

## SESSION 1

### **Status and Population Genetic Structure of the Watercress Darter, *Etheostoma nuchale***

Brook L. Fluker, Bernard R. Kuhajda, and Phillip M. Harris, University of Alabama

Abstract: Watercress Darters (*Etheostoma nuchale*) were surveyed at the five known localities in Jefferson County, Alabama in October 2006 and January 2007. *Etheostoma nuchale* was found at all sampled localities. Preliminary results from October suggested that *E. nuchale* was abundant at three of the four native localities (N = 56, 178 and 47; relative abundance [N/Seining Effort] = 8.0, 59.3, and 7.8 respectively) and at one introduced locality, Tapawingo Spring (N = 142; N/SE = 8.9). However, at the type locality, Glenn Spring, *E. nuchale* was present in small numbers (N = 15; N/SE = 0.4). Multiple size classes were found at all localities suggesting spawning and recruitment throughout the range of *E. nuchale*. At all localities, *E. nuchale* was associated with dense aquatic vegetation (*Fontinalis* sp., *Sparganium* sp. and *Nasturtium* sp.) or filamentous algae (*Chara* sp.) and was most abundant where *Fontinalis* was present. DNA sequence data has shown that the Roebuck Spring population of Watercress Darters (Locust Fork drainage) is more closely related to Gulf Darters (*E. swaini*) than it is to the other native Watercress Darter populations (direct tributary to Black Warrior River drainage). In order to better characterize population genetic diversity among populations of *E. nuchale* and to examine genetic structure within populations, a total of 155 fin clips were taken for microsatellite DNA analysis.

### **Dispersal of tournament displaced black bass and potential release site accumulation in Lake Martin, Alabama**

Ryan W. Hunter and Michael J. Maceina, Department of Fisheries and Allied Aquacultures, Auburn University

Abstract: Anglers fishing in black bass tournaments often displace fish great distances from their site of capture. Accumulation of black bass, which may have negative effects on populations and the fishery, can occur when many tournaments displace large numbers of black bass to a single tournament processing site. Largemouth bass *Micropterus salmoides* and spotted bass *M. punctulatus* were implanted with radio transmitters to observe the effect of tournament displacement on movement and measure the rate of dispersal from a popular tournament release site in Lake Martin (16,188 ha), Alabama. Displaced fish dispersed from the release site over time, however behavior was altered for up to 9 months after release and some fish remained in the vicinity (< 2 km) of the release site for up to 6 months. Dispersal rates were used to model the increase in biomass of black bass that occurred within 2 km of the release site during the spring and fall tournament seasons. Black bass tournaments probably contributed as much as 6-9 kg/ha of additional transplanted black bass biomass near the release site during typical tournament seasons which could have negative effects on growth, survival, and reproduction.

Near the release site (< 10 km), relative weights black bass were less and spotted bass growth was lower compared to the rest of the reservoir.

## **SESSION 2**

### **But nary a drop to drink: effects of floods and droughts on growth of sunfish in Georgia Rivers**

Steve M. Sammons, Department of Fisheries and Allied Aquacultures,  
Auburn University

*Abstract:* Otoliths from over 6,500 sunfish of 5 species were collected in 14 river sections from spring 2004 to fall 2005 by Georgia DNR biologists to describe age and growth characteristics of these populations. Otoliths were examined using an image analysis system and growth increments were calculated for each growth year, then compared to river flows. Most sunfish species, with the exception of redear sunfish, were characterized by short lifespans (< 8 years) and fast growth. Redbreast sunfish growth was slowest in the Piedmont regions of the Flint and Ocmulgee Rivers and fastest in the coastal plain rivers of southeast GA. Growth was intermediate between the coastal plain rivers of east-central and southwest GA. Bluegill growth followed similar patterns to redbreast sunfish. Annual river flow explained a significant amount of variation in growth of redbreast sunfish in all rivers, and flow during April to June explained the most variation in growth for 6 of 13 rivers examined. In all cases, growth increased greatly when flows were high. Bluegill growth was not as affected by flow; only 3 of 5 models were significant for any flow model, and none explained more than 10% of the variation in growth. Likewise, flow was not important in determining growth of redear sunfish in either population examined. However, summer flows did appear to have significant effects on growth of warmouth and fliers in the Suwannee River. This research demonstrates that river flows do have significant effects on growth rates of redbreast sunfish populations across the state and may have implications for the many water allocation issues currently being debated across the country.

