2024 Annual Meeting

Alabama Chapter of the American

Fisheries Society

Lake Guntersville State Park

Guntersville, Alabama

February 21-22, 2024

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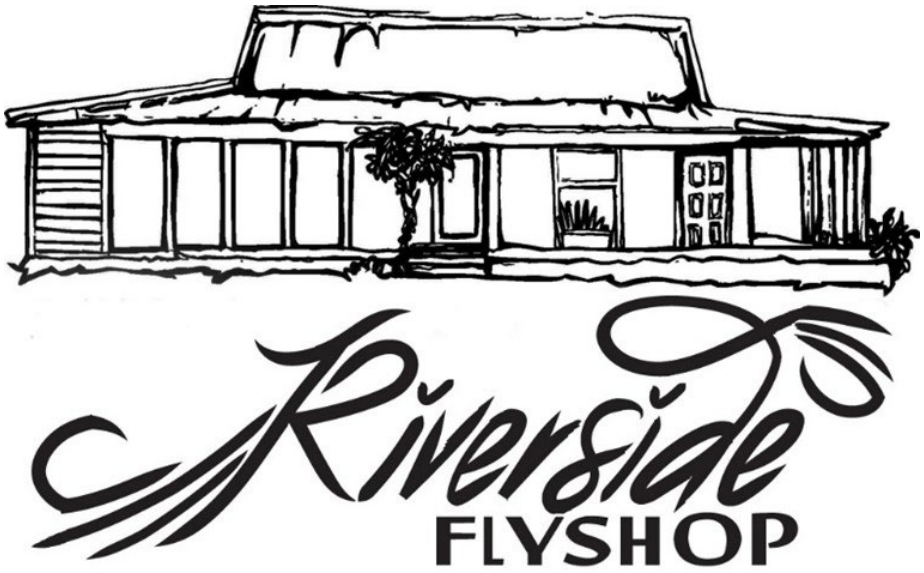

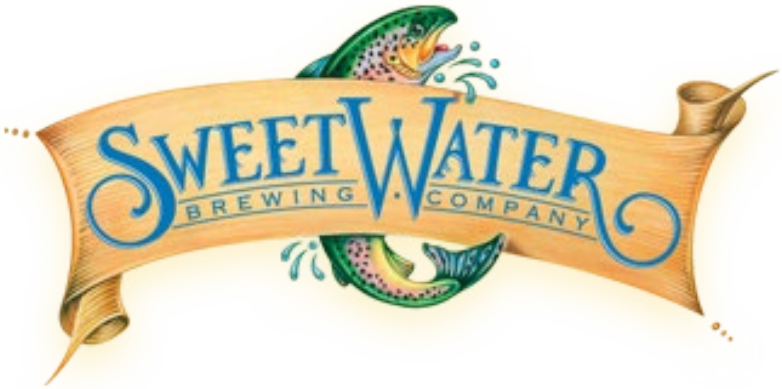

Thank you to all of the ALAFS sponsors & donors of our 2024 Annual Meeting!

Program Schedule

* Meeting, social, and banquet on Wednesday, February 21 will be in the Grandview Ballroom

* Meeting activities on Thursday, February 22 will be in the Camellia Room

Wednesday, February 21:

10:30 AM – 4:00 PM	Meeting Registration & Load Talks
10:30 AM – 5:00 PM	Poster Setup
12:30 PM – 12:45 PM	Opening Remarks
12:45 PM – 3:00 PM	Student Presentations – Session A
3:00 PM – 3:15 PM	Break
3:15 PM – 5:00 PM	ADCNR Presentations – Session B
5:00 PM – 5:30 PM	Break
5:30 PM – 6:30 PM	Poster Presentations & Social
6:30 PM – 8:30 PM	Banquet, Awards, & Raffle

Thursday, February 22

8:00 AM – 9:00 AM	Breakfast/Meeting Registration
9:00 AM – 10:00 AM	Business Meeting
10:00 AM – 10:15 AM	Break
10:15 AM – 12:00 PM	Presentations – Session C
12:00 PM	Adjourn

Wednesday, February 21

12:30pm Welcome and Opening Remarks - Jason Throneberry, President

SESSION A (STUDENTS)

Moderator: Chris McKee, ADCNR Freshwater Fisheries

12:45 pm Movement and tournament dispersal of Largemouth *Micropterus salmoides* and Alabama *Micropterus henshalli* Bass in Neely Henry Reservoir. Marcus Prull and Matthew Catalano.

1:00 pm Factors related to successful hatching and daily growth rate of Shoal Bass *Micropterus cataractae* and Largemouth Bass *M. salmoides* in the lower Flint River catchment. Garrison Forrester et al.

1:15 pm Catch-and-release angling effects on two black bass populations at an Alabama Reservoir. Thomas J. Pullen and Matthew Catalano.

1:30 pm Simulating Tradeoffs Between Fishing Quality and Economic Performance in a Black Bass Fishery with High Tournament Effort. Natalie Coash and Matthew Catalano.

1:45 pm Partitioning mortality components in a high effort Black Bass fishery using a combined high value reward and radio telemetry approach. Max Rubino and Matthew Catalano.

2:00 pm Population metrics of Black and White crappies in Alabama reservoirs. Samuel D. Delaney and Steven M. Sammons.

2:15 pm Estimating Fishing Mortality and Identifying Large-scale Movements of Greater Amberjack in the Southeastern US. Samantha Young et al.

2:30 pm Management Intervention Influences Trajectory of a Declining Stock. Dylan Keine, Mark Albins, and Sean P. Powers.

2:45 pm Comparison between Spherical Baited Remote Underwater Video (SBRUV) and Remotely Operated Vehicle (ROV) surveys in offshore Alabama. Adam Jung et al.

3:00 – 3:15 pm **Break**

SESSION B (ADCNR Freshwater Fisheries)

Moderator: Dylan Shaw, Alabama Power

3:15 pm Preventing the Spread: An overview of Alabama's Aquatic Nuisance Species (ANS) Program. Adrian Stanfill and Dave Armstrong.

3:30 pm Investigating the Susceptibility of Redeye Bass to Overharvest in the Coosa and Tallapoosa River Basin. Nathan Aycock, Michael P. Holley, and Kevin W. Baswell

3:45 pm Status of Southern Walleye populations in Alabama. Chris McKee, AnaSara Gillem, and Ben Parks

4:00 pm "Who'd-A-Thunk-It?" Phil. D. Ekema, Heath Haley, and Ken D. Wood.

4:15 pm A case study discussing the results of drawing down Gantt Reservoir to the original Conecuh River channel September through early December 2019. Ken Weathers, Rob Andress, and Rob McCarter.

4:30 pm Renovation of Chambers Public Fishing Lake (183 ac). Graves Lovell

4:45 pm Sport Fish Restoration in Alabama: Past, Present, Future. Matthew Marshall

5:00 pm **Break and Adjourn**

Poster Presentations

5:30 – 6:30 pm **Grandview Ballroom**

Relative abundance, habitat use, and size structure of Scamp *Mycteroperca phenax* across an artificial reef network. Manuel E. Coffill-Rivera and Sean P. Powers.

Mapping Shore-Based Fishing Along Mobile Bay, Alabama. Hailey Smith et al.

Distribution of Mercury in Flint Creek Watersheds: Implications for Mercury Bioaccumulation. Destinee Simmons et al.

Variation in reproductive characteristics of Red Snapper (*Lutjanus campechanus*) in the northcentral Gulf of Mexico. Laia Munoz-Abril and Sean Powers.

A review of salinity tolerances among North American freshwater mussels (bivalavia: unionida). Susan Fuller et al.

Feeding response of zebrafish *Danio rerio* to a gel-based formulated diet. Logan Holfelder et al.

Thursday, February 22

8:00 am Breakfast & Meeting Registration

SESSION C (Professionals)

Moderator: Dr. Dennis Devries, Auburn University

9:00 am Business Meeting – **Camellia Room**

10:15 am More than just a time series: the value of fishery-independent surveys for delineating habitat suitability. Ana Osowski, JM Drymon, and SP Powers.

