Southern Division News

Gilt Darter (*Percina evides*) captured by Cumberlandian combshell (*Epioblasma brevidens*) mussel in the Powell River, Virginia, 2022. Credit: Brittany Bajo-Walker, Virginia Dept. of Wildlife Resources

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The President's Message

Jason Olive, SDAFS President

Southern Division Members,

It is unfortunate for me (maybe fortunate for you) that I only get to write two President's Messages during the year because I find myself wanting to highlight a dozen different topics in this, my last one. So, if you will indulge me, I am going to cover three different topics very briefly here that are all intended to provide some encouragement and motivation as we all work to improve our society through conservation and management of aquatic resources.

First, I want to talk about heroes. My major professor, Don Jackson, used to say, "we stand on the shoulders of giants" when talking about those who had come before us like Swingle, Ricker, Jenkins, Carlander, and so on. I have more and more appreciation for what he meant the longer I go in my career. One of the really cool things about working in such a relatively small profession is that we often get opportunities to meet and even have a beer with some of the "giants." This past weekend I had the opportunity to attend the

The President's Message (continued)

Jason Olive, SDAFS President

Reservoir Fish Habitat Partnership's (RFHP) annual meeting in Shelbyville, IL. This meeting marked the end of Jeff Boxrucker's career as the RFHP Coordinator as he handed the reins over to Doug Nygren. It was a great opportunity to celebrate Jeff's contributions and accomplishments from his second career leading the RFHP. I don't have nearly enough space to list those here, but many of them are well known to readers of this newsletter. I just wanted to tell you about a moment at the Saturday night banquet where I was talking to Jeff and Gene Gilliland, and it struck me how fortunate I was to be standing there talking to two of the great "giants" of our profession, both of whom I consider friends. Most moments like that in my life tend to pass by without me having any awareness, but this one did not. My wife works in the corporate world, so when I told her about this after returning home from the conference, she couldn't relate. The closest she ever gets to her professional heroes is at a book signing at a conference or something like that. So be thankful to work in a profession where we often have opportunities to talk to our heroes, and don't pass up the opportunity to do so at AFS conferences. My career would not be the same had I not gotten to know Jeff, Gene, and several other "giants" who I could name that have had an impact on the entire fisheries profession as well as me personally. P.S.- congratulations and best wishes to Past SDAFS President Boxrucker on his retirement!

The second thing I want to talk about is perspective. We had an agency director at one time whose favorite quote was, "elevate your perspective!" That really resonated with me because I think, for most of us, our human nature is to be hyper-focused on our individual or unit's work and lose sight of the big picture. I have a large map of the world on the wall in my office to remind me that there are a lot of things going on outside of the Arkansas Game and Fish Commission, and I need to keep my work in perspective. Of course, we can't allow ourselves to become overwhelmed or discouraged by the many big picture things that are largely out of our control, but it is always a good idea to occasionally take a step back from your daily duties and think about the bigger picture. Maybe that bigger picture is your bureau/division, your agency, your department, or your university. It certainly doesn't have to be Planet Earth or even the United States. I especially want to challenge graduate students to do this. It is inevitable, given the challenge of the task, that you will become completely consumed by your thesis project….as well you should! There is nothing wrong with that. I just want to challenge you to occasionally step back and think about the larger picture that is being addressed by your research (and that of your counterparts) and keep that in perspective as you complete your graduate work. While the magnitude may be less, the temptation is no different for agency biologists or university professors. I think it is important for all of us to check ourselves to ensure that we aren't spending all of our time and energy "down in the weeds."

Speaking of the "big picture," we are living in unprecedented times relative to Congressional legislation affecting fisheries and aquatic resources, and that resulted in some things not getting as much attention as they might have during a different era. The conservation community's primary legislative focus over the past several years has been Recovering America's Wildlife Act (RAWA), for good reason. If passed, this would be the most impactful conservation bill since the Pittman-Robertson Act. Getting this bill passed deserves every ounce of effort the conservation community can muster. Some bills that have already passed that have major implications for aquatic conservation include the Bipartisan Infrastructure Bill ($11 BILLION for conservation!) which included funds for the America the Beautiful Initiative, American Rescue Plan Act, Deficit Reduction Act, and the one I want to highlight, America's Conservation Enhancement

The President's Message (continued)

Jason Olive, SDAFS President

(ACE) Act. The ACE Act was signed into law two years ago this month, and notably codified the National Fish Habitat Partnership (NFHP). While it will have nowhere near the impact that RAWA will have if passed, its significance to aquatic conservation should not be overlooked. Included in the 20 partnerships that make up NFHP are the Southeast Aquatic Resources Partnership (SARP) and the aforementioned RFHP, both of which have already had significant impacts on fish habitat across the Southern Division states and territories. With the passage of the ACE Act, funding for these partnerships has become consistent and reliable. This will facilitate even greater impacts for aquatic habitat restoration going forward. For more information on NFHP, go to: https://www.fishhabitat.org/.

Finally, I just want to say that it has been a pleasure serving as your President for the past eight months, and I look forward to finishing out these last four leading up to our annual conference. I also want to extend my appreciation to those in our Division who do so much of the work. From Dennis Riecke handling the listserv to Caitlin editing the newsletter, and all of those who serve as committee chairs, representatives to the Parent Society for various things, etc., your volunteer efforts are appreciated! Let's remember to honor those folks and others who are deserving by nominating people for Division awards this year. Details are outlined later in this newsletter.

I hope to see you all in Norfolk, Virginia in February 2023 for what promises to be an outstanding annual conference. If you have never been to a conference in Virginia, trust me, they do it right and you do not want to miss this one!

Tight lines,

Jason

Jason Olive, SDAFS President

UPCOMING MEETINGS

Southern Division American Fisheries Society Annual Meeting
February 2–5, 2023
Norfolk, Virginia

Registration Now Open!!!
2nd Call for Papers

The Virginia Chapter invites you to share science and management information and experience an in-person (no virtual option) meeting in beautiful waterside Norfolk, VA.