### **Determining flow regimes suitable for successful redbreast spawning below R.L. Harris Dam on the Tallapoosa River, AL**

Ben Martin, Alabama Cooperative Fish and Wildlife Research Unit

Elise Irwin, USGS, Alabama Cooperative Fish and Wildlife Research Unit

*Abstract:* Nesting redbreast sunfish *Lepomis auritus* were observed during their spawning season (May-August 2006) to monitor the effects of adaptive management below Harris Dam, a peaking hydropower facility on the Tallapoosa River (Alabama). Previous research indicated nest success was related to discharge but critical flows and spawning window length were not assessed and both are important goals of the adaptive management project. Snorkeling was employed to monitor nest success, as defined by production of swim-up fry. Nesting behaviors related to flow regimes were also observed and recorded using underwater video equipment. Experimental flows (no flow, one-unit, two-unit) were implemented below the dam to determine

critical flows and potential spawning window lengths. Snorkeling provided data necessary to determine nest success and experimental flows allowed us to determine effects on nest success during peaking events. During underwater filming we determined behavioral responses to stable and rapidly rising water during experimental flows. One-unit experimental flows altered nesting behavior, but did not appear to be sufficient to cause nest abandonment during early developmental stages. Stable flows allowed for the highest rates of nest success during the spawning season. Experimental two-unit flows were not observed because of drought conditions; therefore, we were unable to observe responses to extreme flow conditions in 2006. Data collected during this project were valuable for updating probabilities associated with the faunal response model used in the adaptive management process.

### SESSION 3

#### **Common reed: *Phragmites australis* (cav.) trin. ex steud: Life history in the Mobile River Delta, Alabama**

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*Abstract:* Common reed (*Phragmites australis*) is a non-native invasive perennial grass that creates a nuisance in aquatic and riparian environments across the United States. The ability of common reed to reproduce quickly combined with its ability to cycle nutrients has made it an aggressive invader of riparian and wetland ecosystems. Common reed often forms monotypic stands that displace native vegetation more desirable as wildlife food and cover than common reed. Common reed has been differentiated into 27 haplotypes, eleven haplotypes being native to North America. Two haplotypes of the 27 identified are of concern in North America; I & M. Haplotype M is a European haplotype and haplotype I is a South American & Asian haplotype. Both are of concern due to their ability to out-compete native vegetation, alter hydrology, and change community structure of aquatic and riparian habitats. In order to help maintain native habitats and manage and populations of common reed in the United States, a complete understanding of its life cycle is needed. In this study haplotype I was examined. Twelve samples were taken from four sites in Mobile River Delta, AL from January 2006 until December 2006. Above ground biomass allocation is highest from July through September with a high of 2.9 kg/m<sup>2</sup>. Below ground biomass allocation was highest from May through August with a high of 2.7 kg/m<sup>2</sup> in May. This understanding will provide insights into the relationships between common reed and the environment as well as to guide management strategies.

#### **A Report on the Status of the Alabama Aquatic Nuisance Species Management Plan**

Smoot Major for the Alabama Aquatic Nuisance Species Task Force, Montgomery AL

*Abstract:* An Aquatic Nuisance Species Management Plan for Alabama has been produced and is under review. This plan identifies and ranks the aquatic nuisance plant and animal species of Alabama based on the impact to the economic and ecological aquatic resources of the state. This

document identifies pathways and media that facilitate and contribute to the spread of these organisms. In addition, a set of goals and objectives has been developed to address these organisms and their associated pathways of introduction. A prioritization table was created to identify those species and pathways that have the greatest impact on our resources. Lastly, a system for monitoring and evaluating the implementation of the plan has been produced to promote environmental stewardship in Alabama.

