2025 Annual Meeting

Alabama Chapter of the

American Fisheries Society

Camp McDowell
Nauvoo, Alabama
February 5-7, 2025

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Program Schedule

*** Wednesday registration will be at Pradat Hall. Concurrent workshops will be held at Pradat Hall (Fish ID) or Stough Lodge (Stream Crossing Assessment).**

*** Thursday and Friday's registration and sessions will be in Randall Commons (basement of the Chapel of St. Francis). The location of activities in other locations (meals, social, etc.) is *denoted*. The dining hall is in Stough Lodge.**

Wednesday, February 5th:

12:00 PM – 5:00 PM	Meeting registration & lodging check-in
1:00 PM – 5:00 PM	Fish Identification Workshop OR Stream Crossing Assessment Workshop
6:00 PM – 7:00 PM	Dinner – Fish Fry

Thursday, February 6th:

8:00 AM – 4:30 PM	Meeting registration, lodging check-in, poster set-up, and load talks
8:00 AM – 9:00 AM	Breakfast *Dining Hall*
9:00 AM – 12:00 PM	State Wildlife Action Plan special session
12:00 PM – 1:00 PM	Lunch *Dining Hall*
1:00 PM – 1:15 PM	Chapter Meeting Opening Remarks
1:15 PM – 2:30 PM	Student Presentations – Session A
2:30 PM – 3:00 PM	Break
3:00 PM – 4:00 PM	Professional Presentations – Session B
4:00 PM – 4:30 PM	Break and Poster Setup
4:30 PM – 5:30 PM	Poster Presentations
6:00 PM – 7:00 PM	Dinner *Dining Hall*
7:00 PM – 8:00 PM	Awards, Raffle, Social

Friday, February 7th

8:00 AM – 9:00 AM	Breakfast *Dining Hall*
9:00 AM – 10:00 AM	Business Meeting
10:00 AM – 10:15 AM	Break
10:15 AM – 11:00 AM	Professional Presentations – Session C
11:00 AM – 12:00 PM	Southern Division Committee Meetings
12:00 PM	Adjourn

Thursday, February 6th

1:00 pm Welcome and Opening Remarks – Katelyn Lawson, President

SESSION A (STUDENTS)

1:15 pm Method comparison and data correlation of remotely operated vehicles and 360-degree baited remote underwater video systems in the Gulf of Mexico. Adam Wolff Jung et al.

1:30 pm Investigating the Impact of Bluegill (*Lepomis macrochirus*) on Water Quality in an Alabama pond. Michael Bocchieri and Brian Helms.

1:45 pm Use of an equilibrium yield model to evaluate the statewide 229-mm Minimum Length Limit on crappies in Alabama. Samuel D. Delaney and Shannon K. Brewer.

2:00 pm Effect of culvert systems on fish assemblage structure and connectivity in the Uchee Creek Watershed. Hannah Talbert and Katelyn Lawson.

2:15 pm Sublethal Temperature Effects on North American Unionid Mussels: Exploring Thermal Vulnerabilities. Victoria Martin et al.

2:30 – 3:00 pm **Break**

SESSION B (Professionals)

3:00 pm Range extension of Common Snook (*Centropomus undecimalis*) in the northern Gulf of Mexico: insights from recent research and prospects for Snook expansion in coastal Alabama. Charles W. Martin et al.

3:15 pm Conservation of Southern Walleye (*Sander sp. cf. vitreus*): Insights from Nuclear Markers and Broodstock Management. Kayla M. Fast et al.

3:30 pm Failed and Established Nonindigenous Freshwater Fishes of Alabama and Neighboring States. Michael W. Sandel.

3:45 pm Establishment of the invasive zebra mussel (*Dreissena polymorpha*) in multiple AL reservoirs. Riley T. Lovejoy and Caroline E. Farley.

4:00 pm **Break and Poster Setup**

4:30-5:30 pm Poster Presentations and Networking

POSTER PRESENTATIONS

Common Snook, *Centropomus undecimalis*, in Coastal Alabama: Climate-Driven Expansion of a Tropical Sportfish? Zoey C.W. Hendrickson et al.

Characterizing fishery activity and reef fish movement in an area of potential industry development in the northern Gulf of Mexico. Kaci M. Stokley et al.

