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AMERICAN FISHERIES  
SOCIETY

Fall 2018 NEWSLETTER

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**President's Message**

I suspect that Hurricane Florence was an unwelcomed visitor for most of us. Unfortunately, many North Carolina communities were severely impacted by Hurricane Florence, so I hope everyone is doing well after the storm. The nearly statewide devastation will certainly make the path to recovery difficult for many North Carolina families. Thus, I urge our membership to consider helping with recovery efforts or donations.

In addition, the impacts of Florence will likely creep into your work plans or alter research projects for years to come. The severe flooding has caused fish kills, substantial aquatic habitat alterations, and flushed countless pollutants into our waterways. Please keep these impacts in the forefront of your mind as you scramble to salvage the remainder of the field season!

Finally, I want to encourage our membership to attend the Southern Division AFS meeting in Galveston, Texas, January 24-27, 2019. I also want to remind everyone that our annual chapter meeting will be held in Winston-Salem, February 19-21, 2019. In addition, please start thinking about raffle items for the NCAFS meeting! Please contact Stephen Parker (swparke2@ncsu.edu) if you have raffle items that you would like to donate.

Enjoy the fall!

Tyler Black

*Submitted by Tyler Black, NCAFS President*

## **Save the Date – NCAFS 2019 Annual Meeting!**

**When:** February 19-21, 2019

**Where:** Winston-Salem

**Meeting Site:** The Historic Brookstown Inn [www.brookstowninn.com](http://www.brookstowninn.com)



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### **NCAFS Fall 2018 Treasurer's Report** (as of 9/26/2018)

1. NCAFS checking – \$5,668.27
2. NCAFS Edward Jones Ichthus Fund or Student Fund – \$29,113.89
3. NCAFS Edward Jones General Fund – \$52,535.56
4. Robust Redhorse Conservation Committee – \$11,837.07

This summer we awarded student travel awards, worth \$400 each, to six students (Emilee Wooster, Bobby Cope, April Lamb, Chantelle Rondel, Vincent Santini, and Chris Thaxton). This money was awarded from our Ichthus Fund. We also donated \$700 to the Foothills Conservancy of North Carolina in May for a summer camp ([click to jump to article](#)).

*Submitted by Kelsey Lincoln, NCAFS Secretary/Treasurer*

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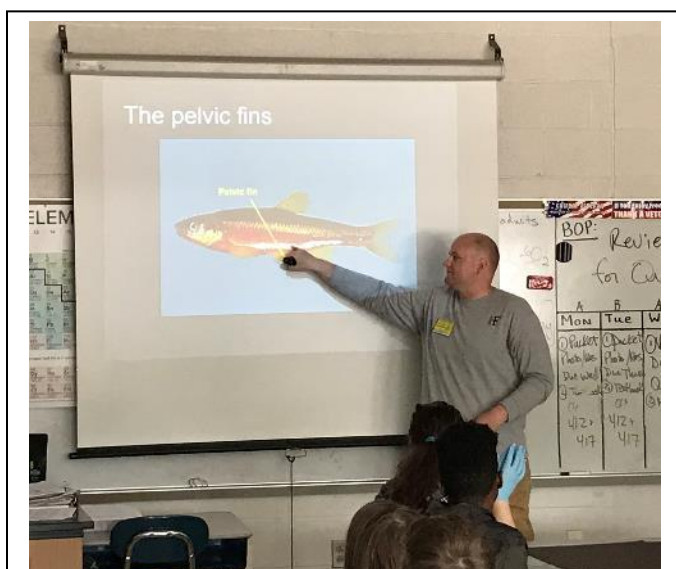
## 2018 Shad in the Classroom – Engaging Students

Through the Shad in the Classroom program, elementary, middle, and high school students learn concepts related to the American Shad's survival, the species' cultural and biological importance, its ecological connections to other species and habitats, and the significance of genetic integrity. Teachers also integrate various other disciplines into the program including math, social studies, technology, art, literacy, and writing. The program heightens knowledge and awareness in future generations of an important migratory fish.

Shad in the Classroom is a cooperative program that has many dedicated partners. The program is managed by the NC Museum of Natural Sciences (Museum), and it receives significant logistical and financial support from the Albemarle-Pamlico National Estuary Partnership (APNEP), the North Carolina Wildlife Resources Commission (NCWRC), and the U.S. Fish and Wildlife Service (USFWS). North Carolina State University (NCSU) and NCSU's Student Fisheries Subunit (SFS) also play significant roles.

This year we received \$840 from the NC Chapter of the American Fisheries Society to purchase materials to construct two higher quality tanks. The new tanks are made of clear plexiglass and are in a hexagon shape to allow the shad to continually swim in a circle. The major benefit to the students is that they can more clearly see the tiny fry. These tanks will be installed in two of our Shad schools for the 2019 season. The NCWRC donated 4 plexiglass hexagon tank systems in 2017, and we also received 4 of these tanks from East Wake Middle School previously. We hope to transition all our Shad schools over to this new tank system over time.