Call for Papers: Submit abstracts electronically for 20-minute oral or poster presentations:

CLICK HERE TO SUBMIT ABSTRACTS

Deadline for abstract submissions is a firm **November 15th**. Abstracts should be less than 250 words. Presenters should specify if they want to be included in a **planned symposium** (Alabama Bass introgression, American Eel management, fish population genetics, climate change, crappie management, marine fisheries management, aquatic connectivity/barrier removal, and off-shore wind production), or can choose a general session option.

Student Participation: Students should indicate whether they want to be considered for an award in the Best Student Oral Presentation (select on-line when submitting as a choice with symposia) or Poster evaluation. Talks and posters considered for an award must be completed projects, not study plans or progress reports. Abstracts must be submitted by **November 15th, 2022.** Students interested in being paired with a mentor for lunch on Saturday should mark the appropriate selection on the registration form; you may also send an email to Chas Gowan (cgowan@rmc.edu), Chair of the Student Affairs Committee, stating your interest.

Meeting information may be found at the meeting website:

https://units.fisheries.org/va/annual_meeting/2023-sdafs/

Make your hotel reservation here (or through the link above) now to ensure you're accommodated on site!

UPCOMING MEETINGS

Warmwater Streams Committee
Continuing Education Workshop & Symposia
Southern Division American Fisheries Society Annual Meeting
February 2–5, 2023
Norfolk, Virginia

The Warmwater Streams Committee is proud to sponsor a continuing education workshop and two symposia at the upcoming 2023 SDAFS Meeting!

Please join us for the follow workshop:

Continuous Stream Temperature Monitoring Workshop

February 3rd, 2023
8:00 AM - 12:00 PM

This workshop aims to introduce continuous stream temperature monitoring methods with the goal of providing attendees essential knowledge to start or refine monitoring efforts. Practicing experts will share best practices, data processing workflows, and case studies through a combination of lecture and hands on experience. This workshop will be conducted in an inclusive and collaborative manner that raises awareness for the needs of stream temperature monitoring and bring scientists and resource managers together to enrich knowledge and foster a community of practice. Focal topics are:

- Study design: considerations for meeting your research and management goals
- Data collection methods: best practices for sensor deployment maintenance and data retrieval.
- Data processing: hands on practice in data entry, cleaning, exploratory analysis, and visualization, and storage using the program R
- Information transfer: data dissemination/open-source sharing/other resources

Please contact David Young if you have any questions regarding this workshop:
david.young@tpwd.texas.gov

UPCOMING MEETINGS

Warmwater Streams Committee

Continuing Education Workshop & Symposia

Southern Division American Fisheries Society Annual Meeting
February 2–5, 2023
Norfolk, Virginia

Please join us for the follow symposia:

Exploring Causes and Consequences of Climate Change in Streams

Contributed talks in this symposium will explore two broad questions related to climate change impacts on warmwater streams: (1) What natural and anthropogenic factors (i.e. climate change) contribute to spatiotemporal variation in ecosystem processes, for example shifts in thermal and hydrologic regimes? (2) How does this spatiotemporal variation affect habitat quality and biotic responses at the individual, population, and community levels?

Please contact David Young if you have any questions regarding this symposium: david.young@tpwd.texas.gov

American Eels: Emerging from the Murky Abyss and Entering a Clear Stream of Knowledge

This symposium looks to share research methods being used to assess the status of American Eel including individual populations, approaches to dam passage, and related study results which should help to better inform management of the species and coordinate research frameworks and conservation actions.

Please contact Stephen Curtis if you have any questions regarding this symposium: stephen.curtis@tpwd.texas.gov

SDAFS ANNOUNCEMENTS & COMMITTEE UPDATES

The Southern Division of the American Fisheries Society 2022 OFFICER ELECTION RESULTS

Congratulations to the 2022 Vice President and Secretary-Treasurer election winners!

VICE PRESIDENT

Jessica Baumann (Extension Associate, Aquatic Plant Management Program) at North Carolina State University.

SECRETARY - TREASURER

Brandon Peoples (Associate Professor, Fisheries Ecology) at Clemson University.

SDAFS ANNOUNCEMENTS & COMMITTEE UPDATES

Resolution Committee

The function of the SDAFS Resolutions Committee is to serve the membership by affording them the opportunity to advocate viewpoints of fisheries professionals regarding programs, actions, legislation and projects which affect any fishery. Every fishery encompasses three essential elements: habitat, aquatic species and people. Any issue that impact those elements may be worthy of a division resolution. The committee has not considered any resolutions on marine fisheries or habitat issues in several years and has not received any resolutions from SDAFS subunits in several years. Resolutions should be sent to the Chair.

A resolution on water quality monitoring in the Lower Mississippi River is being considered (more details below). Resolutions can be found on the SDAFS website at:

https://sd.fisheries.org/resolutions/

Comments on this resolution should be sent to the Resolutions Committee Chairman, Dennis Riecke, by **December 1, 2022**. This resolution will be considered for a vote at the 2023 SDAFS meeting in Norfolk, Virginia.

Resolutions adopted since 2005 are is posted at: https://sd.fisheries.org/resolutions/

Dennis Riecke, Resolutions Committee Chairman (dennis.riecke@wfp.ms.gov).

(DRAFT) RESOLUTION ON THE NEED TO ESTABLISH A COORDINATED, COMPREHENSIVE WATER QUALITY MONITORING PROGRAM FOR THE LOWER MISSISSIPPI RIVER

WHEREAS, the Mississippi River is the fourth longest river in the world and the longest river in North America; and

WHEREAS, the Lower Mississippi River flows 954 river-miles from the confluence of the Mississippi and Ohio Rivers at Cairo, Illinois to the Gulf of Mexico; and

WHEREAS, the aquatic natural resources of the Mississippi River are of significant recreational importance to the States of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Tennessee; the Lower Mississippi Alluvial Valley; and the Nation; and

WHEREAS, these resources provide substantial input to the economies of the States of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Tennessee; the Lower Mississippi Alluvial Valley; and the Nation; and

SDAFS ANNOUNCEMENTS & COMMITTEE UPDATES

Resolution on water quality monitoring in the Lower Mississippi River (continued)

WHEREAS, the Lower Mississippi River Conservation Committee (LMRCC) is a coalition of natural resource and environmental quality agencies from the six lower Mississippi River states along with federal cooperating agencies and committed non-governmental organizations. The US Fish and Wildlife Service provides a coordinator and support; and

