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We would appreciate your comments on this electronic version of the NC Chapter Newsletter. Please send all responses to Jerry Finke ([jerry.finke@ncwildlife.org](mailto:jerry.finke@ncwildlife.org)).

***President's Message***

On behalf of myself and Kevin Dockendorf, Jeff Deberardinis and David Goodfred (Program and Arrangements), Jerry Finke and Kevin Hining (Registration), and Kim Baker and the NC State Student Sub-unit (raffle), I sincerely appreciate those that attended and assisted with our annual NC AFS meeting at the Drury Hotel in north Charlotte. There was a period of a few weeks where we considered canceling the meeting due to perceived low attendance. The Drury Inn was very accommodating and, as it turns out, we had fantastic attendance. Many commuted long miles and/or paid their own way to be with us. How's that for dedication? Some of our final numbers include 55 professional and 18 student registrants, \$1700 raised through the student raffle, and a lot of consumed BBQ.

Thank you to all of the 22 presenters and congratulations to Justin Dycus (Richard L. Noble Best Student Paper Award), Tyler Black (W. Don Baker Memorial Best Professional Paper Award), Kent Nelson (Distinguished Service), and Ed Menhinick (Fred A. Harris Fisheries Conservation Award). And let's not forget the NC State Student Sub-unit for receiving the Southern Division Outstanding Subunit Award for the fourth year in a row and five of the last six!

## ***President's Message (continued)***

It's not too soon to be thinking about the 2012 annual meeting to be held in conjunction with the Tidewater Chapter. As president-elect Chris Wood will need planning assistance and presentation submissions. And don't just think that the annual meeting is your only way to participate in the Chapter as our committees work hard throughout the year to support our members and aquatic resources throughout North Carolina. Committees are also another route to become active in the Southern Division and parent society chapters. Speaking of which, the NC Chapter retained the Membership Challenge Award for maintaining the highest percentage of members who also are members of the parent society (2009 – 68%, 2010 – 73%). Please consider joining the Parent Society as a member for another year or for the first time if you have not already.

Last, thanks to the Chapter for supporting me as your president. I am grateful.

Mike

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## ***Secretary-Treasurer's Report***

[Minutes of the 2011 Annual Business Meeting.](#)

[March 2011 Treasury Report](#)

*Submitted by Kevin Hining, Secretary-Treasurer*

## ***Awards Committee***

Awards presentations are one of the highlights of our annual Chapter meeting. Several awards were presented during the annual NC AFS meeting held on February 22-23, 2011, in Charlotte, North Carolina. The meeting was well attended and the host facility and program were outstanding. Thanks to Mike Abney for hosting a 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 nine presentations by students and thirteen presentations by professionals. Thanks to all who presented papers and the judging panel!

Justin Dycus won the 2011 Richard L. Noble Best Student Paper Award for his presentation titled "Annual Verification and Comparison of Growth-Measurement Techniques for *Villosa vibex* and *Villosa lienosa*". The paper was co-authored by James T. Peterson, University of Georgia. In addition to a Chapter award plaque. Justin will receive a monetary award of up to \$600 from the Chapter's Ichthus fund for travel to present the paper at the 2011 parent society meeting in Seattle, Washington.



*Justin Dycus, award recipient of the 2011 Richard L. Noble Best Student Paper receiving his award from Dr. Richard L. Noble, Professor Emeritus. NCSU.*

Tyler Black won the 2011 W. Don Baker Memorial Best Professional Paper Award for his presentation entitled "Habitat Use of Stream-Dwelling Crayfish During Reproductive Seclusion". The paper was co-authored by Hayden T. Mattingly and David D Smith, Tennessee Technological University.



*Tyler Black, award recipient of the 2011 W. Don Baker Memorial Best Professional Paper receiving his award from Kevin Dockendorf, 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 2011 award was presented to Kent Nelson. Mr. Nelson has tirelessly served the AFS at the local, division, and national levels in a variety of roles. His efforts helped promote the goals and initiatives of the AFS.

Mr. Nelson was NCAFS President during 2007-2008 and provided his time and talents to the Chapter for a number of years in his role on EXCOM and planning annual Chapter meetings. His leadership ability was recognized by his peers in his election as Chapter President. Mr. Nelson also chaired the 2003 Southern Division Spring Meeting held in Wilmington, NC. This meeting was well-attended and a highly successful event and reflected well on the NC AFS Chapter and the state.

Mr. Nelson served on the Southern Division's Warmwater Streams Committee and Striped Bass Committee for a number of years. He was Chair of the Warmwater Streams Committee. Kent provided sound technical expertise and management policy direction during his service on these two committees.