Speaking at one of the shad fry releases, Dr. Wilson Laney, USFWS, said "it takes a village" to restore the American Shad. North Carolina is part of a larger effort among states along the Atlantic Coast involving multiple state and federal agencies. The Shad in the Classroom Program in



*NCSU grad students Bobby Cope and Stephen Parker fish dissection and anatomy lesson at East Garner Middle School. (photo by Matt Lanner)*

"The Shad in the Classroom program gave my students a chance to see how they can directly impact a species and an ecosystem. They experienced a world of nature that they wouldn't have experienced without this program."

North Carolina serves to educate the public about American Shad and their historic significance and to help the public play a role in the restoration of the species. The goal of the Program is to teach North Carolina teachers and students about American Shad history and ecology, to connect teachers and students with their local river basin, to provide the opportunity for the students to participate in the American Shad restoration effort, and to inspire a new generation of biologists and ecologists.

These program goals incorporate a “hands-on” approach with raising shad and give the students a strong connection to the fish resource and the river basin. Program enhancement activities like the fish dissection and macroinvertebrate lessons are highly valued by our

Dissection...

“Loved it!!!! I had other staff, students (not mine) come in and see what it was all about. I included some special education students that would never get this type of opportunity in HS and beyond. They had a blast and did a great job.”

“The students absolutely loved it, for many it was their first chance to ever experience something like that.”



*NCSU grad student Jennifer Archambault aquatic macroinvertebrate lecture at Cook Literacy Model School. (photo by Brad Rhew)*

students and teachers. The hands-on approach of these activities allows students to see, touch, and explore various fish species and aquatic macroinvertebrates helping to more fully engage the students. We are very thankful that 16 student, post-doc, researchers, and educators from NCSU’s SFS, the East Carolina University (ECU) Student

Fisheries subunit, and the NCWRC generously provided their time and expertise to conduct these lessons: April Lamb, Austin Mueller, Bobby Cope, Chris Thaxton, Emilee Wooster, Dr. Gus Engman, Henry Raab, Jennifer Archambault, Keturah Kovolew, Jordan Smith, Kevin Hining, Mike Walter, Rebekah Ewing, Riley Gallagher, Stephen Parker, and Steve Meyer.

Because of these volunteers and the generosity of fish donations (>300 fish - thank you Drs. Rich Noble, Phil Doerr, and Jim Rice, fellow anglers, and the NCWRC’s Armstrong Hatchery), we were able to facilitate the dissection lecture for 13 classrooms (over 1,000 students). Also, Stephen Parker and Riley Gallagher helped coordinate with the NCSU graduate students and collected fish specimens and Jordan Smith helped coordinate with the ECU graduate students and collected fish specimens for the anatomy-dissection lectures.



This year we were able to accommodate 13 of the 15 teachers that requested a dissection lecture at their school. We are very grateful to NCSU, ECU, and the NCWRC educators and for the fish donations, which led to the great success of this activity. All teachers that were able to participate in this class reported that the activity enhanced the learning experience for their students. The fish dissection continues to be a highly appreciated component that we have added to the program.



*ECU grad and undergrad students Jordan Smith, Henry Raab, Steve Meyer, and Keturah Kovolew fish dissection and anatomy lesson at Bertie Early College High School. (photo by ECU grad students)*



*Clear hexagon plexiglass tank. (photo by Danielle Pender)*

Shad in the Classroom “takes its own village” to run the program, and we are grateful to all of our partners and to the all of the volunteers who help with every aspect of the program - from the collection of the broodstock and the running of the embryos to the schools, to the invertebrate and fish anatomy and dissection lessons, to the releasing of the larval fish in their natal rivers, and everything in between. We are gearing up for next year and look forward to working with Chapter members again for the 2019 Shad in the Classroom Program!

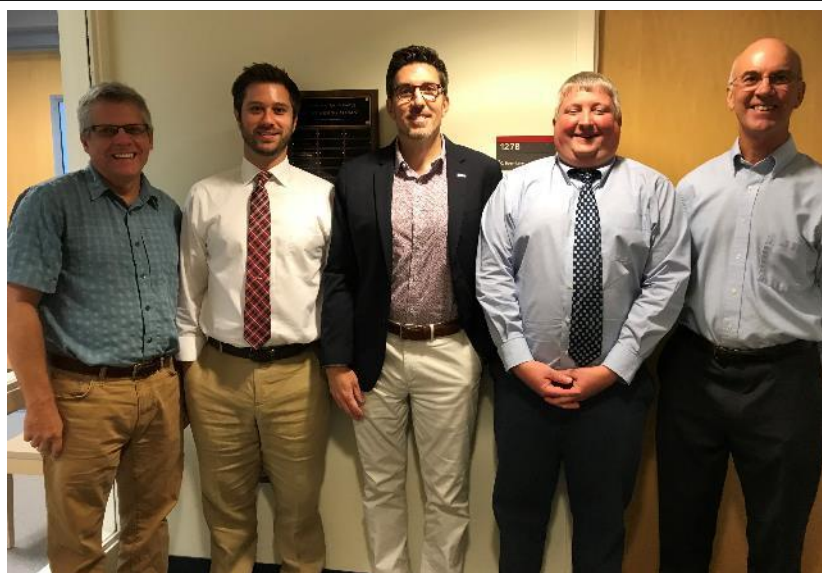
Melissa Dowland, Megan Chesser, and I give a big thank you to all the many volunteers, particularly the NCAFS Chapter and the NCSU and ECU Student Subunits, and NCSU, NCWRC, USFWS, and APNEP! If you would like to be involved in the program next year, please contact Danielle at [danielle.pender@naturalsciences.org](mailto:danielle.pender@naturalsciences.org).