WHEREAS, LMRCC's mission is to "Promote the restoration and wise use of the natural resources of the Lower Mississippi River through cooperative efforts involving planning, management, information sharing, public education, advocacy and research"; and

WHEREAS, each of the six lower Mississippi River states has the authority to set water quality standards and assess waters, and there are numeric and narrative standards applicable to the Mississippi River; and

WHEREAS, the United States Environmental Protection Agency (USEPA) has approved the standards and the most recent assessment produced by each state. The lower Mississippi River, however, is conspicuously left out of monitoring by state and federal agencies; and

WHEREAS, the lower Mississippi River states do not have sufficient water quality monitoring programs of their own ----or in cooperation with their federal partners ----to assess water quality in the Mississippi River. Except for Louisiana no lower Mississippi River state has an ongoing water quality monitoring program on the lower Mississippi River. Louisiana only monitors the lowest portion of the Mississippi River; the part fully within that state; and

WHEREAS, nutrient monitoring by United States Geological Survey (USGS) and others is being used by the national strategy to resolve hypoxia problems in the Gulf of Mexico. For the lower Mississippi River itself, states have not found a basis upon which to establish numeric nutrient standards, and nutrient impacts in the lower Mississippi river have not been reported. No lower Mississippi River state has assessed any of its portions of the river as impaired for nutrients; and

WHEREAS, Some form of cooperative water quality monitoring effort for the Mississippi River is sorely needed because the lower Mississippi River states are unlikely to marshal the resources, either individually or collectively, to initiate and sustain a robust water quality monitoring program on the Mississippi River; and

WHEREAS, the most careful and thorough analysis of the water quality conditions of the Mississippi River and the causes of those conditions was presented in a National Research Council (NRC 2008) report *MISSISSIPPI RIVER WATER QUALITY AND THE CLEAN WATER ACT: Progress, Challenges and Opportunities*; and

SDAFS ANNOUNCEMENTS & COMMITTEE UPDATES

Resolution on water quality monitoring in the Lower Mississippi River (continued)

WHEREAS, the NRC (2008) report stated:

> "Although there are some important federally sponsored efforts in monitoring Mississippi River water quality—such as those conducted by the U.S. Army Corps of Engineers and the U.S. Geological Survey, especially on the upper river—there is no single water quality monitoring program or central water quality database for the entire length of the Mississippi. Thus, there are limited amounts of water quality and related biological and ecological data for the full length of the Mississippi River, especially the lower river. This limited amount of data inhibits evaluations of water quality problems along the river and into the Gulf of Mexico, which in turn inhibits efforts to develop, assess, and adjust water quality restoration activities. Moreover, the limited attention devoted to monitoring the river's water quality is not commensurate with the Mississippi River's exceptional socioeconomic, cultural, ecological, and historical value. The lack of a centralized Mississippi River water quality information system and data gathering program hinders effective implementation of the Clean Water Act and acts as a barrier to maintaining and improving water quality along the Mississippi River and into the northern Gulf of Mexico"; and

WHEREAS in 2014, LMRCC's survey of states and federal agencies found that the limited resources of the lower Mississippi River states and the federal agencies prevent them from performing water quality monitoring to assess, manage and protect this vast and precious resource; and

WHEREAS the lack of water quality data on the lower Mississippi River prevents implementation of the Clean Water Act for this important national resource,

THEREFORE BE IT RESOLVED, that the members of the Southern Division, American Fisheries Society, assembled at their annual meeting on this 3rd day of February in the year 2023 at Norfolk, Virginia strongly recommend that the state fish and wildlife and environmental agencies in lower Mississippi River states (Arkansas, Kentucky, Louisiana, Mississippi, Missouri and Tennessee) along with the USGS and the USEPA work collectively and collaboratively to establish and initiate a comprehensive water quality monitoring program and a central water quality database for the lower Mississippi River,

BE IT FURTHER RESOLVED that the Southern Division, American Fisheries Society urges the state legislatures of Arkansas, Kentucky, Louisiana, Mississippi, Missouri, Tennessee and the Congress of the United States to allocate sufficient funds to their state water quality agencies to establish and sustain this water quality monitoring program and a central water quality database for the lower Mississippi River.

AWARDS & SCHOLARSHIPS

SDAFS Reservoir Technical Committee 2022 Robert M. Jenkins Memorial Reservoir Research Scholarship

The Reservoir Technical Committee is proud to recognize **Douglas Zentner** from Oklahoma State University as the recipient of the **2022** **Robert M. Jenkins Memorial Reservoir Research Scholarship**.

Doug is working under the guidance of Dr. Dan Shoup. His project applies traditional harvest evaluation and modeling to a unique Catostomidae gigging fishery that exists in the Eucha Reservoir drainage. The project involves several complex modeling components using state-space and traditional harvest modeling, but also includes ecosystem modeling and life history studies to attempt to ascertain the role of suckers in this reservoir-river complex. Doug is passionate about research, especially the biology and population dynamics of understudied fishes. He is, and has been, actively involved with AFS and plans to continue to do so and he looks forward to contributing statistical and programming support to the fisheries field in general and fostering the next generation of fisheries scientists.

Richard Snow (left) and Douglas Zentner (right)

Doug was unable to attend the 2022 SDAFS meeting in Charleston, South Carolina. He was presented with his $500 check from the Reservoir Technical Committee in Norman, OK by Richard Snow, Fisheries Research Supervisor, Oklahoma Department of Wildlife Conservation.

The Reservoir Technical Committee will be accepting applications for the **2023 Robert M. Jenkins Memorial Reservoir Research Scholarship** through **December 1st, 2022**. Please visit the Reservoir Technical Committee's website for scholarship and application details: (https://units.fisheries.org/sdafsreservoircommittee/).

SDAFS CHAPTER & SUBUNIT UPDATES

Arkansas Chapter AFS

After a two year hiatus of in-person meetings, the Arkansas Chapter of AFS welcomed about 80 members to the in-person 2022 meeting of the Arkansas Chapter AFS hosted in February at the Graduate Hotel in Fayetteville, Arkansas! Though winter weather conditions posed unexpected hurdles, the meeting consisted of a chapter sponsored student-professional hiring panel lunch workshop, the silent auction fundraiser, 30 oral presentations and 12 posters, and part one of a two-part Crayfish Identification workshop (taught by member Dustin Lynch). The Executive Committee looks forward to gathering with chapter members in 2023! Stay tuned for meeting updates in the near future.