10:30 am Tag Alabama: Angler Engagement and Data Collection Through Collaborative Saltwater Recreational Tagging. Crystal L. Hightower, Sean P. Powers, and Dylan Kiene.

10:45 am Does size really matter? Evaluating the effects of artificial reef size on fish abundance and diversity in the Alabama Artificial Reef Permit Zone. Mark A. Albins et al.

11:00 am Monitoring Seagrass Scars in Tampa Bay, FL Using ArcGIS Pro Deep Learning. Katelyn M. Lawson et al.

11:15 am Lower Alabama River Fish Passage: Reconnecting the Gulf of Mexico to the Appalachian Mountains. Jason Throneberry.

11:30 am ARSNiC: A New Approach for Prioritizing Aquatic Organism Passage and Infrastructure in Alabama. Daniel West.

11:45 am Prioritizing Urban Watersheds for Restoration. Ben Wegleitner.

12:00 pm **Network & Adjourn**

Abstracts

Oral Presentations (Student Sessions)

Movement and tournament dispersal of Largemouth *Micropterus salmoides* and Alabama *Micropterus henshalli* Bass in Neely Henry Reservoir, Alabama

Marcus Prull[1]* and Matt Catalano[1]

[1]Auburn University, School of Fisheries and Aquaculture and Aquatic Sciences, Auburn, AL 36849

*Marcus Prull (Student), mrp0099@auburn.edu, 563-513-9726

Abstract:
Both Largemouth *Micropterus salmoides* and Alabama *Micropterus henshalli* Bass are popular targets for anglers across their respective native ranges and are the subject of numerous fishing tournaments at large reservoirs. Fishing tournaments translocate fish to areas near weigh-in sties, yet few studies have investigated the magnitude of this spatial redistribution in the context of natural movements. We implanted 75 Largemouth and 75 Alabama Bass with radio transmitters and high value reward tags in December 2022 and January 2023 at Neely Henry Reservoir, Alabama, to assess movements, tournament associated spatial redistribution, and dispersal rates from weigh-in sites. Tournament caught fish were self-reported by anglers or visually identified by Auburn fisheries staff at tournament weigh-ins. Of the 150 telemetered fish, 32 (21%) were confirmed to have been weighed in at Black Bass tournaments at Neely Henry Reservoir. Twenty-seven of the 32 (84%) were released at Coosa Landing boat launch located in Gadsden, AL. Dispersal rates from Coosa Landing have been highly variable at the individual level, but a steep decline in fish around the launch has been observed. We found that 71% of fish located <2 weeks after release were within 3 km of Coosa Landing which declined to 40% for 2-4 weeks post release and further declined to 18% within 3 km after 10-12 weeks post release. This movement data will be critical in understanding the magnitude of stockpiling of Largemouth and Alabama Bass around tournament weigh-in sites. Additionally, we will test for differences in movements between the two species and will compare movement of tournament caught fish to non-caught fish.

Oral Presentation

Bio: I grew up in Maquoketa, IA. Graduated from Iowa State University (B.S. Animal Ecology-Fisheries) in the spring of 2018. My current work is focusing on the movement and tournament dispersal of Black Bass at Neely Henry Lake and I am supervised by Dr. Matt Catalano.

Factors related to successful hatching and daily growth rate of Shoal Bass *Micropterus cataractae* and Largemouth Bass *M. salmoides* in the lower Flint River catchment

Garrison Forrester[1]*, Jamie L. Rogers[2], Shannon K. Brewer[3], Steven M. Sammons[1], and Stephen W. Golladay[4]

[1]School of Fisheries, Aquaculture, and Aquatic Sciences Auburn University, Auburn, AL

[2]Alabama Cooperative Fish and Wildlife Research Unit, Auburn University, Auburn, AL

[3]U.S. Geological Survey, Alabama Cooperative Fish and Wildlife Research Unit, Auburn University, Auburn, AL

[4]The Jones Center at Ichauway, Newton, GA

*Garrison Forrester (Student), szf0046@auburn.edu

Abstract:
Changes in environmental factors have important implications for the successful hatching and early growth of stream fishes. Shoal Bass *Micropterus cataractae* and Largemouth Bass *M. salmoides* are native to the Apalachicola-Chattahoochee-Flint (ACF) River Basin. Little is known about reproductive requirements and age-0 growth characteristics of these two species in riverine environments. Our study objective was to determine hatch timing and growth of both species as related to discharge patterns and water temperature. We collected 293 age-0 Shoal Bass and 523 age-0 Largemouth Bass from nineteen sites in the lower Flint River catchment in 2022 and 2023. Shoal Bass ranged from 19 to 117-mm total length (TL) (average: 77-mm TL). Largemouth Bass ranged from 23 to 111mm TL (average: 54-mm TL). Hatch date was determined for each fish through back-calculation using daily bands on otoliths. Shoal Bass hatched over a 40-day period in 2022 with a median hatch date of May 14th, whereas the range of 2022 hatch dates in Largemouth Bass was 78 days with a median hatch date of May 7th. Both species generally hatched during periods of low, stable discharges, with no successful hatches during high-water events. Additionally, no successful hatches were recorded below Albany Dam after hydropeaking began in the summer. Hatches occurred at water temperatures from approximately 16 to 29 °C. Overall, Shoal Bass growth was faster than Largemouth Bass by approximately 0.3mm/day. Fish collected from the mainstem Flint River also grew faster than those collected from tributaries for both species. Knowledge of spawning dynamics in these two species over multiple years will provide information useful to agencies concerned about recruitment success in these populations.

Oral Presentation

Bio: My hometown is Cartersville, Georgia. I am currently a senior at Auburn majoring in Fisheries Management with a minor in Natural Resources Ecology. I have been an undergraduate research technician in Dr. Steve Sammons' lab since May 2021. After graduation I hope to pursue a master's degree in the field of fisheries management.

Catch-and-release angling effects on two black bass populations at an Alabama Reservoir

Thomas J. Pullen[1]* and Matthew J. Catalano[1]

[1]Auburn University, School of Fisheries and Aquaculture and Aquatic Sciences, Auburn, AL 36849

*Thomas J Pullen (Student), tjp0051@auburn.edu, 940-222-1976

Abstract:
The potential for size-selective catch-and-release angling to affect the size distributions of black bass (Micropterus spp.) populations is not well understood. Angling is highly size selective, and some types of angling, such as competitive fishing events, may be particularly size selective by incentivizing the capture of large fish. We are conducting research on Largemouth and Alabama Bass at Neely Henry reservoir in Alabama to assess the potential for size selective angling to affect population size structure. This system is characterized by high fishing effort, a high proportion of fish captured in tournaments, and a high rate of catch-and-release fishing. Size selectivity of tournament and non-tournament angling was estimated from a high reward tagging study. Variation in growth trajectories among individual fish was estimated by ageing samples of fish from the creel and from standardized electrofishing surveys. An age- and size-structured equilibrium model that accounted for individual variation in growth trajectories within these populations revealed that under typical reservoir capture rates and Ricker stock-recruitment dynamics, catch-and-release angling could reduce the abundance of memorable size Black Bass by 27% relative to an unfished population. Under Beverton-Holt recruitment, reductions were more severe with a predicted 38% decline.

Oral Presentation

Bio: I am from Ponder, TX. I earned a degree in Fisheries and Aquatic Ecology from Oklahoma State University before coming to pursue my Masters degree at Auburn University. Currently working on a project assessing the effects of catch-and-release angling on Black Bass under Dr. Matthew Catalano.

