



AMERICAN FISHERIES SOCIETY

Summer 2014 NEWSLETTER

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President's Message

So, how many ticks have "ticked" you off so far? Ah, the mixed blessings of a Carolina summer. I hope that, if not by now, you will soon be able to enjoy the other side of the coin: wondering if that Great Blue Heron will ever figure out that if he just flies behind the boat, it will stop chasing him, while the only sounds are the splash of your paddle or boots in the water and an eternally scolding Carolina Wren. Let's leave out the roar of the generator, the scrape of your boat hull leaving a tattoo on a rock, the insistent ring of your phone that surely bears questions you actually have to think about, or that mournful utterance of "Uh-oh" which always means your day just got longer. At least you won't freeze!

As a Chapter and, as I like to think of it, a web of aquatics and conservation research, with rich strands including genetics, rare species, fisheries management, education, business partnerships, studies of invasive species, and many more, we continue to push forward. Members at NC State University, the NC Wildlife Resources Commission, Duke Energy, and other partners have just embarked on a multi-pronged study to understand more about intersex fish. Each result will doubtless prompt new questions and that is just one of many efforts across the state tackling the challenges posed by today's complicated interaction between humans and natural ecosystems.

On the calendar, the [August meeting of our parent society](#) is coming up quickly, so check the expiration date on that passport if you are lucky enough to be heading to Canada. The SE Association of Fish & Wildlife Agencies

	<p>(SEAFWA) will hold their October 2014 meeting in Florida. The Southern Division of AFS, of which our own Dave Coughlan is Vice-President, has also announced that the spring meeting in 2015 will be in Savannah, GA. NCAFS President-Elect Kim Sparks is already working hard planning for our chapter's Annual Meeting next February as well!</p>
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In the meantime, whether you are in a meeting, boat, sweaty waders, classroom, or wetsuit, I wish you safe and successful journeys. I will simultaneously remind you that the Chapter is here not just because of you, but FOR you. [My "door" is always open](#) and I encourage you to contact your EXCOM, newsletter committee, and fellow members with concerns, requests for assistance, ideas, or data of mutual interest.

May your data sheets be full and your accident reports remain empty!

Brena Jones

Wildlife Commission Fish Attractor Study Receives National Award

The N.C. Wildlife Resources Commission recently received the 2013 Sport Fish Restoration Outstanding Project award in the category of Research and Surveys, for its evaluation of fish attractors.

Jessica Baumann's research project was entitled "Using the DIDSON to Evaluate the Effectiveness of Different Fish Attractors in Turbid Reservoirs." She worked with other Wildlife Commission staff to evaluate the effectiveness of four different types of fish attractors — both natural and artificial — to assess how well they congregated fish and how well they held up over a three-year period.

"Sport Fish Restoration Outstanding Project awards are given annually to recognize excellence in fisheries management, research and education," said Mike Stone. "We selected the Commission's project for this award from a field of strong contenders nationwide."

Fisheries biologists began the fish attractor study in June 2008, sinking three different types of artificial attractors — commercially available Porcupine™ attractors, attractors constructed of PVC pipes and corrugated plastic pipes, and attractors constructed of PVC pipes and halved plastic barrels — and one natural attractor constructed from Christmas tree bundles into Lake Townsend in Greensboro and Lake Cammack in

Burlington. They chose the two lakes because of their abundance of sport fish, similarity in size, and lack of underwater structures.



Mike Stone, president-elect of the American Fisheries Society Administration Section, presented a commemorative plaque to Jessica Baumann, the Commission's fisheries biologist who oversaw the fish attractor study, at the Commission's May business meeting in Raleigh. Also pictured (L-R): David Hart, Corey Oakley, and Brian McRae.

After evaluating each attractor site every fall, winter, spring and summer for three years, using a high definition imaging sonar unit called the DIDSON (Dual-Frequency Identification Sonar), biologists concluded that artificial fish attractors held similar numbers of fish and lasted longer than the traditionally-used Christmas tree bundles.

As a result of this study, the Wildlife Commission has begun using artificial structure constructed from synthetic materials to help congregate fish in many reservoirs. In 2013, staff deployed 19 fish reefs made of Moss Back Fish Attractors™ in Hyco and Mayo lakes near Roxboro. They also deployed nine fish reefs in Lake Thom-a-lex, four fish reefs in Shearon Harris Reservoir and two in the Tar River Reservoir. They plan to deploy similar fish reefs in Lake Raleigh, Lake Holt, Farmer Lake, Lake Michie and Lake Reidsville this summer.

"This study proved that artificial structures made from synthetic materials are a better option for us compared to attractors constructed from Christmas trees, which we would have to replace on a regular basis in order for them to attract the same amount of fish," said Jessica Baumann. "With artificial structure made from synthetic material, we feel as if we are being more efficient because once the artificial structure is deployed it will be attracting fish effectively for years to come."

