AMERICAN FISHERIES SOCIETY

JUNE 2011 NEWSLETTER

INSIDE THIS ISSUE

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).

President's Message

Well, summer is here with a vengeance and I'm already hearing from friends that "it's too hot to fish". Of course, as fisheries workers, we may not have the luxury of passing on field sampling and staying inside. With temperatures in the 90's and relative humidity about the same, please be careful to not overexert yourself or get dehydrated!

I mentioned in my acceptance speech that student and professional participation in annual meetings is important to all involved, developmentally and socially. The annual meeting in Seattle, Washington, September 3-9 (http://afs2011.org/) is quickly approaching with open registration and hotels filling up quickly. According to the organizers, this meeting is expected to be the largest AFS annual meeting ever held. That speaks a lot for our overall dedication especially in tough economic times. Students are eligible for $200-400 travel awards from the NC-AFS Chapter. For more information visit http://www.sdafs.org/ncafs/Awards.htm or contact Dr. Greg Cope at greg_cope@ncsu.edu or at (919) 515-5296.

Information is also available on the 2012 Southern Division AFS meeting in Biloxi, Mississippi, January 26-29 (http://www.sdafs.org/meetings/2012/default.htm). It is being held at the Imperial Palace casino during Mardi Gras. Having spent three years on the Mississippi coast and earning a master's degree a few miles down the road, I can honestly tell you there is no better time to visit!

President's Message (continued)

And, of course, there is the 2012 North Carolina AFS meeting in Raleigh February 28-29. President-elect Chris Wood has already been working diligently with contracts signed and, I'm sure, plans for a glorious social! Although your attendance is a priority for the Chapter, Chris could probably also use your assistance if you have the time. You can contact Chris at chris.wood@ncwildlife.org or at (828) 659-3324 x 222. And it's never too soon to conjure up donations for the student raffle.

On behalf of your Executive Committee (myself, Kevin Dockendorf, Chris Wood, and Kevin Hining) thanks for your continued support!

Mike

Secretary-Treasurer's Report

June 2011 Treasury Report

Submitted by Kevin Hining, Secretary-Treasurer

Environmental Concerns Committee

An issue currently being investigated by the Environmental Concerns Committee (ECC) is a proposed uranium mine in south-central Virginia (see location at http://www.virginiauranium.com/) and the potential effects of this activity on fishery resources in the Roanoke River. The Commonwealth of Virginia currently has a moratorium on uranium mining, but in 2010 it contracted with Virginia Polytechnic Institute and the National Research Council to study the potential environmental and economic effects of uranium mining in the state. The study may be used to reevaluate the current mining moratorium.

Mining for metals in several areas of the western United States has caused considerable degradation of aquatic habitats and resources (see "The Mining Law of 1872: Change is Overdue", *Fisheries* 35:7, July 2010). Many groups, municipalities, and other organizations in Virginia and North Carolina have expressed concern about the potential effects of uranium mining on water quality in the Roanoke River. The NC General Assembly has introduced legislation to study, in part, this issue (http://www.ncleg.net/Applications/BillLookUp/LoadBillDocument.aspx?SessionCode=2011&DocNum=1353&SeqNum=0).

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

Happy summer! Since our last newsletter, the term has wrapped up and many of us have started our field work, spreading us all out across the state. At our last meeting of the term in April, we heard from Representative Timothy Spear to the North Carolina General Assembly. We discussed some bills that would be of interest to our fisheries community and Timothy encouraged us to speak with our local representatives. Our discussion only touched the tip of the iceberg, but we looked into how the political side of the environmental management works. If you missed the meeting, look into the links on our webpage (http://clubs.ncsu.edu/sfs/) to find archived meetings.

We were also fortunate to display a booth at the NCSU Fisheries & Wildlife alumni reunion, where we talked with many alumni who remember SFS well. A couple of us helped with the Baileywick Elementary School Science Expo, hopefully providing some insight to budding scientists. Other outreach events that we took part in was teaching diet analysis to a group of Boy Scouts, as well as some of us worked to help with the Aquatic Science Days, a program for 30 high school students to get exposed to fisheries and aquaculture at NCSU. It was a great day of lots of cool activities: tagging, seining, electrofishing, and fish physiology. A group of us helped out at the NCSU Earth Day, we taught some students the art of Backyard Bass, and enjoyed talking fish while basking in the sun.