### **Walter F. George Lake - Expansion of Invasive Aquatic Plant Hydrilla (*Hydrilla verticillata*) and potential use of Triploid Grass Carp**

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William Smallwood, Corps of Engineers ACF River Project, 427 Eufaula Road, Fort Gaines, GA 39851. Phone: 229-768-2615, FAX: 229-768-28009, email: [William.L.Smallwood@sam.usace.army.mil](mailto:William.L.Smallwood@sam.usace.army.mil)

Abstract: Walter F. George Lake is a multipurpose lake with the following purposes: navigation, hydropower, recreation, regulation of stream flow, and fish and wildlife conservation. Walter F. George Lake has not historically had problems with invasive aquatic plants. This presentation will give the history of Hydrilla (*Hydrilla verticilla*) expansion from first discovery on the lake in 1991 to the present and a potential management option with (sterile) triploid grass carp (*Ctenopharyngodon idella*). From 1992-2000, a small infestation of hydrilla was managed with herbicides, in 2002 the hydrilla infestation begin to expand rapidly, approximately doubling each year. In 2006, the aquatic plant survey estimated 2,400 acres of Walter F. George Lake infested with hydrilla.

### **Aquatic Habitat Restoration in Little Bear Creek Lake**

Joe Jernigan, Aquatic Plant Management Supervisor, Alabama Wildlife and Freshwater Fisheries. Spanish Fort, AL.

Abstract: Little Bear Creek Lake (LBCL) is a 1600-acre reservoir located 10 miles southwest of Russellville, Alabama. LBCL went through the typical new reservoir syndrome with flooded terrestrial vegetation initially provided favorable fishery habitat, resulting in an abundant fishery. However, as flooded terrestrial structures declined, the fishery has also declined. The TVA and the Little Bear Millennium Group (LBMG) recognized the loss of this quality shoreline habitat in the 1990's. They began working to restore and enhance fish habitat in LBCL using several techniques, including hydro-seeding, planting cypress and gum trees, adding stake beds, and changing drawdown times. These techniques have provided some returns; however, additional measures were needed.

The goal of this project is to re-establish submersed native aquatic vegetation and monitor waterwillow (*Justicia Americana*) in LBCL. Because lake-wide establishment is logistically and economically unrealistic, "founder" colonies of aquatic vegetation were established and maintained at selected sites. When conditions are favorable, founder colonies provide

propagules for natural spread to unvegetated areas in a reservoir. By having seeds, fragments, and other reproductive structures being produced at all times (i.e., during the growing season), biotic and abiotic limitations common to man-made reservoirs may be overcome to allow natural spread to other parts of the water body.

#### **SESSION 4 Aquaculture/ Mariculture**

##### **Tag type, retention rates and effects on red snapper *Lutjanus campechanus* growth and survival under hatchery conditions.**

Daniel Rodriguez and Ronald P. Phelps  
Department of Fisheries and Allied Aquacultures  
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Management of red snapper stocks is one of the most controversial issues in the Gulf of Mexico fisheries. Issues include what is the true standing crop, whether or not there are distinct subpopulations, what are the growth rates and rates of mortality that can be expected. One technique to address these issues is to tag fish and recapture them. Before an appropriate tag can be selected several questions need to be answered. In the following study three types of tags were tested with juvenile red snapper to determine the tag retention and effects on fish growth and survival.

Hatchery-produced juveniles with an average weight of  $43.7 \pm 5.6$  g were either not tagged or given one of three types of tags and stocked into  $1.2 \text{ m}^2$  circular tanks at 30 fish/tank with three replicate tanks/tag type. The tags used were: internal anchor tags (model FM-95W, Floy Tag Company, Seattle WA) anchored in the abdominal cavity; passive integrated transponders (PIT) tags, Biomark, Boise, ID placed in the dorsal musculature; and metal self-piercing fish tags (model 1005-4, National Band and Tag Company, Newport KY) clamped around the lower mandible. Fish were fed daily a pelleted commercial feed. Tanks were monitored daily over a 150 d period, recording water quality and any observed fish mortality. All tanks were sampled monthly, recording average fish weight and survival, tag retention and any gross pathology associated with the tag. Water temperature during the study period averaged  $23.2 \pm 1.9^\circ\text{C}$  with a mean salinity of  $30.2 \pm 1.7$  ppt.

