AMERICAN FISHERIES SOCIETY

Spring 2014 NEWSLETTER

INSIDE THIS ISSUE

President's Message

Season's greetings!! Wait, wrong newsletter. Forgive me, what with an overly enthusiastic tango between coatings of ice and 20 mph winds fresh off an iceberg, I am perpetually confused as to what season we are in. But the daffodils insist that spring is creeping in and warmer days begin to nudge into the weeks! For many of us, this means the commencement of field season draws near, whether we are ready to experience those no-doubt-particularly chilly waters or not. I know for myself, it's always an exceptionally busy time of year as I secure our seasonal assistance, awaken and prepare various outboards & batteries & nets, and I remind my perpetually stiffening body that it is to once again abandon that office chair and navigate the boulders/thorns/bottomless mud of North Carolina's wildly diverse aquatic habitats. Every year I am reminded, and, even after ten years, honored, as I was again at this February's Annual NCAFS Chapter Meeting, to be part of a community which includes so many innovative & dedicated people who continue to take those risks, while they simultaneously challenge themselves & each other to keep raising the bar of quality & scientific integrity in their work. What makes it extraordinary is the knowledge that none of us do it for the (generally non-existent) financial gains, but instead are driven by a shared passion to protect and guide our amazing creatures & places from now forward. Thank you for allowing me to be a small part of the journey.

Brena Jones

2014 North Carolina Chapter of the American Fisheries Society Annual Meeting Summary

The Millenium Hotel
Durham, NC – February 18-19, 2014

Thank you to everyone who helped organize and execute the extremely complex project that is our annual meeting, including Greg Cope for his tireless support and guidance, Todd Ewing for his quick and accurate records of financial information, helping rebuild our listserv, and coordinating a great registration table, Kim Sparks for her invaluable work posting information online, Jessica Bauman for not only taking care of podcast recording, but coordinating Dr. Joe Hightower's generously donated and excellent side-scan sonar workshop, John Crutchfield for his ongoing phenomenal work as Awards Chair and making the financial support of Duke Energy possible, and Chris Wood, Kevin Hining, the staff of the Millennium Hotel, who definitely went out of their way to accommodate our group with its unique set of constraints, and all the other folks who offered their time along the way.

Our NCAFS 2014 Meeting Program was completed with an enormous thank you to Bryn Tracy for his assistance, who went above and beyond the call of duty, and did a tremendous job with some very special materials. Thanks as well to Ann Runyon, for giving permission to use her charming Bluehead Chub illustration; she is a freelance illustrator who creates, among many other things, the illustrations in the back of the Wildlife In North Carolina magazine. Thank you to all the volunteers who offered help, particularly our excellent moderators: AFS Past-President John Boreman, Andrea Leslie, Kim Sparks, and Corey Oakley. A debt of gratitude is owed to Jim Rice for providing a huge amount of information which also allowed us to correct the Chapter history on our website. Additional thanks for assistance with that effort goes to Dave Coughlan, Mike Abney, Scott Van Horn, Bob Curry, and all the folks who worked hard to put past newsletters online.

This year's program will be added to the online archives and will include searchable keywords with the abstracts which will be linked to the podcasts. **In addition, if any members have paper or electronic copes of pre-2006 meeting programs and abstracts, please submit them to Kim Sparks (kim.sparks@ncwildlife.org) or Brena Jones (brena.jones@ncwildlife.org)** so we can add them!

Congratulations again to our very deserving award winners and thanks to those who donate to and inspire those awards. I only wish we had more to give out! As always, we are also very proud of our perennially-award-winning Student Fisheries Subunit at NC State University, who also put together another great raffle, adding their hard work and energy to Tuesday evening's social, ever a meeting highlight.

Not only did we enjoy the opportunity to learn from two days of quality updates from all corners of our field, but we also celebrated the Chapter's 25th anniversary since its 1990 charter. For those who could not attend, myself and Bryn Tracy presented a

poster celebrating the auspicious event, although as many know, its roots go back even further. Two copies were signed by all past presidents in attendance and then raffled, with the proceeds going to the NCSU SFS. Both winners, Christian Waters and Chris Wood will continue collecting signatures in the NCWRC's Raleigh headquarters office and at future NCAFS chapter meetings! In addition to the NCWRC copy, posters were also donated to Duke Energy and NCSU in recognition of their continued support of the group. For those who have been here since 'swim-up' in the late 1980's, things must look very different indeed. Many faces in the room have changed, but on an even greater scale, the entire landscape of fisheries and conservation science has evolved across that quarter-century. I hope you enjoy the view!

NCAFS Past Presidents with anniversary poster (L-R): Fred Harris, David Yow, Mike Abney, Lawrence Dorsey, Dr. Jim Rice, Dave Coughlan, Scott Van Horn, Dr. Tom Kwak, Dr. Greg Cope, Dr. Joe Hightower, Don Degan, Bob Curry, Brena Jones, Chris Wood, Christian Waters

Past presidents peruse poster at social (L-R): Lawrence Dorsey, Dave Coughlan, Dr. Jim Rice, Scott Van Horn, Mike Abney, John Crutchfield

Not even Tom Kwak can resist Jr.

Dr. Greg Cope, Christine Gregory, & Jennifer Archambault, while Wayne Starnes debates raffle prizes in the corner

Group social shot (how does Jr get in all the pictures?)

Submitted by Brena Jones

Minutes of the 2014 NCAFS Annual Business Meeting

Millennium Hotel, Durham, North Carolina
February 19, 2014

DETERMINATION OF QUORUM: President Greg Cope called the business meeting to order at 12:06 p.m. and received confirmation from Secretary-Treasurer Todd Ewing that enough members were present to constitute a quorum.

PRESIDENT'S WELCOME: President Greg Cope welcomed chapter members and visitors to the business meeting. He acknowledged President-Elect Brena Jones for organizing a great annual meeting. President Cope welcomed Mr. Fred Harris and Dr. John Boreman, both of which are past presidents of the American Fisheries Society. President Cope then welcomed Mr. Dave Coughlan, Vice President of the Southern Division of the American Fisheries Society. He also recognized all past-presidents of the Southern Division and Chapter who were present.

AFS PARENT SOCIETY UPDATE: AFS Past President John Boreman discussed some current activities of the AFS Parent Society. The Parent Society has a new Executive Director, Mr. Doug Austen. A major focus of Mr. Austen will be increasing the involvement of marine fisheries workers into the Parent Society. Dr. Boreman also advised us that the Management Committee will be taking on more duties dealing with the day-to-day operations of the Parent Society and that the Governing Board will be dealing with longer-term issues. A major focus of the Governing Board will be advocacy. The current 5-year Strategic Plan is coming to an end and the 2015-2020 Plan is being drafted and should be presented to membership soon. The Parent Society is also evaluating the requirements for becoming a Certified Fisheries Professional. The hope is to make certain that certification requirements mesh with current hiring requirements. Dr. Boreman also reported that the Parent Society is in the

process of evaluating and updating their constitution. The goal is to have a more streamlined document. The updates should be available to membership sometime next fall.

Dr. Boreman presented a Golden Membership Award to Dr. Richard Noble. This award recognizes Dr. Noble's 50 years of membership and service to the American Fisheries Society.

SOUTHERN DIVISION UPDATE: SDAFS Vice President Dave Coughlan reports that the recent Southern Division Spring Meeting in Charleston, SC was a success. The SC Chapter was able to raise $40,000 in donations to support the meeting. Elsewhere in the Division, the Striped Bass Committee is very active, proceedings from the Black Bass Symposium are in the process of being published, and the new chapter from Puerto Rico is up and running. Future SDAFS meetings are:
2015 Savannah, GA
2016 Wheeling, WV
2017 Oklahoma

2013 BUSINESS MEETING MINUTES: President Cope indicated that the minutes from the NCAFS 2013 Business Meeting were distributed in the March 2013 Newsletter and that the minutes needed to be approved. President Cope reported that that no additions or corrections to the minutes were received by Secretary-Treasurer Ewing. Therefore, President Cope suggested that a motion be made to have the minutes from the 2013 Business Meeting approved. The motion was made by John Boreman, seconded by John Crutchfield, and passed unanimously.