Julie Harris and Sally Petre at the Baileywick Science Expo.

We do have some congratulations to give, Elissa Buttermore has become a master and Robert Dunn was awarded a NSF fellowship. Sally Petre has graduated with her B.S. in Environmental Science with an Ecology concentration and has headed to Arizona to work on Apache trout.

SFS Cleaning up Rocky Branch since 2010- Patrick Conney, Josh Raabe, and Lindsay Campbell

April was the month of water clean ups. We started off the month with taking on the Neuse River. We wrestled many of a tire out of the river, with Matthew Stillwell holding the official title of Tire Wrangler. Around 80 tires and 11,000 lbs came out of the River in total. To celebrate the end of classes and the end of the month we cleaned up our very own Rocky Branch, hauling 9 bags of trash and 1 bag of recycling out. We also did a little electrofishing to check out the fish composition of Rocky Branch, only to find that once again there are nothing but bluegills above and below the dam. We also found a REALLY fat tadpole, which is something. A big thank you to Bryn Tracy for supplying the backpack electroshockers and with his continued help.

Robert Dunn and Matthew Stillwell preparing to electrofish while Sally Petre and Bryn Tracy check the conductivity of our very own Rocky Branch

Our next meeting will be September 14th at 7 PM and we encourage you to stop by if you are in the Raleigh area, or check us out in our elluminate session. This will be after many of us fly across country to present at the National AFS meeting in Seattle, hope to see many of you there. 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, we hope to see you soon and that the heat doesn't get to you too much,

Cheers!

Submitted by Katie Pierson (kjpierso@ncsu.edu) and Jake Hughes (jbhughe3@ncsu.edu), SFS co-presidents

News from Around North Carolina

NCSU Student Fisheries Society (SFS) receives the 2011 AFS Outstanding Student Subunit Award!
Submitted by Jake Hughes and Katie Pierson, SFS Co-presidents

This award is a culmination of the hard work not only last year, but also of all of the SFS'ers beforehand. Each year, we continue to build on a strong foundation laid down the previous year, going back to 1999 when NCSU students had the initiative to formalize our group. Past achievements include Southern Division Outstanding Subunit (x6 years awarded: 2002, 2005, 2008-2011) and AFS Outstanding Student Subunit (x2 years awarded: 2005 & 2011). Sincere thanks to all of the past and present students who have volunteered so much time and effort!

Our group truly is lead and driven by students, but the input, encouragement, and participation from faculty, researchers, post-docs, and local professionals has been instrumental in our efforts. We really appreciate everything that these individuals continue to bring to our group and to our overall education.

Congrats everyone, we'll have a strong showing in Seattle to receive the award (and celebrate it)!

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

As mentioned in the Chapter's 2010 and 2011 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 fourth 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.

Roanoke Logperch, *Percina rex* (Jordan and Everman 1889)
Current Status: Not Listed, Proposed Status: Endangered

Photo courtesy of N. Burkhead & R. Jenkins, courtesy Virginia Division of Game & Inland Fisheries and Southeastern Fishes Council.

Description

Described by Jordan and Evermann from specimens taken in swift water in the Roanoke River near Roanoke, VA in 1888 (Jordan 1889). A large darter with round or vertically elongate lateral blotches, back with dark vermiculations, most fins strongly patterned, and snout moderate or long, conic or pig-like (Jenkins and Burkhead 1994). Adults are ~80-125 mm standard length (Jenkins and Burkhead 1994); maximum total length is to at least 165 mm (Roberts and Rosenberger 2008).

Range

Previously known only from the Roanoke River drainage in Virginia where it is restricted to the Chowan, Dan, and Roanoke rivers in the Piedmont and Ridge and Valley provinces (Jenkins, *et al*. 1980; Jenkins and Burkhead 1994). It has been found in larger streams in the upper Roanoke, Smith, Pigg, Otter, and Nottoway river systems and Goose Creek, separated by long river gaps and large reservoirs (Roberts and Rosenberger 2008). The species was not listed as occurring in North Carolina by Menhinick, *et al*. (1974). A key to the species of *Percina* and a distribution map showing a locality nearby in Virginia were provided in Menhinick (1991). The species was not reported from the Dan River system in Virginia or North Carolina by Rohde, *et al*. (2003).