He quietly mentored and provided a positive influence on many Commission biologists and managers who currently have key roles in managing the State's freshwater fisheries. In fact, many of these mentored biologists now have influential roles in the NC AFS Chapter and Southern Division. His belief in sound science and spirit of volunteerism for the fisheries profession lives on through these individuals.



*Kent Nelson, 2011 Distinguished Service Award Recipient receiving his award from Kevin Dockendorf, 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 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 2011 Fred A. Harris Fisheries Conservation Award was presented to Dr. Edward F. Menhinick. Dr. Menhinick is a gentleman, family man, and academician who has directly affected the advancement of fisheries science in North Carolina and provided guidance in the professional careers of many fisheries biologists in North Carolina. Dr. Menhinick has advanced the study of fish in North Carolina and throughout the Southeast U.S. as a result of his dedicated research efforts during his career.

Perhaps one of the most prominent and well known scientific endeavors of Dr. Menhinick was the publication of the N.C. Freshwater Fishes book in 1991. This book included dichotomous keys and, for the first time in North Carolina, distributional maps for each species. Prior to the distributional maps, researchers depended on piecemeal original species descriptions, often without illustrations; out-of-date regional species lists; and identification keys from a litany of historical ichthyological publications. His book unified a lot of scientific knowledge on fishes throughout the state, and it has become the standard work tool for many fisheries biologists in North Carolina.



*Fred Harris and Kevin Dockendorf, NC AFS Chapter President, presents the Fred A. Harris Fisheries Conservation Award to Dr. Edward F. Menhinick.*

Finally, the Chapter recognized outgoing president, Kevin Dockendorf for his hard work, dedicated efforts, and outstanding leadership to the Chapter. A big thanks to Kevin for his outstanding leadership to the Chapter during 2010!



*Incoming NC AFS Chapter President, Michael Abney presenting Service Award to Outgoing Chapter President, Kevin Dockendorf.*

*Submitted by John Crutchfield, Awards Committee Chair*

### ***Environmental Concerns Committee***

An issue being investigated by the Environmental Concerns Committee (ECC) is *Didymosphenia geminata*, otherwise commonly known as “rock snot”. This diatom is native to North America, but it has been blooming recently in some high altitude rivers of the West and, closer to home, in tailraces on the Tennessee River. These apparently unprecedented blooms can form dense algal mats that may alter benthic invertebrate communities and the diatom appears to be spreading to other river systems (see Bothwell et al. 2009, Fisheries 34:3). The ECC will be gathering information to assess whether this invasive species could eventually have implications for fisheries in North Carolina.

A simple internet search using “Boylston Creek” and “trout” will generate considerable news about a controversial reclassification of a trout stream in Transylvania and Henderson counties. Boylston Creek, which supports naturally-reproducing populations of brook trout in its headwaters, was reclassified in 2009 from class C to C trout by the Environmental Management Commission. There was overall public support for the reclassification, but stiff opposition by some local residents. Much of the opposition focused on the “25-foot trout buffer rule” that would be applicable to some land-

disturbing activities in the watershed. However, despite the overall support and exemption from the buffer rule of most land-uses in the watershed (i.e. existing development and agricultural and forestry practices), legislation (HB 62) was introduced and passed by the North Carolina House to prohibit the reclassification. The bill is currently being reviewed in the Senate (SB 64).

Thank you for your interest in the goings-on of the ECC. As always, we welcome any suggestions from the membership regarding key issues to investigate and address. Those suggestions can be made any time on the website.

*Submitted by Dave McHenry, Environment Concerns Committee chair*

### **NCSU Student Subunit Report**

Since our last newsletter we have rung in the new year and changed the guard of the Student Fisheries Society, the student subunit of the North Carolina American Fisheries Society. Jake Hughes and Katie Pierson have taken over the co-president positions and the committee is rounded off by: co-treasurers Tamara Pandolfo and Jennifer Archambault, Jared Flowers will remain as secretary, and undergraduate vice-president Matt Stillwell. We thank out-going officers Josh Raabe, Mike Waine, Bethany Galster, Sally Petre, and Benjamin Kornegay for their leadership and a fantastic year.