Potential Quick Method to Predict Body Composition in Fish using Dual-Energy X Ray. Christopher Holbrook et al.

6:00-7:00pm Dinner *Dining Hall*

7:00-8:00pm Awards, Raffle, and Social *Randall Commons*

Friday, February 7th

9:00 am Business Meeting, Randall Commons

10:00 am – 10:15 am **Break**

SESSION C (Professionals)

10:15 am Population Genetics of Three Mussel Species in the Genus *Elliptio*. Molli Newman et al.

10:30 am Freshwater Restoration Across Alabama's Rural Landscape. Alana Reynolds and Jason Throneberry

10:45 am Bridging Science and Community: Troy University's Role in the Elba Hydroelectric Dam Removal Project on the Pea River. Kaelyn Fogelman et al.,

11:00 am Southern Division Committee Meetings, Randall Commons

12:00 pm **Adjourn**

Abstracts

Oral Presentations (Student Sessions)

Method comparison and data correlation of remotely operated vehicles and 360-degree baited remote underwater video systems in the Gulf of Mexico

Adam Wolff Jung[1,2], Sean P. Powers[1,2], Mark A. Albins[1,2] and Crystal L. Hightower[1,2]

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[2]Dauphin Island Sea Lab, 101 Bienville Blvd, Dauphin Island, AL 36528
Adam Wolff Jung (Student), ajung@disl.org

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. Two important video gears used to collect data in the Gulf of Mexico are Remotely Operated Vehicles (ROVs) and Stereo Baited Remote Underwater Video systems with 360-degree camera arrays (360-BRUV). Mobile single-camera systems like the current ROV 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. The standardization of these camera systems and comparison to each other helps increase the applicability of the data they collect. In this comparison study between the 360-BRUV and ROV we are quantifying the relative biases of each gear, determining the degree of correlation between the relative abundance (max Ns) of each camera system and assessing the effect of different methods on the relationship between the data from the two gears. Our current data shows the 360-BRUV and ROV have different probabilities of encountering certain species and measure different proportions of fish abundance. The data collected from this project will supplement Alabama's offshore Fisheries Independent Survey and the Greater Amberjack Count, a large independent study that aims to estimate the absolute abundance of greater amberjack in the coastal waters of the southeast United States.

Bio: I grew up in Rockville, Maryland and graduated from Penn State University in 2018 with a B.S. in Environmental Resource Management. My thesis research is about underwater video camera systems used to survey fish in the Gulf of Mexico.

Investigating the Impact of Bluegill (*Lepomis macrochirus*) on Water Quality in an Alabama pond

Michael Bocchieri[1] and Brian Helms[1]

[1] Troy University, Department of Biological & Environmental Sciences, Troy, AL 36081
Michael Bocchieri (Student), mbocchieri@troy.edu

Abstract:
Sunfishes (Centrarchidae) have been widely used as model organisms to study food web dynamics and energy transfer within aquatic systems. However, little is known about how centrarchids affect water quality within small impoundments in the Southeast United States (SE). Given their often high abundance, we hypothesized that *L. macrochirus* regulates water quality in SE ponds. To test this, we conducted a mesocosm study on Mullis Pond, a 1-ha impoundment in Troy, AL. We predicted that if *L. macrochirus* is removed, nitrates, phosphates, chlorophyll-a, and total suspended solids (TSS) will increase, and ammonia will decrease over time. Experimental mesocosms (10 x 10 x 3 m) were constructed using 1.2 m x 3 m minnow seine mesh (6.35 mm mesh), PVC pipe, and T-posts and placed in the littoral zone. Twelve experimental groups were randomly assigned to one of three treatments in a randomized block design: an enclosure, an exclusion, and a control group. Enclosures were stocked with ten L. macrochirus split into size classes based on total length (0.3 cm—0.35 cm and ≥ 0.36 cm) according to observed ambient density of L. macrochirus from Mullis Pond. Exclusions were not stocked with fish. Control groups were created with PVC pipe without a net. Dissolved oxygen, temperature, pH, chlorophyll a, TSS, nitrates, phosphates, and ammonia were monitored monthly for 12 months in each mesocosm. Ammonia, nitrate, and phosphate levels ranged from 0.001 to 0.92 mg/L. Chlorophyll-a concentrations fluctuated from 4.604 to 75.77 Chlorophyll-a per ug/liter. TSS concentrations ranged from 0.689 to 86.886 mg/L. Preliminary data suggests trends show strong temporal variation with physicochemical and nutrient parameters; however, the link with fish presence is unclear. The degree to which L. macrochirus regulates water quality necessitates further analysis.