AFS is the world's oldest and largest organization dedicated to strengthening the fisheries profession, advancing fisheries science and conserving fisheries resources. The annual Sport Fish Restoration Outstanding Project awards highlight outstanding

work advancing the effectiveness of the Sport Fish Restoration program. The Sport Fish Restoration Program is funded by excise taxes collected on fishing tackle, boats and motorboat fuels, which are apportioned to states to enhance fisheries and boating programs.

For more information about AFS or the awards program, visit www.fisheries.org. For more information about how the Commission uses Sport Fish Restoration money to improve fishing and boating in North Carolina, read the “[Sport Fish Restoration in North Carolina](#)” report. In addition, read “[Artificial Beats Natural in Fish Attractor Study](#)” to learn about the fish attractor study. For more information on fishing in inland, public waters, visit the Commission’s [Fishing page](#).

Prepared by Jodie Owen, NCWRC Public Information Officer

Chasing Redhorse



Drawn by the allure of new experiences, anglers travel thousands of miles for unique opportunities to target endemic freshwater fishes. Undoubtedly, many anglers have departed Raleigh-Durham International Airport (RDU) on flights destined for exotic locales where they are hoping to land fish such as Pacific Salmon, Peacock Bass, or even Tai-men. However, many new, unique, and often unrecognized opportunities to target endemic freshwater fish exist relatively close to these traveling anglers' homes. One such opportunity is offered by the Redhorses (genus *Moxostoma*, subgenera *Moxostoma* and *Megapharynx*).

Ten species of Redhorse are known to inhabit North Carolina waters, three of which have been recently discovered by science and have very small ranges (see article by Mike LaVoie, pg 18, for one example). There is substantial overlap in the ranges of the various species, and it is not uncommon to find several species of Redhorse inhabiting the same system, although a variety of reproductive isolating mechanisms precludes hybridization. Redhorses are fairly large fish: the smallest species in North Carolina,

the Shorthead Redhorse *M. macrolepidotum* grows to 350 mm TL, while the largest, the River Redhorse *M. carinatum* grows well over 600 mm. They are fusiform in shape, their body is coppery or silvery in color, and some species have deep-red colored fins. All Redhorses are benthic fish with subterminal mouths that are adapted for feeding on invertebrates that dwell in the substrate. Redhorses have evolved papillated and plicate lips, which are sensitive to tastes and textures. Redhorses have also evolved specialized pharyngeal teeth, which are used to sort prey from substrate and masticate food items. Although there are numerous intraspecific differences in spawning behavior, most Redhorses demonstrate a migratory strategy known as potamodromy. During the early-spring, they stage migrations from large freshwater rivers or downstream reaches of tributaries into tributaries or further upstream reaches to lay eggs in specific habitats.

Redhorses are an ideal (but frequently overlooked) target for fly fishermen. They grow large, migrate en-masse at a predictable time of the year, feed on bugs, and possess a simple but elegant beauty. The best time to fish for Redhorse is when they are migrating (early spring). During this season, Redhorse are abundant in shallow habitats. This makes them an excellent target for sight-fishing.



A Silver Redhorse landed using a typical 4-weight fly rod and 5x leader

Because they are focused on spawning or fattening up before the spawn, they are also very forgiving of errant casts and can be difficult to spook. The fly selection is not complicated: small heavily-weighted nymphs that are easy for the angler to see are best. The fly is tied to a very delicate leader and rigged with a single heavy split-shot. The fisherman's strategy is to look for feeding fish and cast the rig upstream of them so that the fly is bouncing along (and occasionally catching) the bottom. Like putting in golf, this fishing method takes deliberateness and finesse. Like golfers who read the putting green, Redhorse anglers must also read the water. If the cast and drift are successful, the fly will intersect the fish's feeding route. Redhorse will rarely deviate from their feeding route to investigate an artificial fly, but a well-placed cast (and drift) is

sure to garner some attention. Takes are very subtle, as the fish use their lips to taste and feel the fly before deciding to consume it or to reject it along with other bits of substrate. This gives the angler just enough time to set the hook and prepare for a fight.

Battling a Redhorse with a fly rod is a thrilling experience, and their fight rivals that of many gamefish. When hooked, the enthusiastic Golden Redhorse *M. erythrurum* leaps from the water like a golden missile and puts up a fast and furious fight. The indolent Silver Redhorse *M. anisurum*, on the other hand, reacts to being hooked by deliberately swimming toward deep water. When making such a run, a Silver Redhorse is undeterred due to pressure being applied by the fisherman and any attempt to dissuade it from its chosen route will surely result in a broken line. The majestic Sicklefin Redhorse *M. sp.* uses its speed to try to escape a fisherman, and tends to race through swift water when hooked. The *zing'ing* and *purr'ing* sounds made by the fly reel's drag during a fight with a Sicklefin Redhorse harmonize perfectly with the pastoral settings where this fish is found. The River Redhorse, the brute of the genus, uses its shear strength to try to escape capture. The strategy when fighting a River Redhorse is for the angler to lead the fish away from swift water and other obstructions that could result in giving it any advantage. Once brought to hand, the angler can celebrate the subtle beauty of these highly evolved and unique fishes.