To start off our 2011 year, two of our members, Sarah Friedl and Zach Feiner, defended their masters, congrats to both of them! Our January meeting speaker was a new faculty member in the NCSU Biology department, Dr. Brian Langerhans. It was a great talk about blue holes in the Bahamas, just what we needed on a cool January evening in North Carolina. The day after our meeting a contingent of members left Raleigh for sunny Tampa and the Southern Division American Fisheries Society conference. Seven of our members presented with many more in attendance. A number of us volunteered as audio/visual assistants and moderators. Congratulations to Mike Waine for being the runner up in the Best Student talk Symposium. During the business meeting, Elissa Buttermore was awarded the Jimmie Pigg Memorial Outstanding Student Achievement award! After much anticipation, our student subunit was awarded the Outstanding Student Subunit award for the 4<sup>th</sup> year running. Congrats to new and old members for this great achievement. We're sure we speak for all of us when saying that we are truly proud and excited to be awarded this honor. The end of January found us at the Fred Olds Elementary School Science Fair judging science projects that ran the gamut from a cloud in a bottle to air versus water heat conductivity experiments. Jake Hughes was also awarded the first Joseph E. and Robin C. Hightower Student Award in Fisheries and Wildlife Sciences, which he used to attend hydroacoustics workshops in Seattle.



*Katie Pierson in action during our 2011 raffle and auction at the NC AFS annual meeting in Charlotte, NC.*

At our February meeting, Dr. Jeff Buckel joined us from the Center for Marine Sciences and Technology in Morehead City to talk about "Identification of 'strategic habitat areas' for juvenile fishes" which is an ongoing project being run in association with NC DMF, Sea Grant and CMAST. We had a record number of people sign into the meeting via Elluminate (see website for meeting recordings and upcoming meeting links

<http://clubs.ncsu.edu/sfs/home.html>).

Many of us attended and presented at the North Carolina American Fisheries Society meeting in Charlotte. As many of you know, our yearly fund raiser took place at this event and it was met with overwhelming support. Raffle and auction items included Grundens rain gear, fly fishing rods, custom built fishing rods, tickets to



*Patrick Cooney is ecstatic with his raffle winning at the NC AFS meeting in Charlotte, NC.*



various North Carolina attractions, power tools, and much more. The raffle fairy sure did smile down on us. Once back from the NC AFS meeting, five of us headed to ECU to serve as a judging team for the Blue Heron Bowl which is a part of the larger National Ocean Sciences Bowl. This was a great event where high school students compete in all aspects of oceanography, and once again WOWed us with their knowledge!

Spring seems to have arrived, and with Spring comes the start of many field seasons, and many more outreach activities. Who doesn't like to fish on a sunny Spring Day? With the start of Spring we were invited to run a workshop at the Dixie Deer Youth Wildlife Days. We ran a lesson called "Something Fishy" in which there were between 15 to 25 students. We taught them about what makes a fish, the importance of wetland planning and played a game about fishing regulations. We received valuable feedback and had a lot of fun with the 6<sup>th</sup> graders we were teaching.

At our March meeting, we heard from Sarah McRae about "Strategic Habitat Conservation for the federally endangered Cape Fear shiner in North Carolina" and had a lively discussion about endangered fish and community involvement. We had a lively presence on Elluminate and continue to be busy with outreach events.

Our April meeting will be a little different; we have invited a local politician to come speak. Timothy Spears is a representative in the North Carolina general assembly and has served on aquaculture, fish and wildlife and the marine resources committee, and will be talking to us about the political aspect of conservation and management. Hope to see you there for our last meeting of this school year.

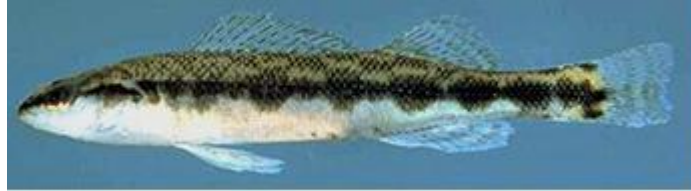
Enjoy the beginnings of Spring, and if you need any help busting out your rods and reels let us know. We invite all to join our new SFS Facebook Group that serves as a forum for pictures, updates, discussion, and to network with alumni and professional. To learn more and keep up to date with SFS, please join this group, visit our NCSU website and also join our e-mail listserv (instructions on website or e-mail one of us). If you are out in the field, or away from Raleigh, we hope to see you on Elluminate, otherwise, here's to the fish that won't get away this Spring.

Cheers!

