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## AMERICAN FISHERIES SOCIETY

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Spring 2015 NEWSLETTER

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### President's Message

An amazing transformation has happened since we were snowed in at Carolina Beach just a few weeks ago. Mother Nature has really been treating us to some beautiful spring days. I am so glad to see the cherry and pear trees blooming, along with the daffodils.

While I am always happy to see the end of winter, I am always surprised to find it brings the end of the first quarter of the year with it. While I know many of you are starting your field seasons, in the IT world the completion of the first quarter is a time to examine our goals. Have we met the first quarter goals? Are we on track for other goals we have set for the year? Do we need to make any changes to keep things on track, or re-evaluate what we thought might be possible?

I find this is a good time to evaluate personal goals as well. What professional goals have you set for yourself? How can your participation in the Chapter help you meet these goals? There are so many opportunities, from writing an article for the newsletter, participating in a committee, or even just submitting ideas to the EXCOM. If you haven't done one of these things lately, I'd encourage you to make it one of your goals for the year. Maybe even one for this next quarter. Many of these things do not take too much time, and really make a big impact on the Chapter. This might be the perfect time to document an interesting anecdote from the field.

Whether you're in the field or behind your computer this spring, I hope the first quarter has been a success. I look forward to hearing from you as the year goes on.

--Kim Sparks

## 2015 North Carolina Chapter of the American Fisheries Society Annual Meeting Summary

Marriott Courtyard Carolina Beach  
February 24–25, 2015

I have never seen snow at the beach before, and it was really beautiful from my hotel room window Tuesday morning. But I know that same snow was really a menace if you were looking at it through your windshield. Thanks to all of you who braved the weather and contributed to an amazing turnout of 60 attendees out of 75 registered. While we missed the folks who couldn't make it, I'm grateful to them for making a safe decision. Podcasts of the presentations will be available from the [meeting website](#), so you'll still



*Tyler Black showing Jennifer Archambault and Michael Fisk the finer points of crayfish identification.*

be able to catch up on the exciting research that was presented by our membership. You'll also be able to listen to Dianne Reid's presentation on the Dan River Coal Ash Spill. Thank you, Chris Wood, for recording the podcasts and managing the PowerPoint presentations during the meeting.

Thanks to Tyler Black and T.R. Russ for presenting such a fun and interesting Crayfish Identification workshop. Their information-packed presentation [slides are now available on our website](#), along

with the conference program, for those who'd like to review or who couldn't make it. The species key will also be added shortly – [watch the meeting page](#)!

I'd also like to thank Bryn Tracy for putting together the meeting program, and I really appreciated everyone's good-natured flexibility when we had to move things around to accommodate cancelled presentations. There are a lot of pieces and parts that go into making the meeting run smoothly and I am so appreciative of all of the people that volunteered to help out and make the meeting a success.

Congratulations to the student subunit on their successful raffle. It has really become the centerpiece of our social and it seemed to me that a fun time was had by all.

We were able to start the Annual Business Meeting an hour early due to the canceled sessions. Hopefully this helped everyone get home before the next round of winter

weather. A lot of exciting things happened at the Business Meeting, but I don't want to steal the thunder from the Awards Committee report later in this issue.

Brena Jones' last act as President was to install the new officers and relieve Greg Cope from his duties as Past President and Todd Ewing from his term as Secretary/Treasurer. I am pleased to welcome Mike Gangloff and Bryn Tracy to the EXCOM as your President Elect and Secretary/Treasurer, respectively. I look forward to serving you as President in 2015. Please feel free to contact me with your ideas or concerns at [ksparks1@nc.rr.com](mailto:ksparks1@nc.rr.com).



*"Shopping" at the student raffle. I am the new proud owner of those paintings since Jim Rice was out of the country!*

*Submitted by Kim Sparks, NCAFS President*

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## **2015 Awards Committee Report**

Awards presentations are one of the highlights of our annual Chapter meeting. Several awards were presented during the recent annual NCAFS meeting held on February 24-25, 2015, in Carolina Beach, North Carolina. Despite the wintery weather, the meeting was well attended and the host facility and program were outstanding. Thanks to Kim Sparks for hosting a very successful meeting! [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 ten presentations by professionals. The quality of the paper presentations was outstanding. Thanks to all who presented papers and the judging panel!