I am currently a Ph.D. student at NCSU, and my dissertation research involves Redhorse in the Hiwassee River basin, which, in terms of Redhorses, is one of the most speciose basins in the world (six species, total). I am also an avid fly fisherman, who, like the anglers travelling through RDU, is constantly searching for a new and unique fishing experience. Given my busy field work schedule and graduate student's salary, my trip to the Amazon Jungle in search of Peacock Bass will have to wait. In the meantime, I have been enjoying the opportunity to chase Redhorse, right here in beautiful North Carolina!



The caudal fin on River Redhorse is brilliant-red in color

Submitted by Tomas Ivasauskas, NCSU Student Fisheries Society Co-President

Dr. J. Frank Randall Obituary

Dr. J. Frank Randall, 95, a long-time member of the Boone community and retired Professor of Biology at Appalachian State University, died on Jan. 10, 2014, at Watauga Medical Center. Born in 1918, at the family farm on Big Pine Creek, Madison County, Dr. Randall was the fifth child of John Wesley Randall Jr., and Lou Ella Randall. Like so many in the Randall family, he pursued a career in teaching and education, receiving an A.A. from Brevard College, an A.B. from The University of North Carolina at Chapel Hill, an M.S. from The University of Michigan, and a Ph.D. in Biology from The University of South Carolina. The title of his dissertation was: *"The Distribution Of The Fishes Of The Catawba-Wateree River Drainage, North Carolina And South Carolina"*. From July 16, 1954 through September 24, 1956, Dr. Randall sampled 229 locations from the headwaters of the Catawba River to confluence of the Wateree and Congaree Rivers, excluding the Broad, Congaree, and Saluda River systems, documenting 86 species and subspecies, including many previously unreported species from this drainage. According to Dave Coughlan (pers. com., January 13, 2014) *"Dr. Randall's Catawba-Wateree collections for his PhD thesis were quite valuable for many of my Duke Power reports regarding historical fish communities! For several years he really 'busted' throughout the basin! It appears he displayed that same zeal throughout his life. Quite a remarkable man."* From Dr. Robert E. Jenkins (pers. com., January 14, 2014): *"I have his pioneering thesis and often used it. I studied his Moxostoma at the USNM and at the Charleston Museum"*. From Bryn Tracy: *"I have his dissertation (via Dave Coughlan) and I expect others have also found it very informative over the years. I know I cited it in our recent catostomid paper and also in our talk on Dusky Shiner. His life seems quite remarkable and I tip my hat to him for his peace activism. He must have been a great educator and conservationist"*.



Dr. J. Frank Randall
(August 02, 1918 - January 10, 2014)

Before joining the faculty of what was Appalachian State Teachers College in 1957, Dr. Randall taught for 2 years at Oakwood Friends School in Poughkeepsie, N.Y., for 7 years in the public secondary schools of North Carolina, and for 3 years at the then newly-established Alpena (Michigan) Community College. Dr. Randall's enthusiasm for teaching was evident in his early morning ornithology classes. He readily shared his avid interest in birds and their environment and nurtured this same appreciation and love of nature in his students. He had a breadth of interest that led him to help develop a series of Biology Department classes ranging from ecology and biogeography to mammalogy, ichthyology, vertebrate zoology, evolution, and endangered species. He was a proponent of the idea that understanding the natural world around us is an important part of an education. In that vein, he created a special biology course for home economics majors and constantly shared his love of field biology formally and informally with students, family, and friends. His two academic trips with students to Alaska (1974 and 1977, respectively) and three trips (1979, 1982, and 1985) to South America to the Galapagos Islands and portions of mainland Ecuador, Bolivia, and Peru, including Machu Picchu, were cherished experiences and robust learning exercises for the participants.

He took pride in, and his students benefited from, his multidisciplinary knowledge. He delighted and surprised many students from small communities with his detailed knowledge of their communities, some of which was acquired during his comprehensive survey of fish in the Catawba-Wateree river basin. Focused on more than just their academic success in a particular class, he conveyed to his students the importance of development of the whole person by challenging them to think deeply about ethics, politics, and human impact on the Earth.

He was keenly aware of his responsibilities as an educator and teacher and played a major role in establishing the Appalachian Faculty Senate, serving as its first chairman. In addition to his professional responsibilities, Dr. Randall was active in the Audubon Society, North Carolina Nature Conservancy, Bluff Mountain Stewardship Committee (where he conducted hiking tours), and the NCWRC's Nongame Wildlife Advisory Committee. He was active with Boy Scouts, serving as a Scoutmaster and as an Explorer Post Advisor.

His lifelong commitment to conservation and preservation was fostered by appreciation for plants, animals, and ecosystems that he absorbed from his father during his childhood in the rural N.C. mountains and by the love of geography and education inspired by his mother. These characteristics were expanded and reinforced when, as a young man, he hitchhiked throughout much of the western US.