*Submitted by Katie Pierson ([kpierso@ncsu.edu](mailto:kpierso@ncsu.edu)) and Jake Hughes ([jbhughe3@ncsu.edu](mailto:jbhughe3@ncsu.edu)), SFS co-presidents*

## **North Carolina Division of Water Quality News**

### **What Happened to the Dusky Darter in North Carolina?**



*Dusky Darter*

(photograph courtesy of VA Tech's Virtual Aquarium (<http://cnre.vt.edu/efish/>))

In North Carolina, the Dusky Darter, *Percina sciera* (Swain), was thought to be known from just two specimens, both collected by Monte Seehorn, a U.S. Forest Service aquatic biologist. The first specimen was collected from Spring Creek along NC 209, Madison County, approximately 2 air miles southwest of the center of the Town of Hot Springs, Madison County on March 09, 1966. The second specimen, also from Spring Creek, was collected on January 1, 1969. Based upon these two specimens, the Dusky Darter was initially listed as Special Concern in 1977 and since 1991 as state Endangered (Harris, et al. 2010). The species has not been collected in the state in more than 40 years despite intensive surveys by Rohde et al. (1998) in the mid-1990s and more recently in the 2000s by Steve Fraley and Thomas Russ of the North Carolina Wildlife Resources Commission (per. comm.). LeGrand, et al. (2008) listed the species as presumed extirpated. To the west, the species is widespread throughout much of Tennessee, but most common on the Coastal Plain and in more sluggish tributaries to the Tennessee River (Etnier and Starnes 1993). The closest known localities to North Carolina are in the Hiwassee River below Lake Appalachia, the Little Tennessee River below Calderwood Dam, and the Little Pigeon River (Etnier and Starnes 1993).

Every major publication on the freshwater fish fauna of North Carolina since Menhinick, et al. (1974) lists the presence of this species in North Carolina based on the two specimens collected by Seehorn (see the Literature Cited and Suggested Readings section). But were those identifications correct?

Almost 45 years after Seehorn had collected Dusky Shiner from Spring Creek, we were talking on February 01, 2011 about another subspecies of Dusky Darter, the Guadalupe Darter, *Percina sciera apristis*. One of us (Wayne) had collected this subspecies in the 1970s from near its type locality in Texas. Unaware that the species was recently re-elevated back to full species status as *P. apristis* (Hubbs and Hubbs), we kept referring to the species as simply *P. sciera*. Colleagues in Texas kept questioning the identification because, in their database, *P. sciera* was not listed from that drainage, but *P. apristis* was. After much frustration, we finally cleared up the confusion by contacting our colleagues in Texas, obtaining the recent publication of Robbins and Page (2007) that re-elevated the subspecies, and re-examining his original specimens. In searching the North Carolina State Museum collection for Dusky Darter and Guadalupe Darter specimens, we serendipitously came across the March 1966 specimen vouchered by Seehorn (<http://collections.naturalsciences.org/searchFishes.aspx>; NCSM Catalogue

No. 5742). One of us (Bryn) had never seen this species before and attempted to "key it out" using Menhinick (1991). Despite his best efforts, the specimen could not be forced into Couplet No. 8 (page 180) because the specimen had narrowly joined gill membranes, the cheeks were naked, and there was a distinct subocular bar. However, after conferring together, we quickly confirmed that the specimen was actually a large female Gilt Darter, *Percina evides*, a species common in Spring Creek and throughout much of the upper Tennessee River drainage in North Carolina.

Could it be that the species' occurrence in North Carolina was totally based upon misidentifications? Had no one before us examined any of the voucher specimens? Did any other vouchered specimens exist?

The following day, after re-reading Rohde, et al. (1998), we discovered that the other lot of Dusky Darter collected by Seehorn was vouchered at the Auburn University Museum. Querying their online electronic database (<http://www.auburn.edu/academic/cosam/collections/fish/>), we discovered that, sometime in the past, that specimen (AUM 3442) was also re-identified as a Gilt Darter. The species' occurrence and status in North Carolina were based upon incorrect identifications that had slipped through the cracks all these years. In a matter of moments, a species that here-to-fore had been thought to have gone extinct due to unknown causes, went "extinct" due to human error because it never was here in the first place! Two simple misidentifications had been perpetuated for almost 45 years in the scientific literature and agency documents.

In conclusion, the importance of voucher specimens cannot be over stated (e.g., see NC AFS Newsletter March 2007). Having those specimens readily available at a museum to other researchers is just as important. In defense of those who have gone before us, perhaps Seehorn's vouchered specimens were not readily available (the AUM specimen) or may not have been known to exist (the NCSM specimen). Listing of imperiled species must not only be based upon good science but also correct identifications. Vouchering your specimens with the North Carolina State Museum or comparable institution such that others can verify your work today, tomorrow, or decades from now is the first step in that process. The North Carolina freshwater fish fauna is a little bit "less diverse" than it was at the beginning of the New Year, but at least its loss was by human error and not by irreversible habitat alteration of the aquatic environment, pollution, sedimentation, or by over fishing.

#### LITERATURE CITED and SUGGESTED READINGS

Etnier, D. A. and W. C. Starnes. 1993. The fishes of Tennessee. The University of Tennessee Press, Knoxville, TN. 681 pp.