Simulating Tradeoffs Between Fishing Quality and Economic Performance in a Black Bass Fishery with High Tournament Effort

Natalie Coash[1]*, Matthew Catalano[1]

[1]Auburn University School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn, AL 36849

*Natalie Coash (Student), nsc0024@auburn.edu, (616) 375-1224

Abstract:
Black bass (*Micropterus* spp.) populations in the southeastern US are subject to high catch-and-release angling effort partly attributable to the popularity of fishing tournaments. Systems with high catch-and-release rates, and low post-release survival, can have catch-and-release mortality rates that exceed harvest mortality, possibly resulting in negative effects on fishing quality. Tournaments may have a stronger negative impact on fishing quality due to higher post-release mortality in comparison to non-tournament catch and release angling. However, tournaments provide economic benefits through increased expenditures in local communities. The objectives of this study are to evaluate the trade-offs between economic benefits and fishing quality across a gradient of increasing black bass tournament fishing effort at Neely Henry Lake, a 4,500-hectare reservoir within the Coosa River Basin in northeast Alabama. We utilize an age-structured simulation model that includes a sub-model for fishing-related economic expenditures to assess various tradeoffs. The model allows for differential effort, post-release mortality, and effort-related expenditures between tournament and non-tournament anglers. The model is informed by an intensive reward/telemetry tagging study being conducted on Neely Henry as well a tournament and nontournament bass angler survey. The 2023 angler survey utilized a mixed methods approach including access-point and roving creel survey methods with contingent behavior questions inquiring anglers to evaluate valuable bass angling tradeoffs to allow researchers to further understand the possible reallocation of angler effort and expenditures under various management scenarios. In summary, we used a mass reward tagging/telemetry system paired with angler socioeconomic data to inform our population model and evaluate the fishing and economic tradeoffs of tournament and nontournament bass angling. Agencies can utilize this information to better understand the subsequent effect of angling pressure on the bass population and surrounding economy as well as construct management regulations that maximize the benefits of the tournament fishing industry while supporting a high-quality fishery with desirable catch rates and size structure.

Oral Presentation

Bio: Graduated with a bachelors in fisheries from the University of Wisconsin- Stevens Point and has previous experience monitoring trout and salmon populations as well as aquatic plant and macroinvertebrate ecology. Master's work at AU aims to continue to diversify my experiences in fisheries research.

Partitioning mortality components in a high effort Black Bass fishery using a combined high value reward and radio telemetry approach.

Max Rubino[1]* and Matthew Catalano[1]

[1]Auburn University School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn, AL 36849

*Max Rubino (Student), mjr0084@auburn.edu, 406-781-6334

Abstract:
In recreational fisheries where voluntary release is nearly 100%, post-release mortality could exceed harvest mortality and negatively affect abundance and size structure. For reservoir Black Bass species (Micropterus spp.) tournament post-release mortality rates are higher than that of non-tournaments and could prove to be a significant component of total fishing mortality. To better quantify components of mortality, we conducted a tagging study to estimate natural, harvest, tournament release, and non-tournament release mortality rates. Over a two-year period we tagged 800 Largemouth *(Micropterus salmoides*) and 800 Alabama Bass (*Micropterus henshalli*) with conventional external dart tags that carried a $100, $200, or $300 angler reward. In addition, 125 fish of each species were implanted with a radio transmitter that indicated mortality by pulsing at a higher rate when tags remained motionless for 8 or 24 hours. Fish were collected for tagging using standard electrofishing procedures in January and February of 2022 and 2023. Telemetered fish were manually tracked monthly. Telemetry data and angler tag returns are used to inform a Bayesian integrated population model. Preliminary results indicate that the annual capture rate for both species will be greater than 0.5. Additionally, estimates of post-release tournament mortality, and annual natural mortality are at the high end of literature values. There is an indication of possible angler selectivity towards Alabama Bass in some angling sectors. Results from this study will inform better recreational fishing management on high effort bass reservoirs in the southeastern US and beyond.

Oral Presentation

Bio: I am a graduate research assistant conducting researching angling mortality for two Black Bass species in Alabama.

Population metrics of Black and White crappies in Alabama reservoirs

Samuel D. Delaney[1] and Steven M Sammons[1]

[1] School of Fisheries, Aquaculture, and Aquatic Sciences, 203 Swingle Hall, Auburn University, Auburn, Alabama

Samuel D. Delaney (Student), sdd0018@auburn.edu, 334-467-3552

Abstract:
Black Crappies *Pomoxis nigromaculatus* and White Crappies *P. annularis* in Alabama are currently regulated with a 229-mm minimum length limit (MLL) and a 30 fish/person/day bag limit. With the recent advent of forward-facing sonar allowing anglers to target crappies more efficiently, evaluation of current regulations is warranted. Electrofishing is being conducted to collect crappies in 13 reservoirs across Alabama to examine differences in population metrics across reservoirs, between species and sex, and within a subset of reservoirs. In two reservoirs, size structure of crappies in upper portions of the reservoirs were shifted towards shorter-length fish compared to the lower portions. Likewise, PSD-P was substantially lower in the upper section in both reservoirs, and relative weights were also lower in the upper section of one reservoir. Size structures and relative weights were similar between male and female crappies. Black Crappies had lower PSD-Ps than White Crappies in reservoirs where both species are present, but relative weights were similar between species. Crappies in mesotrophic reservoirs had lower average relative weights than in eutrophic reservoirs. However, lower trophic systems seemed to show a wider range in size structures. Two reservoirs on the Chattahoochee River, Eufaula and Harding, are exempt from the 229-MLL and had the highest average relative weights in data analyzed thus far. Length frequencies of reservoirs that experience seasonal drawdowns were shifted towards larger fish, with low quantities of stock sized crappies compared to reservoirs with more stable water levels, suggesting drawdowns could negatively influence recruitment. Length frequencies of riverine mainstem impoundments seem to peak closer to 300-mm compared to storage impoundments that all peak near 260-mm, indicating a growth difference between these types of reservoirs. Crappies will continue to be collected for analyses in 2024, with the ultimate goal of assessing the performance of the 229-mm MLL using age-structured models.

Presentation

Bio: I grew up in Enterprise, AL, and received a Bachelor of Science at Auburn University in 2022 from the School of Fisheries, Aquaculture, and Aquatic Sciences. I worked as a biologist for Florida FWC for a short period before returning to Auburn for a thesis-based M.S. that involves an age and growth study on Black and White Crappies across Alabama and evaluating the current statewide 229-mm minimum length limit.

Estimating Fishing Mortality and Identifying Large-scale Movements of Greater Amberjack in the Southeastern US

Samantha Young[1*], Matthew Catalano[1], Steve Sammons[1], Jeffrey Buckel[2], Mark Albins[3], Michael Dance[4], Sean Powers[3]

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[2]North Carolina State University, Center for Marine Sciences and Technology, North Carolina State University, 303 College Circle, Morehead City, NC 28557

[3]University of South Alabama, Dauphin Island Sea Lab, 101 Bienville Blvd, Dauphin Island, AL 36528

[4]Louisiana State University, Department of Oceanography and Coastal Sciences, 2255 Energy Coast and Environment Bldg, Baton Rouge, LA 70803

*Samantha Young (Student), ssy0008@auburn.edu, 570-463-5314

Abstract:

Greater Amberjack (*Seriola dumerili*) are an important marine species for sport and commercial fisheries across the southeastern United States. Two Greater Amberjack stocks are recognized for assessment and management off the southeastern US: the South Atlantic and Gulf of Mexico (GOM) stocks. Currently, the South Atlantic stock is neither overfished nor undergoing overfishing, but the GOM stock is experiencing both conditions. Obtaining independent estimates of exploitation and movement for these stocks would aid management by supplementing and potentially corroborating existing stock assessments. We are conducting a large-scale multi-investigator tagging study to estimate regional fishing mortality, length-based vulnerability, and large-scale movements of Greater Amberjack. From June 2022 to November 2023, we tagged 1029 Greater Amberjack with conventional reward tags; 395 fish were also implanted with an internal acoustic transmitter. The study area was divided into three regions: the Western GOM, Eastern GOM, and the South Atlantic. We assumed 100% reporting of recaptured tags from the recreational fishery by using a $250 reward incentive. Detections of fish tagged with acoustic transmitters were obtained from new and existing receiver arrays to inform mortality estimates and detect fish movements. As of December 2023, 118 externally tagged Greater Amberjack have been reported as caught by anglers: 29 in the Atlantic region, 48 in the Eastern GOM and 41 in the Western GOM. Of the recaptures, 13% came from the commercial fishery, and 87% were from recreational anglers, with 45% of fish harvested and 55% released. Comparing the release with recapture locations indicates that 96% of Amberjack were caught in the same region they were tagged. Our results will provide critical estimates that fisheries management agencies can use to make informed regulatory decisions for future fishing seasons to help maintain a sustainable fishery.