The **2015 Richard L. Noble Best Student Paper Award** was awarded to **Crystal Lee Pow**, a Ph.D. student in the Department of Biological Sciences, Environmental and



*Dr. Rich Noble presents Crystal Lee Pow the 2015 Richard L. Noble Best Student Paper Award.*

Molecular Toxicology Graduate Program at NCSU. Crystal's presentation titled "**Relating the Incidence of Intersex in Centrarchid Fishes to Estrogenic Contaminant Concentrations across North Carolina**" was co-authored by Mac Law, Thomas Kwak, Damian Shea, Gregory Cope, James Rice, Seth Kullman, and Derek Aday. Crystal's research assessed the occurrence of intersex fish and endocrine-disrupting compounds (EDCs) in rivers and streams throughout North Carolina. She evaluated two genera in the family Centrarchidae: black bass

(*Micropterus*) and sunfish (*Lepomis*), which were sampled from 20 sites throughout the state. Intersex characteristics were identified in both genera, with the black bass showing a higher incidence with 60% intersex male fish compared to sunfish (11%). Significant relationships between incidence of intersex and several EDCs were detected. Crystal's research provided information on the relationship between intersex and contaminant load, as well as differences in responses between two Centrarchid genera. In addition to a Chapter award plaque, Crystal will receive a monetary award of \$600 from the Chapter's Ichthus fund for travel to present the paper at the 2015 parent society meeting in Portland, Oregon.

**Kevin Hining**, NCWRC Fisheries Biologist, was awarded the **2015 W. Don Baker Memorial Best Professional Paper Award** for his presentation entitled "**Contribution of Black Crappie Fingerlings Stocked into Lake Hickory, 2007-2012**". The paper was co-authored by David Yow and Kin Hodges. Kevin's research evaluated supplemental stocking of



*Ms. Brena Jones, NCAFS President, presents Kevin Hining the 2015 W. Don Baker Memorial Best Professional Paper award.*

the Black Crappie population in Lake Hickory over a period of five years. Black Crappie fingerlings were marked with oxytetracycline (OTC) and stocked annually into Lake Hickory.

Annual assessments of initial post-stocking survival of OTC marked fish (79–98%) and OTC mark efficacy (96–100%) were high. Year-class contributions of stocked fish ranged from 0%–95%. As of the 2012 trapnet survey, approximately half (48%) of the Black Crappie collected with trapnets that were born during or after 2007 bore an OTC mark. Continued stocking of Black Crappie fingerlings is recommended, along with routine trapnet surveys to verify contributions of stocked fish and overall improvements to the Lake Hickory Black Crappie population.

The **Distinguished Service Award** recognizes Chapter members who have distinguished themselves by service to the Chapter, the American Fisheries Society, or the fisheries profession. At the 2015 meeting, Chapter membership unanimously approved to rename the Award as the **Jerry R. Finke Memorial Distinguished Service Award** in honor of the late Jerry Finke (watch the video of the renaming of the Award at

<http://youtu.be/wU51I1979j4>). Jerry, who passed away due to cancer during 2013, epitomized selfless, dedicated service to the NCAFS Chapter and the Southern Division of AFS. Jerry provided invaluable IT support to the Chapter and Southern Division on developing and maintaining websites to publicize fisheries efforts in North Carolina and the Southeast. He was responsible for ensuring presentations at Chapter meeting proceeded smoothly. Jerry also developed the Chapter's online dues and meeting registration system. The Chapter will remain forever indebted for his volunteer service.

The inaugural **2015 Jerry R. Finke Memorial Distinguished Service**

**Award** was presented to Mr. Bryn Tracy, NC Division of Water Resources Senior Environmental Specialist, for his dedicated and unwavering support of the NCAFS Chapter and Southeastern Fishes Council, his mentoring of fishery students, and his committed efforts over the years to protect and conserve fishery resources in North Carolina.



*At the 2015 NCAFS meeting, Chapter membership unanimously approved to rename the Distinguished Service Award the Jerry R. Finke Memorial Distinguished Service Award*

While Bryn is an active fish biologist both on and off the job, he is first and foremost, a stalwart supporter of the NCAFS Newsletter. He routinely keeps the Chapter apprised of all NCDWR findings regarding stream fish surveys, fish tissue contaminants, and



*Mr. Bryn Tracy, the 2015 Jerry R. Finke Memorial Distinguished Service Award Recipient, receiving his award from Ms. Brena Jones, NCAFS Chapter President.*

statewide fish kills. It is conservatively estimated that in the past 10 years, he has contributed 39 articles and 137 pages of material to the NCAFS newsletter. He has single-handedly spearheaded an effort to edit and post [information on the NCWRC's Scientific Council of Fishes rare and threatened fish species](#), thus educating the membership, and increasing everyone's awareness about the state's Rare, Threatened, and Endangered species. Now, as a member of the NCAFS Newsletter Committee, he also helps to edit and polish each newsletter.

