



AMERICAN FISHERIES SOCIETY

WINTER 2020 NEWSLETTER

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President's Message

The year is drawing to a close and so is my tenure as NCAFS president. This has been one of the strangest years in our lives. It is hard to remember all the crazy that has happened, but I vaguely remember murder hornets being a clear danger at one point. I am very thankful we did not have to dispel rumors of assassin crawfish or slaughter mussels.

The work performed this year by our members is to be commended. Not only has our membership completed amazing fisheries work despite stressful and constantly changing conditions, but this group has addressed many issues that will strengthen our Chapter as we head into the future. Specifically, Chapter members have worked to improve diversity, equality, and mentoring. The culture of family that we have in this profession can go a long way to address these issues, yet we can always do better. During Christmas we are often encouraged to "be good to one another" and "help each other when you can." I am proud to say our membership strives to do this all the time.

As we move into 2021, I am not sure we will find that "new normal" everyone is looking forward to finding. I am hopeful that we can continue to adapt to the constantly changing world around us. I want to thank each of you for your dedication, patience, persistence, and hard work during this past year. Because of you, we work in one of the greatest fields possible.

I hope you all have a wonderful Christmas and can enjoy time with friends and family in the manner you are most comfortable.

God Bless,
Ben

Submitted by Ben Ricks, NCAFS President

2021 President-Elect Ballot

The Nominations Committee is pleased to present the NCAFS ballot for 2021 President-Elect. Please take a moment to evaluate the candidate sketches and cast your vote on the [electronic ballot here](#). Remember, you must be an NCAFS member in good standing in order for your vote to count. In addition, all valid voters will be entered in a drawing to win a year of AFS membership (\$100 value)! Poll closes at midnight, February 2nd, 2021 and results will be announced at the 2021 NCAFS Virtual Business Meeting on February 17th. Good luck to each candidate!



Andrea Leslie

Andrea Leslie
NC Wildlife Resources Commission

Andrea Leslie is an aquatic ecologist who works for the NC Wildlife Resources Commission as the Mountain Habitat Conservation Coordinator, coordinating project review to minimize impacts to rare and important species and their habitats. She is passionate about working through partnership and has developed and supported aquatic conservation networks across Western NC and the broader Southeast US to implement species and habitat restoration, land protection, and community education.

She has a B.S. in Biology from University of Illinois (1989) and M.S. in Aquatic Ecology from University of Florida (2006). Before joining the NC Wildlife Resources Commission, she spent two years with the Peace Corps in Senegal, worked for the US Park Service at Mount Rainier National Park, and danced through several NC agencies, including the Division of Water Resources, Ecosystem Enhancement Program, and Natural Heritage Program.

Andrea has lived and worked in western North Carolina for more than 20 years. She loves all things to do with water – snorkeling, swimming, canoeing, and nerding out with insects, fish, crayfish, mussels, and salamanders. She crawls out of wetlands and streams to garden, hike, bird, hunt mushrooms, and botanize.

Jeremy McCargo
NC Wildlife Resources Commission



Jeremy McCargo

Jeremy McCargo is the Anadromous Research Coordinator for the NC Wildlife Resources Commission. In his role with the Commission, Jeremy assists district staff with Striped Bass, shad, and river herring monitoring activities, represents the Commission on Atlantic States Marine Fisheries Commission technical committees, coordinates closely with NC Division of Marine Fisheries staff, and cooperates with universities and non-governmental entities to research, monitor, and restore anadromous species and their habitats. He received his B.S. in Fisheries and Wildlife Management from NC State University in 2001 and M.S. in Forest Resources from the University of Georgia in 2004, after which he began his career with the Commission as the District 1 Assistant

Fisheries Biologist.

Jeremy has participated at various levels of AFS for many years. He has been a member of the North Carolina Chapter throughout his career, and he also served a few years on the Southern Division AFS Warmwater Streams Committee. He was an active member of the NCSU Student Fisheries Society during his time at NC State, serving as undergraduate vice-president and was a member of the Georgia student sub-unit.

Jeremy enjoys spending his free time in the outdoors and tries to spend as many hours as possible enjoying the beach and surf fishing with his son and daughter. He is a huge sports fan and loves all things NC State.