First discovered in 2007 in North Carolina (NCWRC 2008), known populations are restricted to the upper Dan River system and three, possibly four, of its tributaries in Rockingham County. The North Carolina collections have been summarized by Wood (2009) and Wood and Nichols (2009; 2010) (Table 1). The first specimen from the state, a young-of-year (as determined from Rosenberger 2007), was collected in July 2007 by Duke Energy biologists from the Dan River downstream of its confluence with the Smith River. Initially believed to be a waif from the Smith River population in Virginia, a second fish, an adult, was collected from the Smith River proper in September 2007 by staff of the North Carolina Wildlife Resources Commission (NCWRC) and North Carolina State Museum of Natural Sciences (NCSM). A much larger reproducing population consisting of juveniles and adults was documented by NCWRC, NCSM, and Division of Water Quality (DWQ) staff in the Smith River in August 2008 (NCWRC 2008). An unknown population was then discovered by NCWRC staff in the Mayo River in July 2008, the first known

occurrence in that subsystem in either North Carolina or Virginia. Since then, an individual was found by DWQ staff in Big Beaver Island Creek and additional fish in the Smith and Mayo rivers by NCWRC and Appalachian State University staff (Table 1). Fish in the Mayo and Smith rivers are found below small mill dams creating short reaches of improved water quality and cleaner substrates (Wood and Nichols 2010).

Table 1. Collection records for the Roanoke Logperch in North Carolina. All localities are in Rockingham County and all specimens vouchered are at the North Carolina State Museum of Natural Sciences (NCSM).

Date of Collection	Waterbody	Location	No. Collected	Total Length (mm)	NCSM No.	No. Specimens Vouchered	No. Fish Fin-Clipped
07/24/2007	Dan R	Near SR 2039	1	47	NCSM 46044	1	0
09/12/2007	Smith R	Near NC 700/770[1]	1	130	NCSM 46804	1	1
07/29/2008	Mayo R	Near NC 135[2]	3	110, 112, 113	NCSM 50086	1	3
08/18/2008	Smith R	Near NC 700/770[1]	10	68, 115, 118, 127, 131, 135, 136, 150, 151, 159	NCSM 50085	3	7
05/14/2009	Big Beaver Island Cr	US 311	1	110	NCSM 60926	1	0
08/03/2009	Smith R	Near NC 700/770[1]	2	140, unknown	---	0	0
09/04/2010	Mayo R	Near NC 135[2]	2	137, 143	NCSM 60931 & 60932	0	2
Totals			**20**			**7**	**13**

[1]between Spray Cotton Mill dam and NC 700/770
[2]between Washington Mill dam and NC 135

Collectively, the 20 North Carolina fish may represent one previously unknown, but greater Dan River population (Wood and Nichols 2009). However, the absence of Roanoke Logperch from numerous prior collections in this area may suggest colonization, or recolonization, from source populations in Virginia via Smith River has occurred. Duke Energy biologists have been consistently sampling the Dan River twice a year for the past 20 years. The single young-of-year collected in 2007 occurred during a severe drought when good probable upstream habitats were of minimal size or non-existent. Exceptional water clarity may have also aided capture in what is normally a very turbid river. A strong possibility also exists that populations formerly occurred in North Carolina portions of the Dan River system and were possibly extirpated or reduced to undetectable levels during past times of diminished water quality, since improved.

Results of recent genetic studies (below) are indicative of some uniqueness in lower Smith/Mayo rivers samples, including from populations in the upper Smith River in Virginia. Whether these differences are the result of a founder effect attendant to a recent colonization or, conversely, a genetic bottleneck experienced by a resident but extremely diminished population is unclear at this time.