Bryn has relentlessly served as a judge of presentations at our Annual Chapter Meetings; typically judging student papers as he is a regular professional presenter. In fact, he won the 2013 W. Don Baker Memorial Best Professional Award for his paper entitled "Removing a

Stream from the 303(d) List – The Richland Creek Fish Re-introduction Project". His assistance to the planning and implementation of the 2014 and 2015 NCAFS Annual Meetings was invaluable and extensive. He has served as a member of the Chapter's Environmental Concerns Committee and is currently serving as Chapter Secretary-Treasurer.

Bryn attends nearly all the NCSU Student Fisheries Subunit meetings and is an avid supporter of the group. He comes early to visit, and really enjoys interacting with the students. He often helps with the clean-up days on Rocky Branch (a creek adopted by NCSU SFS that courses through campus) and occasionally brings a backpack shocker so the group can monitor fish populations. He is always ready and willing to share his expertise and field opportunities with the group.

Bryn has been a key partner in bringing some of western North Carolina's streams and rivers back from neglected industrial dumping grounds devoid of their native fauna, to vibrant, healthy ecosystems that support a host of species. Bryn has lead the effort to restore native fish to Richland Creek, a clear mountain trout stream that for decades



suffered degrading effects from industrial discharges and urban stormwater. Though the stream improved, native fish that occupied Richland Creek were unable to return due to the Lake Junaluska Dam acting as a barrier. Bryn proposed, and with the help of partners, implemented a project to reintroduce native darters, cyprinids, sculpin, and other species to areas upstream of the dam. The project was modeled after NCWRC's Pigeon River Fish reintroduction, in which Bryn was also a key partner and contributor. After four years of spring and fall reintroduction work, surveys show that all of the species moved are once again thriving and reproducing in their native home streams.

We are fortunate to have a person like Bryn who so genuinely cares about the people he interacts with, and who is so excited about North Carolina's fishes and the preservation of the habitats they live in.

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 NCAFS Chapter renamed the Fisheries Conservation Award in honor of Fred Harris at the 2009 Annual Meeting. Fred served as Executive Director of the NCWRC and is a Past President of the AFS and was instrumental in [forming the NCAFS Chapter](#). Fred made many significant contributions to fishery conservation in North Carolina and across the nation.

The **2015 Fred A. Harris Fisheries Conservation Award** was presented to **Dr. JoAnn Burkholder**, William Neal Reynolds Professor of Applied Ecology at NCSU and Director of the NCSU Center for Applied Aquatic Ecology.

Dr. Burkholder is a broadly trained aquatic ecologist who has embodied excellence in research, academics, and public outreach for over 28 years. She firmly believes that the protection and management of our aquatic natural resources can only be achieved by using the strongest objective science possible, and she works tirelessly to ensure that the best science is produced and can be translated and used by policy makers and the general public alike.

Dr. Burkholder's research interests focus on algal nutritional physiology and ecology and her work spans the salinity gradient from freshwater to



*Dr. JoAnn Burkholder, 2015 Fred A. Harris Fisheries Conservation Award Recipient, receiving her award from Ms. Brena Jones, NC AFS Chapter President.*

estuarine and marine species, but most notably, she addresses the pervasive issue of chronic eutrophication (nutrient over-enrichment and associated pollutants) of our aquatic ecosystems. She has contributed significantly to the understanding of algal and submerged aquatic vegetation population dynamics and their relation to nutrient and other pollutants in North Carolina, especially in the Neuse and Cape Fear Rivers, across the southeastern U.S., and the throughout the world. Dr. Burkholder has received numerous awards and honors for her significant contributions to the aquatic ecology field.

She has authored or co-authored over 160 peer-reviewed scientific journal articles, numerous books, book chapters, technical reports, and popular press articles on topics ranging from algal dynamics and submerged aquatic vegetation to nutrients and fish kills. Additionally, Dr. Burkholder and her students and colleagues have made over 250 scientific presentations at scientific conferences and symposia. Dr. Burkholder has supported fisheries and aquatic science education and professionalism through her extensive classroom and “field laboratory” teaching and in the mentoring of 20 graduate students (10 M.S., 10 Ph.D.) during her career. She has also served on graduate committees of an additional 34 students (14 M.S., 20 Ph.D.). She is known for leading by example and is responsible for launching the successful careers of many talented aquatic ecologists throughout the nation.