*Danielle Pender, Shad in the Classroom Program Specialist, NC Museum of Natural Science, Education Section*

## **NCSU Fisheries Graduates Honored with College Alumni Awards**

Two NC State graduates and NCAFS Chapter members were honored with NCSU, College of Agriculture and Life Sciences, Outstanding Alumni Awards. Christian Waters (MS 1997, Joe Hightower Advisor) was awarded the 2018 Outstanding Alumni Award, and Steve Midway (MS, 2008, Derek Aday and Tom Kwak, Co-advisors) received the 2018 Outstanding Young Alumni Award. Christian pursued a career as a fisheries biologist with the NC Wildlife Resources Commission, and over the years assumed additional responsibilities to become the Chief of the Inland Fisheries Division. Steve continued his education with a doctorate degree from UNC Wilmington (Fred Scharf, Advisor) and is currently an Assistant Professor in the Department of Oceanography and Coastal Sciences at Louisiana State University. Christian and Steve presented a joint Applied Ecology Departmental seminar on September 7 on their professional experiences, and then College alumni, friends, faculty, and staff gathered at the NC State Alumni Center to celebrate these honors. We're proud of the success and impact that our NCSU graduates achieve after fledging.

Congratulations to Christian and Steve!



*NC State University College Alumni Award recipients and their former advisors. L-R, Tom Kwak (Unit Leader and Professor), Steve Midway (MS 2008, current LSU Assistant Professor), Derek Aday (Applied Ecology Department Head), Christian Waters (MS 1997, Fisheries Chief, NC Wildlife Resources Commission), Joe Hightower (Emeritus Professor).*

*Submitted by Tom Kwak, NCSU*

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## **A Summer of Dead Fish in Jars and Why They Matter**

*Written by Conner Neagle, Intern at the North Carolina Museum of Natural Sciences, Sophomore at North Carolina State University*

Over the course of this past summer I had the pleasure of working alongside the staff and volunteers that make up the Fishes Unit at the North Carolina Museum of Natural Sciences (NCSM) via an internship through the North Carolina Council for Women &

Youth Involvement Office. I learned about the internship program through a curator from the museum who recommended that I check it out since I was looking for employment at the time. Knowing that I would have the chance to work with fish, and not be in retail for another summer, sold me on the idea immediately. I have always loved fishes and all the unique forms they present themselves in; so, I was more than ecstatic when I heard that I had an interview for the internship. At the time, I was living in a building without WiFi so I made sure that I got to the Center for Marine Science and Technology (where I was taking classes at the time) an hour early to ensure that my laptop and webcam were operable. After nervously waiting, a blip on my screen indicated that a video call was coming through. After accepting that call, I was introduced to Gabriela Hogue and Lindsay Roupe, two people I would be working with closely throughout the summer.



Gabriela is the Collections Manager of Fishes and oversees the day to day operations of the collection. She was also my boss over the course of the summer, but boss seems like too harsh of a word for her since she was always kind, helpful, and put up with my shenanigans. I started my job off by learning the ins and outs of curating the collection. There are approximately 1.4 million fish specimens lining the shelves of the “range”. The range is the temperature and humidity-controlled room where the specimens are stored, from the smallest microscopic individuals to the largest sharks, stored in ten-foot tanks (I was particularly excited about seeing those). The sheer diversity of fish is unimaginable, even more so when you have so much variety packed into one room. That first week I

shelved fish after fish from a collection that had been recently databased. Everything had a place, and when it didn’t, we would make room for it. The range, in and of itself, could be thought of as one big library. This particular library is organized by family relationships, then alphabetically by genus, then alphabetically by species, and then by drainage basins for the freshwater specimens. You must be organized in a collection because misplacing a specimen, and its associated data, would be like losing a book in a library. The meticulous care put into the collection by Gabriela and others that have worked with her, has ensured that it is very organized.

My main reason for being hired was to deal with the marine portion of a recently acquired collection from Western Carolina University (WCU, Dr. Jerry West’s collection). My job was to database each specimen according to its associated field notes. That is when the exciting weeks of sitting in front of a computer typing in field note after field