Fish averaged  $111.0 \pm 9.1$  g at the end of the study period with similar rates of gain across treatments ( $156.6 \pm 28.4\%$ ). Fish survival did not differ by treatment and ranged from  $66.4 \pm 25.8$  to  $72.2 \pm 11.7\%$ . Tag retention did differ by treatment ( $P=0.0002$ ). At harvest, none of the PIT tagged fish had lost their tags,  $98.4 \pm 2.8\%$  of the pit tagged fish retained their tags, and  $90.4 \pm 1.6\%$  of the fish given internal anchor tags had tags. Lost of the internal anchor tags occurred primarily within the first month ( $30.0 \pm 5.8\%$  of total). Inflammation was frequently observed in the area where internal anchor tags were inserted into the body cavity. Irritation and cell proliferation was sometimes observed in areas around the jaw tags.

## Effects of Anoxia on Histology, Bacteriology, Condition Index, Glycogen Levels, and Fecundity in the Eastern Oyster, *Crassostrea virginica*.

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The eastern oyster, *Crassostrea virginica*, is well known for its commercial and ecological roles in Mobile Bay, AL. During summer months oysters may be exposed to hypoxic and occasionally anoxic conditions which in turn can cause mortality. This study analyzed the effects of anoxia on oyster condition under summer temperatures.

Five hundred hatchery reared oysters ( $\bar{X} = 48.05 \pm 5.56$  mm), were examined for the effects of anoxia on oyster condition. Oysters were exposed in the laboratory to anoxic ( $< 0.10$  mg/L O<sub>2</sub>) conditions for intervals of 24 h, 48 h and 60 h at 25ppt salinity and  $28^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . Condition index was evaluated prior to experimentation to establish a baseline for comparison to control and test oysters which were sampled at the 60 h interval and 4 weeks post experiment. Histology, glycogen levels, and bacteriology levels were evaluated for test oysters prior to the experiment to establish a baseline for comparison to samples taken during the experiment, at the 24 h, 48 h, 60 h intervals, and 4 weeks post experiment. Bacterial enumeration was done under aerobic and anaerobic conditions. Fecundity estimates were performed 18 weeks post-experiment on control and experimental oysters.

Histological examination indicated that anoxia causes stress in oyster tissue. Digestive tubule lumen ratios increased significantly from the baseline to the 60 h interval. Condition indices were not significantly different ( $P < 0.05$ ) between baseline oysters ( $\bar{X} = 59.0 \pm 2.6$ ) and test oysters at the 60 h interval ( $\bar{X} = 57.5 \pm 1.4$ ). Similarly, there was no difference between the baseline oysters and the control oysters at the 60 h interval ( $\bar{X} = 55.9 \pm 2.16$ ). Glycogen levels for 10 test oysters from all intervals did not differ from the baseline ( $\bar{X} = 72.5 \pm 18.2$ )  $\mu\text{moles}$  glucosyl units/g dry weight.

The bacterial count for test oysters ( $\bar{X} = 1.11 \times 10^6$  CFU/ml) from the 60h interval was significantly higher than counts for the baseline oysters and the 24 h and 48 h intervals. The most common bacteria isolated were *Clostridium sp* which confirms previous studies on the natural anaerobic flora of oysters.

No difference in fecundity could be established due to the lack of mature females in both the control and the experimental groups.

These findings support previous reports that mortality in oysters during anoxic events is due to bacterial infection and not lack of endogenous fuels.

## **Population Structure and Dermo Disease at Harvested and Unharvested Oyster Reefs in Mobile Bay,**

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Oyster reef matrices, both intertidal and subtidal, provide valuable habitat for many marine species while individual oysters help to improve water quality via filtration. One of the economically important diseases affecting the eastern oyster is “dermo” disease caused by *Perkinsus marinus*, a systemic protozoan parasite. Oysters in Mobile Bay, Alabama are generally harvested before their second year, which is earlier than the age at which *P. marinus* causes peak mortality. Certain areas of the bay designated as “no take” zones remain unharvested as part of marine sanctuaries or due to health regulations. These unharvested sites may serve as reservoirs of infection leading to altered epidemiology in near by harvested sites. This study aims to compare the dermo disease status in oysters at unharvested reef sites with that of harvested reef sites.