Bio: I grew up in Saint Johns, FL. Graduated in 2021 (B.S. Marine Biology) from the University of Southern Mississippi. My thesis is on bluegill (*Lepomis macrochirus*) ecology in small impoundments, for which I work under Dr. Helms.

Use of an equilibrium yield model to evaluate the statewide 229-mm Minimum Length Limit on crappies in Alabama

Samuel D. Delaney[1] and Shannon K. Brewer[2]

[1] School of Fisheries, Aquaculture, and Aquatic Sciences, 203 Swingle Hall, Auburn University, Alabama 36849
[2] U.S. Geological Survey, Alabama Cooperative Fish and Wildlife Research Unit, Auburn University, Alabama 36849
Sam Delaney (Student), sdd0018@auburn.edu

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 increased angler use of technologies that may allow anglers to target crappies more efficiently, evaluation of current regulations was warranted. We used electrofishing to collect a total of 6,125 crappies between 2022 and 2024. We enumerated, measured morphometrics, and sexed all fish. All fish were aged by multiple blind, independent readers examining the sagittal otoliths microscopically. Individual year class and growth of crappie populations were estimated across all reservoirs. We used a von Bertalanffy growth model to estimate parameters of growth and results were variable among reservoirs. We found the average time it takes for populations to reach the current 229-mm MLL ranged 1.7 to 4.5 years old. We estimated annual mortality in all reservoirs from catch-curve analyses and these data were also variable. We developed reservoir-specific age-structured Beverton-Holt equilibrium yield models using high, medium, and low estimates of exploitation derived from literature. We ran models using four MLLs to observe predicted population effects with multiple regulation scenarios, which included no MLL. Each MLL was tested under all estimates of exploitation to examine variance. Models yield variable results among reservoirs and exploitation rates. Model results were calculated in terms of the number of memorable sized crappies (≥ 300-mm TL) in the population and predicted amount of yield harvested by anglers. These data will be useful to managers by giving them multiple regulation scenarios among populations. These data coupled with angler preferences will provide the most favorable regulation(s) for fisheries across the state.

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.

Effect of culvert systems on fish assemblage structure and connectivity in the Uchee Creek Watershed

Hannah Talbert[1] and Katelyn Lawson[1]

[1]Auburn University, Department of Crop Soil and Environmental Sciences, Auburn, AL 36849
Hannah Talbert (Student), hgt0034@auburn.edu

Culverts are structures used to convey streams underneath roadways, yet improperly engineered culverts are common physical barriers in streams. When installed poorly, culverts can have negative impacts such as changes in water velocity, excess sedimentation, habitat fragmentation, and reduced connectivity. The goal of this study is to assess the effect of culvert barriers on fish assemblages in streams of the Uchee Creek watershed in central Alabama by analyzing upstream-downstream differences in relation to the severity of the barriers. Stream crossing assessments were conducted for all road-stream crossings in the Uchee watershed to determine the severity of the barrier at each site. Stream sites with varying barrier severity were chosen across the watershed and fish surveys were conducted using backpack electrofishers above and below the culvert at each site to determine the assemblage structure. Nonmetric multidimensional scaling of Morisita similarity was used to visualize the differences in fish assemblages between sites. The ordination showed that generally, sites with minor culvert barrier rankings had more similar fish assemblages above and below than those sites with more severe barriers.

Bio: Hannah grew up in Lawrenceville, GA and graduated in 2022 (B.S. General Biology) from Georgia Gwinnett College in Lawrenceville. Her thesis work is looking at the effect of culvert barriers on fish assemblages in the Uchee Creek watershed under the direction of Dr. Katelyn Lawson.