Dr. Randall was a kind, gentle, patient, and non-violent person and a conscientious objector during WW II, an unpopular, but genuine, belief for which he had to mount legal challenges to state and federal agencies to defend. He served through the American Friends Service Committee and other organizations, performing conservation work in California and Oregon, as well as helping migrant workers and American citizens of Japanese heritage who were relocated to internment camps by the federal government.

As part of his alternate civilian service, he volunteered to become a 'smoke jumper' for fighting forest fires in the West; although, that program was canceled before he was deployed.

Since his retirement in 1990, Dr. Randall spent much of his time adding to, enjoying, and working on his Roaring Fork nature preserve in the Meat Camp section of Watauga County. He shared his love and enthusiasm for this favorite spot with friends, relatives, scouts, students, and beloved canines, Snowzey and Baxter.

Dr. Randall was one of a close family of eight children. In addition to his parents, he was preceded in death by all of his siblings and their spouses, brothers Herman, Paul (Evelyn), Robert (Elizabeth), Fred (Myrtle); and sisters, Virginia Roberts (Gordon), Maye Hill (Jim), Nina Roberts (Sam); as well as niece, Carolyn Roberts Woodrow; and nephew, Robert L. Randall Jr. Surviving Dr. Randall are his wife of 63 years, Lera Britt Randall, formerly of Chadbourn, and son, Richard R. Randall, of Durham. He is also survived by dozens of nieces and nephews and their children, whose friendship and love he cherished.

In lieu of flowers, the family suggests memorial contributions to The Nature Conservancy, American Friends Service Committee, Southern Environmental Law Center, National Audubon Society, institutions of higher education, UNC-TV, or other non-profit, charitable organizations of the donor's preference.

Visitation was held 3 to 5 p.m. Sunday, Jan. 12, 2014, at Austin and Barnes Funeral Home in Boone. A memorial service was held May 31, 2014.

From the Watauga Democrat, January 13, 2014; re-printed with permission from the family of Dr. J. Frank Randall. Additional material inserted by B. H. Tracy on April 10, 2014.

North Carolina's Imperiled Fish Fauna, Part XV

Submitted by Bryn H. Tracy and Fred (Fritz) C. Rohde 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 15th of 16 planned articles on the species that the Council believes have become more or less imperiled 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.

Riverweed Darter, *Etheostoma podostemone* Jordan and Jenkins
Current Status: Special Concern, Proposed Status: Delist

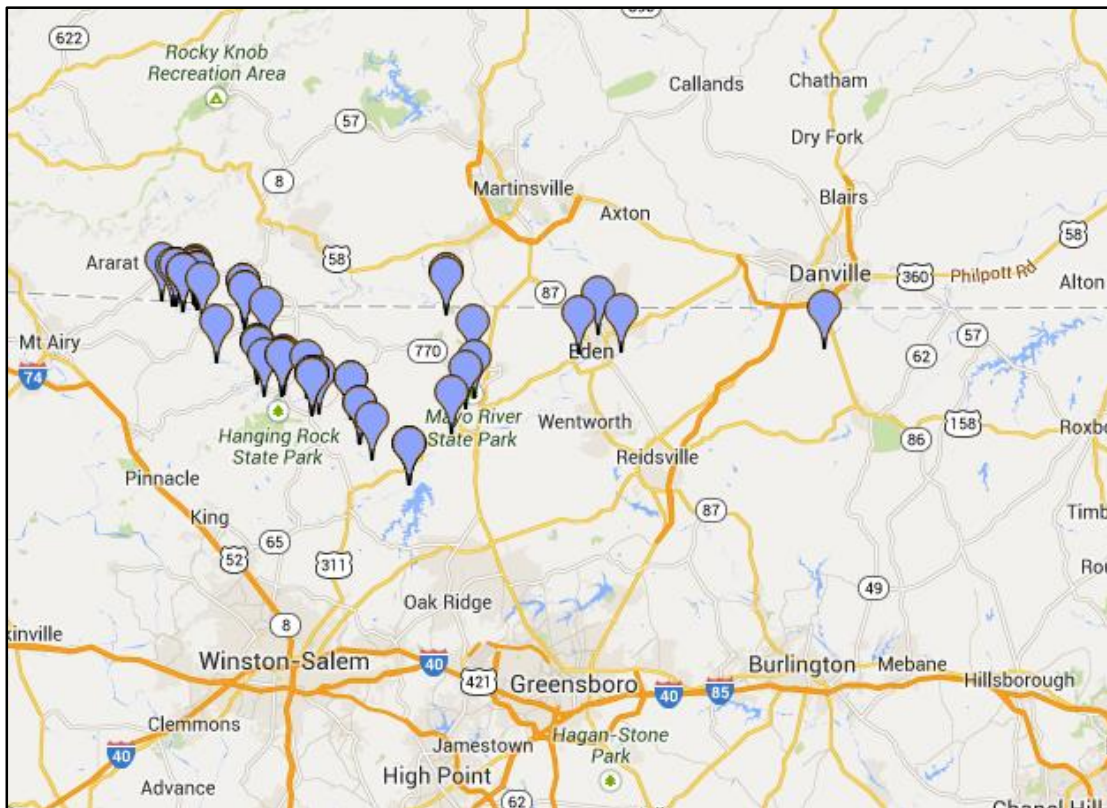


Photograph courtesy of Southeastern Fishes Council, courtesy of Noel Burkhead and Robert Jenkins, <http://www.sefishescouncil.org/>.