A field study was initiated to determine and compare oyster population structure, *P. marinus* prevalence and intensity, and mortality rates at six established harvested reef sites and six unharvested reef sites in Mobile Bay, Alabama. Population structure was analyzed from oysters collected semi-annually from five 1m<sup>2</sup> samples at each reef site. “Dermo” disease intensity was determined by Ray’s fluid thioglycolate medium whole oyster analysis from 5 oysters collected from the same sample area. Mortality was monitored monthly in 3 bags of 30 wild oysters deployed at each site. The study also includes an assessment of “dermo” disease development within hatchery-reared oysters deployed on a heavily harvested reef, one with minimal harvest pressure and another with no harvest pressure.

Overall population density at the unharvested sites was higher than the harvested sites as were the densities of all size classes examined (Fig. 1&2). Oysters on unharvested reefs contain *P. marinus* at higher levels than oysters on harvested reefs (Fig. 3). These findings suggest that higher levels of *P. marinus* at the unharvested sites may act as a reservoir of infection and thereby influence neighboring sites.

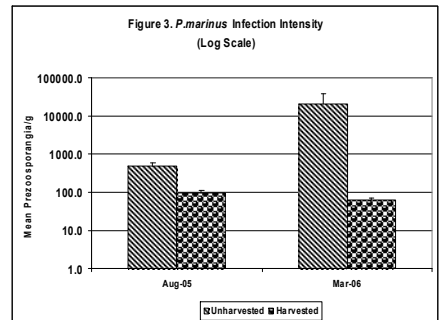
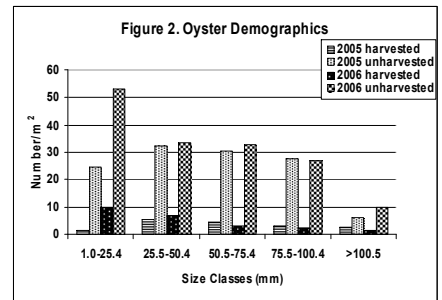
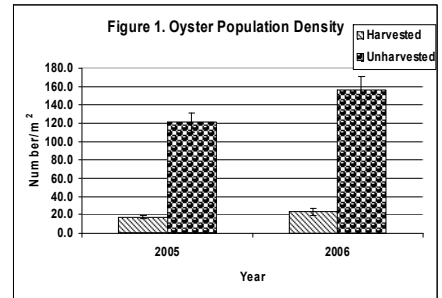
### Transgenic Catfish-Performance and Sterilization

Rex Dunham<sup>1\*</sup>, Atra Chaimongkol<sup>1</sup>, Alison Hutson<sup>1</sup>, Thanathip Lamkom<sup>2</sup>, Andrew Gima<sup>1</sup>, Deborah Beam<sup>1</sup>, Jeff Terhune<sup>1</sup>, Cova Arias<sup>1</sup>, Vance Trudeau<sup>3</sup> and Megan Rosinski<sup>1</sup>

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#### Abstract

Transgenic fish and recently shellfish have been produced that exhibit accelerated growth rates, increased disease resistance, altered body shape and composition, altered coloration, expression of anti-freeze proteins, are bioreactors producing medical compounds and potential sterility. Several species have been studied, and common carp in China, tilapia in Cuba, salmon and trout in the US are nearing government approval and commercialization as food fish. Transgenic ornamental fish have already been commercialized in the US and Asia. Transgenesis appears to have the potential to enhance growth and disease resistance to a greater extent than other genetic enhancement programs, however, there appears to be a highly variable response by species with species having relatively slow growth benefiting the most. Maximum attainable size was



quadrupled in mud loach by introducing growth hormone genes. However, little data is available in experimental units that simulate commercial aquaculture conditions. Initial data indicates that the ultimate aquaculture genotypes will likely result from utilizing a variety of genetic enhancement programs. Growth enhanced transgenic fish have altered body composition and muscle structure. Analysis of these changes, actual and theoretical, indicates that there are no adverse changes in regards to food safety, and in fact, in some cases desirable changes in flesh quality. The primary danger revolves around the introduction of proteins that would cause allergic reactions to transgenic fish flesh, but no such gene transfers have been accomplished. Based on these analyses, it appears that the concerns about transgenic fish flesh for human consumption are decreasing in the international community. The primary impediment to commercialization of transgenic fish is the concern about potential environmental impacts. Fitness traits examined to date in aquaculture species of transgenic fish indicate a lowered fitness of these fish, although more data is needed. However, despite this data, government approval of various transgenic fish will be slow, and this is the impetus for the current research on transgenic sterilization, which if successful, would eliminate almost all potential environmental impact. Constructs have been studied that have shown promise to disrupt embryonic development or gamete maturation in fish.