Harris, F. A., and 14 additional authors. 2010 reevaluation of status listings for jeopardized freshwater fishes in North Carolina. November 2010. Report of the Scientific Council on Freshwater Fishes. Submitted to the Nongame Advisory Committee to the North Carolina Wildlife Resources Commission, Raleigh, NC. 35 pp.

Kuehne, R. A. and R. W. Barbour. 1983. The American darters. The University Press of Kentucky. 177pp.

LeGrand, H. E., Jr., S. E. McRae, S. P. Hall, and J. T. Finnegan. 2008. Natural Heritage Program list of the rare animal species of North Carolina. North Carolina Natural Heritage Program, North Carolina Department of Environment and Natural Resources, Raleigh, NC. 118 pp.

Menhinick, E. F. 1987. A numerical method for ranking of endangered species and its application to North Carolina freshwater fishes. *Journal of the Elisha Mitchell Scientific Society*. 102:54-86.

\_\_\_\_\_. 1991. The freshwater fishes of North Carolina. North Carolina Wildlife Resources Commission, Raleigh, NC. 227 pp.

\_\_\_\_\_ and A. L. Braswell. 1997. Endangered, threatened, and rare fauna of North Carolina. Part IV. A reevaluation of the freshwater fishes. *Occasional Papers of the North Carolina State Museum of Natural Sciences and the North Carolina Biological Survey*, Raleigh, NC. No. 11. 106 pp.

Menhinick, E. F., T. M. Burton, and J. R. Bailey. 1974. An annotated checklist of the freshwater fishes of North Carolina. *Journal of the Elisha Mitchell Scientific Society*. 90:24-50.

Page, L. M. 1980. *Percina sciera* (Swain) Dusky Darter. p 740. Lee, D. S., C. R. Gilbert, C. H. Hocutt, R. E. Jenkins, D. E. McAllister, and J. R. Stauffer, Jr. eds. *Atlas of North American freshwater fishes*. North Carolina State Museum Natural History. Raleigh, NC. i-x + 854 pp.

\_\_\_\_\_. 1983. *Handbook of darters*. TFH Publications, Neptune City, NJ. 271 pp.

\_\_\_\_\_ and B. B. Burr. 1991. *A field guide to freshwater fishes of North America north of Mexico*. Houghton Mifflin Co., Boston, MA. 432 pp.

Robbins, R. H. and L. M. Page. 2007. Taxonomic status of the Guadalupe Darter, *Percina apristis* (Teleostei: Percidae). *Zootaxa*. 1618:51-60.

Rohde, F. C., R. G. Arndt, D. G. Lindquist, and J. F. Parnell. 1994. *Freshwater fishes of the Carolinas, Virginia, Maryland, and Delaware*. University of North Carolina Press, Chapel Hill, NC. 222 pp.

Rohde, F. C., M. L. Moser, and R. G. Arndt. 1998. Distribution and status of selected fishes in North Carolina with a new state record. *Brimleyana*. 35:43-68.

Scharpf, C. 2008. Annotated checklist of North American freshwater fishes, including subspecies and undescribed forms. Part IV: Cottidae through Percidae. *American Currents*. 34 (4): 1-44.

*Submitted by Bryn H. Tracy, NC Division of Water Quality and  
Wayne C. Starnes, North Carolina State Museum of Natural Sciences*

## ***News from Around North Carolina***

### **NC Cooperative Fish and Wildlife Research Unit Receives Three National Awards**

You may know the NC Cooperative Fish and Wildlife Research Unit at NC State University by their Chapter members Joe Hightower, Tom Kwak, and their fisheries staff and students. Recently, the NC Unit was recognized with three prestigious national awards from the Cooperative Research Units program in Reston, VA.

1. The Unit as a whole received the **Science Excellence Award** for building a productive and relevant research program that culminated with a year of substantial accomplishments in 2010.
2. Wendy Moore, Program Assistant, was awarded the **WMI Administrative Excellence Award** for her outstanding performance and critical contributions to the Unit and its mission.
3. Tom Kwak, Unit Leader, was recognized with the **Leadership Excellence Award** for his role as Leader of this successful research unit.

This kind of recognition of a single Coop Unit in a single year is very rare, so the NC Unit is especially pleased to share these awards with their cooperators and to express appreciation for all the support from NC Chapter members that facilitates such success.