COMMITTEE REPORTS:

Program and Arrangements Committee: Our NCAFS 2014 Meeting Program and 25th Anniversary Poster was completed with an enormous thank you to Bryn Tracy, who went above and beyond the call of duty, and did a tremendous job with some very special materials. Thanks as well to Ann Runyon, for giving permission to use her charming Bluehead Chub illustration in the program; she is a freelance illustrator who creates, among many other things, the illustrations in the back of the Wildlife In North Carolina magazine. Thank you to all the volunteers who offered help, particularly our excellent moderators: AFS Past-President John Boreman, Andrea Leslie, Kim Sparks, and Corey Oakley. A debt of gratitude is owed to Greg Cope and Jim Rice for providing a huge amount of information and guidance in putting the program and celebratory materials together, which also allowed us to correct the Chapter history on our website. Additional thanks for assistance with that effort goes to Dave Coughlan, Mike Abney, Scott Van Horn, Bob Curry, and all the folks who worked hard to put past newsletters online. We also could not have made programs available, posted, full of great content without not only our presenters, but Dr. Joe Hightower, who generously donated the extremely educational Continuing Education workshop on side-scan sonar, and our webmaster and President-Elect, Kim Sparks, who kept the website drafts up to date.

This year's program will be added to the online archives and will include searchable keywords with the abstracts which will be linked to the podcasts recorded thanks to the hard work of Jessica Baumann, our A/V coordinator. In addition, if any members have paper or electronic copes of pre-2006 meeting programs and abstracts, please submit them to Kim Sparks (kim.sparks@ncwildlife.org) or Brena Jones (brena.jones@ncwildlife.org) so we can add them to our online archives!

Newsletter Committee: Editor Kevin Hining mentioned that the Newsletter Committee, also comprised of Brena Jones, Dave Coughlan, and Ben Ricks succeeded in assembling and e-publishing four quarterly newsletters in 2013 comprised of 71 pages, 45 articles, and 7 spotlights on students and young professionals. Editor Hining thanked all the contributors for continuing to provide information for the newsletter, as well as the student and young professionals that allowed spotlights to be made about them. If anyone has anything they would like to see included, or new ideas regarding the newsletter format, etc., please call or email Kevin Hining at kevin.hining@ncwildlife.org , 336-877-1087.

Environmental Concerns Committee: Greg Cope reported on behalf of Ben Ricks. Ben Ricks graciously agreed to become Committee Chair after the 2013 Annual Meeting and that the two major items that he worked on and got accomplished were providing Chapter support in the form of formal support letters for the Federal Invasive Species Screening Act legislation and the Association of Fish and Wildlife Agencies National Support Letter for the State & Tribal Wildlife Grants Program. Ben has agreed to remain Committee Chair for 2014 and members should send him items of concern with which they think the Chapter should be involved.

Education and Outreach Committee: Committee Chair Chris Wood reported that 25 attendants participated in the continuing education workshop titled "Techniques for Fish Habitat Monitoring using Side-Scan Sonar" taught by Dr. Joe Hightower. Chris also announced that podcasts of the presentations from the Chapter meeting would be available soon on the Chapter website.

Webmaster: Webmaster Kim Sparks reported that this year we added the Podcasts from the 2013 Annual Meeting, and will add the Podcasts from 2014 as soon as they are available. We are also planning to add the abstracts from previous meetings that have not been posted before. An NCAFS Facebook page has been created that can be accessed from the website homepage. The AFS Parent Society is now offering some website support and is providing a tool that we can use to allow more people to participate in contributing to the website. Hopefully we will migrate our existing content to the new site and format sometime this year.

Finance Committee: Chair Todd Ewing reported that the NC Chapter finances look good. Registration and donations for the 2014 annual NC Chapter meeting did not quite meet costs. Costs for the meeting were $7727.67 and income, including a $1500 donation from Duke Energy, was $6745.71. However, the investments have been increasing steadily since funds were transferred to Edward Jones in June of 2011.

NCSU Student Subunit: The NCSU Student Fisheries Society had another successful raffle. Over $2000 were brought in to help support the Unit. The Student Subunit meets once per month and Chapter members are welcome to attend and come speak at the meetings. The Subunit won the 2014 Southern Division American Fisheries Society Best Student Subunit. This is the eighth time the NCSU Subunit has won that award. Five members of the Subunit presented at the last Parent Society Meeting in Little Rock, AR.

INSTALLATION OF NEW OFFICERS*:* President Greg Cope expressed his thanks to Past President Chris Wood for his guidance and support over the past three years and relieved him of his duties. Greg then welcomed President Elect Kim Sparks to the Executive Committee and passed the presidency to Brena Jones.

President Jones then presented a certificate of appreciation to Greg Cope for his service and work as president.

INCOMING PRESIDENT'S REMARKS: Thank you to everyone who helped me organize and execute the extremely complex project that is our annual meeting, including Greg Cope for his tireless support and guidance, Todd Ewing for his quick and accurate records of financial information, helping me rebuild our listserv, and coordinating a great registration table, Kim Sparks for her invaluable work posting information online, Jessica Bauman for not only taking care of podcast recording, but coordinating Dr. Hightower's workshop, John Crutchfield for his ongoing phenomenal work as Awards Chair and making the financial support of Duke Energy possible, and Chris Wood, Kevin Hining, Bryn Tracy, the staff of the Millennium Hotel, who definitely went out of their way to accommodate our group with its unique set of constraints, and all the other folks who offered their time along the way.

I very much look forward to working with our EXCOM and Committees over the next year to shepherd this amazing group of scientists through the next step forward, in whatever small way I can, and I am truly honored by the opportunity to do so. My goals include an overhaul of our website to more closely align with the SDAFS and AFS pages, as well as building our online presence and creating numerous opportunities for member interaction and contribution to the website itself. In addition, we will sit down and take a hard look at our meeting structure and scheduling, which will be a discussion both with EXCOM and our membership, in an attempt to navigate to a better solution to complicated travel and budgetary restraints.

President Jones asked for a motion to adjourn the meeting. The motion was made, seconded, and the meeting adjourned at 1:45 p.m.

Minutes respectfully submitted by Todd Ewing, Secretary-Treasurer, March 25, 2014

Awards Committee

Awards presentations are one of the highlights of our annual Chapter meeting. Several awards were presented during the recent annual NC AFS meeting held on February 18-19, 2014, in Durham, North Carolina. The meeting was well attended and the host facility and program were outstanding. Thanks to Brena Jones for hosting a very successful meeting. The awards were presented to chapter and non-chapter members for their contributions to the chapter and fisheries and environmental conservation in North Carolina.

Student papers were judged for the **Richard L. Noble Best Student Paper Award** and the professional papers were judged for the **W. Don Baker Memorial Best Professional Paper Award**. There were six presentations by students and fourteen presentations by professionals. The quality of the paper presentations was outstanding. Thanks to all who presented papers and the judging panel!

The **2014 Richard L. Noble Best Student Paper Award** was awarded to **Tim Ellis**, a Ph.D. student in the Fisheries, Wildlife, and Conservation Biology program at NCSU. Tim's presentation titled "Estimates Of Fishing And Natural Mortality Rates Of Spotted Seatrout From Tag-Return And Survey Data" was co-authored by Joseph E. Hightower, Jeffrey A. Buckel, and Kenneth H. Pollock. Tim's research showed that spotted seatrout natural mortality varied dramatically among years depending on winter severity. His results have already influenced management of this species, and there are plans to incorporate his findings into the next stock assessment. In addition to a Chapter award plaque, Tim will receive a monetary award of $600 from the Chapter's Ichthus fund for travel to present the paper at the 2014 parent society meeting in Quebec, Canada.

Tim Ellis, award recipient of the 2014 Richard L. Noble Best Student Paper.

Jennifer Archambault won the **2014 W. Don Baker Memorial Best Professional Paper Award** for her presentation entitled "Sensitivity of Freshwater Mollusks to *Hydrilla*-Targeting Herbicides". The paper was co-authored by Christine M. Bergeron, W. Gregory Cope, Rob Richardson, Mark Heilman, Michael D. Netherland, Ryan Heise,

and J. Edward Corey. Jennifer's research will help guide herbicide applications to control *Hydrilla* in Lake Waccamaw, which supports rare, endemic fish and mollusk populations.