Habitat

The Roanoke Logperch is extremely sensitive to environmental degradation (Jenkins and Burkhead 1994). Inhabiting medium-sized, warm, and usually clear streams, it occupies riffles, runs, and pools with sandy to boulder-strewn bottoms (Jenkins, *et al*. 1980) (Figure 2). As a benthic dweller, all life stages avoid moderately and heavily silted microhabitats, except during winter periods of inactivity (Jenkins and Burkhead 1994; Roberts & Rosenberger 2008). Over the course of a year, adults inhabit areas ranging from swift gravel and rubble riffles and complex bedrock shoals, to slow sandy pools. Age 0 fish often occur in mixed species schools in shallow, sand-gravel pool margins and back waters (Roberts and Rosenberg 2008; Roberts, *et al*. 2010). When water temperature falls below 8ºC, individuals hide under rocks and become quiescent (Jenkins and Burkhead 1994).

Figure 1. The Smith River upstream of NC 700/770, Rockingham County, NC, August 18, 2008.

Life History and Ecology

A benthic insectivore that uses its snout to overturn loosely embedded gravel to feed on aquatic insects, primarily chironomids and caddisflies (Jenkins and Burkhead 1994). In the upper Roanoke River, many fish mature at 2-3 years old and by Age 4 all fish are mature. Longevity is up to 6.5 years (Jenkins, *et al.* 1980; Jenkins and Burkhead 1994). Based on gondal development, peak spawning in the upper Roanoke River probably occurs during April-May in deep runs where the eggs are buried in gravel (Roberts & Rosenberger 2008). The spawning season for other populations are unknown and may vary depending on thermal and flow regimes (Rosenberger 2007). As in many species of *Percina*, larval drift is probably important in dispersal and recolonization of downstream sites. In the upper Roanoke River, juveniles may disperse up to 50 km with a mean dispersal of 4 km over the lifetime of a fish (Roberts, *et al*. 2010). Extensive dispersion of spawning effort and/or juveniles appears to promote genetic panmixia over large distances and may enhance fitness and dampen population fluctuation in variable riverine environments (Roberts, *et al*. 2010).

Rationale for Designation

The Roanoke Logperch is a federally endangered species (Moser 1989) and is being added for the first time to the North Carolina listing of jeopardized freshwater fishes. All native or resident wild animals which are on the federal lists of endangered or threatened species pursuant to the Endangered Species Act have the same status on the North Carolina protected animal lists (North Carolina General Statute §113-334(a)). Preliminary genetic testing at VPI&SU of fin clipped specimens suggests that the North Carolina population inhabiting the greater Dan River subsystem is genetically unique from the known populations in Virginia (Wood and Nichols 2009; Roberts, *et al*. 2009). The significance of these findings is still being evaluated.

Threats to Roanoke Logperch populations in Virginia include siltation and hydrologic alteration from urbanization, channelization, water withdrawal, siltation from agriculture and forestry, catastrophic chemical and sewage spills, and disrupted gene flow and habitat loss from reservoir construction (Roberts and Rosenberger 2008). In May 2009, a fish kill resulting from a deliberate illegal discharge occurred in the Virginia portion of Cascade Creek, a tributary to the Dan River whose confluence is east of the Town of Draper in Rockingham County. A here-to-fore unknown population of Roanoke Logperch were found as a result of the fish kill to inhabit the creek in Virginia. Staff with the Virginia Department of Environmental Quality found two dead Roanoke Logperch just upstream of the state line. Due to the large extent of the fish kill, staff expected that there were possibly more deceased Roanoke Logperch downstream in North Carolina. NCWRC staff then investigated the North Carolina portion of the creek and found no evidence of the fish kill. During the summer NCWRC staff backpack electrofished a large portion of the creek and found a diverse fish community, but no Roanoke Logperch (R. Nichols, pers. com., November 2011). In North Carolina, small dams may also prevent upstream migrations to previously inhabited reaches and may isolate the populations from the larger populations in Virginia.

Recommendations

North Carolina water quality classifications and standards in the upper Dan River system should be strengthened and enforced. The North Carolina Division of Water Quality, working in cooperation with the NCWRC and the U.S. Fish & Wildlife Service, should be encouraged to develop site-specific management strategies to sustain and recover federally-listed species as described in 15A NCAC 02B.0110 of the North Carolina Administrative Code (NCAC 2007).

