directors of Catfish Farmers of Mississippi. Invitations were also sent to non-AFS member individuals who work with the fisheries or aquatic resources of Mississippi. No new faces from the coast or aquacultural workers attended the Greenville Meeting. To attract those marine fisheries workers to join the Mississippi Chapter the Chapter will hold it's next Annual Meeting on the Coast in Pascagoula Mississippi, tentatively in mid March.

Prior to the Annual Meeting in February the Mississippi Chapter Executive Committee drafted two executive position statements. One was in support of a request to the legislature by the Mississippi Department of Wildlife, Fisheries, and Parks for an increase in license fees. If that agency does not receive a funding increase this year it's reserve Wildlife and Fisheries Fund will draw a deficit during FY 1990-91. The second was a letter to President Bush requesting him to support implementation of the Environmental Protection Agency- Army Corps of Engineers Wetlands Mitigation Memorandum of Agreement.

Since the Annual meeting the Chapter EX-Comm voted to comment on the Army Engineers Scoping process on the Yazoo Upper Basin Project. The Chapter suggested that the deadline for submission of input from the public be delayed until such time as current research underway on the ecosystem is completed. The ExComm also voted (2 votes to one) that AFS consider a name change to the "North American Fisheries Society". This action was in responce to a request for this poll from the Chapter Caucus Committee.

The proceedings of the 1987 - 1988 - 1989 Annual meetings have been formally printed. The three volumes of abstracts were included under one cover.

Report Submitted by,

Garry Lucas
President, Mississippi Chapter
American Fisheries Society

Garry Lucas President	Don Jackson President-Elect	Mike Murphy Secretary-Treasurer