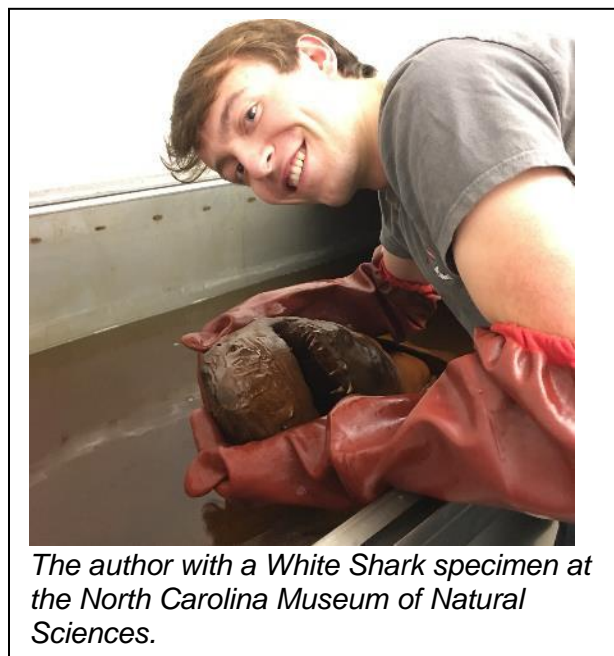


note and geo-referencing locality after locality came to pass. Over the course of the summer I cataloged roughly 2,500 individual specimens and I couldn't have been happier doing it. All of these specimens were marine, and most of them were from the Morehead City area. I was excited to learn more about this area because I fell in love with it after spending a semester there. Of course, this wasn't the only facet of interest for me.

I also enjoyed learning that each individual specimen provides a snapshot into the past for that species. Some of the specimens were from the 1960s, which is significantly older than I am. One cannot help but appreciate how cool that is. There I was, holding a fish that saw the world far before I was even born. On top of that, if you weave the data across species together for a given year or locality, you can begin to get a picture of what a given area was like during a given time period. One question I was keen on answering is if you could put together a relative abundance plot to see what proportions of specimens were collected using the same gear over the course of decades. I decided to focus in on the family Sciaenidae for this because they were easily the most plentiful family caught. Sciaenids are a family of fish that are very common off the coast of North Carolina. Most of them are renowned for their ability to make noise and a few are named after this (i.e. Drum and Croaker).

Eager to practice R (since I am rather new to the program), I decided to plot the data of the sciaenids in a par plot that represented relative abundance over the course of the years during which the specimens were collected. The first figure below shows the relative abundances of sciaenids from the WCU collection; whereas, the second figure shows the sciaenids represented within the databased NCSM specimens. The WCU specimens substantially expanded the number of sciaenid specimens compared to what had already been databased. What is really exciting is that the potential to fill in collections prior to 1970 still exists because NCSM continues to database historic collections, some of which date back to the late 1800s. We can't go back in time to collect fish one hundred years ago, but with the help of interns like me, we can bring historic collections into the 21<sup>st</sup> century.

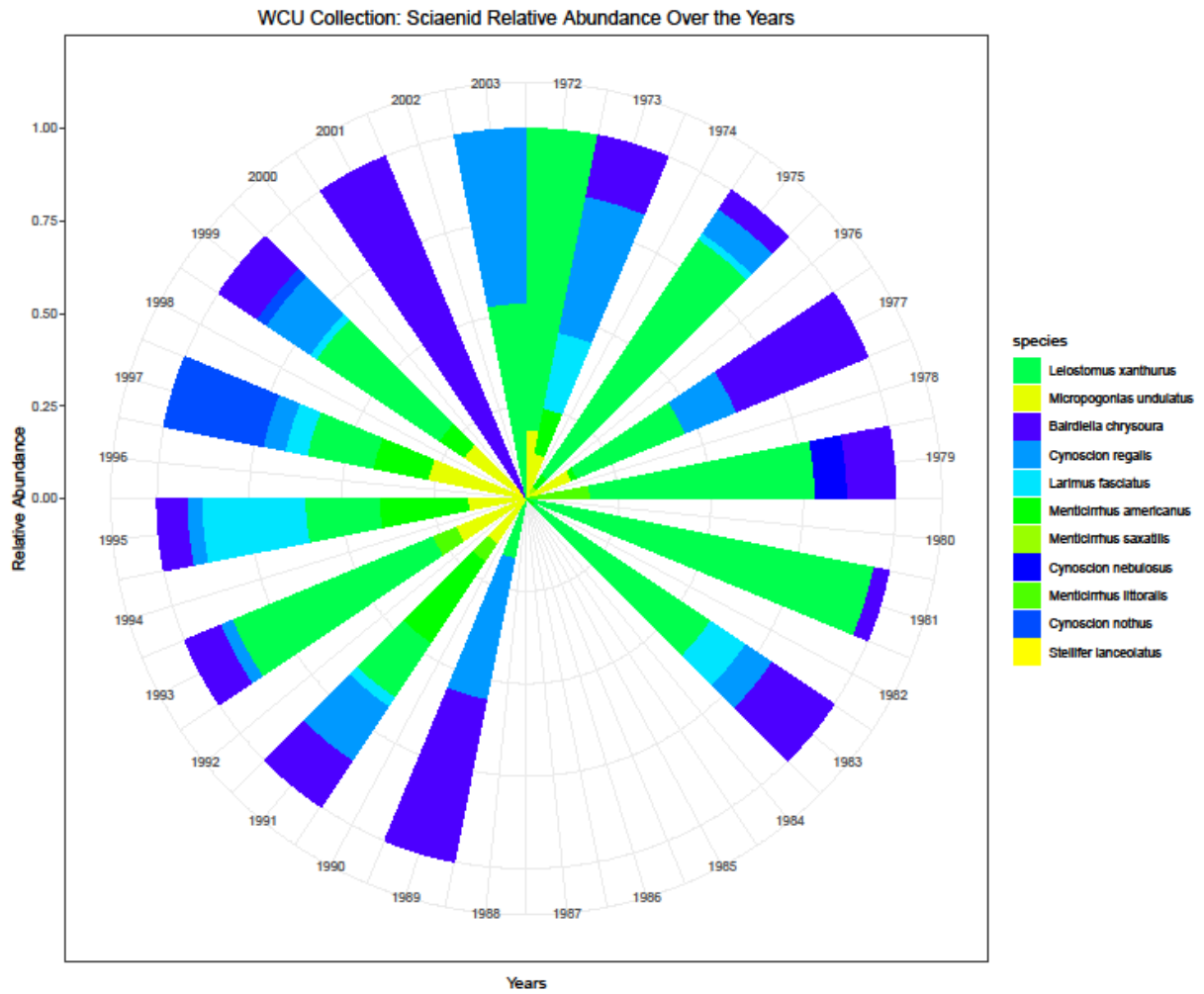
These graphs just scratch the surface of the stories these specimens can tell. Looking closely, we can make out stronger year classes for certain species while also revealing the major players of North Carolina waters. The most relatively abundant species would be the Spot (*Leiostomus xanthurus*). You can see that they usually represent a significant portion