Oral Presentation

Bio: I grew up in a small town in Pennsylvania and earned my B.S. in marine science from the University of South Carolina. I am now pursuing my M.S. in fisheries at Auburn University studying the mortality rates and movements of Greater Amberjack.

Management Intervention Influences Trajectory of a Declining Stock

Dylan Kiene[1], Mark Albins[1], and Sean P. Powers[1]

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Dylan Kiene (student), dkiene@disl.org, 251-861-2141 x2384

Southern Flounder (*Paralichthys lethostigma*) is a marine estuarine-dependent ambush predator that supports popular commercial and recreational fisheries throughout the northern Gulf of Mexico. Alabama's previous assessment on Southern Flounder (2018) indicated that the stock was experiencing a decline in overall population abundance most likely due to low recruitment and that management intervention was needed to rebuild a sustainable stock. Flounder regulations were revised to reduce catch levels through a reduction in both commercial and recreational bag limit, season closure and increase in minimum size (effective August 1st, 2019). To assess the current status of the stock, we synthesized fisheries-dependent and independent data and applied those in an age-structured modeling environment. Fisheries dependent sources of information included commercial and recreational landings, age data from commercial and recreational port sampling, and recreational effort data. Fisheries-independent data from a 22-year gillnet survey was also included. From these data sources three indices of abundances (fisheries-independent CPUE, MRIP recreational CPUE and APAIS recreational CPUE), two catch-at-age matrixes (commercial and recreational), live discards at age with associated mortality, and growth parameters were calculated and entered into the National Marine Fisheries Service's (NMFS) ASAP model (version 3.0.17) for the period from 2001-2022. The ASAP model is a statistical catch-at-age model that allows internal estimation of a Beverton-Holt stock-recruitment relationship. The assessment model indicates that the stock has been experiencing an overall decline for nearly two decades due to high fishing mortality and poor recruitment prior to management intervention in 2019. $F_{current}$ (the current Fishing mortality rate) is below the $F_{SPR30\%}$ (0.64 vs 1.07) indicating that the stock is no longer experiencing overfishing or, alternatively, the rate of exploitation is sustainable under the current management regime observed from 2019 to 2022.

Oral Presentation

Bio: Dylan is a Ph.D. student at the University of South Alabama School of Marine and Environmental Sciences under the advisement of Dr. Sean Powers

Comparison between Spherical Baited Remote Underwater Video (SBRUV) and Remotely Operated Vehicle (ROV) surveys in offshore Alabama

Adam W. Jung[1]*, Sean P. Powers[1], Crystal L. Hightower[1], Mark A. Albins[1], Grant R. Lockridge[1]

[1]University of South Alabama, Department of Marine Sciences, Mobile, Alabama 36688

*Adam Wolff Jung (Student), ajung@disl.org, 240-506-8213

Abstract:
Fishery-independent video surveys are widely used to gather data on relative abundance and species composition of reef-associated fish. Video gears have advantages over traditional fisheries gears (e.g. trawls, longlines, gillnets) as they can be used over a wider range of habitat, are less selective of particular species and size-classes, are non-extractive, and are archival. As the use of video survey data in stock assessments is becoming more common, it is increasingly important to assess the merits and biases of different video gears. Mobile single-camera systems have a limited field of view, but are capable of maneuvering to focus on specific habitat patches. Whereas, stationary 360-degree camera systems benefit from a wider field of view, but are constrained to sample only the immediate area where they are deployed. Because of these discrepancies, abundance data generated from each gear could vary in terms of accuracy and precision across a range fish abundance. We compare measures of relative abundance (max N counts) and species richness between a single-camera video system mounted on a remotely-operated-vehicle (ROV) and a multi-camera, 360-degree, stationary, spherical baited remote underwater video system (SBRUV). These data will be used to assess relative merits and biases, estimate calibration factors, evaluate the behavioral response of fish, and assess alternative methods of analyzing data from these two gear types. Preliminary data indicates that SBRUV max N counts have a stronger correlation to ROV max N counts when the SBRUV video analysis includes the whole deployment (rather than excluding an initial acclimation period) and when bait is used to attract fish to the SBRUV. This demonstrates that certain methods of collecting data increase the ability to compare counts between the ROV and the SBRUV.

Oral Presentation

Bio: I grew up in Rockville, Maryland. I am currently a M.S. student in the University of South Alabama under the advisement of Dr. Sean Powers at the Fisheries Ecology Lab at Dauphin Island Sea Lab. I received my undergraduate degree from Penn State University in Environmental Resource Management and worked as a fisheries observer in Alaska and coral reef research intern in Madagascar.

Oral Presentations (ADCNR FW Fisheries)

Preventing the Spread: An overview of Alabama's Aquatic Nuisance Species (ANS) Program

Adrian Stanfill[1]* and Dave Armstrong[1]

[1]Alabama Division of Wildlife and Freshwater Fisheries, 1631 L. Gray Blvd. Athens, AL 35611

*Adrian Stanfill, Adrian.Stanfill@dcnr.alabama.gov, (256) 777 – 0140

Abstract:
Invasive aquatic species pose a significant threat to native fish populations, invertebrates, recreation, and the Alabama economy. Over 50,000 non-native species have been introduced into North America. Of those, about 15% have become nuisance species, leading to economic and ecological impacts. Alabama is well known for its aquatic biodiversity and introductions of non-native, nuisance species can provide a new source of significant threats to native and endemic species. With a complex network of small rivers, tributaries, and streams, most ultimately draining into the Gulf of Mexico, Alabama harbors 60% of the mussel species, 52% of freshwater turtles, 38% of freshwater fishes, and 20% of the crayfish species in North America. As the center of biological diversity in the U.S., Alabama citizens have an important role to play controlling aquatic nuisance species. If no actions are taken, invasive aquatic species will become more numerous in Alabama and possibly expand into neighboring states. Moreover, negative impacts to the state's economy are likely to occur and the abundance and diversity of native species will decline, possibly to the point of extirpation or extinction. Due to the threats posed by aquatic nuisance species, the Alabama Department of Conservation and Natural Resources (ADCNR) developed the Aquatic Nuisance Species (ANS) Management Plan, which was approved in November 2021. In response, the Fisheries Section of ADCNR created the Alabama ANS Program. Herein, we provide an overview of the newly developed statewide ANS program, its current direction, and future work proposed to address the objectives of the ANS Management Plan and combat issues faced across the state.

Oral Presentation

Bio: I received my bachelor's and master's degrees from Auburn University, School of Fisheries. After finishing my master's, I worked seven years with Florida Fish and Wildlife's Division of Freshwater Fisheries Management, where my focus was sport fish management and habitat restoration. I currently work as a Fisheries Biologist with Alabama's statewide Aquatic Nuisance Species program, based in Athens, AL.

Investigating the Susceptibility of Redeye Bass to Overharvest in the Coosa and Tallapoosa River Basin

Nathan Aycock[1]*, Michael P. Holley[1], Kevin W. Baswell[1]

[1]Alabama Division of Wildlife and Freshwater Fisheries, District II, 1930 Fish Hatchery Road, Eastaboga, AL, 36260

*Nathan Aycock, nathan.aycock@dcnr.alabama.gov, 256-846-2776

Abstract:
Redeye Bass are a small, slow growing species of black bass native to small to medium sized upland streams in Alabama. To evaluate ADWFF's creel limit for Redeye Bass, we conducted a study to examine how a Redeye Bass population responds to fishing pressure under the current harvest regulations (10 fish per day, no length limit) and under catch and release conditions. Two 'harvest' sites and two 'catch and release' sites in the Coosa and Tallapoosa River Basin were fished on five occasions over a three-week period by ADWFF personnel, and fish lengths, catch rates, and recaptures were recorded. A total of 238 Redeye Bass were collected from the four sites. Catch rates were initially high at most sites but fell to near zero at each location after five sampling events. Of the 91 fish marked and released at the catch and release sites, only five were recaptured. Length differences were observed between streams that are likely due to hybridization with other black bass species. Though catch rates fell quickly with intensive fishing pressure, subsequent sampling documented catch rates rebounding four months and one year after the study period, likely due to recolonization from adjacent sections of stream. Management implications regarding potential changes to creel and size limits were explored, and no changes to the harvest regulations governing Redeye Bass in the Coosa and Tallapoosa River Basin are recommended at this time.