Description – From Jenkins and Burkhead (1994): “A laterally XW-marked or evenly spotted darter; adults are 30-55 mm SL. Body elongate or somewhat moderate; snout blunt; frenum absent; branchiostegal membranes moderately or broadly united; caudal fin truncate or rounded; dorsal fins high and caudal very rounded in adult males. Opercle usually 50-80% scaled; belly usually 50-60% scaled; cheek, nape, and breast naked.” Possibly confused with the syntopic Johnny Darter, *Etheostoma nigrum*, however the Riverweed Darter has gill membranes which are broadly joined, 100-110° angle, vs. having the gill membranes narrowly joined, 55-75° angle (Menhinick 1991). Other characteristics that can be used to differentiate the two species are the infraorbital canal (uninterrupted in Riverweed Darter vs. usually interrupted in Johnny Darter) and the number of anal spines (usually 2 in Riverweed Darter and 1 in Johnny Darter) (Jenkins and Burkhead 1994).

Type Specimen and Type Locality - The Riverweed Darter was described by David Starr Jordan and Oliver P. Jenkins in 1889 based upon an unknown number of specimens collected in 1888 by Jordan, Jenkins, and Barton W. Evermann from the Roanoke River at Roanoke, Salem, and Alleghany Springs, VA (Jordan 1889). A 45-mm SL male specimen from the Roanoke River at Alleghany Springs, Montgomery County, VA has been designated as the lectotype (Collette and Knapp 1966; National Museum of Natural History Catalogue Number USNM 39863; <http://collections.mnh.si.edu/search/fishes/>). Its specific name was given because of its association with an aquatic macrophyte known as River Weed, *Podostemum ceratophyllum*. They found the darters to be especially plentiful in the clear waters of Bottom Creek, a headwater tributary to the Roanoke River, about five miles above Alleghany Springs, VA (Jordan 1889).

Range – The Riverweed Darter is endemic to the upper and middle Roanoke River drainage in Virginia and the more southern Dan River system in Virginia and North Carolina (Jenkins 1980; Jenkins and Burkhead 1994). In North Carolina, it is restricted to the Dan River subsystem including the Mayo, Little Dan, and Smith rivers and to medium-sized tributaries such as Archies, Big, Big Beaver Island, Buffalo, Cascade, Country Line, Elk, Hogans, Indian, Little Beaver Island, Matrimony, North Double, Peters, and Snow creeks in Stokes, Rockingham, and Caswell counties (Menhinick 1991; databases of the NC Division of Water Resources, North Carolina State Museum of Natural Sciences, and NC Wildlife Resources Commission, queried January 08, 2014). Rohde et al. (1998) found it in a 124 river kilometer section of the Dan River in North Carolina between July 1992 and May 1995 as well as in the Little Dan, Mayo, and Dan rivers upstream in Virginia. It was most abundant in the mainstem of the Dan River between river kilometer 207 and 259 in the Inner Piedmont portion of the river (Rohde et al. 2003).



Distribution of Riverweed Darter in the Roanoke River system, North Carolina. Map is based upon material vouchered and databased at the North Carolina State Museum of Natural Sciences; the database was queried January 08, 2014 and is based upon a sample size of 54 records.

Habitat – In 1888, the Riverweed Darter abounded in swift water, especially among rocks covered with Riverweed (*Podostemum ceratophyllum*) (Jordan 1889). Across its range, the darter occupies cool and warm, moderate-gradient creeks, streams, and rivers. Adults typically associate with clean, loose, medium gravel, rubble, and small

boulders; young associate with these substrate and often with sand and slightly silted areas (Jenkins and Burkhead 1994).

Life History and Ecology – Sexual maturity in the Riverweed Darter is reached in 1 or 2 years; maximum longevity is 4 years (Jenkins and Burkhead 1994). In aquaria, spawning occurred from late March to late May when water temperatures were 17-20°C (Jenkins and Burkhead 1994). Adhesive eggs are laid on the underside of stones by several females and guarded by a territorial male until hatching (approximately 13 days). The Riverweed Darter feeds primarily on chironomid larvae with feeding activity greatest during daylight (Jenkins and Burkhead 1994; Matthews et al. 1982).