Jennifer Archambault, award recipient of the 2014 W. Don Baker Memorial Best Professional Paper, receiving her award from Dr. Greg Cope, NC AFS Chapter President.

The **Distinguished Service Award** recognizes Chapter members who have distinguished themselves by service to the Chapter, the American Fisheries Society, or the fisheries profession.

The **2014 Distinguish Service Award** was presented to **Dr. Joe Hightower** for his dedicated and unwavering support of the NC AFS Chapter and Parent society, his outstanding research career, especially in the anadromous fish research field, and his exceptional instruction and mentoring of fisheries students.

Dr. Hightower has been an NC AFS Chapter and Parent Society member for over 20 years and is a Chapter Past President, serving in 1996. He served as co-chair of the Chapter's Education and Outreach Committee from 2009 to 2012. Dr. Hightower helped usher the Chapter's newsletter from printed to electronic format including development of the Chapter's webpage. He also helped develop the on-line Chapter voting protocol. Dr. Hightower has been an active member of the AFS Parent Society by participating in the Marine Fisheries and Computer Users sections. He was a member of Computer User Section software review committee and served on the 1990 nominating committee for the Marine Fisheries Section. Most notably, Dr. Hightower served on the AFS Skinner Memorial Award Committee from 2006 to 2010 and served as Committee Chair during 2009 to 2010. In 2010, Dr. Hightower and his late wife, Robin, created the Hightower Endowment Fund to provide financial awards and educational opportunities for graduate students enrolled in the Fisheries, Wildlife, and Conservation Biology Master's and Ph.D. degree programs at NC State University. Additionally, they created the Joseph E. and Robin C. Hightower Collection Endowment

in support of NC State University Libraries, to enrich library materials in genetics, fisheries and wildlife and provide a lasting legacy to higher education.

Dr. Hightower has significantly contributed to the understanding of population dynamics of diadromous fish in North Carolina, especially the Roanoke River, and across the southeastern U.S. He has authored or co-authored over 65 scientific papers and book chapters on topics ranging from migratory fish and habitat requirements, to marine and estuarine species stock assessments, and freshwater fish population dynamics. Additionally, Dr. Hightower, his students, and colleagues have made over 200 scientific presentations at fishery conferences and symposia. Over his career, Dr. Hightower has served on numerous migratory fish and marine species population status review committees for the National Marine Fisheries, the North Carolina Marine Fisheries Commission, and the Atlantic States Marine Fisheries Commission. His selection to serve on these committees speaks of his scientific expertise as a leading authority in migratory fish research. He has earned several awards over his career for his high quality research and most recently, the NC Wildlife Federation recognized his scientific endeavors in conserving migratory fish stocks in the state by naming him the 2011 Water Conservationist of the Year.

Dr. Hightower has supported fisheries education and professionalism through his extensive mentoring of over 27 graduate students (19 M.S., 8 Ph.D.) during his career. He has also served on graduate committees of an additional 28 graduate students. He is known for leading by example and is responsible for launching the successful careers of many talented fisheries scientists throughout the nation. He and his students regularly participate and present timely research at annual Chapter meetings and at division and parent society meetings. He has nurtured and supported the NCSU Student Subunit since its inception which has received numerous recognition awards from AFS for its active participation and engagement in the Society. Dr. Hightower has been an outstanding educator and mentor at NC State and recognized for his teaching talents. His advanced course in quantitative fisheries management is widely lauded and has shaped many students' careers, and he has pioneered technology application for distance education of his courses. He was recognized as the 2003-2004 Outstanding Graduate Instructor in the College of Agriculture and Life Sciences at NC State University and received the Excellence in Education Award from the AFS Education Section during 2006, which is among the highest honors awarded by the American Fisheries Society.

Dr. Joe Hightower, 2014 Distinguished Service Award Recipient receiving his award from Dr. Greg Cope, NC AFS Chapter President.

The Fisheries Conservation Award recognizes non-Chapter members who have distinguished themselves by service or commitment to the Chapter or to the fisheries resources of North Carolina. In recognition of his long-time commitment and service to the fisheries profession, the NC AFS Chapter EXCOM renamed the Fisheries Conservation Award in honor of Fred Harris. Fred served as Executive Director of the NCWRC and is a Past President of the AFS and was instrumental in forming the NC AFS Chapter. Fred made many significant contributions to fishery conservation in North Carolina and across the nation.

The **2014 Fred A. Harris Fisheries Conservation Award** was presented The 2014 award was presented to **Dr. Bill McLarney** of The Land Trust for the Little Tennessee (LTLT).

Dr. McLarney is a conservation biologist who founded the upper Little Tennessee Watershed Biomonitoring Program, currently managed by LTLT which has been a very successful model for tracking species diversity in the Southern Appalachian Mountains for 25 years. Dr. McLarney has advanced the study of species diversity in the Little Tennessee River drainage, and his tireless efforts have resulted in a large amount of valuable aquatic information available on this river system. Dr. McLarney's wide use of volunteers in collecting data for this program not only serves as a mentoring role to the average citizen on stream habitat quality in the Little Tennessee River Basin but also raises the environmental consciousness of an entire region. This program has received regional and national recognition for species conservation efforts in the country.

Dr. Bill McLarney, 2014 Fred A. Harris Fisheries Conservation Award Recipient.

Dr. Richard L. Noble, **Professor Emeritus, NCSU,** was presented his **AFS Golden Award** by Dr. John Boreman, AFS Past President, at the Chapter meeting. The Golden Award recognizes those AFS members who have 50 years of continuous service and membership with AFS. Congratulations, Rich!

Dr. Richard L. Noble, receiving his AFS Golden Membership Award from Dr. John Boreman, AFS Past President.

Finally, the Chapter recognized outgoing president, **Dr. Greg Cope** for his hard work, dedicated efforts, and outstanding leadership to the Chapter with his **Chapter Past President Service Award**. A big thanks to Greg for his outstanding leadership to the Chapter during 2013!

Incoming NC AFS Chapter President, Brena Jones, presenting Past President Service Award to Outgoing Chapter President, Dr. Greg Cope.

Submitted by John Crutchfield

NCSU Student Fisheries Society Report

The NCSU Student Fisheries Society (SFS) has been busy as usual as we enter our 15th year. The SFS has traditionally been dedicated to the conservation, development, and management of fisheries by promoting collaboration among students and with professionals, educating the public, and taking a proactive approach to natural resource management. In 2013 we strived to uphold the level of commitment SFS has always shown to our community. Throughout the summer we helped children cane pole fish for the first time during Yates Mill Park's monthly Family Fun Days. We hosted fisheries stations designed to challenge the young minds of today in a fun and exciting ways during events like National Hunting and Fishing Day, Fall Harvest Celebration, and the Southeastern Wildlife Conclave. We have taken many opportunities to teach community members about the importance of aquatic ecosystems through programs like Shad in the Classroom. We developed activities to challenge children already interested in fisheries and wildlife through the fisheries station created for the Boy Scout Merit Badge Program here at NCSU. We remain committed to removing trash from Rocky Branch, a restored stream which flows through NCSU campus and was officially adopted through the "Adopt-A-Stream" program.

We would like to extend a sincere thank-you to everyone who helped make this year's raffle such a success at the NCAFS meeting in Durham last month. Thanks to everyone's contributions, we were able to raise over $1,700 for the club! We will be back next year and will look forward to putting together another great list of items (although I'm afraid that 'Dale' has finally found a permanent home and will likely be

retiring from an impressive run of appearances). We were also well represented at the meeting, with twelve student members in attendance. Presentations were given by senior members Bryn Tracy and Jenifer Archambault, and by student members Dan Brown, Tim Ellis, Kelsey Lincoln, Gus Engman and Tomas Ivasauskas. Also, congratulations to Tim Ellis, who was awarded the Richard L. Noble Best Student Paper Award, and to Jenifer Archambault, who received the W. Don Baker Memorial Award for best presentation! Great job to everyone who presented at this year's meeting!

Student Fisheries Society members posed for a photo while enjoying the hospitality provided at the 2014 NCAFS Meeting.