2022 Arkansas Chapter AFS Meeting Student Award Recipients

(left to right) Derek Owens, University of Arkansas, Pine Bluff (Best Graduate Student Paper) and Seth Drake, Arkansas Technical University (Best Graduate Student Poster)

2022 Arkansas AFS Meeting Award Recipients (left to right): Ellie Green, Arkansas Technical University (Best Undergraduate Student Paper) and Jeffery Stevens, University of Arkansas, Pine Bluff (Best Undergraduate Student Poster).

Other Announcements:

- EXCOM met in early September to discuss the creation of a student scholarship and other chapter activities
- Arkansas Chapter AFS Newsletter
- The Arkansas Chapter is now on Social Media! Follow us on Instagram and Twitter **@arkansas_afs**

Dustin Lynch hosted a workshop on crayfish identification for Arkansas AFS members in Lorance Creek.

SDAFS CHAPTER & SUBUNIT UPDATES

Georgia Chapter AFS

Georgia AFS Members Select a New Logo!

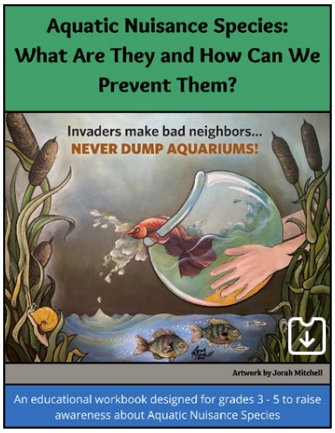
During the Summer and Fall of 2021, a team of Georgia AFS members spent several months with a local artist to design different ideas for a new chapter logo that would highlight Georgia's fisheries diversity. An unexpected challenge to this task was added when AFS announced they changed its logo. Several drafts and more than a hundred emails later Georgia AFS members were presented with 4 different designs to vote upon during the annual meeting last February.

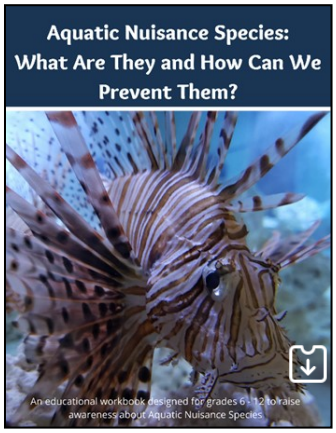
Aquatic Nuisance Species Workbook

Georgia AFS collaborated with the Georgia Department of Natural Resources (GA DNR) to revise the original aquatic nuisance species workbook created in 2020. It was decided we needed to create two workbooks, one for grades 3-5 and one for grades 6-12. The purpose of the workbooks is to raise awareness about aquatic nuisance species and how they threaten our fishery resources in Georgia and throughout the United States.

Printed copies will be distributed to GA DNR environmental education centers, Georgia State Parks, and to other aquatic outreach educators.

The workbooks are currently available on the Chapter's website to view as an interactive flipbook or download as a pdf. Anyone with an iPad or touchscreen laptop can write on the pdf they download and save their answers. (https://gaafs.org/aquatic-nuisance-species/)





Georgia AFS YouTube Channel

The Georgia AFS YouTube Channel is a resource for fisheries professionals and students. The Chapter has several video resources listed on its website, but we thought it might be easier to organize our collection on a YouTube channel. The playlist of videos includes public speaking tips, how to prepare for an oral or poster presentation, R programming, pesticide applicator license review, and more. Videos listed on this channel have been vetted for content.

Georgia AFS 2023 Annual Meeting

The Georgia AFS 2023 Annual Meeting is planned for February 14 – 17 at Lake Blackshear Resort in Cordele, Georgia. The theme for the 2023 annual meeting is "Building Strong Alliances to Spawn Success." Our goal is to emphasize the effectiveness of building strong alliances that support and enhance fisheries science and conservation. These relationships include establishing effective partnerships between fisheries professionals and other stakeholders, strengthening the way we interact with other fisheries professionals, and developing opportunities for future fisheries professionals to acquire the necessary skills to achieve their goals.

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SDAFS CHAPTER & SUBUNIT UPDATES

(Georgia AFS 2023 Annual Meeting continued)

This will be the first time the Chapter has planned a 4-day annual meeting. In addition to the traditional activities from past meetings, we plan to include professional development opportunities, team-building activities, special interest breakout sessions, a field trip, a student-mentor luncheon, and more. Our keynote speaker, Dr. Michael Allen of the University of Florida, will share with us his expertise with building relationships with different stakeholders. Visit our website for additional information: https://gaafs.org/2023-annual-meeting/.

Great News About Georgia's Lake Sturgeon Reintroduction Program

Research led by Dr. Martin Hamel, Associate Professor at Warnell School of Forestry and Natural Resources, indicates that lake sturgeon may be reproducing in Georgia again for the first time in about five decades. University of Georgia researchers found three sexually mature female lake sturgeon in the Coosa River twenty years after Georgia Department of Natural Resources started reintroducing lake sturgeon into the Coosa River Basin. The news of this discovery has been reported nationally by the news media:

Original story: https://warnell.uga.edu/news/stories/2022/prehistoric-fish-may-be-poised-comeback

CBS news: https://www.cbsnews.com/news/lake-sturgeon-prehistoric-fish-may-be-spawning-georgia-first-time-50-years/

Local news: https://www.wsbtv.com/news/local/atlanta/uga-researchers-working-return-prehistoric-fish-georgia-waters/VZTTXZNL3NDCLN22BDSLZ77RSQ/

Graduate students Matt Phillips and Savannah Perry hold an adult lake sturgeon they collected in the Coosa River.

Potomac Chapter AFS

On June 30, 2022, the Potomac Chapter sponsored a networking event in Silver Spring, Maryland, for new and recent Sea Grant Knauss Fellows. This event was an opportunity for Fellows to meet face-to-face with their NOAA counterparts as people began to return to the office following two-plus years of mandatory telework due to COVID-19.