Sublethal Temperature Effects on North American Unionid Mussels: Exploring Thermal Vulnerabilities

Victoria Martin[1], Susan Fuller[1,2], Shannon Brewer[2,3], and James A. Stoeckel[2], Kaelyn J. Fogelman[1,2]

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[2]School of Fisheries, Aquaculture, and Aquatic Sciences, Auburn University, Auburn, Alabama 36082, USA
[3]U.S. Geological Survey, Alabama Cooperative Fish and Wildlife Research Unit, Auburn University, Auburn, Alabama 36849, USA
Victoria Martin (Student), vmartin233344@troy.edu

Alabama is home to one of the richest assemblages of freshwater mussels in the world (180 spp.) representing a global biodiversity hotspot. However, freshwater mussels (Unionidae) are among the most imperiled taxa in North America with over 25 extinctions in the past century and approximately 65% of species considered endangered, threatened, or vulnerable. In Alabama, threats such as connectivity barriers, habitat degradation, and climate change exacerbate the decline of these keystone species, which play critical roles in maintaining ecosystem health and water quality. Thermal variation is a particularly urgent stressor for aquatic ectotherms like mussels, as temperature regulates their behavior, physiology, and reproduction. Sublethal thermal stress – manifesting at cellular, tissue, organismal, and population levels – can serve as an early warning sign of vulnerability and it is critical to understand sublethal thresholds as knowledge of lethal tolerance limits alone are not protective. To inform conservation and management strategies for Alabama's mussel fauna, we conducted a systematic literature review on sublethal temperature effects across the biological levels of organization, analyzing 114 studies encompassing 83 of the 302 North American species. Our findings highlight significant gaps in data for many species, including those endemic to the Southeast. Importantly, this study aims to link sublethal thermal stress response pathways which result in population level effects contributing to decline. By identifying trends and areas for future research, we aim to provide actionable insights for natural resources managers and conservation practitioners to mitigate climate-related impacts. Our ongoing work seeks to translate these findings into tools for predicting and managing the responses of Alabama's mussels to environmental change, ensuring the persistence of these ecologically and economically valuable species.

Bio: I grew up in Birmingham, Alabama, and graduated from Auburn University in 2023 with a B.S. in Microbiology and concentration in pre-veterinary sciences. Currently, I am a Biomedical Sciences master's student at Troy University under Dr. Kaelyn Fogelman and my thesis work investigates Sublethal Temperature Effects of North American Unionid Mussels. After completing my master's degree, I plan to attend a school of veterinary medicine to pursue my dream of becoming a veterinarian to advocate for animals who do not have a voice of their own.

Oral Presentations (Professional Sessions)

Range extension of Common Snook (*Centropomus undecimalis*) in the northern Gulf of Mexico: insights from recent research and prospects for Snook expansion in coastal Alabama

Charles W. Martin[1,2], Zoey C.W. Hendrickson[1,2], Ashley M. McDonald[1,2], Kathryn A. O'Shaughnessy[1,2], John F. Valentine[1,2]

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[2] Dauphin Island Sea Lab, Dauphin Island, AL 36528
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Increasing global temperatures are driving the poleward expansion of tropical fauna and flora into subtropical and temperate areas. Over the last two decades, one popular sportfish, Common Snook (*Centropomus undecimalis*), has been documented expanding its range on the Atlantic and Gulf Coasts of Florida and the Gulf Coast of Texas. Here, we present observations from previous studies along the Big Bend of Florida and discuss preliminary observations of Snook in Alabama. Specifically, fisheries independent monitoring along Florida's Gulf Coast documented an exponential increase in Snook along the Big Bend area since 2010, with increased use of thermal refugia such as groundwater and springs. These increases have continued into adjacent states of Alabama and Mississippi, with recent catches of state records in each state the past two years. Our recent survey information indicates increased catches of Snook by coastal Alabama fishers, with a growing interest in this novel sportfish in the area. However, critical data is lacking to manage Alabama Snook, including site fidelity, thermal refugia, and life history information such as diet, growth, reproduction, genetics, and lower thermal limits. Given the large recreational fishery present in the area, we present ongoing efforts and future plans to gain additional insight into this expanding population.

Bio: I grew up in north Alabama and studied invasive species in Mobile Bay for my dissertation work with John Valentine at Dauphin Island Sea Lab and University of South Alabama. After serving as a postdoctoral researcher at Louisiana State University and a faculty at University of Florida, I returned home to build a research program based in coastal Alabama and our nearby waters.