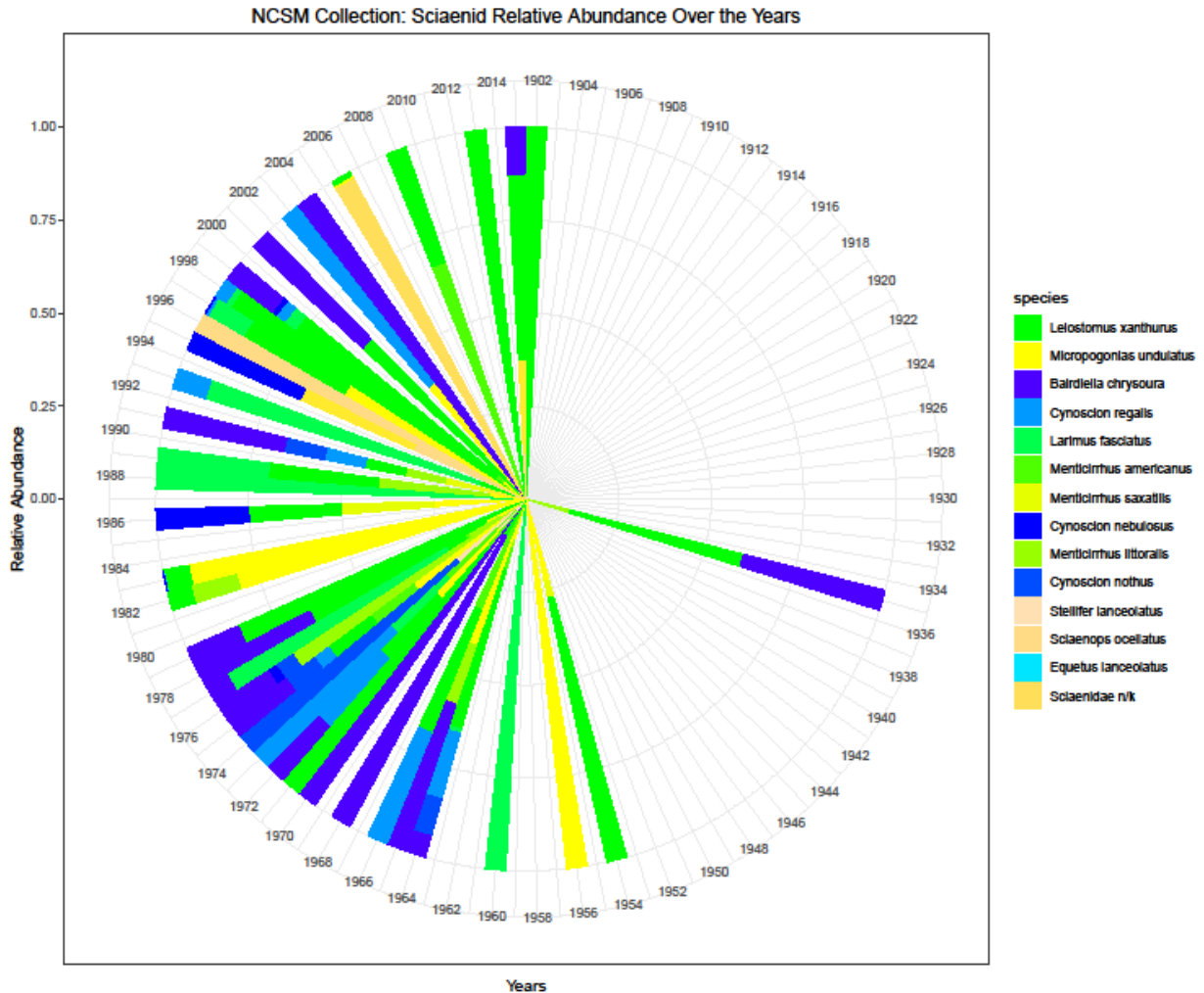




of the catch within the WCU collection. What I find interesting to note is that, when Spot are less common in the catch, Spotted Seatrout (*Cynoscion nebulosus*) and Weakfish (*Cynoscion regalis*) appear to become a bit more abundant. These are possibly larger year classes due to favorable conditions, but that is something I never would have considered if I had never looked at the data within this collection. There are so many things that could be learned from the sciaenid specimens alone, but there are even rarer species housed within the collection. Each individual fish has the potential to be valuable to research and education as each provides a snapshot in time. I am astounded and amazed to have had an opportunity to work in this collection and to see animals I have only dreamed of seeing before. Everything from the smallest Cavefish to the largest Bull Shark is significant in some way and should be preserved so that they may tell their stories for years to come.