Oral Presentation

Bio: I graduated with an undergraduate degree in fisheries from Auburn University and a master's from Mississippi State University. After college I began my career with the Mississippi Department of Wildlife, Fisheries, and Parks. In 2019 I started working for the Alabama Division of Wildlife and Freshwater Fisheries in District 2 as a fisheries biologist. I live in Oxford, AL.

Status of Southern Walleye Populations in Alabama

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Abstract:
The Mobile Basin is home to a genetically unique strain of walleye (*Sander vitreus*), known as southern walleye or Gulf Coast walleye. Although southern walleye were likely never abundant, historical records indicate higher catch rates and a more widespread distribution than those observed today. This presentation will provide an overview of the status of walleye populations in the Warrior and Tombigbee Rivers in Alabama, ongoing efforts to survey and restore wild populations, and efforts to create recreational fisheries for Alabama anglers.

Oral Presentation

Bio: Chris graduated with an undergraduate degree from Arkansas Tech and a MS degree in Fisheries from Auburn University. He is now the ADCNR Freshwater Fisheries District Supervisor for District III in Northport, Alabama.

“Who’d-A-Thunk-It?”

Phil D. Ekema[1]*, Heath Haley[1], and Ken D. Wood[1]

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Abstract:
Trophy catfishing, catfish pay lakes, and catfish tournament angling have become increasingly popular during the past 10-15 years. Accompanying this increased catfishing activity is an increased demand for catfish bait. Since Skipjack Herring (*Alosa chrysocloris*) (SJH) are the preferred catfish bait (common knowledge), the demand on this unregulated resource is now at unprecedented levels. “Who’d-A-Thunk” that a fish once considered trash would now be worth as much as $46 apiece (eBay Oct 2022). This study focused on sampling the SJH populations in Wheeler, Wilson, and Pickwick Reservoirs in north Alabama during fall 2020 to determine the effect that increased angling exploitation has had on these populations. Electrofishing and angling gear (plus gill nets in Pickwick) were utilized to sample a minimum of 100 SJH from each reservoir. Angling proved to be effective and simulated the technique used by SJH harvesters. Conventional spinning gear with terminal tackle consisting of Sibiki rigs, Foley spoons, or crappie jigs cast from shore in the tailraces or fished from a boat in pinch-points in the river was utilized. Baits were fished at varying depths until a pattern was established. Lengths, weights, sagittal otoliths, and sex data were collected from all SJH. SJH were captured from Wheeler (N=114), Wilson (N=117), and Pickwick (N=115) Reservoirs during fall 2020. Analysis of these data revealed that the Wilson population was heavily exploited, while both Wheeler and Pickwick populations showed less exploitation. As a result of this study, a daily and possession limit of 100 SJH was imposed Statewide on 1 October 2021. A follow up study should be considered to assess any changes that may have occurred since implementation of the regulation.

Oral Presentation

Bio: Phil is a 34-year employee of the Fisheries Section with 31 of those years working out of the District-1 Office in Limestone Co. and 3 yrs. as the Hatchery Manager at the Carbon Hill State Fish Hatchery. Phil began his career as a Biologist Aide and has advanced through the ranks to his current position as District Fisheries Supervisor. He spends his spare time chasing bass in north Alabama and cheering on his Iowa State Cyclones.

A case study discussing the results of drawing down Gantt Reservoir to the original Conecuh River channel September through early December 2019.

Ken Weathers[1]*, Rob Andress[2], and Rob McCarter[2]

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[2]Alabama Department of Conservation and Natural Resources, Wildlife and Freshwater Fisheries Division, Fisheries District 4, 3520 Plaza Drive, Enterprise, Alabama 36330

*Ken Weathers, Ken.Weathers@dcnr.alabama.gov, 334.347.9467

Abstract:
The Gantt hydroelectric dam was built on the Conecuh River in the 1920's and requires periodic drawdowns of Gantt Reservoir (2,747 acres) to allow for maintenance of the dam. The latest draw-down by PowerSouth Energy Cooperative was conducted September through December 2019, when the reservoir was lowered approximately 18 feet to the river channel. This presentation will discuss some of the sportfish population assessments based on the standardized fish sampling data collected before and after the reservoir draw-down. We will discuss the angler attitudes and perceptions that were observed during and after the draw-down, and habitat improvement projects conducted by AL DCNR and PowerSouth Energy Cooperative.

Oral Presentation

Bio: Graduated from Auburn University with a MS in freshwater fisheries management in 1989, then worked as a district fisheries biologist for KY Dept of Fish and Wildlife Resources for a year. I was hired as a district fisheries biologist by AL DCNR in September 1990, and served in this capacity until I was promoted to district fisheries supervisor in 2006. I retired from AL DCNR in 2022, and after a long walk in the woods came back as a part time fisheries consultant in February of 2023.

Sport Fish Restoration in Alabama: Past, Present, Future

Matthew Marshall[1]*

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*Matthew Marshall, matthew.marshall@dcnr.alabama.gov, 334-242-3471

Abstract:
The Alabama Division of Wildlife and Freshwater Fisheries (ADWFF) mission is to protect, manage and enhance the state's fish and wildlife resources for the sustainable benefit of the people. Since 1953, the Fisheries Section of ADWFF has relied on the Sport Fish Restoration (SFR) Fund and the funds from the sales of fishing licenses to achieve this mission. In total, the SFR Fund has provided $185,000,000 in federal grants for the conservation, management, and research of Alabama sport fishes. Funding for SFR grants is collected from manufacturer excise taxes on fishing equipment, marine and small engine fuel taxes, and imports which are matched with state license dollars. Currently, these grants assist with operation and maintenance of 125 boat ramps, 23 public fishing lakes, three freshwater sport fish hatcheries, research, survey and monitoring of public waters, technical assistance, aquatic and education. The Fisheries Section faces challenges related to a decline in fishing participation, angler misinformation, and increase costs, highlighting important issues for the future.

Oral presentation

Bio: Born in Montgomery, AL. Graduated in 2004 (B.S. Fisheries) and 2008 (M.S. Fisheries) from Auburn University.

Poster Presentations

Relative abundance, habitat use, and size structure of Scamp *Mycteroperca phenax* across an artificial reef network

Manuel E. Coffill-Rivera[1,2]* and Sean P. Powers[1,2]

[1]University of South Alabama, Stokes School of Marine Sciences, Mobile, AL 36688

[2]Dauphin Island Sea Lab, Fisheries Ecology Lab, Dauphin Island, AL 36528

*Manuel E. Coffill-Rivera (Student), manuelcoffill@gmail.com, 407-432-0666

Abstract:
Groupers (Serranidae) are reef-associated fishes that support commercial, recreational, and subsistence fisheries across their range. Many groupers display moderate/high longevity, protogynous hermaphroditism, and complex spatial ecology (spawning-related migrations and aggregations), traits that make these species susceptible to overexploitation. Scamp *Mycteroperca phenax* supports important commercial and recreational fisheries across its range, especially in Alabama where it's the most harvested grouper in the state. The goal of this study is to describe the relative abundance, habitat use, and size structure of Scamp in the Alabama Artificial Reef Zone (AARZ). The AARZ is a soft-bottom continental shelf region that has been supplied with artificial reef structures for decades to supplement valuable fisheries off Alabama. Scamp relative abundance, habitat use, and size structure in the AARZ will be investigated using a long-term remotely operated vehicle (ROV) visual survey. Generalized additive models will be used to determine what environmental variables influence Scamp presence and relative abundance across the region. Previous studies have highlighted the high affinity of groupers to hard-bottom habitats. However, recent studies have also highlighted the importance of artificial reefs as transitional habitats for groupers and their preference for it in the absence of natural hard-bottom. This will be the first description of Scamp relative abundance, habitat use, and size structure focused on the AARZ and will provide information that will be beneficial for monitoring the health of this important stock and guide management. As sympatric grouper stocks (e.g., Gag *M. microlepis* and Red Grouper *Epinephelus morio*) are subject to stricter regulation due to intense fishing pressure reducing population fitness, this may indirectly cause additional fishing pressure on the Scamp stock.