Our members were also able to represent the subunit well at the Southern Division AFS meeting in Charleston, SC in January. The club donated over $500 for student activities at this meeting. In addition to the monetary contribution, members Jared Flowers, Dan Brown, Gus Engman, Kelsey Lincoln, Tim Ellis, and Jody Callihan contributed excellent oral presentations. During that meeting, we were honored once again with the Outstanding Subunit Award of the Southern Division of AFS! This award is presented each year to a subunit that has shown tremendous effort in maintaining a community presence and that strives to provide professional and educational opportunities for its members. This marks the seventh time in ten years that SFS has won the award and we'd like to thank all the members of SFS and all those who have supported us over the years! The dedication of SFS members and the support they receive from the North Carolina Chapter, NCSU faculty, and fisheries professionals throughout the state is what continues to make SFS the most outstanding student subunits in AFS.

SDAFS president Mike Allen presenting Jared Flowers, Kelsey Lincoln and Gus Engman with the Outstanding Subunit Award in Charleston, SC

Finally, we'd like to send a big congratulations to Augustin (Gus) Engman (NCSU Ph.D. student) for earning the Jimmie Pigg Memorial Outstanding Student Achievement Award "to recognize university students showing exceptional progress in their research, education and professional endeavors," from the Warmwater Streams Technical Committee of the Southern Division of the American Fisheries Society. Gus is pursuing doctoral research in Puerto Rico stream and river ecosystems in the NC Cooperative Fish and Wildlife Research Unit and Department of Applied Ecology.

Gus Engman accepting the coveted Jimmie Pigg Memorial Outstanding Student Achievement Award at this year's SDAFS meeting in Charleston, SC

We have one more meeting left before taking a break for the summer, so if you're available on Tuesday, April 1st, please come on over to David Clark Labs on NC State's campus and join us for pizza and a possible guest presentation from Tyler Black! As always, feel free to contact Dylan Owensby (dpowensb@ncsu.edu) or Tomas

Ivasauskas (tjivasau@ncsu.edu) with any questions or comments, or check us out on the web (http://clubs.ncsu.edu/sfs/) or on Facebook.

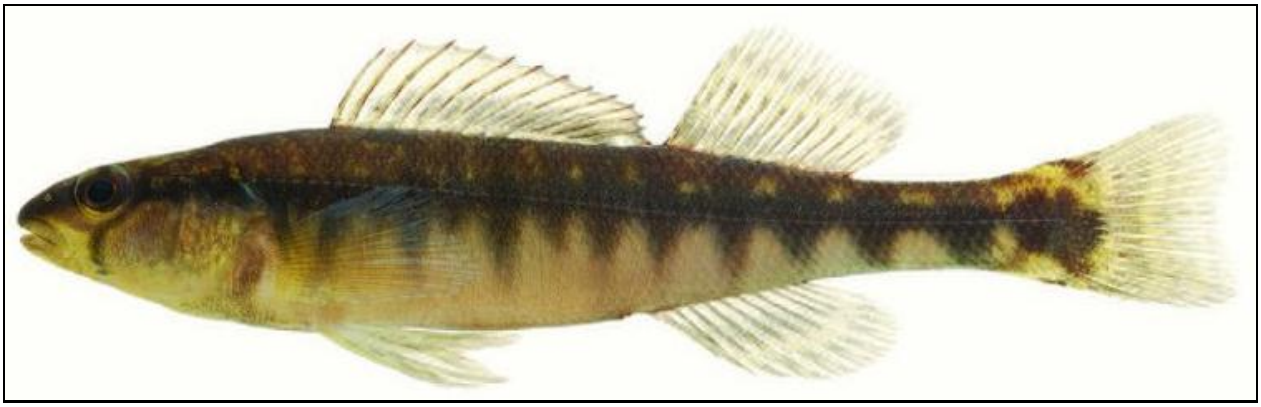
Submitted by Dylan Owensby and Tomas Ivasauskas

North Carolina's Imperiled Fish Fauna, Part XIV

Submitted by Bryn H. Tracy, Wayne C. Starnes, and Stephen J. Fraley on behalf of the NCWRC's Scientific Council of Fishes

As mentioned in the Chapter's 2010-2013 newsletters, there are approximately 215 indigenous, described, and undescribed species of strictly freshwater fishes in North Carolina. Of these, 26% are state or federally listed: Endangered (17), Threatened (17), or Special Concern (22) (Harris et al. 2010). It is the responsibility of the 15 member Scientific Council on Freshwater Fishes to submit its recommendations to the Nongame Advisory Committee of the North Carolina Wildlife Resources Commission (NCWRC) if changes in imperilment classifications for any species are warranted. To communicate our findings with the chapter membership, this is the 14th of 16 planned articles on the species that the Council believes have changed status since the last listing in 2006. Thus acquainted, it is hoped that chapter members can serve as additional "eyes and ears" to expand our vigilance for these rare or highly localized fishes.

Blackbanded Darter, *Percina nigrofasciata* (Agassiz)
Current Status: Threatened, Proposed Status: Special Concern



Photograph courtesy of Southeastern Fishes Council, courtesy of Fritz Rohde, http://www.sefishescouncil.org/.

Description - This is a medium-large darter, attaining total lengths of over 100 mm. Its ground color is straw yellowish to tan, paler on the belly. The sides have about 11 primary black blotches, which become vertically elongate in larger individuals and may resemble tall diamond-shapes anteriorly, with less intense secondary blotches between. Three spots are found at the base of the caudal fin and one is found at the base of the

pectoral fin. The fins have specks on their membranes and large males have a dark basal band in their dorsal and anal fins. The body color can be highly variable and it is probably influenced by habitat. Fish taken over light-color and sandy substrates tend to be light colored, while those found in darker habitats (in vegetation and debris, for example) are overall darker and with accentuated barring patterns (Rohde et al. 2009). Breeding males darken overall and developed a blue wash over the body and a brownish-gold color on the head (Rohde et al. 2009). Lateral-line scales number 46-71 (Crawford 1956); 14 specimens at NCSM (NCSM Catalogue Nos. 30880, 30881, 65064, and 65071) had lateral line scale counts ranging from 58-68. The dorsal fin usually has 11-13 spines and 10-14 soft rays, the anal-fin rays number modally 9, and the pectoral-fin rays number 13-15. Males have ridge-like swellings on the anal and pelvic fin rays (Etnier and Starnes 1993). It is the only species of *Percina* in the Savannah River system in North Carolina.

Type Specimen and Type Locality - The Blackbanded Darter was described by Louis Agassiz in 1854 based upon an unknown number of specimens collected by Albert Stein, Esq. in April 1853 from the neighborhood of Mobile, Alabama (Agassiz 1854; http://mczbase.mcz.harvard.edu/guid/MCZ:Ich:24603). The lectotype (a male, 103 mm SL) is at Harvard University's Museum of Comparative Zoology (MCZ Catalogue No. 24603; http://mczbase.mcz.harvard.edu/guid/MCZ:Ich:24603; Collette and Knapp 1966).

Range -- The Blackbanded Darter is known on the south Atlantic Slope from the Edisto River of South Carolina southward to almost Lake Okeechobee in Florida and westward to the eastern tributaries of the Mississippi River in southwestern Mississippi (Crawford 1956; Etnier and Starnes 1993). It also occurs in the Cumberland Plateau, Piedmont and Ridge and Valley provinces in the Tombigbee, Alabama, Apalachicola, Savannah, and Edisto River systems (Burgess 1980).