*The primary faculty and staff of the NC Cooperative Fish and Wildlife Cooperative Research Unit (L-R, Jaime Collazo, Ted Simons, Joe Hightower, Wendy Moore, Tom Kwak).*

**North Carolina's Imperiled Fish Fauna, Part III**  
**Submitted by Bryn H. Tracy**  
**on behalf of the NCWRC's Scientific Council of Fishes**

As mentioned in the Chapter's 2010 newsletters, there are approximately 215 indigenous, described and undescribed species of freshwater fish in North Carolina. Of these, 26% are considered imperiled as either state or federally listed Endangered (17), Threatened (17), or Special Concern (22). 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 third of several planned articles on the species that the Council believes have become more 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 fishes.

**Tennessee Darter, *Etheostoma tennesseense* Powers & Mayden 2007**  
**Current Status: State Special Concern, Proposed Status: Endangered**



Photo courtesy of Uland Thomas,  
North American Native Fishes Association and Southeastern  
Fishes Council

Description

Recently distinguished from Tennessee Snubnose Darter, *Etheostoma simoterum* (Cope), by Powers and Mayden (2007), this small darter (up to 63 mm SL) has large fins and a very blunt, rounded snout. The opercle and cheek are at least partially scaled. The body is greenish above and yellowish below, with about 8 or 9 dark green, squarish blotches along each side, which may be confluent or partly so. Small red and yellow dorsal spots are sometimes present. Females and young are less colorful than males. The species differs from all members of the *E. simoterum* complex in nuptial males having the following combination of characters: orange breast, belly, and venter of caudal peduncle; blotches along lateral line olive green to black; and large bright red spots and horizontal banding or vermiculation generally lacking in most of the interradiial membranes of the spinous dorsal fin. See Powers and Mayden (2007) for more detailed information and for color photographs of the spinous dorsal fin and lateral and ventral views of nuptial males.

### Range

The Tennessee Darter inhabits the Clinch and Powell rivers and Holston River and its tributaries downstream of the forks of the Holston and all tributaries of the Tennessee River downstream to the Hardin Creek system in Hardin and Wayne counties, Tennessee. It also inhabits the upper Bluestone River of the New River drainage of the upper Ohio River. It is present in the French Broad, Pigeon, Little Tennessee, and Hiwassee River systems, but is largely absent from the Blue Ridge, portions of these systems, as well as the north-flowing tributaries of the southern bend of the Tennessee River in north Alabama (Powers and Mayden 2007).

In North Carolina, there is one early record, as *Hyostoma simoterum* Cope, of a 3 inch long specimen collected by E. D. Cope in the fall of 1869 from an unspecified locality on the French Broad River (Cope 1870, page 494). According to Smith (1907; pages 258-259) the specimen was vouchered at the U. S. National Museum; it was catalogued in the original ledger under USNM 14982 (L. Palmer, Smithsonian Institution, pers. com. November 2009). However, an online electronic search of the National Museum of Natural History's collection ([http://vertebrates.si.edu/fishes/fishes\\_collections.html](http://vertebrates.si.edu/fishes/fishes_collections.html)) failed to locate this specimen. In November 2009, L. Palmer also could not find the specimen in the collection under its original name, *Hyostoma simoterum*, or under *Etheostoma simoterum* or *Diplesion simoterum* and the specimen is presumed lost.

There are two questionable records from Spring and Laurel creeks in Madison County (Etnier 1980, Menhinick 1986). The origin of these records is uncertain (D. A. Etnier and E. F. Menhinick, pers. com.) and they should be disregarded until any vouchers that may exist are found. In August 2009, W. C. Starnes and B. H. Tracy collected two specimens from Shut-in Creek in Madison County. These specimens were vouchered at the North Carolina State Museum (Catalogue No. 55217) and represent the first verifiable record of this species for the state since 1869 and the only recent record currently represented by vouchers.

### Habitat

The Tennessee Darter inhabits small to large streams over primarily gravel, cobble, and boulder substrates adjacent to riffles (Powers and Mayden 2007). The two specimens collected by Starnes and Tracy were found in a clear, shallow, gravel and sand bottom run/pool.

### Life History and Ecology

No formal study of the the ecology of the Tennessee Darter has been published (Powers and Mayden 2007). However, traits for the *E. simoterum* species complex were summarized in Etnier and Starnes (1993) and Jenkins and Burkhead (1994). Peak spawning probably occurs from April through early May with females producing as many as 250 eggs per year. Life span is probably at most two years. Like other species in the *E. simoterum* complex, *E. tennesseense* probably feeds on small aquatic insects such as midge larvae, mayfly nymphs, caddisfly larvae, microcrustaceans, amphipods, water mites, fingernail clams, and snails (Etnier and Starnes 1993; Jenkins and Burkhead 1994).