The Chapter recognized Dr. Burkholder's dedicated and unwavering support to aquatic resource conservation and her exceptional research, instruction, mentoring of fisheries and aquatic science students, and service to her state and nation.

Finally, the Chapter recognized outgoing president, **Ms. Brena Jones** for her hard work, dedicated efforts, and outstanding leadership to the Chapter with the **Chapter President Service Award**.

A big thanks to Brena for her outstanding leadership to the Chapter during 2014!

*Submitted by John Crutchfield,  
NCAFS Awards Committee Chair*



*Incoming NCAFS President, Ms. Kim Sparks,  
presenting the Chapter President Service  
Award to outgoing President, Ms. Brena Jones.*



## Secretary-Treasurer's Report

### 2015 Annual Business Meeting Minutes and Treasury Report

*Submitted by Todd Ewing, NCAFS Secretary-Treasurer*

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#### Chapter Facebook Page and Web Update

We put our Facebook page to work last month with live updates during the annual meeting! That was the plan all along, but it became even more important when the snowy beach weather thwarted some members' plans to attend. And it paid off – we reached our fans more than 900 times that week!!! We hope many of you were able to enjoy the meeting updates and keep up with all that happened. In addition to presentations and fun from the social, we made sure to include important updates from the annual business meeting. If you missed the coverage, head on over to [www.facebook.com/NCAFS](http://www.facebook.com/NCAFS), scroll down to the meeting dates, and check it out now!



Reminder! **Our page and all posts are publicly available, so you can read them anytime even if you don't have a Facebook account.** Just click on the Facebook fish at the bottom of any page to navigate there from the Chapter website. Last month, we also added a new way to access our Facebook content without having to visit Facebook itself – our talented webmaster has added a live feed embedded in the Chapter webpage! Simply visit our [News & Updates tab](#) and click the post pinned to the top of the stack.



Now, a call for content! **We would love for members to make use of the Chapter's social media resources by submitting photos, field stories, event announcements, or even local fisheries-related news stories from around the state!** It's a great and informal way to quickly share information. To submit content, send an email directly to me, at [jmarcham@ncsu.edu](mailto:jmarcham@ncsu.edu), or post it to the page and we will share it with our fans. My inbox is waiting!!

*Submitted by Jennifer Archambault, NCAFS Facebook Page Administrator*

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## Spotlight on Students and Young Professionals



*Casey Grieshaber gives a Pee Dee River Robust Redhorse a little love! She's also researching the species and other fishes in the river ecosystem to examine water quality and contaminant effects on the fish assemblage and fisheries.*

### Casey Grieshaber

Casey Grieshaber is a graduate student and serves as Co-President of the NCAFS Student Subunit at NCSU. She has always had an affinity for water and is now pursuing that passion as a fisheries scientist!

Casey comes from a family of airline professionals, which transferred to North Carolina (Mooresville) when she was a grade-schooler. They found a house on Lake Norman, and that fueled Casey's love of the aquatic environment. Early manifestations of that were evident in participation in all manner of water sports — boating, sailing, jet skis, slalom skiing, wakeboarding, and

more. She didn't pay much attention to what was underwater until she earned her SCUBA certification at age 12, which expanded her interests to aquatic life, ecology, and fish. During high school she attended summer camp at MarineQuest, a coastal educational outreach center run by UNC Wilmington, and that led to her attending UNCW for a Bachelor's degree in Marine Biology, and formalized her pursuit of the fisheries profession.

While an undergrad at UNCW, Casey conducted honors research with Dr. Fred Scharf (NCAFS Chapter member) on the ecophysiology of Southern Flounder. She also made the most of her undergraduate summers with enriching experiences, including serving as an aquarist intern at the Fort Fisher NC Aquarium, a counselor at MarineQuest (the same UNCW camp that nurtured her interests), and a National Science Foundation (NSF) Research Experience for Undergraduates at the University of Texas Marine Science Institute, where she studied Red Drum physiology. The summer after she graduated from UNCW (2013), she worked with Chapter members Gus Engman (NCSU Ph.D. student) and Tom Kwak (Professor) as a research assistant studying riverine fish assemblages and recruitment in Puerto Rico. She soon began her own Master's studies at NCSU with Greg Cope and Tom Kwak on water quality and traditional and emerging contaminant effects on the Yadkin-Pee Dee River fish assemblage and fisheries. Her research is funded by the NCWRC and includes collaborators from NCSU, NCWRC, and the SC Department of Natural Resources.