Field survey efforts should concentrate on appropriate habitats in the mainstem Dan River and its larger tributaries in Stokes and Rockingham counties, including Cascade Creek. Watershed-level, coordinated efforts need to inventory threats, minimize siltation, prevent spills and enhance population connectivity (Roberts and Rosenberger 2008). Field surveys have been conducted in the upper Dan River system and Mayo River subsystem in 2009 and 2010, but no additional specimens were found (R. Nichols, pers. com., November 2010). The Meherrin River subsystem of the Chowan River in Northampton County should also be surveyed, because there might be yet an undetected population of Roanoke Logperch in this river (R. Nichols, pers. com, November 2010).

Translocations of populations should be considered along with dam removal, when ecologically feasible and beneficial to the entire aquatic community, on the Mayo and Dan rivers in Rockingham and Stokes counties to restore free-flowing reaches of the rivers and allow upstream expansion of existing known populations and restore connectivity between populations (Wood and Nichols 2010).

Literature Cited and Recommended Readings

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Jodi Mitchell Chosen as First NCSU Fisheries Health Scholar
Submitted by Michael Stoskopf, NCSU

The NCSU Fisheries Health Scholar Program is an innovative program designed to attract students with strong fisheries backgrounds and an interest in fisheries health issues into careers as aquatic veterinarians. The program, initiated 3 years ago in a cooperative effort by the NCSU College of Veterinary Medicine and the NCSU Fisheries, Wildlife and Conservation Biology Program selects top fisheries undergraduate students for guaranteed acceptance into veterinary school. Jodi Mitchell, a third year fisheries major at NCSU, advised by Dr. Derek Aday, has been selected as the very first student for the program. Selected on the basis of her focus on fisheries science issues throughout her undergraduate program to date and her excellent academic performance, Jodi will join the DVM class of 2016 in the fall of 2012. During her time in veterinary school she will have the opportunity to pursue fisheries health questions and continue to work with NCSU fisheries faculty on relevant fisheries research while completing her DVM degree. The program, which takes advantage of NCSU's strong fisheries faculty and strong aquatic medicine program is currently limited to undergraduate NCSU fisheries majors, but some consideration is being given to possibly expanding the program to include fisheries graduate students who have completed the pre-veterinary prerequisite course work. Students interested in the program should contact Dr. Derek Aday in the NCSU Biology Department, or Dr. Michael Stoskopf at the NCSU CVM.

1960's Voucher Series Completed
Submitted by Wayne Starnes, NC Museum of Natural Sciences

Wayne Starnes and Gabriela Hogue from the North Carolina Museum of Natural Sciences (NCSM) in Raleigh would like to announce that the huge project of databasing the complete voucher series from the NCWRC's statewide river basins survey of the early 1960s is finally completed. This was accomplished with the great help of a two-year cooperative funding agreement with NCWRC, plus a portion of a grant from the National Science Foundation. The NCWRC portion was an allocation of Federal Aid to Fisheries funds, which was quite appropriate, as NCWRC's original statewide survey was funded via the very same program a half century before! All of the data from the original 23 basin reports (over 23,000 records) was compiled and georeferenced in a database for comparison to the over 11,000 records generated from the voucher specimens that were retained from these surveys and ultimately deposited at NCSM. All voucher materials were curated, identified and verified to species, georeferenced, entered into NCSM's collection database, and are now accessible online via the Museum's collections webpage:. http://collections.naturalsciences.org/ . Further, a large report, a compendium of 1035 pages, was prepared that provides a history of the project, plus compares side by side the original species listings for all sites found in the 23 NCWRC basin reports versus the species lists generated from vouchers. As you might imagine, after half a century, due to both many taxonomic changes and less than adequate aids to identification in the days of the surveys, there are many discrepancies to reconcile among these lists. Some of