### Rationale for Designation

Currently the species is known from one stream in North Carolina. It previously was considered as possibly extirpated from the state and later as Special Concern. The presence of a very small localized population in a single tributary to the French Broad River near the Town of Hot Springs warrants a designation of State Endangered.

### Recommendations

The species is extremely abundant and successful in eastern and south-central Tennessee and extreme north-central Alabama (Etnier and Starnes 1993; Powers and Mayden 2007). The unusual distribution of the Tennessee Darter, stopping just inside the North Carolina boundary, perhaps in association with the abrupt gradient change and/or transition to Blue Ridge habitat at this boundary, permits some interesting studies on habitat selection and tolerance. Appropriate French Broad River tributary streams near the Tennessee state line in Madison County should be surveyed to ascertain the present status of this species. Reintroduction into the lower stretches of the French Broad River drainage should be considered if a suitable combinations of habitat and water quality can be located.

### Literature Cited and Recommended Readings

- Cope, E. D. 1870. A partial synopsis of the fishes of the fresh waters of North Carolina. Proceedings of the American Philosophical Society. 11:448-495.
- Etnier, D. A. 1980. *Etheostoma simoterum* (Cope), Tennessee Snubnose Darter. Page 693. 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.
- \_\_\_\_\_. and W. C. Starnes. The fishes of Tennessee. The University of Tennessee Press. Knoxville, TN. 681 pp.
- Jenkins, R. E. and N. M. Burkhead. 1994. Freshwater fishes of Virginia. American Fisheries Society, Bethesda, MD. 1080 pp.
- Kuehne, R. A. and R. W. Barbour. 1983. The American darters. University Press Kentucky, Lexington, KY. 201 pp.
- Menhinick, E. F. 1986. A numerical method for ranking of endangered species and its application to North Carolina freshwater fishes. Journal of the Elisha Mitchell Scientific Society. 102:54-86.
- Page, L. M. 1983. Handbook of darters. T. F. H. Publ., Inc., Neptune City, N.J. 271 pp.
- Powers, S. L. and R. L. Mayden. 2007. Systematics, evolution and biogeography of the *Etheostoma simoterum* species complex (Percidae: Subgenus *Ulocentra*). Bulletin Alabama Museum of Natural History. 25:1-23.
- Smith, H. M. 1907. The fishes of North Carolina. North Carolina Geological and Economic Survey. Volume 2. 453 pp.



**NCSU Eagle Cam's Bird's-Eye View of Fish Predation**  
**Submitted by Tom Kwak, NCSU**

It's becoming more common to see a majestic bald eagle soaring above the lake waters or perched in a tree along the river when we're in the field. Do you ever wonder what fish that once-endangered bird of prey captures and eats? One way to find out is to pack up your binoculars and spotting scope, launch your boat, motor for hours in search of an eagle, hope that it's hungry, and watch very carefully. The other way is grab a snack and frosty grain beverage and boot up the NC State University Eagle Cam on your browser!

The NCSU Eagle Cam is up and streaming live activity from a Bald Eagle nest on Jordan Lake, NC — see <[www.basic.ncsu.edu/eaglecam](http://www.basic.ncsu.edu/eaglecam)> between dawn and dusk. It was developed by a team of university, agency, and NGO volunteers and students, led by Ted Simons of the NC Cooperative Fish and Wildlife Research Unit.

There are two eaglet chicks in the nest that hatched back in January -- and they're hungry! The parents have been busy ever since delivering fish to the nest to keep these chicks fed and quiet. At any time you might see a black crappie, bluegill, white catfish, or a diversity of other fish species. But identification here is not for the novice — you usually get only a few clues of fragments, heads, or fins. It's a real challenge; if you enjoy identifying prey fish in the diet of piscivores, you'll love the Eagle Cam!

Ok, so you're a big-shot, well-respected fisheries biologist; you do science, and the Eagle Cam is just a bunch of fluff for kids and nature centers, right? Well, please consider this fact — the NCSU Eagle Cam has already received over *4.5 million hits from 60 countries* since it went public in January. When's the last time you reached an audience that large and were able to sneak in your message of conservation? NC Chapter member Patrick Cooney (NCSU) developed a quick guide to the fishes of Jordan Lake for Eagle Cam viewers to identify and report fish prey on the Eagle Cam Facebook page, and it's also been incredibly popular!

The success of the Eagle Cam probably has you thinking of other more aquatic public outreach opportunities... what's next, the Trout Redd Cam, Crappie Trap-Net Cam, the Community Fishing Lake Attractor Cam, or maybe the Hatchery Raceway Cam? The possibilities are endless!