When Casey's not on the water, she spends time with her family, socializes (a lot) with her student colleagues, and travels. In fact, she just spent spring break hiking the Inca Trail to the Machu Picchu ruins in the Andes Mountains of Peru (13,000 feet high)! She's also participating in the NCWRC Becoming an Outdoors-Woman program and honing more traditional fishing, hunting, and outdoor skills. When Casey completes her Master's degree, she'll pursue employment conducting fisheries and aquatic research and infusing that with education, outreach, and advocacy. We look forward to all she'll contribute to the fisheries field!

*Submitted by Tom Kwak and Greg Cope, NCSU*

### **Tom Fox**

Tom Fox was hired as the NCWRC District 3 Fisheries Biologist 1 in January 2015. Tom grew up in the state of New Jersey where he learned a love for the outdoors by camping in the Pocono Mountains, fishing in coastal rivers, and surf fishing. Tom left the Garden State for the District of Columbia and George Washington University.

At George Washington University, Tom received a Bachelor of Science degree in Biology with a focus on freshwater and marine ecosystems.

Looking to work in freshwater aquatic conservation and fisheries management, Tom came to North Carolina in 2007 to work with NCWRC's Aquatic Wildlife Diversity Program. Tom assisted with surveying, monitoring, and performing a variety of research on threatened and endangered species of freshwater fish and mussels. This included a status assessment of the federally endangered Cape Fear Shiner for the US Fish & Wildlife Service Recovery Plan review, an endemic minnow the Piedmont portion of the Cape Fear River basin, Robust Redhorse mark-recapture sampling and radio telemetry, and status surveys for endemic fish and mussel species in Lake Waccamaw. His dedication and work ethic was an invaluable asset to that work group and his passion for North Carolina's fauna grew exponentially.

After working with the Aquatic Wildlife Diversity Program, Tom continued to work for NCWRC as a creel clerk for the Lake Gaston Creel Survey. Operating a boat on Lake Gaston and interviewing anglers in the dead of winter as well as during the hottest days of summer is a difficult, laborious, and stressful job. Nevertheless, Tom was very reliable and motivated during that work. As time allowed, he also assisted NCWRC District 3 staff with gill netting and electrofishing surveys. These varied jobs with the



*Tom Fox, NCWRC Fisheries Biologist displays an American Shad captured during a recent electrofishing survey on the Tar River.*



Commission solidified his desire to work in North Carolina so he decided to pursue a Master's degree at NCSU.

Tom earned his Master of Science degree from NCSU while investigating *in vitro* propagation of freshwater mussels with implications for improving juvenile health. Through Tom's work, he established a freshwater mussel *in vitro* propagation facility at the university, conducted research to improve the physiological health of *in vitro* propagated freshwater mussels, and successfully propagated 13 species *in vitro*, including eight new species and three federally endangered species. Post-graduation, Tom continued to work at NCSU as the lead researcher for a Department of Defense grant to conduct mussel surveys on Fort Bragg. The primary objectives for this work were to identify mussels located on Fort Bragg and to conduct stream geomorphology surveys to identify potential causes for habitat degradation and suggest appropriate changes in land use practices.

Once the work at Fort Bragg was completed, Tom came back to NCWRC's Aquatic Wildlife Diversity Program. During this period, Tom helped survey various species of crayfish, Carolina Madtom, Roanoke Bass, Tar River Spiny mussel and helped deploy a PIT tag array in Jordan Reservoir. Tom was a tremendous help in the field and technically savvy when boat pumps or electrofishing gear needed to be rewired.

When not working, Tom enjoys spending time with his wife, Jamie, throwing the Frisbee for their Vizsla, Fin, backpacking, and mastering the art of smoking meats.

Tom's diverse background and work experiences will prove to be tremendously helpful as the NCWRC District 3 Fisheries Biologist 1. He will be working on reservoir Striped Bass, Largemouth Bass, Blue Catfish, and crappie as well as on Striped Bass, American Shad, Hickory Shad, and river herring in the Tar River. We are excited to have Tom aboard and we look forward to his many contributions to NCWRC's fisheries management program.

*Submitted by NCWRC staff Brian McRae, Kirk Rundle, Brena Jones, and Tyler Black*

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### **High Honors: Cope and Pollock Appointed Distinguished Professors**

Two NC State University professors have recently been awarded the highest honors in the NCSU College of Agriculture and Life Sciences! Drs. Greg Cope (NCAFS Past-President) and Ken Pollock (long-time Chapter member) are the newest William Neal Reynolds Distinguished Professors. These endowed professorships recognize "great scholars, great teachers, great scientists, and great interpreters."