Conservation of Southern Walleye (*Sander* sp. cf. *vitreus*): Insights from Nuclear Markers and Broodstock Management

Kayla M. Fast[1], Steven J. Rider[2], Michael W. Sandel[1,3]

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[2] Alabama Department of Conservation and Natural Resources
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The Walleye (*Sander vitreus*) is a widespread freshwater sportfish valued for recreational and commercial purposes. Walleye have been introduced to non-native water bodies in 43 states via stocking as a food fish and for sportfishing. An undescribed species of Walleye (*Sander* sp. cf. *vitreus*) occupies the southernmost reaches of the Walleye native range in the Mobile Basin and is referred to as Southern Walleye. Southern Walleye is considered a species of conservation priority, due in part to competition or genomic homogenization with non-native Northern Walleye. Mitochondrial markers have traditionally been used by managers for stock identification and have been shown to be inadequate for Walleye in regions that have received less attention. We used nuclear markers to quantify the degree and geographic distribution of natural Southern Walleye reproduction in the Mobile Basin. We compiled a genomic dataset of over 400 specimens of wild-caught Southern (*S.* sp. cf. *vitreus*), Highlands (*Perca salmonea*), and Northern Walleye (*S. vitreus*); congeners within the *Sander* genus; and Southern Walleye broodstock used for stocking within the Tombigbee River Watershed. Walleye in the Tombigbee River Watershed are pure Southern Walleye with the exception of the Black Warrior River which shows admixture with Northern Walleye. Specimens from the upper Coosa River include pure Northern Walleye and admixed individuals, though the Hatchet Creek population represents a native pure Southern Walleye population. We found that broodstock recently supplied from Alabama and Mississippi hatcheries were pure Southern Walleye and nuclear data do not indicate admixture with non-native strains. Our data suggest that while admixture of Southern Walleye with non-native strains does occur, positive assortative mating may select for native genotypes. Current efforts to collect pure Southern Walleye for broodstock have been successful and continued stocking of native fish may aid in maintaining the genetic integrity of Southern Walleye.

Bio: I am from Mississippi and completed both a B.S. and M.S. in biological sciences at Mississippi State University. I have been a Research Associate in the Laboratory of Aquatic Evolution/Sandel Lab for 9 years.

Failed and Established Nonindigenous Freshwater Fishes of Alabama and Neighboring States

Michael W. Sandel

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Michael Sandel (Professional), michael.sandel@msstate.edu

Subtropical freshwater ecosystems have become tropicalized through poleward range expansion of nonindigenous aquatic species (NAS), a process facilitated by climate change, aquaculture, global trade, habitat modification, and related anthropogenic activities. Invasive species represent one of the most important threats to the freshwater biodiversity hotspot in the southeastern United States, where native species have been displaced or extirpated after invasion by NAS. Specifically, tropical ornamental fishes (e.g. Cichlidae, Poeciliidae) have become established at unexpected latitudes in the Gulf-Atlantic Coastal Plain (GACP), with some populations expanding far beyond the site of introduction. Predictive modeling methods, such as species distribution models (SDMs) and fish bioenergetics models (FBMs), have proven unreliable for predicting NAS invasion. I present a summary of all documented nonindigenous fishes in Alabama, Florida, Georgia, Mississippi, and Tennessee. I highlight novel ecological and economic impacts of local invasions, and discuss ways to improve relative risk assessment across the teleost tree of life. I also present ways to integrate in situ physiological measurements to improve predictive models of species invasion potential. I conclude with a call for cooperative generation of in situ physiological parameters, a notable knowledge gap in published literature.

Bio: I was raised north of Columbus, Ohio, where I spent most of my summers and after school hours flipping rocks and catching fish by all possible means. I earned a BS in as one of the last Zoology majors at the Ohio State University. I moved to Tuscaloosa in 2004, where I earned a PhD in Biological sciences at the University of Alabama. I completed a Postdoc in Public Health at UAB. I started my faculty career at UWA in 2015, and moved to Mississippi State in 2022. I have been a member of the Air National Guard for 26 years.

