The Northeast Fish Rapper

Newsletter of the Northeastern Division of the American Fisheries Society
February 2013 Volume 29 Issue 1 ***ed. Megan Altenritter***

Feature:

New Hampshire Fish Chief Retires

New Hampshire Fish and Game Department Inland Fisheries Chief, Steve Perry, retired January 24th after 35 years with the Department. After graduating from Michigan State University with a BS in Fisheries, Steve began his career as a fish culturist in 1978 at the New Hampton State Fish Hatchery. In 1980, Steve was promoted to Fisheries Biologist I and was put in charge of fin fish studies as part of a coastal environmental impact study in the estuary of Great Bay. In 1986, Steve advanced to Fisheries Biologist II and worked primarily on coldwater fisheries research projects including, statewide stream inventory and classification, forage fish research and management, and lake trout and landlocked salmon management. He was instrumental in getting a Commission policy established that recognized the highest and best use of rainbow smelt in our large lakes was as forage for salmon and trout and not as a commercial species. From 1992-1997, Steve served as a Regional Supervisor, managing staff in two regional offices at one point while still conducting field work.

Steve became Chief of Inland Fisheries in 1997 where he initiated quality and wild trout management programs, and was recognized for his efforts by Trout Unlimited, receiving TU's Silver Trout Award in 1998. He also developed the state's first fisheries habitat program for New Hampshire as well as being

In this issue:

instrumental in hiring staff to complete the aquatics portion of the NH Wildlife Action Plan. During his time as Fish Chief, Steve volunteered for leadership positions at regional and national levels, including chairing the Eastern Brook Trout Joint Venture steering committee, chairing several National Fish Habitat Partnership committees, serving on committees for the Recreational Boating and Fishing Foundation as well as the Sport Fishing and Boating Partnership Council. Steve also became the first, and so far only, National Conservation Leadership Fellow in NH and lead Fish and Game's "Agency Change Initiative," which recognized the need to adapt to the Department's changing constituency.

Steve also served AFS as a member of the Atlantic International Chapter Excomm (1989-1990) as Vice-President and President and also as Fisheries Program Chair for the Northeastern Division (1999). Although he is retiring from state service and will be sorely missed by staff and colleagues, Steve will still be engaged in fisheries issues as he accepted a position as the Coordinator of the Eastern Brook Trout Joint Venture. Steve can be reached at ebtjv.coordinator@gmail.com – *submitted by Scott Decker*

Steve Perry with a nice coho salmon on a recent fishing trip to Alaska

Upcoming Meetings & Workshops

Save the Dates!

Two Summer Specialty Conferences hosted by AWRA
Hartford, CT June 24-25 and June 27-28
With a Special Field Trip on June 26th

Relative to fisheries and instream flows, An AWRA **Summer Specialty Conference on Environmental Flows** will be held in Hartford, Connecticut, on June 24-25, 2013. Environmental flows, also called ecological or instream flows, are defined as "the quantity, quality, and timing of water flows required to sustain freshwater ecosystems, human livelihoods, and the well-being of those who depend on them." The objective of the conference is to offer a professional forum on the latest issues concerning the research, policy, and application of establishing environmental flows.
Weblink:http://www.awra.org/meetings/EnvironmentalFlows2013/

Relative to Forestry and water quality, AWRA is holding a **Summer Specialty Conference Healthy Forests = Healthy Waters** in Hartford, Connecticut, on June 27-28, 2013. This specialty conference will address the many issues associated with forest management for the protection of water supplies and aquatic communities.
Weblink: http://www.awra.org/meetings/HealthyForest2013/

Sandwiched in between these two conferences is an all day field trip. On Wednesday, June 26, 2013 attendees can join a special field trip to nearby Barkhamsted Reservoir, which provides water to Hartford and the surrounding region, and where the Hartford Metropolitan District has launched forest management and source protection programs. The field trip will also include a lecture tour and reception at Great Mountain Forest, which hosts research on forest ecosystem management. These are places you cannot easily visit on your own and where there are great programs using sustainable forest practices to protect water resources for water supply and aquatic communities. Stops will also be made along the Connecticut River to learn of actions being taken to manage reservoir releases and environmental flows.