These two professors are internationally renowned leaders and represent over a half-century of experience and service in the fields of Fisheries, Wildlife, and Ecology. Below are some highlights of their respective accomplishments that support this great recognition. Congratulations to Greg and Ken on this well-deserved honor!



*Pictured (L-R) are NCSU Applied Ecology Department Head, Harry Daniels; current Distinguished Professor, JoAnn Burkholder; and the two newest Distinguished Professors, Ken Pollock and Greg Cope.*

**Dr. Greg Cope.**—Dr. Cope's works in toxicology research, teaching, and extension have led to major advances in the science, conservation,

and management of endangered freshwater fauna; strengthened national environmental policy with benefits to all Americans; and major progress in agromedicine and health and safety protection for farm workers across the state, nation, and world. He directs the single largest university program worldwide that is dedicated to understanding and mitigating the effects of toxic pollutants on sentinel imperiled freshwater mussels and fish. His research team's contributions have been highlighted by scientific societies and by a wide array of state and federal resource agencies. He has published over 120 scholarly papers, books, and book chapters associated with his research and extension programs and has mentored 25 graduate students and served on another 30 graduate committees. Under his leadership as Coordinator of the NC Agromedicine Institute, agromedicine programs have substantially improved the occupational health safety of rural populations involved in agriculture, forestry, and fisheries. Dr. Cope exemplifies the highest level of excellence as a scholar, scientist, teacher, and interpreter, and also has an outstanding record of service to his college, university, state, and country.

**Dr. Ken Pollock.**—As an internationally recognized authority on the application of mark-recapture theory to real-world problems in wildlife conservation, Dr. Pollock has developed sampling methodologies that are used throughout the world in game and non-game fisheries and wildlife research and management. He has advised and trained 65 graduate students, and served on over 250 graduate student committees in his 30+ years at NCSU. Many of these students have gone on to leadership positions in academia, private industry, and with fisheries and wildlife management agencies where they have applied their training to the management of species as diverse as Striped Bass, terrestrial salamanders, migratory songbirds, and endangered species such as Florida Manatees and Cape Fear Shiners. Dr. Pollock is the author or co-author of five books and over 200 peer-reviewed publications in the fields of applied wildlife ecology and statistics, several of which have received prestigious national and international

awards from the Wildlife Society, the American Statistical Association, and the U.S. Fish and Wildlife Service. His scholarly and academic accomplishments have had an enormous impact on his field of research and our society.

*Submitted by Tom Kwak, NCSU*

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## **Update from the NC Division of Water Resources**

### **Wadeable Stream Fish Community Monitoring Program**

In 2014, 65 ratable sites were sampled as part of the Little Tennessee, Hiwassee, Roanoke, and Cape Fear River basinwide monitoring program (20, 12, 31, and 2 sites, respectively). Four sites in the Cape Fear and two sites in the Roanoke River basins could not be sampled due to insufficient or excessive flow conditions. Overall, 92% of the basinwide sites that were to be sampled, were sampled. Two urban streams in the Sand Hills were sampled as part of a special study on the [development of criteria and metrics for wadeable Sand Hills streams](#); the study was completed, approved, and implemented by December 2014 (see link for details from the Winter 2014 NCAFS Newsletter). Three sites were re-assessed in the New and Cape Fear River basins for verification of 2013 results prior to their possible placement on the impaired streams list. One site in the French Broad River Basin that is currently on the §303 (d) list was re-assessed to determine if it should be removed from the list due to any possible water quality improvements in the watershed; results indicated that it should stay on the list.

Field assistance during 2014 was again provided by more than 30 willing and eager staff from NCDWR's Water Sciences Section; the Groundwater Management, Planning, 401 and Buffer Permitting units; and the Asheville, Fayetteville, Mooresville, and Winston-Salem Regional Offices; US Fish & Wildlife Service, Eastern Band of the Cherokee, Little Tennessee Land Trust, NCSU graduate student and summer interns, Hiwassee River Watershed Coalition, and the NCWRC. Check the following links for NCDWR's [fish community assessment methods](#), [data](#), [NCIBI ratings](#) and a [map of NCIBI sites](#). These web pages are updated every spring.