Submitted by Jake Rash, NCAFS Past-President

Call for Papers: 2021 NCAFS Virtual Meeting

The [32nd Annual Meeting of the North Carolina Chapter of the American Fisheries Society](#) (NCAFS) will be held on **February 16-17**, 2021. Chapter members – you are invited to our first *virtual* meeting streaming across the WebEx platform. Because of the pandemic, there will be no continuing education workshop, poster presentations, or socials this year. The good news is that there will be no meeting registration fee and we will continue to offer 7 minute lightning talks and 20 minute full presentations.

Our tentative schedule is for the presentations to occur on Tuesday and Wednesday mornings and the business meeting will be held Wednesday afternoon. The NCSU Student Fisheries Society will also hold a virtual raffle.

Abstracts should be submitted by **January 11, 2021** to **both** Ryan Heise (Ryan.Heise@duke-energy.com) and Bryn Tracy (bryntracy12558@att.net). The Abstract Example and Submission Form, which we have used in years past, [may be downloaded here](#).

Topics addressing any aspect of fisheries and related aquatic sciences are welcomed, including, but not limited to, management, research, conservation, outreach and education. Full length presentations will be limited to 20 minutes (this includes a question & answer period). Lightning talks will be limited to 7 minutes (this includes a brief question & answer period). Lightning Talks are an ideal platform for students and professionals to present new projects or programs, results from ongoing work, emerging issues, and other research or management briefs. When you are submitting your abstract, please include in the subject line: **"NCAFS Meeting 2021 Abstract"**. All abstracts are limited to roughly 300 words and should include clearly stated objectives, brief methods, general results, and the basic conclusions.

If you have any questions regarding the 2021 meeting, please do not hesitate to [contact Ryan Heise](#).

Submitted by Ryan Heise, NCAFS President-Elect

Occupancy Modeling and Estimation Workshop

Register now to participate in an upcoming educational workshop on the use of occupancy/detection models. This event will be held online on January 12-13, 2021. Occupancy estimation and modeling is used to account for imperfect detection of organisms in surveys and to determine the probability of the true presence or absence of a species at a site. This is done by quantifying the detection probability of a species at a site based off of empirical data. Occupancy modeling can be used to determine a species' distribution and range, relate patch occupancy to habitat characteristics, determine effects of invasive species on native species, and much more. This two-day workshop will cover the basics of occupancy analysis, modern extensions including N-mixture models, and also discuss important study design considerations. This will be an introductory level workshop and will utilize both a GUI-based program as well as analysis using R. R proficiency is not required. All coding skill levels will be able to learn new skills and techniques for modeling and occupancy estimation. The workshop is open to all parties with discounted rates for both NCAFS members and for students and recent graduates who are not currently employed.

More info here: <https://nc.fisheries.org/stats-workshop-2021/>

Date/Time: January 12 and 13, 2021 from 9:00 am to 5:00 pm each day (with 1 hour for lunch)

Workshop Fee: \$100 for NCAFS members, \$125 for non-members, \$10 for students and recent graduates without a full-time job (payment will be accepted via Paypal or mail).

Course Capacity: 40 people

Submitted by Seth Mycko, NCAFS Education and Outreach Committee Chair

Roanoke Logperch Restoration



Roanoke Logperch juvenile.

In 2007, Duke Energy biologists captured the first Roanoke Logperch, *Percina rex*, from North Carolina - a single, juvenile specimen collected using boat electrofishing in the Dan River near Eden. From 2007–2018, numerous individuals were collected by the NC Wildlife Resources Commission (NCWRC), NC Division of Water Resources, and the NC Museum of Natural Sciences from six different water bodies including the Mayo, Smith, and Dan rivers in Rockingham County. In 2016, a population genetics study was initiated by the NCWRC and Georgia Southern University and found that the NC population was relatively

large but not as diverse as some of the older populations in Virginia. In 2018, the total population in NC occupied approximately 40 river miles, but upstream migration was prevented by dams: Mayo Dam on the Mayo River and Lindsey Bridge Dam on the Dan River. In 2020, restoration of the Roanoke Logperch in North Carolina intensified with 50 river miles of optimal habitat in the Dan River opened up by the completion of the Lindsey Bridge Dam-Dan Restoration Project. More than 100 propagated juveniles were released into Big Beaver Island Creek to augment the current population. Funding was also secured for additional on-the-ground restoration. Conservation Fisheries Inc. is currently holding 21 Roanoke Logperch broodstock from VA and NC. They recently received a larger grant from US F&WS to continue



Lindsey Bridge Dam removal.