Poster presentation

Bio: I was born and raised in Puerto Rico, received my B.S. in Marine Science at Florida Gulf Coast University and M.S. in Wildlife, Fisheries and Aquaculture at Mississippi State University. I'm pursuing a Ph.D. in Marine Sciences at the University of South Alabama, and my dissertation research focuses on describing the population dynamics of Scamp in the northcentral Gulf of Mexico.

Mapping Shore-Based Fishing Along Mobile Bay, Alabama

Hailey Smith[1]*, Sarah Gibbs[1], Savannah Swinea[2], Katie Waring[2], Steven Scyphers[1]

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Abstract:
Shore-based fishing is important socially, culturally, and economically, yet is among the more understudied aspects of fisheries. The Mobile Causeway, also known as Battleship Parkway, is a 7-mile long highway that connects the east and west shores of Mobile Bay. The highway sits on the water and has public beaches, piers, and seawalls along the shoulders. The north side requires a freshwater fishing license while the south side requires a saltwater license, as the highway acts as a water divide. Due to its history, accessibility, and geography, the Causeway is a hotspot for shore-based recreational fishing in coastal Alabama. However, very little is known about the spatial distribution of fishing activities or the underlying social drivers (i.e., shoreline accessibility, fisher demographics). This poster describes a pilot study focused on mapping the spatial and temporal distribution of fishing activities and documenting the social and demographic characteristics of fishers. Specifically, we coupled high-resolution mapping surveys of fishing activity with intercept surveys of fishers that measured: target species, species caught, consumption patterns, fishing tackle, fishing experience, demographics, and social motivations. Our results highlight the unique importance of the Causeway for shore-based fishing, particularly among low-income and subsistence fishers. Considering that shore-based fishing represents a large proportion of some fisheries, our study demonstrates a methodological approach to simultaneously characterize fishing activity and the socioeconomic dimensions.

Poster Presentation

Bio: Hailey is from Alabama and went to Spring Hill College in Mobile for her undergraduate degree to study Marine Biology. Hailey worked under Dr. Sean Powers at the Dauphin Island Sea Lab working on his projects that focus on ecology of reef and estuarine fish. She was then recruited and continues to work under Dr. Steven Scyphers in understanding the angler's role in fisheries management and how to better protect the angler in the decisions made to protect our ecosystems.

Distribution of Mercury in Flint Creek Watersheds: Implications for Mercury Bioaccumulation

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Abstract:
When mercury enters the environment, it converts to methylmercury (MeHg), which is biologically hazardous and is present in soil and aquatic microorganisms. Exposure to MeHg affects the central nervous system, causing neurological damage, mental retardation, blindness, deafness, kidney malfunction, and, in some cases, death. This research study will compare the bioavailability and toxic effects of mercury and its compounds in both fish and humans. It will also identify the distribution of mercury in Flint Creek watersheds and the implications for mercury bioaccumulation. Samples were taken along the Flint Creek watershed at Red Bank, Vaughn Bridge, and Highway 31. At these sites, composite surface water samples were collected. The water samples were analyzed for Total Organic Carbon, Dissolved Carbon, and Total Mercury. There were 36 fish, including 12 species of largemouth bass, bream, and catfish, and 102 other samples (36 for soil/sediment, 36 for surface water, and 30 for TOC/DOC). These samples were collected, cleaned, and pretested. The samples were preserved in hydrochloric acid bottles, while physiochemical parameters, including water temperature and pH, were measured. Surface water samples were tested for total Hg concentrations using Cold Vapor Atomic Fluorescence Spectroscopy at the Environmental Compliance and Testing Laboratory in Memphis, TN. Quantitation limits are also used to determine the concentration of total mercury (tHg). The determined tHg within Flint Creek revealed federal drinking water standard levels that are potentially hazardous to aquatic life. Highway 31 experienced elevated levels of methylation resulting from stagnant conditions. The findings of this study showed that tHg concentrations were consistent with the results of the Alabama Department of Public Health (ADPH) fish consumption advisories released in 2022. The concentrations exceeded certain human and public health standards, and it advised that people should refrain from eating largemouth bass or eat only two meals of fish per month from Flint Creek.

Poster Presentation

Bio: My name is Destinee Simmons I am from Atlanta, GA, and I attend Alabama University. My thesis is on the Distribution of Mercury in Flint Creek Watersheds: Implications for Mercury under Dr. Okweye.

Variation in reproductive characteristics of Red Snapper (*Lutjanus campechanus*) in the northcentral Gulf of Mexico

Laia Munoz-Abril[1]* and Sean Powers[1]

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* Laia Munoz-Abril (Student), lmunoz@disl.org, 2512329762

Abstract:
The Red snapper *Lutjanus campechanus* inhabits rocky and muddy environments and plays an essential role in reef areas. Due to intense fishing pressure, the species is considered vulnerable to overfishing. Hence, it is a species routinely assessed in the Gulf of Mexico and the South Atlantic. The snapper population is a metapopulation divided into two subgroups without genetic differentiation in the Gulf of Mexico. A standard recommendation from stock assessments is the need for updated reproductive parameters. Given the increased focus on regional, state-focused management, more excellent spatial resolution in these parameters is needed. To provide this information for the northcentral Gulf of Mexico, we have a multi-year study to update the reproductive status (sexual maturity size, spawning season, and reproductive status by age cohorts) of Red Snapper in offshore Alabama using histological information. Specimens are collected from fisheries-dependent sources (fishing tournaments) and fisheries-independent surveys. For each fish, we record morphometric measures of fork length and weight; we store the gonads in NBF at 10% and use a histological approach (hematoxylin and eosin) to identify each sample's stage. We are aging the fish using sagittal otolith cuts. As it is a study in progress, we have 800 samples showing the spawning peak during July, which is related to the GSI. Our samples are more significant than 270 mm, suggesting that the size at sexual maturity is less than this measure. We will conduct comparisons with previous studies that will allow us to evaluate the temporal and spatial patterns of variability in these critical metrics.

Poster Presentation

Bio: I am a four-year PhD student at the University of South Alabama/ Dauphin Island SeaLab. I was born in Colombia and moved to Ecuador to obtain my masters degree at Universidad San Francisco de Quito. and then moved to Alabama for my PhD.

A review of salinity tolerances among North American freshwater mussels (bivalavia: unionida)

Susan Fuller[1]*, Shannon Brewer[1], Maureen Walsh[3], Jennifer Archambault[4], Jim Stoeckel[1], Kaelyn Fogelman[1].

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Abstract:
North America is a biodiversity hotspot for freshwater unionid mussels – of which nearly 1/3 are considered imperiled. One threat that freshwater species are facing is the increased salinization of freshwater systems through an increase in extreme weather events such as droughts and hurricanes or human activities such as irrigation and use of road de-icing salts. To facilitate conservation and management efforts associated with mussel conservation it is important to understand stressful and lethal thresholds of tolerance to environmental stressors such as increased salinity. To support this need we conducted a systematic literature review to summarize existing salinity tolerance data for North American unionids by life stage and taxonomy. We identified published studies on salinity tolerances for 22 North American species within the families Margaritiferidae and Unionidae, including the tribes Amblemini, Anodontini, Lampsilini, Pleurobemini, Popenaidini, and Quadrilini. Lethal endpoints identified included the salt concentration at which 50% of individuals tested experienced a desired endpoints (generally mortality; EC50), at which 50% of individuals tested experienced mortality (LC50) and the time until death for 50% of individuals tested (TUD50). The primary salt used in exposure studies was sodium chloride (NaCl), but tolerance assays have also been conducted using exposures to beet juice salt brines, commercial salts (Liquidow brine, Morton salt, and Cargill road salt), and sodium cyanides. Most exposures have been conducted on glochidia and juvenile life stages, although three species of adult unionids have had upper lethal tolerance limits evaluated. The next steps of this review include summarizing and synthesizing lethal thresholds for known species across life stages and taxonomy to identify lethal salinity thresholds for aquatic systems that unionid mussels reside in.