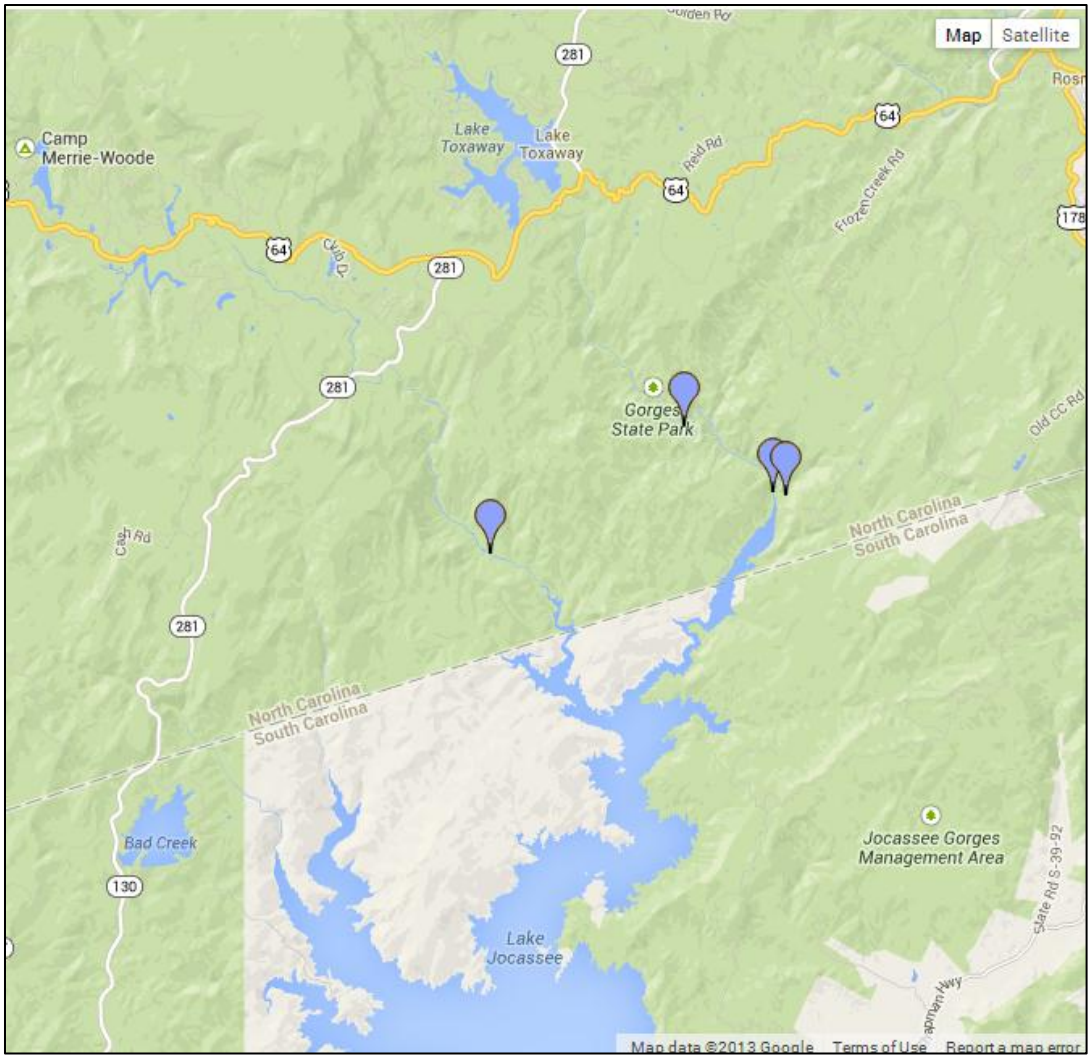
Previously unknown from North Carolina, the Blackbanded Darter was never-the-less included in Menhinick (1991) because of its known occurrence in tributaries to the Savannah River (i.e., Horsepasture, Toxaway, Whitewater, Chattooga, and Thompson rivers) just across the state line in South Carolina and Georgia (Crawford 1956; Burgess 1980). The first specimen from North Carolina was collected by Hugh Barwick (Duke Energy) on September 19, 1993 from the lower reaches of Toxaway Creek just before entering Lake Jocassee in Transylvania County. The single specimen (102 mm TL) resides in the Duke Energy collection (Catalogue No. 2137) (pers. com. Dave Coughlan, April 07, 2006 and Mike Abney, November 01, 2013). Additional specimens were collected in 2000 from the Toxaway River and Toxaway Creek (NCSM 30880 and 30881) and in 2010 from the Horsepasture and Toxaway rivers (NCSM Catalogue Nos. 65064 and 65071) and Toxaway Creek (10 specimens observed , none preserved, NCWRC Aquatics Database, queried November 07, 2013). In 2001, Blackbanded Darter was also collected, but not preserved, from Rock Creek near its confluence with the Toxaway River (Lake Jocassee) (Robinson and Rand 2002). It has never been collected from the other major Savannah River Basin tributaries in North Carolina (i.e., Chattooga, Whitewater, and Thompson rivers).

Habitat -- This darter inhabits creeks, moderate sized rivers, and reservoirs, ranging from Blue Ridge to Coastal Plain. It is regularly collected during spring electrofishing surveys of littoral habitat in the South Carolina portion of Lake Jocassee (Dave Coughlan, pers. Com. April 2014). It prefers areas of moderate current and is found over a variety of substrate types, ranging from silty sand or gravel to rock, and is often associated with woody debris or heavy vegetation such as waterwillow, *Justicia* spp. (Etnier and Starnes 1993; Rohde et al. 2009).

Life History and Ecology – The diet consists of microcrustaceans and aquatic insects-dominated by dipteran and caddisfly larvae and mayfly nymphs. Spawning occurs April to June. Females may contain up to 250 eggs. Its lifespan is 3-4 years or more (Mathur 1973a, 1973b; Etnier and Starnes 1993).

Rationale for Designation - Like the similarly distributed Turquoise Darter, *Etheostoma inscriptum* (a state Threatened species), the Blackbanded Darter is a rare element of North Carolina's biodiversity and a hallmark of a distinctive Savannah Basin fauna, which barely enters the state's borders. The North Carolina populations are separated from downstream populations in South Carolina and Georgia by Jocassee Dam and Reservoir. For these reasons, the species was proposed as state Threatened in 2005 with a state ranking of S1 (critically imperiled due to extreme rarity or some factor(s) making it especially vulnerable to extirpation (local extinction) from the state; typically five or fewer occurrences or very few remaining individuals (<1,000)). This recommendation was adopted by 2008 (LeGrand et al. 2008).

Given that the Blackbanded Darter's habitat enjoys some protection due to being situated in the new North Carolina Gorges State Park; that the species seems to demonstrate some tolerance of impoundments (probably in adult phases); that populations exist downstream in South Carolina (albeit fragmented by the dam); and that the NC Division of Water Resources has supplementally classified portions of the Whitewater River as High Quality Waters, portions of the Horsepasture River as Outstanding Resource Waters, and most of the waters as Trout waters, the status of State Special Concern seems most befitting, rather than Threatened. Globally, the species is regarded as stable (secure) (Warren et al. 2000; LeGrand et al. 2012).



Distribution of Blackbanded Darter in Transylvania County, North Carolina. Map is based upon material vouchered and databased at the North Carolina State Museum of Natural Sciences; the database was queried October 30, 2013.

Recommendations – Tributaries to the Savannah River in North Carolina should be periodically monitored to determine the status and range of this and other species (e.g., Turquoise Darter and Rosyface Chub, *Hybopsis rubifrons*) restricted to that system within the state's borders. The NCWRC periodically (approximately five year intervals) samples a number of long-term monitoring sites on tributaries in the Savannah River Basin. Protection of these species should figure prominently into any plans for development of the area.

Literature Cited and Recommended Readings

Agassiz, K. 1854. Notice of a collection of fishes from the southern bend of the Tennessee River, in the state of Alabama. The American Journal of Science and Arts. Series 2. 17: 297-308 and 353-365.

Burgess, G. H. 1980. *Percina nigrofasciata* (Agassiz), Blackbanded Darter. Page 730. Lee, D. S., Gilbert, C. R., Hocutt, C. H., Jenkins, R. E., McAllister, D. E., and J. R. Stauffer, Jr. eds. Atlas of North American freshwater fishes. North Carolina State Museum of Natural History. Raleigh, NC. *i-x* + 854 pp.

Collette, B. B. and L. W. Knapp. 1966. Catalog of type specimens of the darters (Pisces, Percidae, Etheostomatini). Proceedings of the United States National Museum. 119. No. 3550. 88 pp.

Crawford, R. W. 1956. A study of the distribution and taxonomy of the percid fish *Percina nigrofasciata* (Agassiz). Tulane Studies in Zoology. Volume 4. 55 pp.