these issues have been perpetuated in the literature for several decades without critical follow-up investigations until now. The report contains 23 sections corresponding to the original basin reports. Each is preceded by lengthly remarks that point out the prevalent discrepancies within each report and attempt to reconcile them to the degree possible, and thus to clear up some lingering questions of fish occurrences in some areas. Maps of all survey sites for all basins are provided that also indicate the sites from which vouchers survived to be deposited at NCSM; the percentages of that voucher coverage varied greatly among basins. While the report is authored and compiled by Wayne C. Starnes and Gabriela M. Hogue, there were large contributions from other Museum Fishes Unit staff and an intern. In years past, before Wayne and Gabriela were hired at NCSM to form the Fishes Unit, herp curators Bill Palmer, Alvin Braswell, and Jeff Beane had worked up part of the voucher collections and made a significant contribution. However a great portion was worked up and identified in the last two years by technician Maridith Gatens, with verifications either by Wayne or Bryn Tracy, who accomplished a huge share of this by extending his workday past his duties at NCDWQ. Technicians Jimmy Chang and Chris Gannon meticulously researched, georeferenced, and entered data from thousands of localities and summer intern Kim Pigford accomplished much of the huge job of entering species occurrence data from the 23 original NCWRC reports. All of these folks are deeply thanked for their contributions.

This report was submitted to NCWRC in April and they have made a the report available across the agency on their intranet system. Others may request a copy by contacting Wayne (wayne.starnes@ncdenr.gov) or Gabriela (gabriela.hogue@ncdenr.gov) at the Museum. Upon request, we will attempt to send you a pdf copy via e-mail attachment. However, please be advised that it is quite a large document (15+ MB) and may exceed the capacity of some clients or perhaps require lightening the load in some inboxes, etc. If this fails, we can mail you a CD.

Because if the huge number of pages and binding costs, we cannot afford to produce multiple hard copies for distribution but you might wish to print your own, either completely or just those sections that pertain to your geographic area. We hope this contribution will prove very useful to resource managers and students as they pursue their work and studies in streams and rivers across North Carolina.

Spotlight on Students and Young Professionals

Jake Hughes, MS Student, NCSU - Jacob (Jake) Hughes grew up fishing, hunting, and playing under the midnight sun and along the banks of remote rivers in and around Fairbanks, Alaska. Salmon, mosquitoes, bears, mosquitoes, moose, mosquitoes, 24 hour daylight summers followed by 20 hour darkness winters, and mosquitoes were a part of everyday life. If Alaska had a state cologne, it would probably be *OFF!* or REPEL. Jake has been interested in fisheries since childhood after hearing endless 'work'-stories from the regional fisheries manager who happened to be a very close family friend. He thought it must be nice to have a job that 'pays' you to go fishing - of course, little did he know that 'pay' is a relative term! Jake says that the real payoff is the satisfaction and privilege of having a job that you truly enjoy.

After graduating from Lathrop High School, Jake attended Eastern Oregon University earning a B.S. in biology in 2007. During his undergrad years, he started his fisheries career in the sport-fish division with Alaska Department of Fish and Game, 'working' during summers on remote rivers and lakes. Following graduation, Jake worked as a fisheries technician in Oregon (USDA Forest Service and Oregon Dept. of Fish and Wildlife) and Idaho (Idaho Dept. of Fish and Game). He also volunteered in the ODFW fish health lab assisting a microbiologist with BKD and whirling disease testing. After 2.5 years of 'working' in Idaho, Jake and his wife and daughter made a mid-winter, cross country move to North Carolina State University where he is pursuing an MS degree in Fisheries, Wildlife, and Conservation Biology. His thesis research focuses on use of hydroacoustics to estimate run size of several anadromous fish populations migrating up the Roanoke River, NC. Under the guidance of Joe Hightower, Jake's goal is to produce reliable estimates and develop new sonar monitoring techniques that can be used by managers in Southeastern watersheds. Jake is also active in NCSU's Student Fisheries Society and serves as 2011 Co-President with Katie Pierson.

Jake Hughes pauses for a picture in a previous role, removing invasive lake trout from Lake Pend Oreille in Idaho.

Outside of 'work', Jake enjoys spending time with his wife and 2 year old daughter, camping, fishing, hunting, and trapshooting.

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 Herpetoligists (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. You can also follow current discussions on the SDAFS blog at http://www.sdafs.org/blogs/.

Wanted – Good home for the following periodicals:
Fisheries Bulletin – Volumes 1-35; missing some issues
North American Journal of Fisheries Management – Volumes 1-20, complete plus volume 22 special reprint – White Bass Ecology and Management.
Contact Jim Borawa at borawajc@earthlink.net or 828-231-9130.