*NCSU Eagle Cam photo of Bald Eagle parents with their fast-growing eaglet chicks in their nest on Jordan Lake, NC, 14 March 2011. Note the remains of their black crappie prey... or is that a bluegill?*

**Ryan Heise Chairs the Robust Redhorse Conservation Committee**  
**Submitted by Tom Kwak, NCSU**

NC Chapter member Ryan Heise (NC Wildlife Resources Commission, Wildlife Diversity Program) assumed the Chair position for the Robust Redhorse Conservation Committee (RRCC) last fall at the group's annual meeting at the Webb Wildlife Center in Garnett, SC. The RRCC is a voluntary stakeholder partnership charged with the overall responsibility for directing the recovery of the robust redhorse (*Moxostoma robustum*). The robust redhorse is a large, long-lived member of the sucker family that was originally described by Edward Cope in 1870 from the Yadkin River, NC. For decades, it was lost to science until specimens from North Carolina and Georgia led to its rediscovery in 1991. Since then, a small population has been studied in the Pee Dee River, downstream of Blewett Falls Dam. Research and monitoring of the Pee Dee River population have been guided by a cooperative technical working group of agencies, universities, private industry, and NGOs.



*Forrest Sessions (SCDNR, left) crowns Ryan Heise (NCWRC, right wearing crown) "Sucker King" and turns over leadership of the Robust Redhorse Conservation Committee.*



*Robust redhorse (female above, male below), "the mystery fish," can attain sizes of 31 in. and 18 lb. and occurs in the Pee Dee River NC and SC*

Ryan has served as Chair of the RRCC Yadkin-Pee Dee Technical Working Group and now assumes leadership of the entire RRCC. Ryan is planning the RRCC annual meeting for next fall (2011) to be held at Morrow Mountain State Park. Please contact Ryan at [ryan.heise@ncwildlife.org](mailto:ryan.heise@ncwildlife.org) if you have questions about the robust redhorse and its management in our state, or visit the RRCC web site at <http://www.robustredhorse.com> to read more about it.

**Giving Back: The Hightower Graduate Student Award in Fisheries and Wildlife  
Submitted by Tom Kwak, NCSU**

A new endowment to fund awards for NC State University graduate students was established by NC Chapter member Joe Hightower and his wife Robin. The Joseph E. and Robin C. Hightower Graduate Award Endowment in Fisheries and Wildlife Sciences was created in October 2010 at a signing ceremony and reception hosted by the College of Agriculture and Life Sciences.

The endowment will be used to provide financial awards and educational opportunities for graduate students enrolled in the Fisheries and Wildlife Sciences Master's and Ph.D. degree programs. Earlier this year, the Hightowers also created the Joseph E. and Robin C. Hightower Collection Endowment in support of the NCSU Libraries, to enrich library materials in genetics, fisheries, and wildlife.

Joe and Robin are both NCSU alumni, and we admire their generosity in giving back to the University and future generations of fisheries and wildlife students and professionals. If you would like to contribute to either of the Hightower Endowments, please see the links below.

Joseph E. and Robin C. Hightower Graduate Award Endowment in Fisheries and Wildlife Sciences <<http://www.cals.ncsu.edu/givenow>> (keyword "Hightower").

Joseph E. and Robin C. Hightower Library Collection Endowment <<http://www.lib.ncsu.edu/giving/givingform/give.php?gift=donation>>.



*The NC Cooperative Fish and Wildlife Research Unit staff (standing, Tom Kwak, Ted Simons, Jaime Collazo, and Wendy Moore) joined the Hightower family (seated, Robin, Joe, and Jason Hightower) at a signing ceremony to create the Hightower Graduate Award Endowment in Fisheries and Wildlife Sciences.*

## **Meetings of Interest**

**2011 NCSU Student Fisheries Society**– First Wednesday of each month, Raleigh, NC.  
<http://clubs.ncsu.edu/sfs/>

**2011 American Society of Ichthyologists and Herpetologists (ASIH)** – July 6-11, 2011, Minneapolis, MN. <http://www.asih.org/annualmeetings>

**141st Annual Meeting of the American Fisheries Society**– September 4-8, 2011, Seattle, WA.  
<http://www.wabc-afs.org/team-2011/>

**142nd Annual Meeting of the American Fisheries Society**– August 19-23, 2012, St. Paul, MN.

**143rd Annual Meeting of the American Fisheries Society**– September 9-12, 2013, Little Rock, AR.

### **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/>. You can subscribe to the NCAFS list serve at [ncafs@lists.fisheries.org](mailto:ncafs@lists.fisheries.org). You can also follow current discussions on the SDAFS blog at <http://www.sdafs.org/blogs/>.