One very important thing to note is that all the data that accompanies these specimens is available to you. Everyone has access and can use it for research or as a teaching tool. You can access the data here: <http://collections.naturalsciences.org/>. My hope is that we, and others, will view this collection as an opportunity to learn more and explore the fish that bring us all together to begin with. Collections such as this one need to be treasured for what they are - windows into the past. And, hopefully more people will be as lucky as I was in the future.





*Submitted by Conner Neagle, North Carolina Museum of Natural Sciences*

## **News from the NCAFS Awards Committee - 2018 Student Travel Awards Presented**

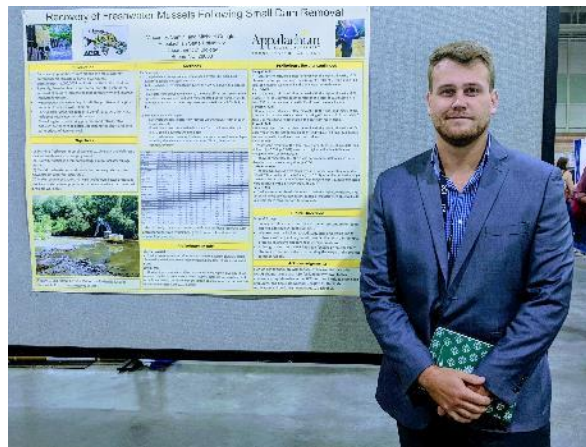
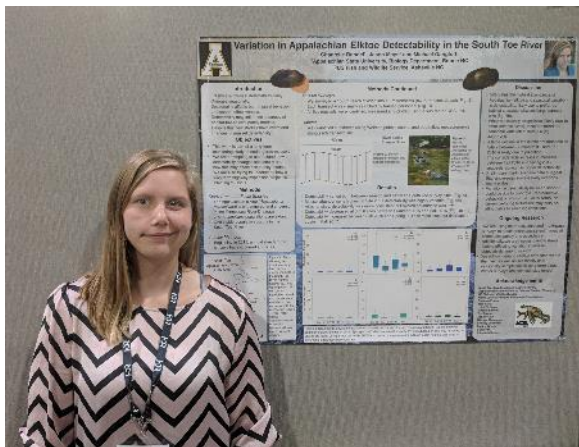
The NCAFS Chapter established a Student Travel Award Program in 2005 for the specific purpose of encouraging professional growth of students and maximal participation of undergraduate and graduate students at the annual meeting of the American Fisheries Society. Monetary support is provided to qualifying students via a travel award of \$200 to \$400 to help defer the cost of meeting travel, registration, and accommodations. The 2018 awards were presented to six students for the 148<sup>th</sup> Annual Meeting of the American Fisheries Society held August 19-23 in Atlantic City, New Jersey.



The 2018 award recipients included three graduate students from NC State University, two from Appalachian State University, and one from East Carolina University. Emilee Briggs, Bobby Cope, and April Lamb were the recipients from NC State University; Emilee Briggs and April Lamb are advised by Dr. Jesse Fischer and Bobby Cope is advised by Dr. Tom Kwak. Chantelle Rondel and Vincent Santini were the recipients from Appalachian State and are both advised by Dr. Mike Gangloff. Chris Thaxton was the recipient from East Carolina and he is advised by Dr. Rebecca Asch. They each received a cash award of \$400 from the Chapter's Ichthus Fund account, which was established specifically to foster student involvement.



*The NCAFS Student Travel Award recipients from NC State University pictured at the AFS Annual Meeting in Atlantic City, New Jersey. From left to right are: Barbara Knuth (an AFS Past-President), Emily Briggs, April Lamb, Bobby Cope, and Doug Austen (AFS Executive Director). Photo Credit, Tom Kwak.*



*The NCAFS Student Travel Award recipients from Appalachian State University standing beside their posters at the AFS Annual Meeting in Atlantic City, New Jersey; Chantelle Rondel (left) and Vincent Santini (right).*

Each of these students represented the Chapter admirably at the meeting and expressed their sincere gratitude to the Chapter for helping to make their attendance and participation possible.

*Submitted by Greg Cope, NCSU, and Corey Oakley NCWRC*



*Chris Thaxton, award recipient from East Carolina University delivers his presentation at the Atlantic City, New Jersey AFS Meeting.*

## **White Lake Fish Kill**

On May 3, 2018, a contractor for the Town of White Lake commenced application of buffered aluminum sulfate (alum) to strip phosphorus and flocculate algae from the water column of White Lake. The following day, NCWRC was notified of a fish kill in progress.