Etnier, D. A., and W. C. Starnes. 1993. The fishes of Tennessee. University of Tennessee Press, Knoxville, TN. 689 pp.

Harris, F. A., and 14 authors. 2010. 2010 reevaluation of status listings for jeopardized freshwater fishes in North Carolina. Report of the scientific council on freshwater fishes. Submitted to the Nongame Advisory Committee to the North Carolina Wildlife Resources Commission. November 2010. North Carolina Wildlife Resources Commission, Raleigh, NC.

LeGrand, H. E., McRae, S. E., Hall, S. P. and J. T. Finnegan. 2008. Natural Heritage Program list of the rare animal species of North Carolina. North Carolina Natural Heritage Program, Division of Natural Resource Planning and Conservation, North Carolina Department of Environment and Natural Resources. Raleigh, NC.

LeGrand, H. E., Finnegan, J. T., Hall, S. P., Leslie, A. J., and J. A. Ratcliffe. 2012. Natural Heritage Program list of the rare animal species of North Carolina. North Carolina Natural Heritage Program, Office of Conservation, Planning, and Community Affairs, North Carolina Department of Environment and Natural Resources. Raleigh, NC.

Mathur, D. 1973a. Some aspects of the life history of the Blackbanded Darter, *Percina nigrofasciata* (Agassiz) in Halawakee Creek, Alabama. American Midland Naturalist 89:381-393.

_____. 1973b. Food habits and feeding chronology of the Blackbanded Darter, *Percina nigrofasciata*, in Halawakee Creek, Alabama. Transactions of the American Fisheries Society 102:48-55.

Menhinick, E. F. 1991. The freshwater fishes of North Carolina. North Carolina Wildlife Resources Commission. Raleigh, NC. 227 pp.

Robinson, J. L. and P. S. Rand. 2002. Fish and aquatic macroinvertebrate community survey and stream habitat assessment in Jocassee Gorgers State Park, North Carolina. Final report to North Carolina Natural Heritage Program, Division of Parks and Recreation, North Carolina Department of Environment and Natural Resources. Raleigh, NC. 27 pp.

Rohde, F. C., Arndt, R. G., Foltz, J. W., and J. M. Quattro. 2009. Freshwater fishes of South Carolina. University of South Carolina Press, Columbia, SC. 430 pp.

Warren, M. L., and eleven authors. 2000. Diversity, distribution, and conservation status of the native freshwater fishes of the southern United States. Fisheries 25:7-31.

Spotlight on Students and Young Professionals

Spotlight on Dylan Owensby

Dylan Owensby and his advisor, Dr. Jim Rice, finishing up some sutures on a lucky Muskie

Dylan Owensby grew up hiking and wondering in the woods in the mountains of North Carolina. He spent his summers fishing, boating and snorkeling the waters of Lake James, where he was the first (self-proclaimed) to document a bloom of freshwater jellyfish in the spring of 2004.

Always a true Tar Heel at heart, Dylan attended the (self-proclaimed) flagship school of the state, the University of North Carolina at Chapel Hill, where he actually attended his regularly scheduled AFAM class twice a week (with only one absence). After graduating, he landed an internship in Yellowstone National Park working on conservation of the native Yellowstone cutthroat trout (accomplished by massacring thousands of Lake Trout with gill nets on beautiful Yellowstone Lake). In Wyoming he spent his free time appreciating the complexities of fly fishing, learned to hunt waterfowl (outside park boundaries of course) and did his best to avoid hungry Grizzly Bears. Eventually he was taken in by Jim Rice and Derek Aday, and with funding from the NCWRC he is now working on his own telemetry project tracking dispersal, mortality and habitat use of stocked juvenile Muskellunge in western North Carolina.

When he is not devoting his energy to the plight of the Muskellunge, Dylan likes to spend his free time travelling with his fiancé Katelyn and their dog Aspen.

Submitted by Derek Aday

Spotlight on Tomas Ivasauskas

From fish food to fish science, Tomas Ivasauskas, Ph.D. candidate at NC State University, has steadily honed his interests in fish and their environments. When he was 10 years old, Tomas' father relocated their family from New York to Blacksburg, VA, for employment with Tetra, the fish food company. Perhaps then it's not a surprise that Tomas has kept aquarium fish since he was young (was it the free food?). He always liked fishing and the outdoors as well, so when his former middle-school teacher sent him an announcement about the AFS Hutton Scholars Program, he applied right away! It was his good fortune to be accepted into this mentorship program to expose high-schoolers to the fascinating world of fisheries science. His Hutton mentor was John Copeland, fishery biologist with the VA Department of Game and Inland Fisheries (and former AFS NC Chapter member). His work on fish age and growth and conducting creel surveys in this internship was enough to hook him on fisheries as an educational pursuit and future career.

Living in Blacksburg, the next step was obvious, to earn a Bachelor's degree in Fisheries Science at VA Tech, which he completed in 2007. During all four undergrad summers, Tomas was employed by the US Forest Service, Center for Aquatic Technology Transfer, where he conducted fish assemblage and habitat surveys in streams of southeastern US National Forests. He also assisted in data collection to guide the FERC relicensing of a dam on the Cheoah River in NC. He then continued his education by completing a Master's degree at TN Tech in 2009, advised by our friend Phil Bettoli. His thesis was on the fate and dispersal of stocked rainbow trout in large TN reservoirs. He also conducted post-M.S. research on nongame fish assemblages in a large regulated river, before joining us at NC State.

He is currently working toward his doctorate degree at NC State, studying the early life history of potamodromous fishes in Appalachian Mountain streams, with a special eye on the Sicklefin Redhorse, a recently discovered and undescribed, large, imperiled sucker. He's advised by Tom Kwak in the NC Cooperative Fish and Wildlife Research Unit. Tomas maintains his involvement with AFS at all levels and currently serves as Co-President of the Student Subunit at NC State, and his career goal is in agency or academic fisheries research. When he's not fishing for data, you might find him fishing for fun — he's an avid boater, bass angler, fly fisher, and fly tyer! But he's given up keeping aquarium fish and diversified into breeding, rearing, selling, and trading Poison Dart Frogs! Welcome, Tomas, to the AFS NC Chapter!

Tomas Ivasauskas, Ph.D. student at NCSU, handles a Sicklefin Redhorse that he sampled from the Hiwassee River. The Sicklefin Redhorse is found in only two NC mountain drainages, it's a candidate for protection under the Endangered Species Act, and is among the largest undescribed species in North America. Photo by T. Kwak.

Submitted by Tom Kwak

Update on the North Carolina Division of Water Resources

North Carolina Division of Water Resources

The North Carolina Division of Water Quality was restructured in 2013 and merged into the Division of Water Resources (http://www.ncwater.org/) within the North Carolina Department of Environment and Natural Resources (http://portal.ncdenr.org/web/guest/). The division's goals are to:

1. position the Division of Water Resources as the state's leading customer-focused and fiscally responsible permitting and compliance agency through on-going training initiatives and programmatic monitoring at all levels of the organization;
2. foster an organizational culture of excellence; attracting, training, rewarding and retaining employees of the highest caliber; and
3. demonstrate that, faced with an ever increasing demand for healthy waters, achieving a balance between the protection of our natural resources and the needs of the public is not only possible, it is vital to the preservation and enhancement of both the environment and the economy.