Rationale for Designation –The Riverweed Darter was listed as a Special Concern species by the Committee in 1977 because of the proposed construction of a dam on the Dan River and because it was believed to be restricted to larger waters of a limited region (Menhinick 1987; Menhinick and Braswell 1995; Harris et al. 2010). The dam was never built, but the species continued to be listed as Special Concern, primarily because of the perceived lack of additional distributional data. Rohde (1993) recommended that the species be delisted because in 1992 it was widely distributed in the Dan River subsystem in North Carolina, it occurred in good numbers, and the presence of four other rarer species (Cutlip Minnow, *Exoglossum maxillingua*, Special Concern; Rustyside Sucker, *Thoburnia hamiltoni*, State Endangered; Bigeye Jumprock, *Moxostoma ariommum*, State Threatened; and Orangefin Madtom, *Noturus gilberti*, State Endangered) would provide continued protection for this portion of the Dan River subsystem. The Riverweed Darter was considered secure in North Carolina by Rohde, et al. (1998).

Additional data indicate populations are strong in the Smith and upper Dan rivers and their tributaries and are at levels for which there is no reason to continue listing the species (Harris et al. 2010). The NCWRC's Scientific Council of Fishes recommended in 2010 that the species be delisted. However, until legislative action is taken, the Riverweed Darter continues to be listed as Special Concern (LeGrand et al. 2012).

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Submitted by Bryn Tracy,

Spotlight on Students and Young Professionals

Spotlight on Katy Potoka

Most NCAFS members are aware that quite a few in our ranks, including several past presidents, hail from the well-known fisheries professional producing juggernaut—Tennessee Technological University. Well, it's time to add another to that list. Katy Potoka joined the NC Wildlife Resources Commission's Division of Inland Fisheries staff in January 2014. She comes to North Carolina from Ohio where she earned her B.S.

degree in Environment and Natural Resources with a specialization in Wildlife and Fisheries Science from The Ohio State University in 2010. While still an undergraduate, Katy gained valuable experience completing an internship at the Ohio DNR Old Woman Creek National Estuarine Research Reserve, which is the only freshwater estuary in the National Estuarine Research Reserve program. Upon graduation from OSU, Katy began pursuit of her master's degree at Tennessee Tech under Dr. Phil Bettoli studying endangered Boulder Darters in the Elk River.



Katy Potoka, District 1 Assistant Fisheries Biologist

With her graduate degree completed in 2013, Katy traded in her waders and kick seine for a seat on an electrofishing boat as the Assistant District 1 Fisheries Biologist with the Commission. Her new job duties with the Commission include surveying Striped Bass, Hickory Shad and American Shad on the Roanoke River as well as managing resident sport fish in the coastal rivers and lakes around the Albemarle Sound area. In her first spring field season, Katy has excelled in conducting numerous field surveys and has already authored an exceptional report on management of Largemouth Bass at Lake Mattamuskeet. She even helped net a potential state record Blue Catfish electrofished from the Roanoke River.

In her spare time, Katy enjoys spending time outdoors with her fiancé, Mark, their two dogs, Moose and Penny, and their cat, Stevie. We are glad to have Katy on staff with the Commission, and we look forward to more great work from her in the years to come. Welcome, Katy!

Submitted by Jeremy McCargo, NCWRC District 1 Fisheries Biologist

Spotlight on Caitlin Bradley

Caitlin Bradley grew up in North Carolina and spent her summers roaming around Lake Phelps. Her father, a naturalist and entomologist, not only taught her to appreciate nature, but to look at it through curious eyes. After an outing, he would quiz her on where she saw buck rubs, what bird species had already migrated, and what tree species were flowering. He would bring her home owl pellets to dissect, take her to cotton fields to help collect samples, and dissect water snakes to see what they had eaten.

With a deep passion for the outdoors, Caitlin majored in Biology and Spanish at UNC. She hoped to fulfill her dream of conducting an ecological project in the most diverse region of the world-Amazonia. As a sophomore in college she traveled to Iquitos, Peru and studied *Aedes aegypti*, the mosquito that transmits Dengue Fever. The next year she returned and studied the vocalizations of Tamarin monkeys. Upon graduation, she moved to rural China for two years where she rock climbed and led school groups in outdoor activities.

Caitlin is now working on her Master's project at NCSU in the Fisheries Ecology and Aquatic Science lab with Jim Rice and Derek Aday, studying movement and mortality of Striped Bass in the Neuse River. In addition to tracking the spatial distribution of Striped Bass at different life stages, she will quantify their mortality and relate it to water quality and fishing pressure. The project, funded by the NC Wildlife Resources Commission with Sport Fish Restoration funds, will hopefully help contribute to maintaining a sustainable Striped Bass fishery in the Neuse River. After graduation, Caitlin will either continue conducting ecological research and enter a Ph.D. program, or she will move back to China where she hopes to spread environmental awareness, by using outdoor activities as a tool.