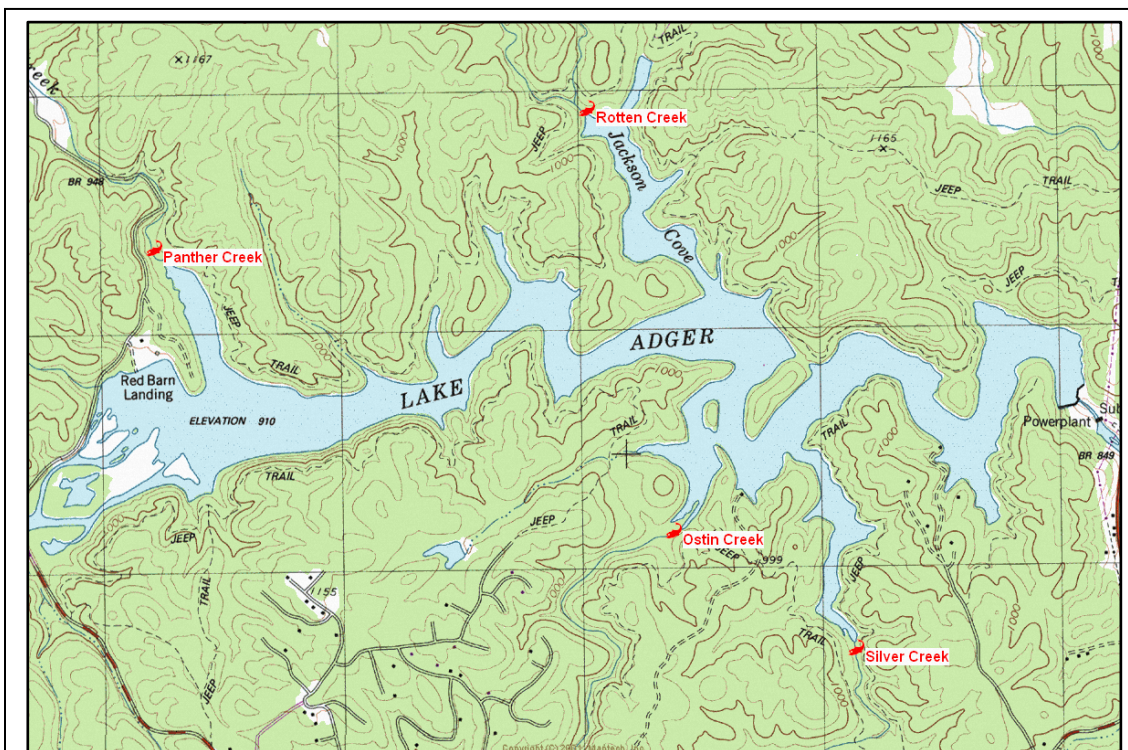


*Pictured (L-R) are Sue Homewood and Niki Maher. A long way from home, US 64 at the NC-TN state line.*



## Lake Adger Use Attainability Studies

In March 2014, during the public posting of the draft 2014 §303 (d) list, property owners on Lake Adger, citizens of Polk County, and a Polk County commissioner expressed concerns to the Division of Water Resources that four tributary streams, which are currently classified as C;Tr, no longer support trout due to sediment and that the upper reaches of Lake Adger have drastically filled in with sediment.



*Tributary sampling sites on Lake Adger, Polk County.*

The supplemental stream classification of trout waters is defined as: “*freshwaters protected for natural trout propagation and survival of stocked trout*” and “*. . . those waters which have conditions which shall sustain and allow for trout propagation and survival of stocked trout on a year-round basis*”. The Tr supplemental classification has been applied to these four streams since March 01, 1963. A request was also made that benthic macroinvertebrate sampling should be conducted to determine if biological ratings would show that the waters are not supporting their designated uses necessitating the placement of the streams on the impaired stream’s list. Their concerns and requests were to initiate some investigative and mitigative action regarding the sources of sediment and turbidity in the Green River, Lake Adger, and its tributaries. Streams that are on the §303 (d) list are more likely to receive funding (e.g., from the Clean Water Management Trust Fund and §319 (h) and §205 (j) funding sources) for restoration and watershed management activities than those that are not.

A study was conducted on April 15 and 16, 2014 at four tributary streams to Lake Adger (Ostin, Panther, Silver, and Rotten creeks) to determine if the streams continue to support trout and to determine if the streams’ bioclassification based upon benthic

macroinvertebrate assessments are impaired. The report, finalized in December 2014, determined that at the locations sampled, there was no evidence that any of the four tributary streams to Lake Adger support a reproducing population of trout - a requirement for a stream to be classified as Trout waters. Neither Rainbow Trout nor Brown Trout are indigenous to the Broad River Basin and there is no strong evidence that Brook Trout is indigenous, either. All three species have been stocked in the cool- and cold-water headwater tributaries in the Broad River Basin as economically important recreational game species for at least 50 years. However, none of the four streams is managed as a trout fishery by the NCWRC. Based upon all the data collected, the streams do not appear to be able to sustain a reproducing population of trout on a year-round basis. Where sampled, these streams are shallow and sediment-filled lacking sufficient depth to currently support trout. However, it is possible that trout may occur in headwater segments of these streams.