New and recent Sea Grant Knauss Fellows attend networking event in Silver Spring, MD.

SDAFS CHAPTER & SUBUNIT UPDATES

Arkansas Tech University AFS

The 2022-2023 Arkansas Tech University (ATU) Fisheries and Wildlife Society has had a busy year. Beginning with some of our members attending the Arkansas AFS meeting in Fayetteville, many of our members presented research and participated in a Crayfish Identification Workshop. Majority of our spring semester was spent planning for our fundraising event 'Beast Feast' in late April where we raised funds to send our members to Conclave next spring. Ending our spring semester, we held a Resume/Internship workshop led by our graduate students to help undergraduates apply for internships.

Our fall semester started with some volunteer events, where students have helped out with two events: Bowjam and the Piney Creek Habitat Improvement Project. Bowjam was an event targeted for children to learn archery. The Piney Creek Habitat Improvement Project is where students helped improve habitat by completing trail cleanups, creek cleanups, field seeding and gate maintenance and installation.

What we have to look forward for the rest of the semester is a beginner fly tying class for our members who are interested in fly fishing. A backpack shocking/seining event to give our members a look at what they may be doing later in their classes. We also have a camping trip scheduled in the end of October with a local herpetologist to take us night herping and a Dutch oven class. Lastly, we will have our officer elections and that will wrap up our semester.

ATU Fish and Wildlife Society members that participated in the Piney Creek Habitat Improvement Project volunteer event.

-Autumn Henry, ATU Fish and Wildlife Society President

SDAFS CHAPTER & SUBUNIT UPDATES

Clemson University

At Clemson University, fisheries research and conservation is of upmost importance to Wildlife and Fisheries Biology undergraduates and graduates and student recreational anglers. As an American Fisheries Society collegiate subunit, our goal is to help connect students with fisheries professionals nationwide, facilitate professional skill set growth for resume building, and create an inclusive and knowledgeable environment for those interested in fisheries management.

(above) Otolith extraction workshop

(below) President Isabel Tiller spent her summer as the summer intern for SCDNR Freshwater Fisheries

This semester, the subunit plans to host several guest speakers from the North Carolina Wildlife Resource Commission and the Georgia Department of Natural Resources, host skill set workshops for students such as otolith extraction and trailer driving workshops, and volunteer for multiple river clean-ups with the community. After kicking off the semester with our annual Fish Fry, we look forward to an educational and exciting semester!

(right) Members posing with the trash they collected on Lake Hartwell in Clemson, SC.

(left) Officers frying up catfish nuggets for the annual fish fry to kick off the semester

SDAFS CHAPTER & SUBUNIT UPDATES

East Carolina University AFS

Greetings from the ECU Student Subunit of AFS! This fall we would like to share some of the exciting research some of our fellow members are currently working on studying Southern Flounder (*Paralichthys lethostigma*) right here in North Carolina. The Southern Flounder fishery is a very important fishery for the state. Fisheries managers recently have found that the Southern Flounder stock in our state was overfished, and overfishing is occurring. Research is a critical need for understanding this species and there are still aspects of the life history of Southern Flounder that are uncertain. Our members are working tirelessly in their research efforts to better understand the species, help to better inform fishery management, and to ensure that Southern Flounder are here for years to come! We are proud of the work that our Pirates are doing!

Southern Flounder Migration Project: Telemetry

Caitlin McGarigal
Associate Researcher, Asch Lab

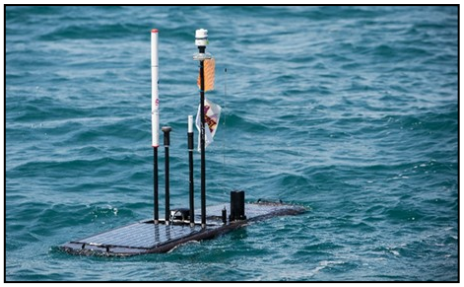
Tagging adult Southern Flounder in Albemarle Sound, North Carolina with Innovasea acoustic V9 and V13 transmitters.

As part of a multidisciplinary project investigating Southern Flounder (*P. lethostigma*) offshore migration behavior and spawning areas in North Carolina, we are evaluating adult flounder movements using acoustic tracking technology. Identifying critical movement corridors through the barrier islands and locating potential offshore spawning habitats will support making informed management decisions and improve stock assessment accuracy for this valuable fishery. Likewise, a better understanding of the extent that flounder stocks from southeastern states are mixing will help determine whether the Atlantic population should be managed at a regional or a state, scale. By working with commercial pound net fishermen in the Fall of 2020 and 2021, we successfully captured and tagged 210 adult female flounder in Albemarle, Pamlico, and Core Sound. Tagged individuals are monitored by a network of inshore and offshore acoustic receivers maintained by ECU, as well as by other institutions that share data through the Mid-Atlantic Acoustic

SDAFS CHAPTER & SUBUNIT UPDATES

East Carolina University AFS (continued)

Telemetry Observation System (MATOS). Our team also tracks flounders using ECU's R/V Blackbeard wave glider, which has been deployed annually on four missions in late winter to search for tags across the continental shelf in North Carolina. To date, more than a third of deployed tags have been detected and data collection is ongoing.

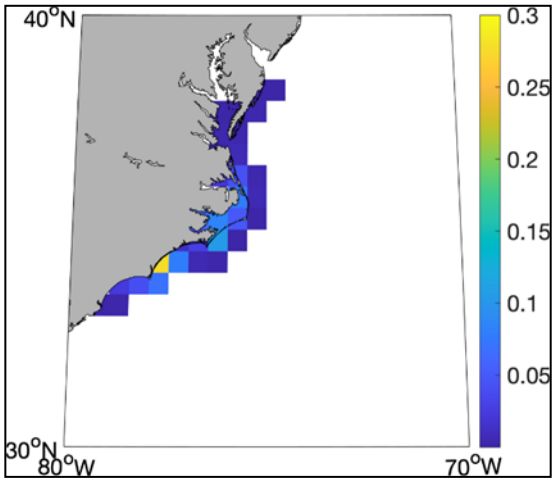


R/V Blackbeard, an SV2 wave glider outfitted with an Innovasea VR2C acoustic receiver on a mission tracking Southern Flounder offshore of North Carolina.