Caitlin Bradley with a Neuse River Striped Bass about to devote its life to science

Submitted by Jim Rice, Extension Fisheries Specialist, NC State University

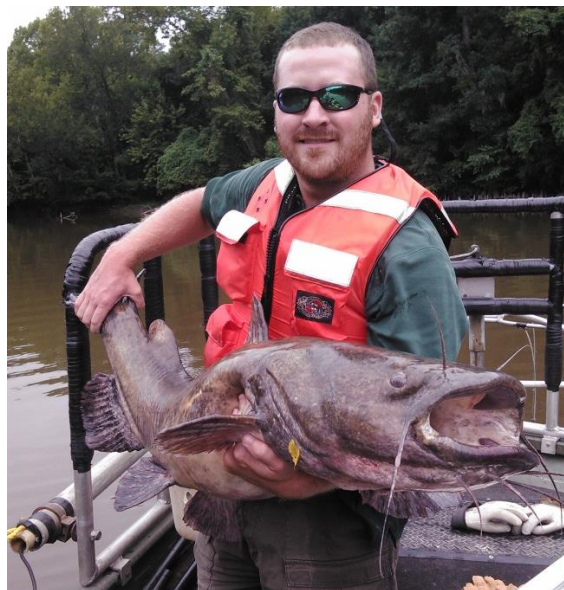
Spotlight on Kyle Rachels

Many of you may be aware of the personnel shuffling that occurred recently in the coastal region of the North Carolina Wildlife Resources Commission. Out of the shuffle one of the great new hires was Kyle Rachels. Kyle is originally from St. Pauls, NC. He completed his undergraduate studies from NCSU where he worked in the USFWS Co-op lab. After NCSU, Kyle went on to earn his Master's degree from the University of Arkansas at Pine Bluff. Kyle's Master's project evaluated Largemouth Bass stockings in small impoundments under the guidance of Dr. Steve Lochmann.

Luckily Kyle's love for North Carolina guided him back to the Old North State. He has been working in District 2 as the assistant biologist, since January 2014. Since his employment Kyle has not only demonstrated a powerful fisheries knowledge base, he is also part electrician, mechanic, carpenter, plumber, etc. We are truly lucky to have such a "jack of all trades" in the coastal region.

In Kyle's free time he enjoys wood working. In fact, most of his office furniture consists of Kyle Rachels originals. Kyle is also a big hunter. He spent a lot of time in Arkansas in pursuit of mallards in standing timber swamps. Kyle is also especially fond of turkey hunting. While spring is a terribly busy time for a fisheries biologist, there is little doubt that in his limited spring free time he'll be listening for a gobbler somewhere.

Lastly he is the son of Tom Rachels, a recently retired NCWRC Fisheries Biologist. Great things are expected out of this young professional, but not because of his last name; he has been impressive on his own merits already.



Kyle Rachels, District 1 Assistant Fisheries Biologist

Submitted by Ben Ricks, NCWRC District 2 Fisheries Biologist

2014 Shad in the Classroom: a Successful Team Effort!

We had a great year with the Shad in the Classroom Program, and we have many NCAFS members to thank for it! Led by the N.C. Museum of Natural Sciences, the Shad in the Classroom program receives significant logistical and financial support from the Albemarle-Pamlico National Estuary Program (APNEP), the N.C. Wildlife Resources Commission (NCWRC), and the U.S. Fish and Wildlife Service (USFWS). The program provides training, tanks, and eggs to 23 schools in the Neuse and Roanoke River basins. Through their observations and experiences, students learn concepts related to the shad's survival, the species' cultural and biological importance, its ecological connections to other species, and the significance of genetic integrity. The program heightens knowledge and awareness in future generations of an important migratory fish, the American Shad.

Seventeen teachers from 14 participating schools attended an all-day workshop held in February at the N.C. Museum of Natural Sciences, where the teachers learned how to construct their fish hatcheries, attended presentations from Dr. Joe Hightower and Dr. Jesse Fischer from N.C. State University (NCSU) and Ben Ricks from the NCWRC, participated in hands-on activities, and received curriculum materials to use in their classrooms. During this year's program, NCSU students and post docs, Laura Belica, Gus Engman, Jesse Fisher, Tomas Ivaskauskas, and Dylan Owensby, and Kevin Hining of the NCWRC conducted hands-on fish dissection lectures for 16 classes at 6 schools. We received donated fish from Rich Noble, Phil Doerr, and fellow anglers, the NCSU Student Fisheries Society Chain Pickerel removal event, and the NCWRC's Armstrong Hatchery. We had a great variety of fish, including Hickory Shad, Largemouth Bass, Bluegill, crappie, Chain Pickerel, Chubsucker, and Brook, Brown, and Rainbow Trout. USFWS (John Ellis, Emily Jergen, Wilson Laney, and Mike Wicker) and APNEP (Bill Crowell and Jim Hawhee) personnel also helped with the egg deliveries and shad releases. NCWRC biologists Kris Smith provided a program on water quality and aquatic invertebrates and Ben Ricks and Kyle Rachels provided an electrofishing demonstration at fry release events. American Shad eggs were provided by the Watha State Fish Hatchery and the Edenton National Fish Hatchery.