Pennsylvania Chapter of the American Fisheries Society
Spring Technical Meeting
Friday April 26 and Saturday, April 27, 2013
Tom Ridge Environmental Center at Presque Isle
Erie, Pennsylvania

AQUATIC Invasive Species

SPEAKERS

- **Jeanette Schnars, Ph.D., Regional Science Consortium**
  Role of the Regional Science Consortium at the Tom Ridge Environmental Center
- **Gregory Andraso, Ph.D., Gannon University**
  Ecology and Behavior of the Round Goby and Zebra Mussels
- **Tim King, Ph.D., USGS Leetown Science Center**
  Use of eDNA in Determining the Presence and Movement of Asian Carp and Other Invasive Species
- **Sara Grisè, Pennsylvania Sea Grant**
  Role of Pennsylvania Sea Grant in Invasive Species Management in the Great Lakes
- **Ken Anderson, Pennsylvania Fish and Boat Commission**
  Fish Passage Structures Designed to Exclude the Sea Lamprey in Lake Erie Tributaries
- **Rick Spear, Pennsylvania Department of Environmental Protection**
  Spread of Didymo and Other Invasive Algae in Pennsylvania Waterways

WORKSHOPS

- **Duane Chapman, USGS Columbia Environmental Research Center**
  Identification of Bighead Carp and Silver Carp Juveniles
  Collection of Grass Carp Tissue Samples for Ploidy Testing
- **Kierstin Carlson and Mary Walsh, Pennsylvania Natural Heritage Program**
  Tracking Invasive Species with iMap Invasives

Friday Evening Dinner and Social

Saturday Field Trip

SECOND CALL FOR PAPERS

The Wild Trout XI:

Looking Back and Moving Forward

October 1 - 4, 2013

Old Faithful Inn,

Yellowstone National Park, USA

The Wild Trout Symposium brings together a broad and diverse audience of governmental agencies, non-profit conservation groups, media representatives, educators, anglers, fishing guides, and business interests associated with trout fisheries to exchange technical information and viewpoints on wild trout management and related public policy. Held every 3 years, each symposium has led to innovative wild trout management approaches.

Wild Trout XI offers a unique forum for professionals and anglers to interact, and where participants are exposed to the latest wild trout science, technology and philosophies. This conference will equip participants to better manage, preserve, and restore these significant but declining resources.

The symposium plenary session will begin by looking back on the history of wild trout research and management, both in terms of past science and the nearly four-decade lifespan of the Wild Trout Symposiums themselves, and wrap up with a look forward to where wild trout management is headed.

The following topics are of particular interest to the organizing committee and may be developed as entire sessions, given sufficient interest. However, presentations on all aspects of wild trout research, management, conservation, education, and recreation are welcome and will be considered in the call for papers:

Proposed session topics:

- Non-trout salmonids
- Wild trout socioeconomics: understanding a diverse group of users and values
- Special regulations: have we gone full circle or have some issues never gone away?
- Taxonomic, phylogenic, and genetic tools for wild trout management
- Wild trout population monitoring techniques – including further understanding of impacts of global climate change, population dynamics, and evolutionary ecology
- Struggling with invasive species
- Stressors to, and restoration of, wild trout habitats – what have we learned and what do we need to know?
- Brook trout research and management across the species' historic and introduced range
- Role of ecological resilience in wild trout persistence and management, using the past to inform the future

Additional session topics will be added based on the papers that are submitted. Presentations will be accepted in oral or poster format. **Please note the authors who are selected for oral presentations at the symposium must submit a complete manuscript ready for Symposium Proceedings publication by June 1, 2013.** Successful applicants will receive further information upon acceptance of their paper.