### **Hybrid Catfish**

Rex Dunham\*, Alison Hutson, Megan Rosinski, Atra Chaimongkol, Andrew Gima, Deborah Beam, Jeff Terhune, Allen Davis, Ron Phelps, Nagaraj Chatakondi and Joseph Ballenger

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#### Abstract

The hybrid channel catfish, *Ictalurus punctatus*, female X blue catfish, *I. furcatus*, male is the best genotype for pond culture of catfish. This fish exhibits increased growth, feed conversion efficiency, disease resistance, tolerance of low oxygen, seinability and carcass traits compared to the commonly grown channel catfish. Its growth and angling vulnerability would also make it an excellent recreational fish. Until recently, reproductive isolating mechanisms prevented much commercial application of the hybrid. Wide scale application of the hybrid is now just beginning because of research advancements. Advancements in genetics, nutrition, hormone induction, reproductive physiology, embryo incubation and hatchery management have made hybrid embryo production technically and economically feasible. Not all hybrids are created equal. Genotype of parents can affect performance. Hybrids are perhaps more environmentally friendly than domestic channel catfish because of their reduced reproductive capacity.

### **Production of all-female largemouth bass for trophy bass fishing**

#### Abstract

Tyler Heep and Ronald P. Phelps

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Trophy largemouth bass are typically females. In the following study, largemouth bass were produced intensively, fingerlings trained to a formulated diet and cultured to a range of sizes with the goal of determining the cost of production of manually selected females. Eleven-month old bass were sorted into five size categories and sexed. The accuracy of manual selection was determined for each size category. The costs of production (variable costs only) to obtain fry, fingerlings, and sexable-size fish was determined. An average of 14,769 eggs/kg female was obtained, resulting in 4,905 swimup fry/kg female at a cost of \$4.84/1000. Nursery ponds stocked at 148,515/ha yielded 0.97 g fingerlings with a 95.6% survival, at a cost of \$53.53/1000. Fingerlings were stocked into 3 mm mesh net cages, feed trained for 13 days and held an additional 21 days on a commercial diet. At harvest fish averaged 3.53 g with a 61.2 % survival costing \$253.03/1000. Fingerlings were stocked into ponds at 20,000 and 40,000/ha and cultured 270 days on a commercial diet. Average weights and survivals at harvest were 179 g and 159 g and 25.3% and 33.7% for the two respective stocking densities. It was possible to sex fish with 100% accuracy when they were 20 cm and larger. Thirty five percent of the total number of bass produced were identifiable females. The costs of production of these females was \$5.26/fish when the value of males and unsexable fish at \$6.61/kg was deducted from the total production costs.

**No submissions to date.**

## **SESSION 5**

### **Reproductive behavior of the gray triggerfish, *Balistes capriscus*, and interactions with red snapper, *Lutjanus campechanus*, in the Northeastern Gulf of Mexico**

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*Abstract:* Reproductive behaviors of gray triggerfish, *Balistes capriscus*, were recorded by SCUBA divers and remote video on artificial reefs in June and July 2004-2006. Gray triggerfish showed elaborate courtship, demersal nest building, and parental care of the eggs by both sexes. Male triggerfish spent significantly more time revisiting the nest with a female, while females spent significantly more time on the nest fanning/blowing the eggs. We repeatedly observed females on separate nests guarding eggs simultaneously around one reef with a dominant male. Competitive interactions between gray triggerfish and red snapper, *Lutjanus campechanus*, were tested in laboratory and field studies. In the laboratory, we measured specific growth rates of red snapper alone and gray triggerfish alone and with these two species together. Red snapper showed no significant differences in growth rates among treatments; however, sample size was low

and trends indicated slower growth rates in the presence of gray triggerfish. In the field, competitive interactions were examined by changes in abundance of red snapper after removal of gray triggerfish. Six months after gray triggerfish removals we compared changes in abundance of red snapper between removal and non-removal sites. There were greater increases in red snapper abundance on removal sites but differences were not statistically significant