Poster presentation

Bio: I am from Danville, AL. I received my undergraduate degree in Fisheries and Applied Aquaculture from Auburn University (2023). I am currently a graduate student at Troy University getting a degree in Biology and Environmental Science under Dr. Fogelman working with mussels and crayfish.

Feeding response of zebrafish *Danio rerio* to a gel-based formulated diet

Logan Holfelder[1]*, Sophie B. Chehade, Nichole M. Conner, George B. H. Green, Jami de Jesus, Michael B. Williams, Jeri L. Brandom, Mickie L. Powell, Stephen A. Watts[1]

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*Logan Holfelder (Student), logo@uab.edu, 256-200-6395

Abstract:
The zebrafish, *Danio rerio*, serves as a valuable high-throughput pre-clinical animal model, contributing to our understanding of human health. Over the past few decades, *D. rerio* has become increasingly integral as a model for nutrition in both aquaculture species and humans. Comprehensive documentation of the culture of this model exists, with ongoing efforts to optimize husbandry requirements, particularly in the areas of diet and nutrition. Typically, adult *D. rerio* are fed formulated, nutrient-dense granulated diets proffered multiple times per day by either staff or robotics. Labor or mechanical costs of feeding are high in most laboratories and alternative protocols to reduce feed handling would be beneficial. Of additional benefit would be a diet offering the capability to monitor feed consumption throughout the entire growth phase. A gel-based diet has been produced that has a high moisture content, mimicking natural live prey. This diet maintains its physical integrity in the water, and one application can be consumed over 24 hours. The present study goal was to evaluate *D. rerio* fed gel-based diets relative to longer term growth, survival, and reproductive success. We conducted a 12-week feeding trail comparing a granulated standard reference diet (RD), a gel-based diet (AZ-GE), and a granulated version of the gel-based diet (AZ-GR). *D. rerio* survival in all treatments was > 95.8%. Terminal measures of weight and length in females fed the RD or AZ-GE diet did not differ significantly, whereas males fed the RD diet had the highest terminal weight and length measures. Reproductive success was similar among treatments, with all treatments exhibiting substantial egg production and high embryo viability. Use of the gel diet provides a mechanism to measure feed intake outcomes that could be valuable to zebrafish and other fish held in captivity.

Poster presentation

Bio: I grew up in Gadsden, AL. Graduated in 2019 (B.S. Biology, Marine Science concentration) from UAB. Upon graduation took a job at Dauphin Island Sea Lab's public aquarium (Alabama Aquarium). Returned to school to pursue my master's in biology working in Dr. Stephen Watts lab focusing on animal nutrition, with an emphasis on using Zebrafish as a biomedical model

Oral Presentations (Professional Session)

More than just a time series: the value of fishery-independent surveys for delineating habitat suitability

Ana Osowski[1]*, JM Drymon[1,2] and SP Powers[3,4]

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[3]University of South Alabama, School of Marine and Environmental Sciences, Mobile, AL 36688

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Fishery-independent surveys are fundamental for developing the indices of relative abundance used during the stock assessment process. However, these surveys are increasingly used to quantify the factors that influence species' distributions. Collectively, this information is crucial for implementing effective management and conservation practices, yet is challenging for highly vagile species. To illustrate this, we present two case studies focused on coastal sharks and red drum (*Sciaenops ocellatus*) wherein we sought to quantify abiotic factors that influence seasonal variation using data from a long-term fishery-independent bottom longline survey in the northern Gulf of Mexico. Between May 2006 and November 2018, we conducted 1,226 bottom longline sets and caught 13,742 individuals encompassing 67 species. These catch data were coupled with a suite of potentially predictive variables and analyzed using boosted regression trees to generate habitat suitability maps. For coastal sharks, depth and distance from shore were the strongest predictors of distribution and relative abundance. Conversely, for red drum, surface velocity and surface temperatures were the strongest predictors. Surprisingly, the importance of the predictive factors varied little across seasons for both sharks and red drum, suggesting future efforts to characterize the dynamics of this community could take place any time of the year. While the primary function of fishery-independent surveys will always be the construction of indices of relative abundance, our findings demonstrate the value of these efforts beyond a time series. As such, long-term fishery-independent monitoring should remain a priority, particularly in light of impending climate change.

Oral Presentation

Bio: Originally from Wisconsin, Ana Osowski pursued her graduate degree at Auburn University, where her thesis work focused on red snapper abundance on oil and gas platforms in the northern Gulf of Mexico. She now works as an Extension Associate with Mississippi State University's Marine Fisheries Ecology Program, where she assists with bottom longline surveys, manages the data collection and analysis from these surveys, and contributes to peer-reviewed journals and publications**.**

Tag Alabama: Angler Engagement and Data Collection Through Collaborative Saltwater Recreational Tagging

Crystal L. Hightower[1]*, Sean P. Powers[1], and Dylan Kiene[1]

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*Crystal LouAllen Hightower (Research Coordinator), Chightower@disl.org, 251-861-2141 x2384

Abstract:
Tag Alabama is an angler driven saltwater recreational tagging program sponsored by the Coastal Conservation Association of Alabama and the Fisheries Ecology Lab at the University of South Alabama. It gives anglers the opportunity to participate in user-based data and research on Spotted Seatrout, Red Drum, Atlantic Tripletail and Atlantic Tarpon in coastal Alabama. Anglers attend a training workshop where they receive a tagging kit, instructions on handling and tagging, and support for data entry in a web logging system at https://tags.usouthal.edu. Since 2018, Tag Alabama has grown to include 1100 participating anglers (over 1000 recapture anglers, 195 taggers) resulting in over 10,758 fishes tagged and 1,449 recaptures reported. Fifty-seven percent of recaptures were Red Drum, 38% were Spotted Seatrout and 5% were Atlantic Tripletail. Recapture rates continued to be highest for Atlantic Tripletail (31%) followed by Red Drum (18%) and then Spotted Seatrout (9% recapture rate). With the help of anglers, we observed broadscale spatial and temporal movement patterns for these species. Seasonal shifts in movement were observed for Red Drum (longitudinal) and Spotted Seatrout (latitudinal). Complimentary to this program, fishery independent tagging using high dollar reward tags can further estimate tag reporting rates. Additionally, double tagging approximately 10% of released fish can help estimate tag retention/tag loss. These important metrics can be incorporated as correction factors for the use of tagging data in future estimates. Tag Alabama promotes angler engagement in data collection and incentivizes catch and release fishing to promote the successful conservation of these important fisheries.

Oral Presentation

Bio: Crystal attended undergrad at the University of North Alabama, Florence, AL (B.S. Marine Biology) and graduate school at the University of South Alabama (M.S. Marine Sciences). She is the Research Coordinator for the University of South Alabama School of Marine and Environmental Sciences and Lab Manager for Dr. Sean Powers' Fisheries Ecology Lab at the Dauphin Island Sea Lab, Dauphin Island, AL.