Complete abstract preparation guidelines and online submission forms can be found at: www.wildtroutsymposium.org **Deadline for abstract submission: April 1, 2013**

For additional information, contact one of the Program Committee Co-chairs:

Jacob Rash

North Carolina Wildlife Resources Commission

Tele: 828-659-3324 ext. 225

Email: jacob.rash@ncwildlife.org

Jason Burckhardt

Wyoming Game and Fish Department

Tele: 307-527-7125

Email: jason.burckhardt@wyo.gov

www.wildtroutsymposium.org

This is from the Wild Trout Symposium in 1997. You may run into some crazy characters like this if you attend. (Photo credit: Wild Trout Symposium facebook page)

Notices and Announcements

From the River to the Sea
40th Aquatic Toxicity Workshop
Moncton, NB
October 6 to 9, 2013

ATW is Canada's major annual meeting in the field of aquatic toxicology and related disciplines. It provides the opportunity to share information on current and emerging topics of regional, national and international importance related to water quality. Participants include students, academics, government scientists and regulators, environmental consultants and industry representatives.

The 40th Annual Aquatic Toxicity Workshop will be held this year in Moncton, NB, October 6-9, at the Delta Beauséjour. This event attracts 300-400 people each year from across Canada, including researchers (universities, government), regulators (federal, provincial), environmental consultants, NGOs, industry representatives (such as mining, pulp & paper, agriculture, aquaculture, food). Short courses will be offered and a preliminary session list includes the following topics: aquaculture and agriculture, metal mining, pulp and paper – investigation of cause studies, offshore oil and gas, onshore oil and gas, innovative tools for environmental assessment, ecological risk assessment, marine and estuarine contaminants, health of our harbours. For more information, check out the website at www.atw.ca.

MONCTON

International Conference on Engineering and Ecohydrology for Fish Passage

June 25-27, 2013

Oregon State University
Corvallis, Oregon

The 2013 International Conference on Engineering & Ecohydrology for Fish Passage (Fish Passage 2013) promises to be an important international forum to exchange findings and experiences on fish related passage issues. Fish Passage 2013 will be of interest to researchers, educators, practitioners, funders, and regulators who have an interest in advancements in technical fishways, nature-like fishways, stream restoration and stabilization, dam removal, road ecology, and the myriad of funding, safety, climate change, and other social issues surrounding watershed connectivity projects.

This is a three-day conference with concurrent sessions in engineering, biology, and management and social issues. The conference will also feature plenary talks, professional networking opportunities, and a poster session. Independently offered short courses and workshops will be available immediately before and after the conference.

Nominations are now being accepted for the 2013 Fish Passage Career Achievement Award! The award recognizes the efforts of an influential professional whose contributions to the field of fish passage have enhanced the national fisheries resources. Click herefor more details.

Sponsor and exhibitor opportunities are now available! For more information on these see our webpage and to sign up contact Dr. Guillermo Giannico at (541) 737-2479 or giannico@oregonstate.edu.

Reminder that registration for the 2013 International Conference on Engineering & Ecohydrology for Fish Passage held at Oregon State University in Corvallis, Oregon on June 25-27, 2013 is now open! Click here to register!

Submit an abstract or session proposal at fishpassageconference.com. There you can learn more about Corvallis and what dates to watch for as the conference approaches.

Fish Passage 2013 follows the successful Fish Passage 2012 and 2011 conferences held at UMass Amherst in June of 2012 and 2011. Details about the Fish Passage 2012 talks, including downloadable PDF's for many of the presentations, can be found here.

We hope to see you there!