Five teachers in the program also participated in an overnight canoe trip along the Roanoke River in May to explore the swamp ecosystem and its resources and to gain valuable insight to take back to their classrooms. I really love the excitement that I see in both the students and the teachers. There is so much enthusiasm for the program and it is very contagious! Many students expressed that their favorite part about raising the shad was seeing the young larvae move within the egg and then hatch. They can't believe that they are actually living creatures. The students that witnessed boat electrofishing were very excited to see the many species that came up from the river depths, including American Shad. When I was saying goodbye to the students on the bus one shouted to me "I am going to do that!"

This was a productive and fulfilling Shad in the Classroom year — successful as a team effort! Teachers and students provided enthusiastic, positive feedback and are very

appreciative of all aspects of the program. Melissa Dowland, Megan Chesser, and I give a big thank you to all of the many volunteers, particularly the NCAFS Chapter and the NCSU Student Fisheries Society! If you would like to be involved in the program next year, please contact Danielle Pender at [<danielle.pender@naturalsciences.org>](mailto:danielle.pender@naturalsciences.org).



Dylan Owensby (upper left), Jesse Fisher (upper right), and Ben Ricks (bottom) assist with Shad in the Classroom outings

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

Fishing with Sticks and Stones for the Jungihtla

As summer stream flows drop in western North Carolina, ancient stone monuments expose themselves above the water's surface. These V-shaped fish weirs, scattered throughout the southern Appalachian's large streams, were fundamental to the Cherokee peoples' livelihood for centuries. Located adjacent to historic settlements, these carefully constructed boulder and cobble structures helped to funnel abundant runs of fish into basket traps made of oak or hickory splits.



Fish weir on the Little Tennessee River

Fishing was a cooperative endeavor for the Cherokee with shared efforts by men, women and children culminating in the acquisition of both rich nutritional resources and meaningful family experiences. One fish captured with these methods, known to the Cherokee as *jungihltla* and translated as “wearing a red feather” due to its falcate dorsal fin, was not recognized by the scientific community as a unique species until 1992. Today, the aptly named Sicklefins Redhorse has been eliminated from approximately 50% of its native range in the Little Tennessee and Hiwassee watersheds due to habitat degradation and fragmentation from dams. This long-lived sucker species, growing to 25 inches in length, was either stewed or roasted and provided a calorically rich seasonal component of Cherokee subsistence.



Adult male Sicklefins Redhorse from the Little Tennessee River

As these aged weir structures bear witness to the historic abundance of the region’s fishes, the human alteration of aquatic systems continues to threaten both biodiversity

and a rich fishing culture. Today the Eastern Band of Cherokee Indians Fish and Wildlife Management program is partnering with the U.S. Fish and Wildlife Service, N.C. Wildlife Resources Commission, and Conservation Fisheries Inc. to restore the Sicklefin Redhorse to its historic distribution in western NC. In 2007 partners began collecting wild brood stock from the Little Tennessee River to propagate and rear juvenile Sicklefin Redhorse for restoration efforts. To date, over 10,000 juveniles have been released into the Oconaluftee, Tuckasegee, and Little Tennessee rivers where populations have been either extirpated or greatly diminished. Partners also continue to implement Sicklefin Redhorse research activities focused on assessing the success of restoration efforts and understanding movement and habitat use patterns of multiple life history stages.



Collecting eggs from Sicklefin Redhorse brood stock (left), and juvenile Sicklefin Redhorse prior to release into the Tuckasegee River (right)

On a recent June day local youth gathered along with natural and cultural resource professionals for an outreach event on the Tuckasegee River to share information on Cherokee fishing culture, aquatic ecology, and ongoing conservation initiatives. The highlight of the day included the re-enactment of a traditional fishing event utilizing a centuries old fish weir. Kids thrashed river cane switches on the river's surface as they walked in a line downstream hoping to herd fish into a basket located at the weirs apex. Although the day's catch definitely wouldn't feed a village, the smiles and laughs observed as the kids waded in their ancestor's footsteps was what truly mattered. At the end of the afternoon, Cherokee youth stood by as biologists released hundreds of recently spawned, inch-long Sicklefin Redhorse into a pool upstream of the remnant weir. All were hopeful that the small fish would remember the smells and tastes of the river and return to spawn in the coming years – aiding in rebuilding an ecosystem and reconnecting a people to their cultural identity.



*Submitted by Mike LaVoie, Fisheries and Wildlife Management Program Manager,
Eastern Band of Cherokee Indians*

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/>

68th Annual Conference of the Southeastern Fish & Wildlife Agencies- October 19-
22, 2014, Destin, Florida. <http://www.seafwa.org/conferences/2014/index.html>

2015 Southern Division American Fisheries Society Meeting- January 28-February
1, 2015, Savannah, Georgia. <http://sdafs.org/meeting2015/>

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/>.

This and archived NCAFS newsletters, along with links, chapter information, and upcoming meetings can be found on our website at <http://www.sdafs.org/ncafs/>.