Establishment of the invasive zebra mussel (*Dreissena polymorpha)* in multiple AL reservoirs

Riley T. Lovejoy[1] and Caroline E. Farley[1]

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Riley Lovejoy (Professional), rtunnell@samford.edu

The zebra mussel (*Dreissena polymorpha*) has been ranked among the world's worst invasive species. Adults settle on hard substrate and pose substantial threats not only to power and water infrastructure (by clogging pipes, increasing corrosion rates, etc.), but also to biodiversity of native taxa (through competition for limited resources and settling on native mussels). *D. polymorpha* was originally detected in the Great Lakes during the 1980s and has since become established in many states across the US. Though the species was first observed in Alabama in the 1990s and occurrences have been noted in multiple reservoirs, limited sampling for *D. polymorpha* has been conducted in our state. Because of this, a zebra mussel working group (composed of members of the Alabama Department of Natural Resources, USACE, and various other individuals) has been established to address the invasion of Alabama waters through monitoring, education, etc. This work aimed to compile and summarize existing data from multiple agencies / individuals and to sample reservoirs for zebra mussel veligers (planktonic larval stage) and other zooplankton to verify where established, reproducing, populations exist and investigate potential impacts on zooplankton communities. Veliger and zooplankton sampling was conducted in summer 2024 in Pickwick, Wilson, Wheeler, Guntersville, Smith, Bankhead, Holt, and Oliver reservoirs. Veligers were observed and enumerated from all reservoirs except Bankhead and Smith, leading to the identification/confirmation of multiple active, reproducing, populations of *D. polymorpha* in our state.

Bio: Riley Lovejoy is an Assistant Professor at Samford University with a background in invasive species and metacommunity ecology. Currently, her work focuses on native community response to invasion and other stressors.

Population Genetics of Three Mussel Species in the Genus *Elliptio*

Molli Newman[1], Mary Joy[1], Kaelyn Fogelman[1], Jonathan Miller[1] and Brian Helms[1]

[1]Troy University, 213 McCall Hall (MSCX), Troy, Alabama, 36082
Molli Newman (Professional), mnewman201689@troy.edu

The state of Alabama is home to 180 freshwater mussel species, 70% of which are imperiled. Mussels rely on their fish hosts for larval dispersal. However, due to fragmentation as a result of barriers to aquatic connectivity, fish movement can become limited, thus limiting mussel dispersal and gene flow. This project seeks to quantify the relationship between mussel genetic diversity and factors that could be influencing genetic connectivity of mussel populations within the Upper Chipola River Strategic Habitat Unit (SHU) located in southeastern Alabama. During summer 2024, a total of 15 sites were surveyed on Big and Cowarts Creeks, and mussel tissue samples were collected for 3 common mussel species, the inflated spike (*Elliptio purperella*), Gulf slabshell (*Elliptio fumata*), and Gulf spike (*Elliptio pullata*). Mussel population genetics were examined by extracting genomic DNA, amplifying the cytochrome oxidase I (COI) subunit gene, sequencing these amplicons, and then analyzing the sequences to examine population genetics within and among the various sampling sites for each mussel species. Patterns of population genetic diversity, structure, and connectivity will be related to geographic distance and measures of stream connectivity derived from Southeast Aquatic Resource Partnership road crossing assessments. This presentation will present the findings of this analysis and identify potential barriers to genetic connectivity for these common mussel species and other Endangered Species Act-listed Threatened and Endangered mussels within this critical habitat.

Bio: I grew up in Phenix City, AL. Graduated from Auburn University in 2011 (Ph.D. Biological Sciences) and worked as a postdoctoral fellow at Auburn University (Plant Pathology) from 2011-2017. I am currently an Assistant Professor at Troy University in the Biological and Environmental Sciences Department.

Freshwater Restoration Across Alabama's Rural Landscape

Alana Reynolds[1] and Jason Throneberry[1]

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Alabama ranks number one in aquatic biodiversity- yet is also foremost in the number of imperiled species, rate of endemism, and species decline. Sedimentation remains one of the primary threats in the Southeast to stream health and freshwater biodiversity. It alters instream habitat, reduces primary production, disrupts food webs, and smothers sensitive species and their life history stages. To address the ongoing threat of sedimentation in Alabama's streams, it is necessary to use a watershed-scale conservation approach across the rural landscape. Over the past 20 years, The Nature Conservancy (TNC) in Alabama, along with partners, has demonstrated how to develop and implement a successful watershed-scale restoration methodology for sediment abatement. TNC works with private landowners to install best management practices (BMPs) and streambank restoration projects to improve water quality and instream habitat in focal watersheds across the state.