All streams, with the exception of Silver Creek, received Excellent bioclassifications which indicated minimal pollutants entering their catchments from upstream sources. Therefore, based on benthic macroinvertebrate sampling, these streams would not be recommended for listing as impaired on the 2016 § 303 (d) list. However, water quality in Silver Creek did appear to be negatively affected by increased siltation from upstream sources. A copy of the full report is available from Bryn H. Tracy ([bryn.tracy@ncdenr.gov](mailto:bryn.tracy@ncdenr.gov)).

### **New NCDWR Distributional Records for 2014**

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

- *Fundulus rathbuni*, Speckled Killifish, Blounts Creek, tributary to Cross Creek, Cumberland County, first county record and furthest downstream record for the Cape Fear River Basin, two specimens, 57 and 81 mm TL;
- *Micropterus dolomieu*, Smallmouth Bass, Moon Creek, tributary to Dan River, Caswell County, first county record and furthest east record in the Dan River system, one specimen, 197 mm TL, nonindigenous;
- *Pimephales promelas*, Fathead Minnow, Little Brasstown Creek, tributary to Brasstown Creek, Cherokee County, one specimen, 61 mm TL, first collection ever from the system, non-indigenous; and
- *Ameiurus brunneus*, Snail Bullhead, Giesky Creek, tributary to Shooting Creek, Clay County, one specimen, 177 mm TL, non-indigenous.

These specimens, except for the Smallmouth Bass, along with other nonindigenous species such as Red Shiner, Brown Trout, Rainbow Trout, Green Sunfish, Redear Sunfish, and Spotted Bass, were vouchered at the North Carolina State Museum of Natural Sciences.

An up-to-date list of the freshwater indigenous and nonindigenous species found in North Carolina is available at: <http://portal.ncdenr.org/web/wq/ess/bau/nativefish>. All of DWR's nonindigenous fish records may be found at:

<http://nas.er.usgs.gov/taxgroup/fish/default.aspx>. DWR specimens vouchered at the NCSM may be found at: <http://collections.naturalsciences.org/searchFishes.aspx>.



*Fundulus rathbuni*, Speckled Killifish



*Ameiurus brunneus*, Snail Bullhead



*Pimephales promelas*, Fathead Minnow

Photographs courtesy of Noel Burkhead and Robert Jenkins (Speckled Killifish), Fritz Rohde (Snail Bullhead), and Uland Thomas (Fathead minnow)  
<http://www.sefishescouncil.org/>

Submitted by Bryn Tracy, NCDWR

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## NC Wildlife Resources Commission Wildlife Diversity Program Quarterly Reports

The link below provides information on NCWRC's quarterly wildlife diversity reports, which contain updates on a wide variety of nongame research projects and survey results.

### [Wildlife Diversity Quarterly Reports](#)

Be sure to check out recent articles on the [augmentations of populations of Tar River Spiny Mussel, Carolina Heelsplitter, and Robust Redhorse](#).



Ryan Heise, NCWRC Aquatic Nongame Biologist, with a Robust Redhorse

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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, email Kevin Hining at [kevin.hining@ncwildlife.org](mailto:kevin.hining@ncwildlife.org) or give him a call at 336-877-1087. Also, if you want to become more involved with one of the many great NCAFS committees then please check the link below for information about each one, contacts, etc., <http://nc.fisheries.org/who-we-are/committees/>

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## Highlighted Meetings of Interest



**2015 NC State University Student Fisheries Society-** First Tuesday of each month, Raleigh, NC. <http://clubs.ncsu.edu/sfs/>

**145<sup>th</sup> Annual Meeting of the American Fisheries Society-** August 16-20, Portland, OR. <http://2015.fisheries.org/>

**2015 Southeastern Association of Fish and Wildlife Agencies-** November 1-4, Asheville, NC. <http://www.seafwa.org/index.php>

**2015 Southeastern Fishes Council Meeting-** November 12-13, Gainesville, FL. <http://www.sefishescouncil.org/fishes/>

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## Valuable Links

The [American Fisheries Society Home Page](#) offers a wealth of links to assist you in your fishy endeavors. Information on ordering AFS books, public outreach, 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 [our own website](#).

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