Larval Connectivity Modeling: Searching Possible Southern Flounder Spawning Sites

Brian Bartlett
Doctoral Candidate Coastal Resources Management, Asch Lab

My work focuses on utilizing oceanographic models to create projections of possible Southern Flounder spawning sites. I use a particle dispersal model called the Connectivity Modeling System (CMS) to move particles through the study system. This allows simulated runs where the particles, which are treated like larvae, move through ocean currents. By running ocean currents backward in time, the model allows us to project where the larvae we captured in Beaufort originally came from. It is currently unknown where Southern Flounder spawn, so this work gives us some insight into possible spawning locations. Along with the fieldwork being conducted by others on this project, my work can help narrow down possible locations to investigate evidence of Southern Flounder spawning.



Possible of spawning site of Southern Flounder. The units on the color bar denote probability of larval origin.

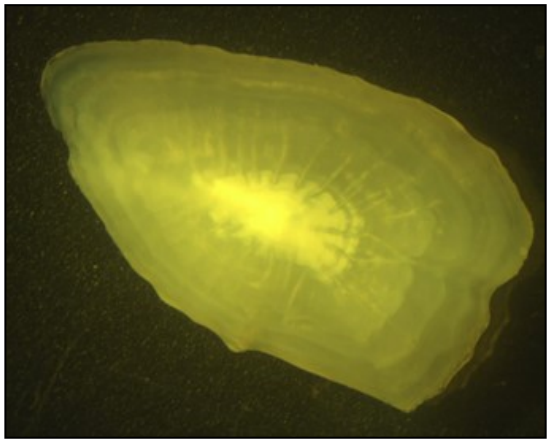
SDAFS CHAPTER & SUBUNIT UPDATES

East Carolina University AFS (continued)

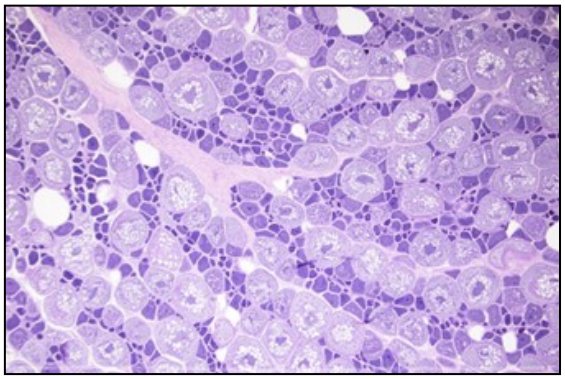
Age, Growth, Maturity and Residency of Southern Flounder

Justin Mitchell
M.S Candidate Biology, Asch and Luczkovich Labs

Justin Mitchell has collected samples from Albemarle, Pamlico, and Core Sounds, as well as Cape Fear, for analysis of Southern Flounder age, growth, reproduction, and residency. A total of 432 individuals have been sampled with their length, weight, and gonadosomatic index (GSI) measured, as well as their sagittal otoliths removed. Out of the 432 individuals sampled, 351 were females, 74 were males, and 7 were unidentified. Length data displays sexual dimorphism, with males averaging a smaller size at 325.1 mm TL (SD 15.9 mm) and females averaging a larger size at 395.2 mm TL (SD 38.8 mm). Southern Flounder sampled were aged with their age distribution ranging from 0-4 years, with a majority of fish one year old (n=265) and two years old (n=121). Three individuals were 4 years of age. GSI has shown a significant increase during the fall, peaking in November in preparation for winter spawning. A subsample of 300 individuals have been selected for otolith microchemistry analysis through laser ablation to help determine the residency patterns of the species within the state's waters looking particularly at the relationship between Sr/Ca ratios. A subsample of 200 individuals were also selected for gonadal tissue histological analysis to determine the maturity of the individuals sampled and to help gain a greater understanding of how Southern Flounder mature in preparation for their winter spawn. Histology and otolith microchemistry analyses are underway with new results anticipated this fall.



The right sagittal otolith of a 4-year-old Southern Flounder collected from Cape Fear NC., July 2021



A cross section of a female Southern Flounder gonadal tissue with developing ovaries.

PERSONAL REFLECTIONS

"I Can Do More"

What I Learned During My Summer in Science Policy and Why You Should Consider Science Policy Too

by Alissa Ganser*

"I can do more."

This is the thought that has plagued me for the past six or seven years, the feeling that there is more that I can do in science, that I can be somehow more helpful. Don't get me wrong, I love what I research and I truly thought that after graduate school I would find a home in a state or federal research lab or hatchery. I may still find my way to a lab or hatchery, but in the meantime, I have found a way to satisfy that little voice in the back of my head urging me to do more. That way is through science policy.

If you are unfamiliar with science policy, you are not alone. Even people that work in science policy have a difficult time explaining it because it is so broad. In generalized terms, we use science to guide policy and legislation that affects the public or funding for scientific research. Science policy is incredibly important because it bridges the gap between scientists and non-scientists. Most people, including many lawmakers, business CEOs, and heads of local, state, and federal offices may have little scientific training. They may not understand how we interpret results and the jargon associated with most scientific research. That's where science policy comes in – we can use our scientific knowledge to analyze, interpret, and explain research in ways that can prove useful in the development and implementation of policies and legislation.

Recently I had my first foray into science policy and it changed my life – I learned that all of the strengths and skills that I had built up over my scientific career were important for science policy and that the transition was not as arduous as I was worried it would be. I also learned how few fisheries scientists make the transition into the world of policy, and I understand the hesitation. There are no fun field days, no snorkeling, no beautiful sunsets over the water at the end of a hard day of mussel releases, no exciting fish to find. However, fisheries scientists have a unique understanding of the aquatic environment and how easily aquatic systems can be affected by pollution, habitat degradation, etc. We can provide insights that policy makers may not realize. I want to share some of my experiences from my summer in science policy, discuss what I learned and what skills I used, and why I enjoyed working in science policy. Hopefully I can encourage other fisheries scientists to consider becoming more involved in policy, whether through a career change or by volunteering for organizations doing policy work.