Bio: Alana Reynolds is the Watershed Coordinator for the Freshwater Program at The Nature Conservancy in Alabama. She attended the University of Alabama where she received her B.S. in Environmental Science with a focus in freshwater studies and has over fifteen years of experience in freshwater conservation where she has worked for state, federal, and private organizations.

Bridging Science and Community: Troy University's Role in the Elba Hydroelectric Dam Removal Project on the Pea River

Kaelyn Fogelman[1], Jonathan Miller[1], Lisa Harris[2], Brian Helms[1]

[1]Troy University, Department of Biological and Environmental Sciences, Troy, AL 36082
[2]Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority, Troy, AL 36082
Kaelyn Fogelman (Professional), kfogelman@troy.edu

Dam removal presents a unique opportunity to improve or restore river connectivity, enhance habitat quality, and improve ecological health, while also posing challenges related to community engagement, historical preservation, and biological monitoring. The Pea River watershed, home to a rich diversity of aquatic species including Gulf Sturgeon, Alabama Shad, and imperiled mussel species, is the site of a multi-agency collaborative effort to remove the Elba Hydroelectric Dam. The Elba Dam (constructed 1911-1914) is the oldest known example of a concrete hydroelectric dam in the state and allowed for the electrification of Troy, AL and surrounding areas, opening the way for the industrial and commercial development of this region. Presently, the dam is inoperable and presents a hazard to people, fish, and wildlife. Troy University is supporting the removal effort through pre- and post-removal biological assessments and promoting education and outreach initiatives. Our work focuses on evaluating the effects of dam removal on macroinvertebrate and mussel populations and associated habitat pre-and post- dam removal, while also engaging local schools and communities to promote understanding and support for the project. Biological assessments will include targeted mussel surveys, macroinvertebrate sampling, and habitat characterization along an ~8km reach above and below the existing Elba Dam 1y before dam removal and at annual warm-season sampling efforts after dam removal. Outreach efforts will include mentoring local secondary school teachers and student leaders to implement aquatic-based environmental projects in their respective schools and/or communities. This presentation will highlight the ecological goals of the project and proposed strategies for effective science communication, education and outreach, and community building activities. By sharing our objectives, we aim to foster discussion, solicit expertise, and build partnerships to enhance the success of this project and ensure that our efforts serve as a model for future watershed restoration efforts in Alabama and beyond.

Bio: Kaelyn Fogelman is an Assistant Professor at Troy University. She holds a BS in Biology and Ecology (Susquehanna University, Pennsylvania) and a PhD in Fisheries, Aquaculture, and Aquatic Sciences (Auburn University). Her lab focuses on the ecophysiology of aquatic mollusks, crustaceans, and non-game fish to address issues in conservation, management, and aquaculture production. Additionally, her lab leads efforts for assessing aquatic connectivity and barriers to aquatic organism passage in south Alabama.

Poster Presentations

Common Snook, *Centropomus undecimalis*, in Coastal Alabama: Climate-Driven Expansion of a Tropical Sportfish?

Zoey C.W. Hendrickson[1,2] , Ashley M. McDonald[2] , Kathryn A. O'Shaughnessy[2] , John F. Valentine[1,2], Charles W. Martin[1,2]