### **Evaluating potential impacts of red snapper (*Lutjanus campechanus*) on recruitment of vermilion snapper (*Rhomboplites aurorubens*): project overview and summary**

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Abstract: Recognition that improved fisheries management will require a more ecological framework has led to a broad mandate to incorporate ecosystem level interactions into traditional fisheries management plans. Unfortunately, our limited understanding of the dynamic processes that function at the local community or larger ecosystem level prevents such approaches from being fully incorporated into traditional stock management. Here, we present a study designed to examine multi-species interactions in reef fish assemblages in the Northern Gulf of Mexico. Specifically, we are examining the potential impact of red snapper (*Lutjanus campechanus*) on recruitment of vermilion snapper (*Rhomboplites aurorubens*) and how this relationship may be influenced by habitat complexity. Preliminary results suggest that recruitment of vermilion snapper in this area was limited; however, recruitment did seem to be concentrated on the most complex artificial reef structures. Our catch data also suggests that red snapper abundance was limited in this area. Analysis is still ongoing to determine if red snapper can influence post-settlement vermilion snapper directly through predation or indirectly by influencing reef fish community structure.

### **Assessment of Alabama's marine fishes**

John Mareska, Alabama Department of Conservation and Natural Resources, Marine Resources Division, PO Box 189, Dauphin Island, AL 36528

Abstract: The Marine Resources Division began a sampling program in 2000 for adult fishes to answer management concerns for numerous species. The program has undergone several changes in order to meet those demands. Gear-consists of two multiple-panel monofilament gillnets. Panels include mesh sizes of 2 to 4-inch stretch by half-inch increments in the first net. The second net has panels of 4.5 to 6-inch stretch mesh by half-inch increments. Collection of selected species has allowed for growth and abundance estimates as well as other parameters necessary for management. In addition to monitoring the marine species, the program has also captured several freshwater species utilizing the estuary. Currently, we believe we have a design that will allow the

division to perform stock assessments on estuarine dependent species such as spotted seatrout and escapement estimates for red drum.

### **Alabama's inshore shrimping fleet - A decade of change**

Leslie Hartman, Alabama Department of Conservation and Natural Resources,  
Marine Resources Division

Abstract: Historically, the shrimp fishery is economically the most important commercial fishery in Alabama. The past decade was a decade of significant change that has resulted in reduced significance of the shrimp industry. These extensive changes are the result of increased global trade, a changing economic landscape and natural disasters. An overview of the status of the inshore shrimping fleet, past and present, is presented. The inshore shrimping effort revolves around three commercially important shrimp, brown shrimp, *Farfantepenaeus aztecus*, white shrimp, *Litopenaeus setiferus* and pink shrimp, *Farfantepenaeus duorarum* with incidental catches of rearback / roughneck shrimp, *Trachypenaeus* spp, rock shrimp, *Sicyonia* spp and seabobs, *Xiphopenaeus kroyeri*. Management of the inshore fleet is the responsibility of the Alabama Marine Resources Division and is regulated based on overall size of the shrimp. The seasonal distribution of the brown and white shrimp drives management decisions for openings and closings. As fleet size and market share decrease, the applicability of the current management plan will need to be reviewed.

### **Gulf Sturgeon investigations in the northeastern Gulf of Mexico**

Frank M. Parauka, U.S. Fish and Wildlife Service, Panama City, FL

Abstract: The marine movement and habitat use of Gulf sturgeon *Acipenser oxyrinchus desotoi* in the northeast Gulf of Mexico was documented with trawler captures and telemetry from 2004 to 2007. Gulf sturgeon tagged in Florida panhandle river systems were located during the winter along the coast from Carrabelle, Florida to Fort Morgan, Alabama. Fish were found from .5 to 3.0 km from shore and at a depth of 3.0 to 12.0.