One of these restructurings combined the Environmental Sciences and Chemistry Laboratory sections (http://portal.ncdenr.org/web/wq/ess/home and

http://portal.ncdenr.org/web/wq/lab) under the new moniker: "Water Sciences Section" headed by Dianne Reid. With regards to staff that interact with North Chapter American Fisheries Society members:

1. The Biological Assessment Branch (BAB), headed by Eric Fleek, is charged with evaluating the water quality of streams and rivers using the biological communities that live there. In addition to assessing the effects of water pollution, biological information is also used to define High Quality or Outstanding Resource Waters, support enforcement of stream standards, and measure improvements associated with management actions. The results of biological investigations have been an integral part in North Carolina's basinwide monitoring program.
2. Bryn Tracy continues to be responsible for the wadeable stream fish community assessment program (http://portal.ncdenr.org/web/wq/ess/bau/ncibi-data) within the BAB (http://portal.ncdenr.org/web/wq/ess/bau).
3. Michael Shepherd continues to provide field, laboratory, and technical assistance to the wadeable stream fish community assessment, the fish tissue contaminant, and the benthic macroinvertebrate monitoring programs. He also continues to review NPDES-required environmental assessment reports submitted by regulated industrial customers.
4. Steve Beatty, Victor Holland, and Michael Walters continue to be responsible for the benthic macroinvertebrates monitoring program (http://portal.ncdenr.org/web/wq/benthosdata). Tracy Morman, formerly with the program, has re-located back to Ohio and Deirdre Black has transferred over the to the Microbiology Unit of the Chemistry Laboratory within the Section.
5. Jeff Deberardinis continues to be responsible for the fish tissue contaminant program (http://portal.ncdenr.org/web/wq/ess/isu/fish-tissue-data), but was re-assigned to the Intensive Survey Branch (http://portal.ncdenr.org/web/wq/ess/isu) which is supervised by Jason Green. Their function is to collect and interpret a variety of biological, chemical, and physical data that are incorporated in the division's basinwide planning concept. Their monitoring programs include the Ambient Lake Monitoring Program, Lake TMDL Studies, and other Special Studies/Intensive Surveys as requested and resources allow.
6. Mark Hale was also re-assigned to the Intensive Survey Branch where he will continue to be responsible for reporting on fish kills (http://portal.ncdenr.org/web/wq/ess/fishkillsmain), assisting in field work, and maintaining the Environmental Sciences Section's databases.
7. The Water Planning Section, headed by Tom Fransen, is now the home for the Basin Planning and the Classifications and Standards/Rules Review branches. The Basin Planning Branch is responsible for the water quality and water quantity planning, performs water resources investigations on management issues and water yields for reservoirs and river basins statewide, and is the department's lead in hydropower relicensing. In this branch you will now find Nora Deamer, Heather Patt, Melanie Williams, Jamie McNees, Paul Clark, and Ed Williams (http://portal.ncdenr.org/web/wq/ps/bpu). The Aquatic Weed Control Program (Rob Emems) and the Ecological Flow and Aquatic Ecology programs (Fred Tarver) are also within the Planning Section.

8. The Classification and Standards/Rules Review Branch (http://portal.ncdenr.org/web/wq/ps/csu) is responsible for developing and assisting with interpretation and implementation of the state's surface water and groundwater quality standards (numeric and narrative) and surface water body classifications such as Water Supply, Outstanding Resources Waters, and High Quality Waters. The branch, supervised by Jeff Manning, includes Elizabeth Kountis and Adrienne Weaver.

WADEABLE STREAM FISH COMMUNITY MONITORING PROGRAM

In 2013, 59 sites were sampled as part of the Cape Fear, New, and Watauga River basinwide monitoring program (33, 22, and 4 sites, respectively). Six sites in the Cape Fear River Basin could not be sampled due to insufficient or excessive flow conditions; conditions that were shared by many fishery researchers across the state in 2013. Field assistance was once again provided by willing and eager staff from the Intensive Survey and Ecosystems branches and the Mooresville, Fayetteville, and Winston-Salem Regional Offices. The complete data and ratings for these river basins, along with that from North Carolina's other 14 river basins are available at: http://portal.ncdenr.org/web/wq/ess/bau/ncibi-data (including a Google fusion table and showing the location of all the fish community assessment sites) and http://portal.ncdenr.org/web/wq/ess/bau/ncibi-scores. Files of the indigenous and nonindigenous fauna for North Carolina may be found at: http://portal.ncdenr.org/web/wq/ess/bau/nativefish and are updated every Spring.

Dee Dee Black holding a 668 mm TL Bowfin from 7 m-wide Pokeberry Creek, a tributary to the Haw River, Chatham Co.

Nine new regional reference sites in the Sand Hills were sampled in October 2013 as part of a special study on the development of criteria and metrics for wadeable Sand Hills streams. The communities were evaluated with a proposed 7 Metric NCIBI. The new data substantiated previous findings that reference sites and other least impacted fish community sites in the Sand Hills should have:

- low specific conductance, low pH, low abundances of fish, and low percentages of tolerant fish;

- high percentages of Key Sand Hills species, Key Sand Hills fish, and Invertivore Cyprinds;
- at least two intolerant species; and
- high quality instream habitat characteristics.

So far, results have shown that the new NCIBI for the Sand Hills can be an effective water quality assessment tool in evaluating the biological integrity of fish communities in wadeable streams in this ecoregions across the Lumber, Cape Fear, and Yadkin River basins. Work to be conducted in 2014 will seek to find watersheds that are degraded by urban or agricultural impacts to further test the new assessment method.

Field hazards encountered when sampling streams on Fort Bragg.

USE ATTAINABILITY STUDIES

Winding down the Use Attainability Study program (the reclassification of a waterbody to Outstanding Resource Waters (ORW), High Quality Waters (HQW), or Trout waters (Tr)) three studies were completed in 2013 and early 2014:

1. Two studies on Buffalo Creek and the upper Yadkin River watersheds in the Yadkin River Basin were initiated in 2007 at the request of the Classifications & Standards Unit who had received a formal request from the Division's Asheville Regional Office. Recommendations from the 2007 study were postponed until additional sites could be assessed to fill in longitudinal or tributary data gaps, to re-sample tributary or mainstem sites that previously did not rate Excellent, and to provide more current data. Studies conducted between 2010 and 2012 filled in these data gaps. Based upon these data:
    - All of the named tributaries and the mainstem of the Upper Yadkin River from its source to Preston Creek qualify for consideration to be supplementally classified as HQW based upon the Excellent benthic macroinvertebrate assessments.
    - All of the named tributaries and the mainstem of Buffalo Creek from its source to the Yadkin River, except in the vicinity of off SR 1557, qualify for consideration to be supplementally classified as HQW based upon the Excellent benthic macroinvertebrate and fish community assessments.
    - Buffalo Creek in the vicinity of off SR 1557 was suitable for consideration of a HQW special management strategy.

- None of the streams qualified as ORW because no imperiled aquatic species were collected or are known from the watershed.

2. A third study, conducted in the Coweeta Creek watershed in the Little Tennessee River basin, was requested by the Classification and Standards Unit in 2009 for those named waters in the watershed that were not classified as trout waters (Tr). Camprock Branch and Cunningham, Henson, and North Fork Coweeta creeks supported multiple age classes of either Rainbow Trout or Brook Trout, indicating trout reproduction, and were recommended for supplemental reclassification to Tr. Ten of the 11 streams sampled for benthic macroinvertebrates received an Excellent bioclassification. Coweeta Creek, Dryman Fork, Howard Branch, and North Fork Coweeta Creek were recommended for supplemental classification to ORW based on this rating and records of state and federally listed aquatic Species of Concern. Pinnacle Branch, Camprock Branch, Cunningham Creek, Shope Fork, and Henson Creek were recommended for supplemental reclassification to HQW also based on an Excellent rating; no records of imperiled aquatic species existed for these streams.

NEW DWR DISTRIBUTIONAL RECORDS FOR 2013

(i.e., those not shown in Menhinick (1991) and collected for the first time by DWR staff from a particular county in the New River systems)

- *Ameiurus catus*, White Catfish, Obids Creek, tributary to South Fork New River, Ashe County, one specimen, 169 mm TL, first collection ever from the system, non-indigenous; and
- *Noturus insignis*, Margined Madtom, Crab Creek, tributary to the Little River, Alleghany County, three specimens, 84-110 mm TL, first collection ever from the system, non-indigenous.