Does size really matter? Evaluating the effects of artificial reef size on fish abundance and diversity in the Alabama Artificial Reef Permit Zone

Mark A. Albins[1,2]*, Crystal Hightower[1,2], Trey Spearman[1,2], Craig Newton[3], and Sean Powers[1,2]

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Abstract: Over several decades, the Alabama Marine Resources Division (AMRD) has created and maintained one of the world's most extensive networks of artificial reefs. This network provides increased fishing opportunities and has increased the local abundance of important fisheries species. As AMRD continues to expand this reef network, they will need to make decisions about how best to use their resources. One major question is whether it is more effective to deploy a small number of large artificial reefs, like shipwrecks, or a large number of smaller purpose-built reef modules. In order to help answer this question, we used a combination of ROV video and fisheries echosounder surveys to quantify the abundance and species richness of fish across three reef size categories (Small: chicken coops and small pyramids; Medium: super pyramids; and Large: shipwrecks). ROV video data suggest that (1) relative abundance of Red Snapper was highest on Medium reefs, (2) Gray Snapper were more abundant on Medium and Large reefs than on Small reefs, (3) Almaco Jack increased in abundance with reef size, and (4) Greater Amberjack, while not observed on Small reefs, were more abundant on Medium reefs than on Large reefs. Video data did not provide evidence that species richness differed among reef sizes. Echosounder data suggest that the density of medium to large sized fish in the water column was highest over Large reefs, but did not differ between Small and Medium reefs. Our initial results suggest that reefs in the Medium size category (i.e. Super Pyramids) support higher densities of important fisheries species than reefs in the Small size category (chicken coops and small pyramids), but that the differences between Medium reefs (Super Pyramids) and Large reefs (shipwrecks) are mixed and/or negligible. However, there are several important caveats to this conclusion that will be discussed.

Oral Presentation

Bio: Dr. Albins is a Research Assistant Professor working on a variety of projects related to the ecology and management of marine fishes. His research combines a firm grounding in ecological theory with rigorous empirical field investigations and advanced analytical tools to investigate fish populations and communities, and better understand how our actions affect them.

Monitoring Seagrass Scars in Tampa Bay, FL Using ArcGIS Pro Deep Learning

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Katelyn Lawson (Professional), klawson@auburn.edu, 334-844-5017

Abstract:
Seagrass scarring from boat propellers impacts seagrass health and abundance in Tampa Bay, Florida and many other coastal areas in the United States. Seagrass scars can be identified and manually digitized from high-quality aerial imagery to identify patterns of severity for targeted outreach, yet this is time-consuming and subject to bias. We used ArcGIS Pro 3.0 Deep Learning tools to develop a model that detects seagrass scars as objects. Through this process we reduced bias associated with manual digitization, saved time, and made this process repeatable and transparent year after year.

Oral Presentation

Bio: Katie received her MS in Fisheries from Auburn University and her PhD in Fisheries from the University of Florida, where she worked at the Tropical Aquaculture Laboratory. She conducts research in the areas of landscape ecology, native fish ecology, and nonnative fish biology and risk assessment. She worked for the USGS in Columbia, Missouri as an invasive carp Research Fish Biologist for 2 years, and for the last 5 years she has worked in the Alabama Natural Heritage Program at Auburn University as a GIS Analyst and Research Biologist.

Lower Alabama River Fish Passage: Reconnecting the Gulf of Mexico to the Appalachian Mountains

Jason Throneberry[1]*

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Abstract:
The Mobile River Basin drains more than 32,000 square miles in Alabama, equating to approximately 63% of the total land area. Within this vast watershed, the Alabama River is one of the most biodiverse ecosystems in the Southeastern United States. Many species supported by these rich waters are migratory, either from the Gulf of Mexico upstream into the Alabama River and its tributaries or locally migrant within the river and tributaries. The Cahaba River boasts the most aquatic biodiversity in the Alabama River system and is critical for many of these migratory fish species.

Since dam construction at Claiborne and Millers Ferry on the Alabama River, a historic and ecologically important migratory corridor was closed. Several species rely on this corridor for completion of life history requirements (i.e., fish and freshwater mussels). Recent studies by Auburn University have yielded that past efforts have not been successful, despite decades of effort. In response to species decline and recognition of critical timelines for species survival, The Nature Conservancy of Alabama (TNC) entered into an agreement with the U.S. Army Corps of Engineers (USACE) to complete a Feasibility Study for fish passage at these sites. Implementation of fish passage at these structures would yield ecological reconnection of approximately 600 miles of priority rivers, including 236 miles of the Alabama River and 152 miles of the Cahaba River. With this reconnected migratory corridor and given the monumental aquatic biodiversity of this system, this will be the most ecologically significant river restoration in North America.

TNC and USACE have reached the Agency Decision Milestone. USACE has moved forward with the decision to implement natural bypass channels at each lock and dam. TNC and USACE are in the planning and implementation phase of the Project and preliminary design has been completed.

Oral Presentation

B.S. Fisheries and Wildlife Biology
M.S. Biology – Emphasis on Rare and Endemic Species Aquatic Ecology
15 years experience in Fluvial Hydrogeomorphology
15 years experience in Stream Restoration
20 years experience in Aquatic Ecology Techniques and Implementation
Lead for TNC Southern Appalachian Whole System – Sediment Abatement
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ARSNiC: A New Approach for Prioritizing Aquatic Organism Passage and Infrastructure in Alabama

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Abstract:
Alabama is an aquatic biodiversity hotspot, but many species are at risk from habitat fragmentation. Ecological assessments confirm the importance of providing aquatic organism passage through road-stream crossings for aquatic species during all stages of life to ensure robust and healthy populations. Longitudinal connectivity of streams is necessary for species to access spawning grounds for successful reproduction and adequate gene flow. A common cause for stream reaches to become isolated is perched culverts, which can restrict the movements of aquatic organisms during critical time periods. Perched culverts result from erosion on the downstream side of the crossing related to hydrologic changes altered by the crossing structure. Increased erosion degrades habitats downstream through scouring, bank destabilization, and burying of primary habitat under excessive sediment. Other threats related to erosion by culverts are issues with transportation infrastructure. From structure failure and collapsing roadways to increases in frequency of flash flooding, these events can leave communities completely isolated, disrupting daily lives, blocking main throughways for emergency services, and lead to increased costs for repair and/or replacement. In an effort to confront these issues, that will worsen with climate change, the Alabama Rivers and Streams Network including Connectivity (ARSNiC) team was created to identify, assess, evaluate, and prioritize longitudinal connectivity projects on a statewide scale. ARSNiC is a multi-agency partnership performing assessments using multiple compounding methodologies from evaluating sediment risk input for roadways, to the structural influence on fluvial geomorphic responses, to the ecological and social benefits. Applying a step-up approach, the ARSNiC team is assisting in streamlining restoration efforts through identifying and prioritizing crossing structure replacements, along with improving transportation corridors. This new approach on longitudinal connectivity, provides potential opportunities for improving watershed connectivity and habitat availability for aquatic organisms, strengthening transportation infrastructure, and adds to social feasibility in a statewide diverse partnership.

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Bio: Daniel West is a fluvial geomorphologist and a Senior Environmental Scientist for the Ecosystems Investigations Program at the Geological Survey of Alabama, as well as the founder and current lead for the Alabama Rivers and Streams Network including Connectivity team. With specialization in watershed dynamics and management, Daniel's interests lie in integrating habitat assessments into watershed science.

Prioritizing Urban Watersheds for Restoration

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Abstract:
Urban watersheds are under stress due to polluted stormwater runoff, increased volume caused by urbanization, and sedimentation from upland and in-stream sources. In Alabama, these watersheds comprise the headwaters of some of the most biodiverse rivers in the state. The Nature Conservancy (TNC) in Alabama is launching an initiative to prioritize urban streams near the Birmingham metropolitan area for restoration and identify locations for infrastructure retrofits designed to restore flow regimes for the benefit of aquatic organisms and their habitats. This work is in its first year, but design and construction are underway for projects in the Locust Fork, Big Canoe Creek, and Shades Creek.

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Bio: Ben has been with The Nature Conservancy for 6-months. Prior to joining TNC, he worked for Cahaba River Society as the River Sustainability Director, focusing on science, policy, and advocacy for better stormwater management in the Birmingham Metro. Ben is originally from Minneapolis, MN and worked on fisheries, watershed, and land use strategies in the Great Lakes region for 10 years before coming to Alabama.