This past summer, I participated in the Commonwealth of Virginia Engineering and Science (COVES) Policy Fellowship sponsored through the Virginia Academy of Science, Engineering and Medicine (VASEM). This program selects STEM-H (Science, Technology, Engineering, Medicine, and Health) students from across the Commonwealth and places them in host offices within Virginia. The COVES program features a wide variety

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of host offices, including political offices of State Senators and Delegates, positions in the offices of the Executive Branch, state agencies, and private industries. After interviewing with multiple potential host offices, I was placed with a Virginia State Senator, where my duties included working on constituent cases, preparing the Senator's talking points and responses for events and policy decisions, assisting with legislative research, and hosting town hall events between the Senator, Delegates and constituents in their district. Other Fellows researched and prepared reports for policy plans, assisted with landowner meetings and discussions for access to and development of shoreline habitat, and planned and ran annual meetings with the public, shareholders, and scientists about topics such as biotechnology and solar energy.

When I first began in science policy, I was concerned that I would be spending hours learning new skills from scratch and that I would be lost amidst the sea of legislative terms and policy language. Turns out, the opposite was true – the research and communication skills that I had honed during my scientific training proved to be the most vital for my work in science policy. I used my ability to creatively hunt down sources when preparing for the Senator's speaking engagements and developing ideas for upcoming legislation. Communication was by far the most important skill that I needed in science policy – whether it was written or verbal. I frequently needed to communicate with the Senator's staff, other elected officials, state officials, and the public. Each interaction was different and required me to tailor my communication to the specific audience. With the elected officials, I could use a little bit of scientific jargon, as long as it was explained well. I could also state any materials that I referenced and they would understand the significance of citing a scientific article versus using a less vetted source. For the public, any scientific communication needed to be kept to more common vernacular and explained concisely and thoroughly to maintain interest. While sometimes challenging, relying on my experience in public outreach was very helpful. As aquatic scientists, we spend a lot of time explaining organisms and processes that most people will never see. The same techniques that I use to describe what a mussel provides to the ecosystem are the ones that I used for communication in science policy.

By far the most important thing I realized this summer is that as much as I enjoy working with mussels, I enjoy helping people too. I liked working toward the greater good and using science to drive decisions that could benefit many people in the Commonwealth. I also enjoyed exploring different research areas such as human health, housing, and infrastructure. I have worked with freshwater mussels for years, and while they will always be my favorite area of science, it was fun to explore the areas that I had previously only had a passing interest in. For those of you that have multiple different research interests (mine are aquatic ecosystems and human health), science policy may be for you. You may be able to transition into a position where you can work on multiple topics simultaneously, or you may be able to split your time among different projects.

As research scientists, we can fall into the trap of only communicating with other research scientists, but by definition, that audience is going to be small. By broadening into science policy, we can reach a broader audience and be a better advocate for fisheries and aquatic systems because we are able to understand the re-

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search and communicate their importance to those who may otherwise overlook it. In order for our science to be effective, we need to make sure that more people understand what we do. Participating in science policy can help achieve these goals and ensure that our research plays a role in the larger picture.

If you have ever found yourself thinking "I can do more", there are a number of ways in which you can get involved. For students, fellowships can provide an immersive, often paid experience that will help you gain new skills and use your expertise in new ways. Further, stipends from these fellowships may help cover some costs of your graduate degree. For professionals and students alike, another option would be volunteering at a non-profit. Non-profits offer a rewarding environment for you to use your expertise in local matters such as pipeline development concerns, green energy solutions, and local infrastructure development. If this brief summary of my experience in science policy speaks to you, I encourage you to explore opportunities in this field further.

This article is based on my experiences in summer 2022 working with Virginia state science policy. Multiple other states in the Southern Division have similar programs, so please consider researching programs in your area. North Carolina, for example, has a one-year fellowship that places fellows in science and technology programs in the Executive Branch[1]. In addition to fellowships for students, many states have non-profit groups that work in science policy and they offer volunteer and part-time employment to scientists and engineers working to utilize their expertise to advocate for local, regional, or state issues.

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[1]Diasio, M.A. et al. 2020. Developing Science and Technology Policy Fellowships in State Governments without Full-Time Legislatures. *Journal of Science Policy & Governance* 16(1).

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Welcoming the Unwelcome Visitors to Bluehead Chub *(Nocomis leptocephalus)* Nests

by Samantha Brooks
M.S. Student, Virginia Tech - Fish & Wildlife Conservation

On one golden, sunny morning during this summer's field season, I found my sandaled toes submerged in the cool waters of the creek, my eyes scanning the stream environment for a suitable place to attach my trail camera. With high, clay banks both behind and in front of me, locations to attach my camera were few and far between. I then saw it; there was a tree root protruding out of the red clay just to the left of my view. This is what I needed to use—this is what I was going to use. I walked across Toms Creek and found myself in front of the root. I secured my footing in the slippery clay, screwed the camera onto the gray, textured root, turned on the camera, positioned it properly, and stepped back to observe. The trail camera was ready to capture. Once back across to the stream, I turned around to check it once more. The camera was facing downwards, recording the water's flow and something I was not aware of just two years prior to this day—a bluehead chub spawning mound.

As a graduate student studying with Dr. Emmanuel Frimpong in the Virginia Tech Fish and Wildlife Department, I conduct my research at Toms Creek, a tributary situated in Blacksburg, Virginia that eventually flows into the New River. It is a stream that has been observed by Virginia Tech ecologists to have fascinating natural complexities and connections throughout the aquatic ecosystem. One of the ecological marvels is a freshwater minnow, the bluehead chub *(Nocomis leptocephalus).* A six to ten-inch long fish with a bright blue head and white tubercles, the bluehead chub is native to the streams of the southeastern United States. It is an asset and an ecosystem engineer wherever it resides. When preparing for reproduction, the male host makes mounded nests out of pebbles and gravel, using only their mouths. Multi-colored mounds, which have been measured up to five feet long, are not simply used by the species themselves, but by other vibrantly colored freshwater minnows such as the mountain redbelly dace *(Chrosomus oreas)* and the crescent shiner *(Luxilus cerasinus)*. Up to a few hundred of these fishes can be seen on a mound at any given time! There is an interwoven relationship between these fishes whereby the bluehead chub male cleans and maintains the spawning mound, while the nest associates potentially provide parental care for the brood and protection from predators. Little to no research has officially investigated potential predators, or "unwelcome visitors" that prey on the mounds. This is where my research comes into play, recording

Photo of a bluehead chub *(Nocomis leptocephalus)* positioned over top of a spawning mound. Photo courtesy of Todd Pusser.