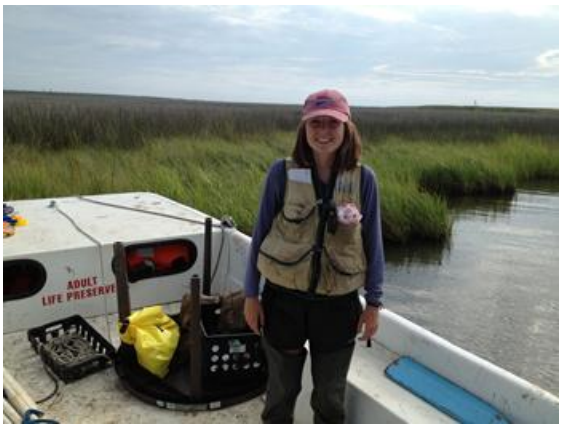
These four specimens were vouchered at the North Carolina State Museum of Natural Sciences, along with other nonindigenous species once again collected from the New River basin in 2013 (e.g., Mountain Redbelly Dace, Whitetail Shiner, Highback Chub, Redlip Shiner, Saffron Shiner, Tennessee Shiner, Warpaint Shiner, Pumpkinseed, Brown Bullhead, and Tessellated Darter).

Photographs courtesy of Southeastern Fishes Council, courtesy of Fritz Rohde (top) and Noel Burkhead & Robert. Jenkins (bottom) http://www.sefishescouncil.org/.

Submitted by Bryn Tracy

A Day in the Field *with* Lucille Zipf - Research Technician, Institute of Marine Sciences, University of North Carolina at Chapel Hill

As our skiff approached the marsh edge I marveled at the placidity of Pamlico Sound's waters, driven only by our boat to gently lap against the shore. It had been a rigorous but fruitful day of fieldwork during which my boss Chris Voss and I deployed seemingly countless traps in the surrounding *Juncus romerianus* salt marshes. The aim of our ongoing study is to quantify the number of terrestrial and marine animals that live in these flooded marshes, with a special focus on the juveniles of five recreationally and commercially valuable fish species. The minuscule size of our target species necessitated extra care when outfitting the minnow pots we would use to catch them. This responsibility fell to me. In order to ensure tiny fish did not escape the minnow pots, I carefully shrouded each of them in mosquito netting.



On this bright summer day I felt invigorated at the prospect of seeing the traps I labored over for weeks catch small organisms that would have otherwise slipped through the cracks, literally. Jumping off the boat, I marched through the tall *J. romerianus* blades to find the minnow pots we had left on the marsh during a previous sampling round. I came upon the post we had stored the traps next to, but not the traps. I furrowed my brow and felt my temperature rise. Had I made a mistake during our previous field day? I searched around frantically for the traps whose delicate coverings I had measured, cut, glued and sealed. They were nowhere to be found. They were gone.

As we drove off, the late day sun beating on my pink cheeks, I was mad. Mad that the traps I worked so feverishly to construct had been stolen and mad at whoever stole them. I was still stewing when we pulled into the driveway of our hotel, nestled in the heart of Engelhard, NC. Hotel Engelhard, as it is so aptly named, is more like a community center than a transient lodging. As I entered, covered in mud and disappointment, an eruption of laughter burst from the front room. The crowd of regulars ushering us in to join them had become familiar and I could name all of them by their given or chosen moniker, sometimes both. I was unwilling to let their boisterous attitudes penetrate my sour one. They asked what was wrong. What followed not only changed my demeanor, but also my appreciation for our study and state.

After I recounted my tale, the group immediately sprang to action. These men who I barely knew outside of our bimonthly pleasantries promised to do everything they could to recover our traps and ward off future thieves. Their generosity surprised and delighted me, melting my hardened disposition. Unfortunately, the minnow pots were never recovered, but in retrospect they are not important. More traps were made to replace the old but my newfound understanding of the culture and people of coastal North Carolina brought on by this scientific mishap is irreplaceable.

Submitted by Lucille Zipf

North Carolina's Most Wanted Aquatic Outlaws

What is an invasive Species? Part I of Many.

Before we get going with highlighting different invasive species in North Carolina in the next few newsletters, we first need a common understanding of what exactly constitutes an invasive species.

North Carolina is home to many aquatic invasive species, some are non-native, nuisance, nonindigenous, injurious, or all of the aforementioned. Whether a species is classified as invasive or by any of the above terms, really depends on a thorough understanding of what invasive means. Executive Order 13112 (Federal Register Vol. 64, No. 25,Monday, February 8, 1999) defines an invasive species as '*an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health.'* This definition does not include anything about what level (e.g., continent, state, river basin, etc.) or the relative perspective, in which a species is considered invasive. Because of this confusion, the Invasive Species Advisory Committee (created by Executive Order 13112) clarified the definition of invasive species in an 11 page white paper that gives numerous examples. Essentially, an invasive species is "a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health". The paper discusses what constitutes 'harm', and discusses 'biogeographical contexts', 'gray areas', 'environmental harm', 'impacts to natural resources', and 'impacts to recreational opportunities and other human values'.

Whether or not a species is an invasive is largely going to depend on personal and societal values.

Non-native species, i.e. species outside of their indigenous environment, however some can be harmful and are designated nuisance, invasive, non-indigenous, or injurious. 'Nuisance' is a more comprehensive and meaningful term than 'Invasive' and is defined by the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 (NANPCA 1990) as "nonindigenous species that threaten the diversity or abundance of native species, the ecological stability of infested waters, or any commercial, agricultural, aquacultural or recreational activities dependent on such waters. The Aquatic Nuisance Species Task Force (ANSTF), as authorized by NANPCA 1990, further clarifies Nuisance species as "nonindigenous species that threaten ecological processes and natural resources and that aquatic nuisance species also hinders economic development, preventing recreational and commercial activities, decreasing the aesthetic value of nature, and serving as vectors of human disease". The ANSTF considers *introduced*, *foreign*, *exotic*, *alien*, *non-native*, *immigrant* and transplants as synonyms for invasive. The USGS National Nonindigenous Aquatic Species Program uses Nonindigenous, to mean any species outside of its native range. Notice there is no particular harm or impact associated with this designation. The Fish and Wildlife Service uses the injurious provisions of the Lacey Act (18 U.S.C. 42; 50 CFR 16) to prohibit introductions of and manage invasive species. Injurious wildlife are mammals, birds, amphibians, reptiles, fish, crustaceans, mollusks and their offspring or gametes that are injurious to the interests of human beings, agriculture, horticulture, forestry, wildlife or wildlife resources of the United States. Plants and organisms other than those listed above cannot be listed as injurious wildlife.

The Roanoke Bass *Ambloplites cavifrons* is native to the Chowan, Roanoke, Tar, and Neuse River basins, but was introduced outside of its native range into the Cape Fear and Pee Dee River basins (Menhinick 1991; USGS 2014). The Roanoke Bass, in the last two basins, can also be classified as non-native, exotic, or alien, but because there is no economic harm and unknown other impacts, the Roanoke Bass is not considered an invasive, injurious, or a nuisance species. The Rock Bass *Ambloplites rupestris* is native to the Mississippi River basin but has been introduced into many locations. Because the Rock Bass has hybridized with the Roanoke Bass within some Roanoke River basin populations, the Rock Bass is considered an invasive and not just as a non-native species. There are many other examples of exotic species that may need a biogeographical context or consideration of societal values to determine if they are invasive (e.g. Striped Bass, Alewife, Blueback Herring) but others species are pretty clear cut in their designation of invasive (Rusty Crayfish) and injurious (Rice Eel, Snakehead, Zebra and Quagga Mussels). In the next few newsletters, I will be highlighting different invasive species in North Carolina. Stay tuned.

Resources:
The Executive Order, National Invasive Species Management Plans, and the Invasive Species Advisory Council's white paper on the definition of an invasive species can all

be found at the National Invasive Species Council website:
http://www.invasivespecies.gov/index.html

Aquatic Nuisance Species Task Force
http://www.anstaskforce.gov/ans.php)

USGS National Nonindigenous Aquatic Species Program
http://nas.er.usgs.gov/

Fish and Wildlife Service Injurious Species
http://www.fws.gov/injuriouswildlife/

Submitted by Rob Nichols

Meetings of Interest

2014 NCSU Student Fisheries Society- First Tuesday of each month, Raleigh, NC. http://clubs.ncsu.edu/sfs/

144th Annual Meeting of the American Fisheries Society- August 17-21, 2014, Quebec City, PQ. http://afs2014.org/

Valuable Links

The American Fisheries Society Home Page offers a wealth of links to assist you in your fishery endeavors. Information on ordering AFS books, public outreach, annual meetings, chapter links and joining the AFS can be found at http://www.fisheries.org/.