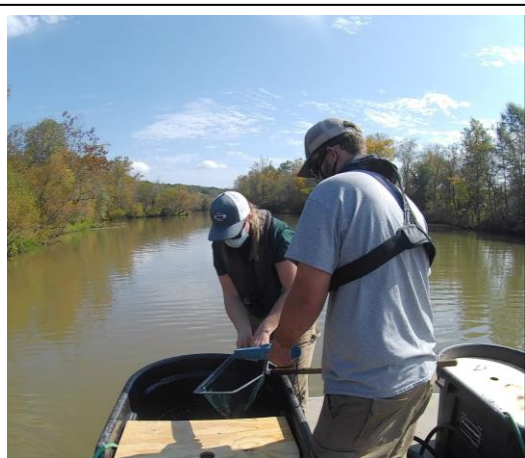
propagation through 2023. Over the next three years we hope to stock an additional 1,000 juveniles in the upper Dan and Mayo rivers.

[Drone footage of Lindsey Bridge Dam-Dan Restoration Project](#)

Submitted by Thomas Russ

Lake Norman F1 Largemouth Bass

A group of Lake Norman anglers reached out to NC Wildlife Resources Commission (NCWRC) biologists advocating for the stocking of F1 Largemouth Bass (Northern Largemouth Bass, *Micropterus salmoides salmoides* x Florida Largemouth Bass, *M. salmoides floridanus*). Following several months of communication, fundraising, and planning 2,000 F1 Largemouth Bass were stocked as a cooperative effort between the NCWRC and anglers.



Casey Grieshaber and Carson Pope check for coded-wire tag retention while stocking F1 Largemouth Bass.

This stocking, and others planned in the future, are motivated by a nearly two-decade decline in Largemouth Bass in Lake Norman, following the introduction of illegally stocked invasive Alabama Bass, *Micropterus henshalli*. Biologists have observed a dramatic decline in Largemouth Bass catch and hope that the stocking of F1 Largemouth Bass will bolster the Largemouth Bass population. In other reservoirs, F1 Largemouth Bass grow faster and to larger sizes than their pure strain counterparts.

The 2,000 F1 bass, which were stocked in October of 2020, were donated by local anglers and were tagged with a coded wire tag prior to

stocking. Surveys will be conducted over the next few years to evaluate stocking success. For more information on the project please visit <https://www.ncwildlife.org/Fishing/Lake-Norman-Black-Bass> or download the project [factsheet](#).

Submitted by Casey Grieshaber

Southern Flounder Research at East Carolina University

On December 2nd, the ECU wave glider “Blackbeard” was deployed off the coast of Cape Lookout, NC as part of a two-year project investigating the annual offshore spawning migration of Southern Flounder, *Paralichthys lethostigma*. While Southern Flounder support valuable commercial and recreational fisheries in NC waters, their migratory behavior and offshore life history are poorly understood. Questions the Southern Flounder Tagging Project is trying to answer include: 1) what movement corridors do mature females use to leave the inshore areas of Albemarle, Core, and Pamlico sounds; 2) where are fish going offshore to spawn and what characterizes these habitats, and 3) what is the emigration rate of fish back into the sounds after



ECU and Liquid Robotics deploying the wave glider “Blackbeard”.

spawning? To address these questions, we have taken a multi-faceted approach employing traditional acoustic telemetry as well as a remotely operated ocean robot to track the movements of tagged fish over several years.