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the possible antagonistic interactions that occur on bluehead chub spawning mounds. What I observed blew my expectations right out from under me. The interconnectedness of aquatic and terrestrial ecosystems is utterly complex.

Three days later, I returned to the same location with my toes, once again, submerged in the waters of Toms Creek. I looked down at the bluehead chub mound and fish activity had slowed, the male host was not present and silt from the stream and banks had begun to accumulate on the downstream side. It was time to remove the camera from the tree root. Walking around the mound, I released the camera, turned around, and immediately almost slipped from the silky clay under my feet. I caught myself. The prized possession of the camera stayed safe. I went about the rest of my day in the field in awaited anticipation of the footage I longed to see.

I had become very discouraged with the data I had collected so far within the summer field season. Time after time, I assessed pictures and videos that displayed the mound, but one could only observe the movement of the stream or the swaying of the vegetation of the surroundings, not the unwelcome visitors. I sat down on my couch after a long, hot day in the field numb to the idea that I might see something fascinating from the videos, but I was still hopeful. I was still curious. Per my normal routine, I inserted the Secure Digital card into my computer, tapped my fingers on the sides of the mousepad, and waited for the data to display. I started with the pictures; not seeing any activity worthwhile, I frequented the left arrow on my keyboard to steadily move to the next video… and the next… and the next. I then stopped in my tracks. Seen in front of me was a picture, taken at 11:55 PM, of three, furry, mammalian skinny faces amongst the darkness of the stream's waters, facing ahead as if they were in mid-motion of swimming through the frame. I remember stating, "Ah! River otters! No way!" I very promptly watched the corresponding video, and these three North American river otters (*Lontra canadensis)* completely submerged their bodies into the stream, directly on top of the bluehead chub mound. This is novel information: the North American river otter is now considered a suspected predator of freshwater minnows in Toms Creek, specifically on those that spawn on bluehead chub mounds.

I later found myself observing other definitive and potential predators on or nearby mounds such as the first being the great blue heron *(Ardea herodias)*. Seen numerous times throughout this field season, whether on camera or during my daily observational walks, great blue herons were seen, standing tall and curious, observing the spawning action of the minnows, their reflection in the water displaying their angelic stance, ready to strike, but waiting for the perfect moment. In one video, a great blue heron struck a mound not just once, but *four* times, displaying what looked like an unsuccessful attempt for a snack. Another predator was the northern watersnake *(Nerodia sipedon)*. Having seen past videos of a northern watersnake wrapped around a mound, I was still captivated by the fluidity of its predation on freshwater minnows. In one photo-video sequence, I observed the snake as settled right on top of the mound, head lifted ever so slightly and alert, ready to eat a fish whenever the moment was right. Unfortunately, the video was only thirty seconds long. I will have to dream of the antagonistic action that happened between the species, at least until new footage is

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collected of a similar snake-minnow interaction. Finally, the third—the mallard *(Anas platyrhynchos)*. Mallards were witnessed a few times this summer to be quite inquisitive of bluehead chub mounds, encircling them as if interested in fish movement, potentially looking for something to eat. They are opportunistic animals, feeding on plant material, tadpoles, crustaceans, and perhaps, in this study system, maybe even small fish, such as the common nest associate, the mountain redbelly dace.

Now, as I sit here at my desk—watching more videos and also wishing to be outside—I think to myself, why in the world is this all so important? Why do I feel the need to shout this from the rooftops or tell everyone about the interesting videos I watched that day? For ecology and this study system, my research can allow for future studies, such as quantifying the level of predation, determining the frequency of antagonistic activity, or observing how minnow's spawning behaviors changed when other freshwater species or "unwelcome visitors" prey on mounds. Overall, this study provides novel evidence and a clear visual of the interconnectedness between aquatic, terrestrial, and aerial species. These findings will help ecologists further investigate the behaviors of these involved species and why these behaviors are needed for the animals to survive. For me, it's simple. Curiosity. Knowledge. Developing a sense of place in my surroundings. Understanding complex ecosystems. Learning about the interconnectedness of it all. All of these uphold my purpose for life—being a steward of the environment and educating others to become one as well.

Photo of a northern watersnake (*Nerodia sipedon)* preying on a bluehead chub mound. Note that the snake is positioned directly in the center of the mound.

For you, the reader, I encourage you to develop your own sense of place to your natural surroundings, to the outside space that you consider as home. Be observant and notice the intricacies, whether this be by standing inquisitive in a creek looking for minnows and other creatures, or by taking a walk to see the sunset, picking four-leafed clovers. Take the time to learn. Take the time to love nature for all its wonders. Who knows, maybe you'll see something you have never seen before.

NEWS & SOCIAL MEDIA

Advancement of Atlantic Croaker (*Micropogonias undulatus*) Aquaculture

Research partners: Live Advantage Bait LLC, J&J wholesale (a commercial baitfish fisherman) and Stuart Angler (local bait-and-tackle shop). Project funded by the Gulf States Marine Fisheries Commission.

This croaker was raised from an egg in captivity in early 2022.
Credit: *Nicole Kirchhoff*

Brief Description: Atlantic Croaker, native to the Atlantic and Gulf State regions, have high potential for multi-purpose aquaculture development including live baitfish, food fish, and restoration. Recently Croaker has Florida Fish and Wildlife management restrictions on catch under precaution due to increased market price, demand, and sales as bait in Florida. Therefore aquaculture development can also alleviate pressure on wild stocks. This project will attempt to learn more about the reproduction and larval rearing of this species and determine the socio-economic impact on the bait-and-tackle/recreational fishing community. The reproduction and larval rearing work on this project will take place at Live Advantage Bait with local native broodstock to be captured in the Winter and Spring 2022. This project officially started January 1st and will go through December 2022.

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