Species ID and Assessment of Northeastern Freshwater Fish Assemblages

June 16 – June 22, 2013

Freshwater fish in the northeastern United States number over 150 species, inclusive of native and introduced forms, resident to ponded and flowing waters of varying habitats and water quality. Sportfish species (trout, salmon, bass, pike and perch) are most recognizable, while many of the vast minnow (one-third of the fish fauna) and non-game species are more difficult to identify, particularly in the field. This seminar will focus on the taxonomy and field/laboratory identification of 28 freshwater fish families, inclusive of diadromous (migratory) species. Through lectures, actual field sampling (minnow trapping, beach seining, and backpack electrofishing), examination of fresh and preserved-aquarium specimens and use of technical keys, participants will gain an under-standing of the taxonomy, morphology, and ecology of freshwater fish. Fish origins, distributions and conservation status will be emphasized and development of *Indices of Biotic Integrity* (IBI) and the *Biological Condition Gradient* (BCG) reviewed, as well as an introduction to pre-Columbian fish remains found at Maine archaeological sites. A listing of historical and current scientific literature will also be provided. This seminar will be of great interest to aquatic-wildlife-conservation biologists-scientists, environmental consultants, natural historians and others who wish to learn more about freshwater fish and resident fish species assemblages.

Dave Halliwell (david.halliwell@maine.gov) received his Ph.D. in Fishery Biology from the University of Massachusetts, Amherst, specializing in fish conservation, aquatic habitat classification, and vertebrate taxonomy. He has been employed as an Aquatic Biologist with Maine DEP (Augusta) since 1999. Dave has spent over three decades identifying and investigating the habitats of freshwater fishes while working with northeastern State and Federal fish and water quality agencies and has considerable experience teaching University and field courses related to New England fish and wildlife. Related interests include pre-Columbian indigenous fish (archaeological) studies, aquatic habitat restoration, hydropower-flow issues, reservoir water levels, lake water quality assessment and fish zoogeographic studies. Dr. Halliwell is a co-author of the *Inland Fishes of Massachusetts* (2002). All participants will be provided with a comprehensive course notebook and study guide ($35 fee). Inland Fishes of Massachusetts is currently out of print, however, multiple classroom copies will be available.

Seminar location - Eagle Hill Institute, Steuben, Maine
Tuition, accommodations and meal costs can be found at eaglehill.us

HUDSON RIVER
ENVIRONMENTAL SOCIETY

Save the Date!

2013 Hudson River Science Symposium
"The State of Hudson River Science"
State University of New York at New Paltz
Student Union Building

Wednesday April 24, 2013
9:00AM - 5:30PM

It has been more than two decades since the Hudson River Environmental Society (HRES) has held a Hudson River symposium to bring together scientists, natural resource managers, environmental advocates and educators to learn of our current scientific understanding of Hudson River ecology and the environmental quality of its watershed. Much has changed since the first such meeting was held in 1966 when sixty scientists and public officials met in an attempt to gain a common understanding of what is known, what challenges lay ahead, and begin to decide how to meet those challenges to better protect the Hudson River estuary. The one thing that has not changed is the need for a common knowledge base.

On April 24th 2013 HRES, working in partnership with the Hudson River Foundation, will be holding a Hudson River Science Symposium at the State University of New York at New Paltz to present our latest scientific understanding of the Hudson River and environs, discuss the drivers behind the science, identify future challenges, and provide an opportunity for scientists, resource managers, educators and students to share ideas.

Invited speakers will give presentations on the following themes:

The State of Hudson River Science –Dr. Jeffrey Levinton

Long-term Ecological Changes – Dr. David Strayer

Climate change, Sea-level Rise, and Episodic Events – Dr. William Solecki (invited)

Ecosystem Restoration Science– Dr. Stuart Findlay

Hudson River Fisheries – Dr. Karin Limburg

Sediment Transport and Deposition – Dr. Rockwell Geyer

Contaminants: Old and New – Dr. Isaac Wirgin & Dr. Emma Rosi-Marshall

Historical Ecology and Archaeology – Dr. April Beisaw

Meeting the Challenges: Multi-institutional Cooperation – Dr. Dennis Suszkowski

In addition, a contributed poster session and reception will follow the oral presentations. This will provide for a great opportunity to make and renew connections and share ideas.