Since October 2020, we have worked in collaboration with commercial fishermen to capture and tag 110 mature females from the

Albemarle (n=35), Pamlico (n=38), and Core (n=37) sounds. Fish were tagged with both a surgically implanted acoustic transmitter (either Vemco V9 or V13) and an external tail-loop tag that fishermen can return to the Division of Marine Fisheries for a reward. The acoustic transmitter emits a unique signal that can be detected and recorded by 40 receivers (Vemco VR2W, VR2Tx, VR2AR) that were deployed in strategic locations to monitor the movement of fish as they leave inlets and move offshore. The Blackbeard wave glider, outfitted with a Vemco VR2C receiver, has complemented our fixed-station receivers by providing a mobile detection platform that allows us to search for tagged fish along a remotely piloted or programmed route. Over the first 8 days of the mission, Blackbeard moved north from Cape Lookout to Diamond Shoals (near Cape Hatteras) and the first leg of the 13-day mission ended at Cape Lookout Shoals so that Blackbeard’s batteries could be recharged. The second leg of the mission will head south from Morehead City to Cape Fear before returning to Morehead City. Blackbeard has so far detected 2 tagged Southern Flounder (both caught and released in the Albemarle Sound) and potentially several other tagged species from other research projects. In January, a second Blackbeard mission will be conducted using the results of the first mission, the moored receivers, a back-calculated larval dispersal model, and

satellite tag data. If you would like to keep up with the ECU Blackbeard ocean glider excursion, you can find a group on Facebook titled “Blackbeard Sails the Seas for Science” that provides constant updates!

Submitted by Caitlin McGarigal

Darwin Days’ Lake Waccamaw Live: A Fishy Field Trip

On November 14th 2020, NOAA Fisheries Ichthyologist Fritz Rohde and NCWRC Aquatic Wildlife Diversity Biologists Brena Jones and Katharine DeVilbiss broadcast to the public an hour long segment titled *Lake Waccamaw Live: A Fishy Field Trip* as part of Darwin Days programming by the North Carolina Museum of Natural Sciences. The annual outreach event highlights Charles Darwin and what his theories of natural selection have done for the world of science. In the segment, Brena Jones provided an overview of the biologically unique Lake Waccamaw, including the numerous evolutionarily diverse freshwater mussels and fish that call the lake home as well as NCWRC’s ongoing conservation efforts there. One of these fish endemic to Lake Waccamaw and the broader coastal plain of the Carolinas is the Broadtail Madtom, *Noturus* spp. aff. *insignis*. A focused presentation on the undescribed rare species, their population decline through time, and current monitoring efforts was given by Katharine DeVilbiss. A field trip portion consisted of long time Broadtail Madtom expert Fritz Rohde giving a



Fritz Rohde corresponding live and on-scene from Lake Waccamaw.

demonstration on how we check Madtom Motels, a catchy name for small artificial cover structures made of clay, in Lake Waccamaw.

Program participants at the time of the event were amazed by the mussel adaptations, the cuteness of the madtoms, and how picturesque Lake Waccamaw is. And perhaps attendees also enjoyed the light humor this bunch of presenters infused into the event.

A recording of this segment can be accessed online:

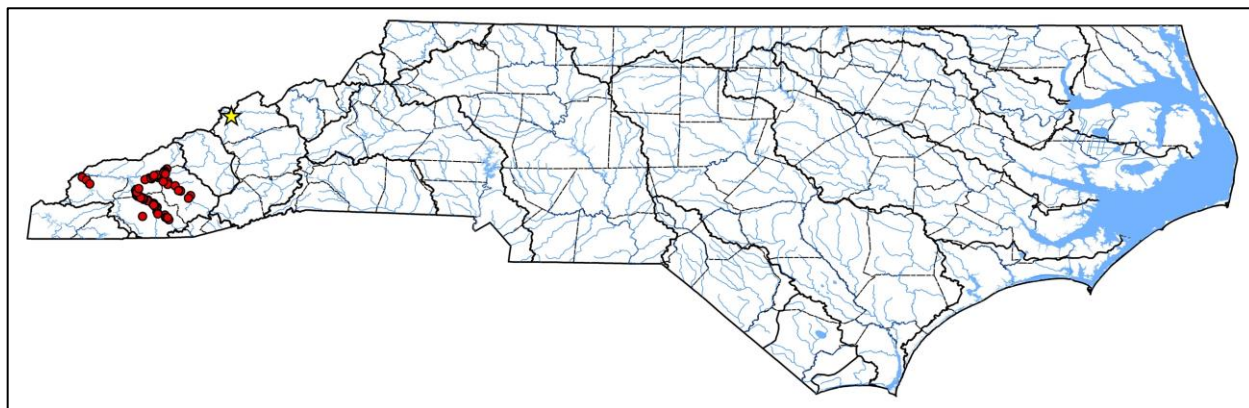
https://naturalsciences.org/calendar/darwin_days_program/lake-waccamaw-live-a-fishy-field-trip/