NCWRC staff collected dead fish along six randomly selected shoreline transects and six across-lake transects. Total estimated loss was 114,770 fish from nine species with a replacement value of \$634,132. The NC Division of Water Resources determined "High pH values and fluctuating DO concentration from the existing algal bloom combined with the site specific effects of the alum treatment caused the fish kill." NCWRC staff will monitor the recovery of sport fish populations with surveys planned for fall 2018 and spring 2019.



The full fish kill investigation report can be found here:

<https://files.nc.gov/ncdeq/Water%20Quality/Environmental%20Sciences/FishKill/2018Kills/White%20Lake%20fish%20kill%20reportNC.pdf>.

Submitted by Kyle Rachels, NCWRC

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## **Adventures in Nature, Foothills Conservancy Summer Camp - Thank You NCAFS!!**

Recently, NCAFS donated funds to the Foothills Nature Conservancy to help create a free summer camp for a diverse group of youth, age 8-12. The camp was a huge success! Click the link to view a [thank you letter from Foothills Conservancy describing the summer camps activities.](#)



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## **America's First Fish: *Lepomis auritus* (Linnaeus 1758) – taken from the July 4<sup>th</sup>, 2018 edition of The ETYFish Project**

<https://www.etyfish.org/name-of-the-week2018/>

Today is Independence Day, a federal holiday in the USA commemorating the ratification of the Declaration of Independence on July 4, 1776. On this day, the Continental Congress officially announced that the 13 colonies of America were no longer part of the British Empire but represented a new nation, the United States of America. (Actually, Congress voted to declare independence two days earlier, on July 2.) This got us to wondering: “What was the first inland fish from the United States to be described?”

The answer is the Redbreast Sunfish, which Linnaeus described as *Labrus auritus* in the 10<sup>th</sup> edition of his *Systema Naturae*, the first official work of zoological nomenclature. “*Auritus*” means “eared” and refers to the long opercular flap of adults.



Linnaeus also described the Pumpkinseed Sunfish, *Perca gibbosa* (now *Lepomis gibbosus*) in the same publication, but since it appeared nine pages later, we consider it America's "second fish."

*Labrus auritus* officially settled in the genus *Lepomis* in 1883. Proposed by Rafinesque in 1819, *Lepomis* translates as *lepis*, scale and *poma*, lid, once again referring to the opercular flap that's characteristic of adults of the genus. Rafinesque used the flap to distinguish sunfishes from the bream genus *Sparus* (Sparidae), thought to be related at the time.



Redbreast Sunfish, *Lepomis auritus*. Photo by Scott Smith. Courtesy: [North American Native Fishes Association](#).

The Declaration of Independence was signed and ratified in Philadelphia, Pennsylvania. The specimen that Linnaeus used to describe "America's first fish" hailed from Philadelphia too!

Submitted by Bryn H. Tracy

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### **Good Work! – Recent Publications by NCAFS Members**

Archambault, J. M. 2018. [Using Herbicides to Save Endangered Snails](#). Scientific American Newsletter, July 20<sup>th</sup>, 2018.

Archambault, J. M., W. G. Cope, and T. J. Kwak. 2018. Chasing a changing climate: reproductive and dispersal traits predict how sessile species respond to global warming. *Diversity and Distributions*. 24:880-891.

Archambault, J. M., S. T. Prochazka, W. G. Cope, P. R. Lazaro, and D. Shea. 2018. Polycyclic aromatic hydrocarbons in surface waters, sediments, and unionid mussels: relation to road crossings and implications for chronic mussel exposure. *Hydrobiologia*. 810:465-476.

Bishop, W. M., B. E. Willis, R.J. Richardson, and W. G. Cope. 2018. The presence of algae mitigates the toxicity of copper-based algaecides to a non-target organism. *Environmental Toxicology and Chemistry*. 37:2132-2142.

- Bradley, C. E., Rice, J. A., and D. D. Aday. 2018. Modeling the effects of vital rate manipulation and management scenarios to predict the population impact of restoration programs on an unrecovered coastal population of Striped Bass. *North American Journal of Fisheries Management*. 38: 639-649.
- Buczek, S. B., W. G. Cope, R. A. McLaughlin, and T. J. Kwak. 2018. Effects of turbidity, sediment, and polyacrylamide on native freshwater mussels. *Journal of the American Water Resources Association*. 54:631-643.
- Buttermore, E. N., W. G. Cope, T. J. Kwak, P. B. Cooney, D. Shea, and P. R. Lazaro. 2018. Contaminants in tropical island streams and their biota. *Environmental Research*. 161:615-623.
- Drew, C. A., M. Eddy, T. J. Kwak, W. G. Cope, and T. Augspurger. 2018. Hydrologic characteristics of freshwater mussel habitat: novel insights from modeled flows. *Freshwater Science*. 37:343-356.
- Engman, A. C., T. J. Kwak, and W. G. Cope. 2018. Do postlarval amphidromous fishes transport marine-derived nutrients and pollutants to Caribbean streams? *Ecology of Freshwater Fish*. 27:847-856.
- Favrot, S.D. and T.J. Kwak. 2018. Behavior and reproductive ecology of the Sickletfin Redhorse: an imperiled southern Appalachian Mountain fish. *Transactions of the American Fisheries Society*. 147: 204-222.
- Flood, S. L., J. M. Burkholder, and W. G. Cope. 2018. Assessment of atrazine toxicity to the estuarine phytoplankter *Dunaliella tertiolecta* (Chlorophyta) under varying nutrient conditions. *Environmental Science and Pollution Research*. 25:11409-11423.
- Grieshaber, C. A., T. N. Penland, T. J. Kwak, W. G. Cope, R. J. Heise, J. M. Law, D. Shea, D. D. Aday, J. A. Rice, and S. W. Kullman. 2018. Relation of fish intersex to contaminants in riverine sport fishes. *Science of the Total Environment*. 643:73-89.
- Hanks, R. D., Y. Kanno, and J. M. Rash. 2018. Can single-pass electrofishing replace three-pass depletion for population trend detection? *Transactions of the American Fisheries Society*. 147:729-739.
- Henson, M. N., D. D. Aday, and J. A. Rice. 2018. Thermal tolerance and survival of Nile Tilapia and Blue Tilapia under rapid and natural temperature declination rates. *Transactions of the American Fisheries Society*. 147:278-286.