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Increases in global temperature continue to drive poleward expansions of organism distributions. Specifically, rising minimum temperatures result in overwinter survival of cold-sensitive species, allowing tropical species to expand into subtropical and temperate environments. In coastal Alabama, several tropical species have been documented, including black mangrove, gray snapper, and emerald parrotfish. Other species have been hypothesized for range expansion including African pompano, bonefish, and permit. However, one popular sportfish has recently been documented in increasing abundance: the predatory gamefish common snook, *Centropomus undecimalis*. Snook are highly-prized fish historically restricted to water temperatures >10-12°C. Recently, snook have been documented at higher latitudes on the Atlantic Coast of Florida with observations as far north as South Carolina and along the Gulf Coasts of both Texas and Florida. Here, we document the presence of snook in coastal Alabama through various news reports, social media, and personal communication with fishers, managers, and stakeholders. Given that the Alabama state record has been broken for the past two consecutive years (2023 and 2024), state officials are now discussing implementing regulations in anticipation of a growing snook population. As of December 31, 2024, we have documented 106 snook sightings beginning in 2012-2024, with 83 sightings occurring in 2024. Because of this growing interest, we present plans for ongoing and future work to characterize snook abundance, life history parameters, and ecology in this recently expanded range.

Bio: I grew up in North Central FL, received by B.S. in Biology from Florida State University and M.S. in Fisheries and Aquatic Sciences from University of Florida. I am currently working with Dr. Charlie Martin conducting research on a potentially novel common snook population in coastal Alabama and overwinter habitat use of coastal fish communities as part of my dissertation.

Characterizing fishery activity and reef fish movement in an area of potential industry development in the northern Gulf of Mexico

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As offshore aquaculture and other marine industries expand operations globally, it is paramount to characterize habitat use within and surrounding potential sites before implementation. Determining species composition and abundance, reef fish movement, and vessel activity can help describe fishing activity and reef fish behaviors in a particular area, allowing trends and changes to be identified over time. There are plans to implement a commercial offshore aquaculture operation in the northern Gulf of Mexico, highlighting the need to understand habitat use across this area. The proposed site is located above the northern rim of Desoto Canyon with a hard-bottom ridge to the south that is described as consisting of limestone outcroppings with varying degrees of patchiness and relief that support biological communities. The site is mostly sandy substrate with limited artificial structure identified near the proposed farm location. The goal of this study is to generate baseline information on reef fish movement and vessel activity in the study area. Specifically, the objectives are to 1) establish baseline species composition and abundance estimates at study sites using a visual survey and tagging data, 2) determine broad- and fine-scale movement of acoustically tagged reef fish species at the potential farm location and between 3 study sites with varying distances from the farm location, and 3) monitor vessel activity in the study area using passive acoustic monitoring. The results will offer insight into habitat-specific species composition and abundance, movement of tagged reef fish among the study area, and vessel activity as an indicator of fishing activity. This baseline information will help characterize and develop an understanding of habitat use by reef fish within and surrounding the proposed area, aiding future monitoring studies in identifying potential habitat use and fishery changes, ultimately helping resource managers make more informed decisions.

Bio: I grew up in Mobile, AL. Graduated in 2014 from University of South Alabama and worked for Alabama Marine Resources Division (2020 – 2023), prior to pursuing my M.S. in Marine Science at the Stokes School of Marine and Environmental Sciences. My thesis work focuses on describing reef fish composition, abundance, movement, and vessel use in a proposed area for offshore aquaculture in the northeastern Gulf of Mexico under the guidance of Dr. Sean Powers.

Potential Quick Method to Predict Body Composition in Fish using Dual-Energy X-Ray

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Fisheries scientists use a broad range of morphological, biochemical and physiological metrics to determine the health and nutritional condition of fishes. Many of these currently used methods are very invasive and require the animal to be sacrificed. We compared dual-energy X-ray absorptiometry (DXA) measurements of fat, lean, bone mineral, and total tissue mass were compared with chemical analysis for fat, water, protein, total ash, and scale weight for five species of fish White Perch, Channel Catfish, Butterfish, Boston Mackerel, and Tilapia). The DXA measurement of the percentage of fat in was highly correlated ($R^2=0.71$) to the chemical measurements, but these patterns differed among species. The total percent fat estimated by DXA was significantly lower than the chemical analysis estimates for Boston Mackerel and Butterfish. However, for Channel Catfish, Tilapia, and White Perch, the total percentage fat estimated by DXA was significantly higher than the chemical analysis estimates. Although on average DXA compared very well to chemical analysis, individual errors were much greater. Individual errors in the lean tissue and fat tissue components were strongly correlated with the fat content of skeletal muscle and the lean content of mesenteric fat. These results indicate that DXA could be a valuable research tool for measuring the composition of fishes.