Special thanks to Community Engagement Educator Brian Wuertz and his fellow Museum Staff for the design and assembly of this outreach segment.

Submitted by Katharine DeVilbiss

An Annotated Atlas of the Freshwater Fishes of North Carolina

If you haven't heard by now, "*An Annotated Atlas of the Freshwater Fishes of North Carolina*", was recently published by the [Southeastern Fishes Council](https://www.sefishes.org/). The Atlas discusses the distribution of the 257 currently described and undescribed freshwater fish species within North Carolina. Annotations for each species include a distributional map with type locality noted where appropriate, remarks concerning questionable records and misidentifications, extirpations, introductions and interbasin transfers, and imperilment status. The 198-page document may be downloaded as a pdf for **free** at: <https://trace.tennessee.edu/sfcproceedings/vol1/iss60/1>. Unfortunately, you'll have to print a color hard copy for yourself. As of December 16, 2020, the Atlas has been downloaded 1,015 times.



Map 228. Distribution of *Etheostoma vulneratum*, Wounded Darter, in North Carolina. Yellow star indicates type locality.

The authors encourage you to share this link with co-workers and students who might be interested in North Carolina's fishes. As a companion to this publication, please check-out the web site — [NCFishes.com](https://www.ncfishes.com/) — which covers all of the state's freshwater and marine fish species, along with a blog that is now featuring identification keys with colored photographs to the freshwater species.

Submitted by Bryn H. Tracy, Fritz Rohde, and Gabriela Hogue

Activities of the NCFishes.com Team

The NCFishes.com Team [Fred (Fritz) C. Rohde, Christina Schobernd, Scott A. Smith, Jesse Bisette, and Bryn H. Tracy] continued to be productive during these unprecedented times and like all of us are learning to adapt to the “New Norm”. At the recent virtual annual meeting of the Southeastern Fishes Council, Scott gave a very well-received presentation: “*NCFishes.com: A website devoted to North Carolina’s freshwater and saltwater fishes.*” In November, the NCAFS ExCom notified us that we would be the recipients of a much needed and appreciated grant to help defray travel expenses in photographing North Carolina’s freshwater, estuarine, and marine fishes. The grant will be used beginning Spring 2021 and the Team is already planning a trip to western North Carolina to photograph many of the spawning redhorse suckers and darters in the Little Tennessee River basin.



South Fork New River, Watauga County.

In early October just as some of the trees were starting to change colors, Fritz, Scott, and Bryn took a 1,200+ mile week-long trip to the Mountains in the hopes of securing images of species which they are lacking. Practicing social distancing and wearing personal protective equipment whenever possible, they were skillfully assisted on several days by Luke Etchison and Dylan

Owensby (North Carolina Wildlife Resources Commission Aquatic Wildlife Diversity Program staff). Over five days the crew was able to photograph 48 species including the extremely rare and hard to find Blotchside Logperch, *Percina burtoni*, along with Kanawha Minnow, *Phenacobius teretulus*, Tonguetied Minnow, *Exoglossum laurae*, and Tangerine Darter, *Percina aurantiaca*. In a whirl-wind tour, they commenced at South Prong Lewis Fork in Wilkes County and culminated along the Pigeon River in Haywood County with seining and backpack electrofishing along the way at Stony Fork (Yadkin basin; Obids, Helton, Big Laurel, and Cranberry creeks and South Fork New River (New basin); Prices and Jacks creeks, and five locations totaled on the Cane and South Toe rivers (Nolichucky basin).



Cranberry Creek, Ashe County.