- Henson, M. N., D. D. Aday, J. A. Rice, and C. A. Layman. 2018. Assessing the influence of tilapia on sport fish species in North Carolina reservoirs. *Transactions of the American Fisheries Society*. 147:350-362.
- Johnson, T. K. B., C. E. LePrevost, T. J. Kwak, and W. G. Cope. 2018. Selenium, mercury, and their molar ratio in sportfish from drinking water reservoirs. *International Journal of Environmental Research and Public Health*. 15(9), Article 1864, 17 pp.
- Lamb, A. 2018. [Speaking Mattamuskeet – And Saving A Research Project](#). North Carolina State University College of Agriculture and Life Sciences Newsletter August 21, 2018.
- Penland, T. N., C. A. Grieshaber, T. J. Kwak, W. G. Cope, R. J. Heise, and F. W. Sessions. 2018. Food web contaminant dynamics of a large Atlantic slope river: implications for common and imperiled species. *Science of the Total Environment*. 633:1062-1077.
- Rachels, K. T. and B. R. Ricks. 2018. Exploring causal factors of spawning stock mortality in a riverine Striped Bass population. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science* 10:424-434.
- Rash, J. 2018. A native son returns. *Wildlife in North Carolina*. 82: 4-9.
- Rogers, J. J., W. F. Henley, A. G. Weberg, J. W. Jones, and W. G. Cope. 2018. Assessment of growth, survival, and organ tissues of caged mussels (*Bivalvia: Unionidae*) in a river-scape influenced by coal mining in the southeastern USA. *Science of the Total Environment*. 645:1273-1286.
- Runde, B. J., J. E. Harris, and J. A. Buckel. 2018. Symposium review: Using electronic tags to estimate vital rates in fishes. *Fisheries*. 43:268-270.

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## News from NCWRC

### [Aquatic Nuisance Species Webpage](#)

This new webpage provides information on NCWRC's efforts to curtail Aquatic Nuisance Species.





## Wildlife Diversity Program Quarterly Reports

NCWRC's quarterly wildlife diversity reports contain updates on a wide variety of nongame research projects and survey results. This issue includes an update on continuing mussel work in the Rocky River in Chatham County, home to one of NC's strongest populations of the State Endangered Savannah Lilliput.

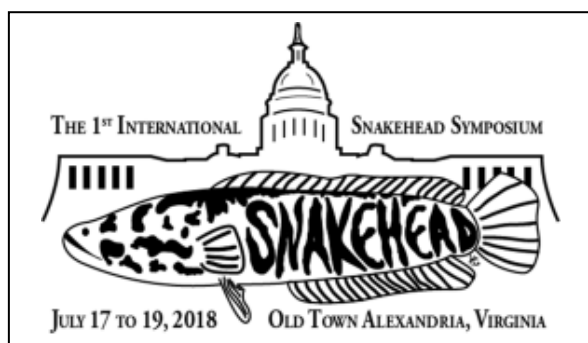


*Savannah Lilliput from Rocky River*

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## **First International Snakehead Symposium | Virginia Chapter**

Recently, the Virginia Chapter of the American Fisheries Society held the first [international symposium on snakeheads](#), July 18-19, 2018. Although the symposium is over, below are some links that provide video footage of the symposium.



July 18 - Day 1 – Part 1

<https://www.youtube.com/watch?v=iAB0QRQX99k>

July 18 - Day 1 – Part 2

<https://www.youtube.com/watch?v=LvuhizckIKk>

July 19 - Day 2 – Part 1

<https://www.youtube.com/watch?v=67oVFP0FZC4>

July 19 - Day 2 – Part 2

<https://www.youtube.com/watch?v=7UCS8wlx00Q>

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## **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 Kevin Hining [kevin.hining@ncwildlife.org](mailto:kevin.hining@ncwildlife.org) or give him a call at 336-213-9692. 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., <https://nc.fisheries.org/who-we-are/committees/>

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## Valuable Links

[Click to view dates & deadlines](#)

**UPCOMING MEETINGS**  
In Fisheries & Ecology

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](#).

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