Meanwhile, at the Coast, Jesse and Christina are continuing to perfect their photographic techniques, especially with white backgrounds of larger marine fishes that do not easily fit in a photo tank.



Gulf Kingfish, Menticirrhus littoralis.

During the last quarantined quarter, Team members have been developing blog posts featuring identification keys to the freshwater species occurring in North Carolina. So far, keys have been posted approximately every two weeks on sunfishes, catfishes, suckers, and “minnows” (<https://ncfishes.com/blog/>). Future blog posts that are nearing completion and

which will be posted this winter will include those on darters, pikes, topminnows, silversides, and lampreys. Smaller families such as sculpins, pygmy sunfishes, temperate basses, and livebearers will be developed over the winter months.

We have downloaded some website statistics through early December and the results continue to be very encouraging. We have been averaging about 91 unique visitors per day. Since January 2020, we have had more than 31,000 visits, averaging about 2,585 unique visitors per month. We have had visitors from 157 countries including Canada, the United Kingdom, Australia, and as far away as Vanuatu. Our top five state-side visitors are from North Carolina, Florida, Virginia, Massachusetts, and South Carolina.



Sargent Major, Abudefduf saxatilis

So be sure to bookmark us and check back frequently. It continues to be a work-in-progress and we are adding material to it every day.

Submitted by the NCFishes.com Team

Updates from North Carolina State University

Small Impoundments Management Course

NCSU's Small Impoundments Management short-course (AEC 495/592) was held this past Fall. Michelle Jewell (NCSU Applied Ecology Science Communicator) wrote a very nice piece on the class (<https://news.ncsu.edu/2020/11/preserving-lake-raleigh/>).

The class is unique in many ways, but the most prominent is that we jointly conduct a fisheries assessment of Lake Raleigh with North Carolina Wildlife Resources Commission (NCWRC) biologists as part of the class. We work closely with Kirk Rundle (and Seth Mycko this year) of the NCWRC to sample all components of the lake and its

fish assemblage, as well as Walnut Creek downstream of the dam. The students then present the results to the Fisheries Chief (Christian Waters) and staff for ongoing consideration as we jointly manage the lake between NCSU and NCWRC.

This year the class was a special challenge. We conducted our all-day field sampling with all the usual water safety measures (life jackets, gloves, rubber boots, etc.), but also masks, lab gloves, sanitizer, and running around wiping down all our gear after each use. There were no reports of COVID-19 resulting from the activity.



*Masked-up and ready to net some fish.
Photograph courtesy of Michelle Jewell.*

Many thanks to my co-instructor Bonnie Myers (Applied Ecology PhD Candidate), Kirk and Seth (NCWRC biologists), Bryn Tracy (retired), and Michelle Jewell (Applied Ecology Science Communicator) for their roles in a successful semester in trying times. Think and Do in practice!



Clockwise from top left: Sarah Rajab, Riley Gallagher, Gus Engman, and Cara Kowalchyk.

Subunit Activities and Recent Graduates

This has been a difficult year for everyone, and NCSU's Student Fisheries Society was no exception. Our usual in-person events, such as Shad in the Classroom and Family Fishing Fiesta, were canceled this year due to the COVID-19 pandemic. Before the pandemic took hold, we were able to enjoy the NCAFS Chapter meeting in New Bern where we hosted an extremely successful fundraising raffle. Thanks go out to the NC Chapter members for your support in this endeavor. In addition, we hosted one

in-person meeting this year, wherein Bryn Tracy gave a great talk about his trip to Arizona to help monitor the endangered Humpback Chub *Gila cypha*.

Despite unprecedented circumstances, life went on for our subunit with many members managing to overcome pandemic-related challenges and make huge career strides in 2020! Graduate student members who received their degrees this year include Dr. Sarah Rajab (PhD), Dr. Jennifer Archambault (PhD), Cara Kowalchyk (MS), and Riley Gallagher (MS). Sarah plans to return home to work for the University of Kuwait and Jennifer is now a Fish and Wildlife Biologist with the Raleigh Ecological Services Office of the U.S. Fish and Wildlife Service. Cara has started a job as a Conservation Technician with the North Carolina Wildlife Resources Commission, and Riley is planning to pursue his PhD at University of Auckland in New Zealand in 2021. Congratulations to these graduates and the rest of those who moved on from NCSU this year!

We also bade a fond farewell to Dr. Gus Engman, a long-time SFS member and supporter, who left NCSU to accept a position at the [University of Tennessee as Assistant Professor of Fisheries Conservation](#). Good luck, Gus!

Submitted by Brendan Runde, Linnea Anderson, and Tom Kwak.

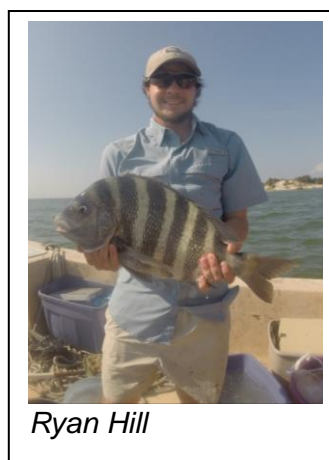
Recent Meetings and Graduates at East Carolina University



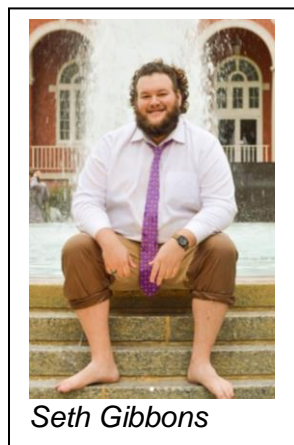
The East Carolina University (ECU) Student Subunit didn't let COVID-19 get in the way of a successful fall speaker series conducted virtually. Harvey Walsh and Katey Marancik from the NOAA Northeast Fisheries Science Center gave talks on applications of a long-term fisheries survey, the Ecosystem Monitoring (EcoMon) program which covers the area from Cape Hatteras, North Carolina to Nova Scotia, Canada. Katey Marancik used the survey to discuss larval dispersal patterns of Red Hake, *Urophycis chuss*, in the Gulf of Maine. Harvey Walsh discussed research on the copepod *Calanus finmarchicus*, which is a key prey item for the highly endangered North Atlantic Right Whale, *Eualaena glacialis*, and also discussed efforts to protect these whales. Finally, Lela Schlenker, a new postdoctoral researcher at ECU, discussed her dissertation research on Mahi, *Coryphaena hippurus*, in the Gulf of Mexico and a unique application of an at-sea experiment using pop-up archival tags to study the impacts of Mahi artificially exposed to an oil spill.

Recent Graduates

C. Ryan Hill, our ECU-AFS historian and a MS student in Dr. Rulifson's lab at ECU, has graduated this fall 2020 semester after working on the Hickory Shad, *Alosa mediocris*. His research focused on whether adults collected from spawning grounds in coastal rivers from Chesapeake Bay to Florida can be identified using elemental otolith chemistry. Ryan has been accepted into the PhD program at the University of New Brunswick in Fredericton, New Brunswick, for the spring 2021 term where he will be working on fish passage issues at the Mactaquac Dam in the Saint John River. Ryan hails from Rutherfordton, NC, and graduated from Lees-McRae College in Banner Elk with a BS degree in Environmental Sciences. Congratulations, Ryan, and best of luck!



Ryan Hill



Seth Gibbons

Seth Gibbons, our ECU-AFS Vice President last year, graduated with a MS degree in Biology and has entered the PhD program in Parks, Recreation, and Tourism Management at Clemson University. Seth also was a BS graduate of Lees-McRae College in Banner Elk, and worked in the lab of Dr. Erin Field in the Department of Biology on the use of environmental DNA (eDNA) to detect river herring in coastal North Carolina watersheds. Seth presented his work at the AFS Southern Division meeting last year in Little Rock, Arkansas. Congratulations to you Seth, and best wishes for success at Clemson!

Submitted by Samantha Dowiarz and Quentin Nichols

Free Webinars and Virtual Learning Opportunities

[NC Wildlife Resources Commission: Science Communication Webinar Series](#)

[NC Museum of Natural Sciences: Darwin Days](#)

[AFS: Introduction to eDNA: Applications, Advantages, and Implications](#)

Submitted by the NCAFS Newsletter Review Team

Good Work! – Recent Publications by NCAFS Members

[Cope, W. R., T. J. Kwak, T. R. Black, and K. Pacifici. 2019.](#) Evaluation of artificial cover units as a sampling technique and habitat enhancement for madtoms in rivers. *North American Journal of Fisheries Management* 39:778-787.

[Gray, K. M., C. E. LePrevost, and W. G. Cope. 2020.](#) Anglers' views on using signs to communicate fish consumption advisories. *Fisheries* 45:307-316.

[Krabbenhoft, T. J., B. J. E. Myers, J. P. Wong, C. Chu, R. W. Tingley III, J. A. Falke, T. J. Kwak, C. P. Paukert, and A. J. Lynch. 2020.](#) FiCli, the Fish and Climate Change Database, informs climate adaptation and management for freshwater fishes. *Scientific Data* 7:124.

[Kwak, T. J. 2020.](#) Being led and leading in science and life: an Index of Mentor Quality. Pages 333-338 *in* W.W. Taylor, A.K. Carlson, A. Bennett, and C.P. Ferreri, editors. *Lessons in leadership: integrating courage, vision, and innovation for the future of sustainable fisheries*. American Fisheries Society, Bethesda, Maryland.

[Mack, K., H. White, and F. C. Rohde. 2020.](#) Use of acoustic telemetry to identify spawning river and spawning migration patterns of American Shad in the Albemarle Sound, North Carolina. *North American Journal of Fisheries Management* <https://doi.org/10.1002/nafm.10555>.

[Pugh, M. W., G. Pandolfi, T. Franklin, and M. M. Gangloff. 2020.](#) Influences of in-stream habitat and upstream land-use on site occupancy of the Kanawha Darter (*Etheostoma kanawhae*): a narrowly distributed species from the New River (Upper Kanawha Basin). *Aquatic Conservation: Marine and Freshwater Ecosystems* <https://doi.org/10.1002/aqc.3473>.

[Tracy, B. H., F. C. Rohde, and G. M. Hogue. 2020.](#) An annotated atlas of the freshwater fishes of North Carolina. *Southeastern Fishes Council Proceedings* No 60.

Submitted by the NCAFS Newsletter Review Team

Stories of Interest

[Conservation group files suit against North Carolina over fisheries management](#)
CCA and private individuals file suit alleging violation of public trust doctrine.

[FISHstory: how old fishing photos unlock history of Atlantic Fisheries](#)
Citizen-science project to identify fish in old pictures.

[Partnerships to improve conservation stocking of Barrens Topminnow](#)
Over 44,000 of the endangered species have been stocked.

[No Sex For Fish](#)
The intersection of overfishing, environmental disaster, and extreme poverty.

[‘You have to be realistic’. Fisheries biggest impediment to Brexit deal](#)
Negotiations ongoing.

[Development of autonomous vessels to monitor illegal fishing](#)
Applications for patrolling marine protected areas.

[Ebony Anglers: increasing diversity in sport fishing](#)
North Carolina team took 1st place in King Mackerel tourney.

[USACE denies permit for Pebble Mine](#)
Latest in the decade-long project that would impact Bristol Bay salmon.

[NCWRC seeks public comment for proposed rule changes](#)
Statewide virtual public hearing at 6:30pm on Jan 21.

Submitted by the NCAFS Newsletter Review Team

Call to Action!

If you want to contribute, have a story idea or would like us to include something in next quarter's newsletter, e-mail Kyle Rachels kyle.rachels@ncwildlife.org or give him a call at 252-548-4938. Also, if you want to become more involved with one of the many great NCAFS committees then please check the link below for information about each one, contacts, etc., <http://nc.fisheries.org/who-we-are/committees/>

Valuable Links

The [American Fisheries Society Home Page](#) offers a wealth of links to assist you in your fishy endeavors. Information on ordering AFS books, annual meetings, chapter links and joining the AFS can be found there.

This and [archived NCAFS newsletters](#), along with links, [chapter information](#), and [upcoming meetings](#), can be found on the [NCAFS website](#).

[Click to view dates & deadlines](#)

UPCOMING MEETINGS
In Fisheries & Ecology