Check www.hres.org for updates!

Chapter and Subunit Updates

New York Chapter Update:

The planning and arrangements are done and the next New York Chapter meeting will be Jan 30-Feb 1, 2013. It will be held at the new Hilton Garden Inn in Watertown, NY. The theme will be *Fishing Promotion: Reaching Out to New and Old Anglers Alike.* The featured presenter will be Don Meissner of PBS's Rod and Reel Streamside fame. Other presenters will include John Pitarresi, Utica Observer dispatch, Spider Rybaak, Falcon Guide books, Sadie Stevens, USFWS, Ed Woltmann and Melissa Cohen, NYSDEC, and Glenn Erickson,PhD, Federation of Fly Fishers. An additional 16 papers and 17 posters will be presented on a wide range of fisheries subjects. There will also be an Aquatic Entomology Workshop in conjunction with the meeting on Jan 30. The New York Chapter recognizes up to four awards at its annual meeting: The Professional Achievement Award, the Conservationist of the Year Award, Honorary Member Award, and the David Bryson Memorial Award. Student Best Paper, Poster, and Travel Awards are also given out.

Aquatic Entomology Workshop

This 8-hour workshop introduces the life histories, collection methods and identification of aquatic insects in streams and lakes of the Northeast. Special adaptations such as gills, air stores, antennae, setae and other structures will be described and utilized in identification. The workshop emphasizes orders that are particularly consumed by fishes, as well as those commonly imitated by anglers: Ephemeroptera, Odonata, Plecoptera, Hemiptera, Megaloptera/Neuroptera, Trichoptera, Coleoptera and Diptera. A few of the thousands of imitations of aquatic insects will be demonstrated. Each participant will utilize a stereomicroscope to identify a set of known insects, typically to the genus level, utilizing keys and other aids that will be provided. Ideal collecting sites will be identified for future use; and the appropriate literature will be introduced.

Your instructors are Dr. Neil Ringler, Distinguished Teaching Professor, SUNY ESF who has taught this subject at the College since 1987, with previous experience at University of Michigan; Dr. Stefanie Kroll, who has just completed her PhD in aquatic entomology at ESF, comparing the stream fauna in Spain and the Northeast; and Ms. Stephanie Johnson, who is just completing her doctoral dissertation at ESF in studies of aquatic invertebrates as colonists in a highly perturbed ecosystem.

Newsletter editor Emily Zollweg-Horan completed the summer and winter edition of the New York Chapter Newsletter, which was distributed to all chapter members. The newsletter is one of the primary means of communicating with chapter members and provides information on recent chapter business, workshop, meeting and job announcements, as well as AFS Parent news. The newsletter can be downloaded from the chapter website *www.newyorkafs.org*.

Led by Chapter Webmaster Erik Latremore, the New York Chapter website continues to evolve and now includes an ecommerce capability allowing members to register for the annual meeting and subscribe for membership online for the first time via PayPal for meeting registrations. The Chapter is also on Facebook.

The ESF Chapter of AFS hosted the 2nd Annual NY AFS Student Colloquium in April 2012. The event was held at the Salmon River Fish Hatchery in Altmar, NY and students from several schools, including SUNY ESF, SUNY Cobleskill, Paul Smith's College, and Cornell University presented undergraduate and graduate research. In September 2012, our AFS Chapter took a trip to Carpenter's Brook Fish Hatchery to spend a day helping with numerous tasks, and in October held a successful fishing derby on Oneida Lake. Successful meaning that the grill was hot and there were burgers and hot dogs aplenty; the fishing left something to be desired.

Four students were awarded Student Travel Awards, $150.00 each, for attendance at the annual 2013 meeting.

Award recipients

Scott George, SUNY Albany, Effects of Tropical Storm Irene on fish assemblages in the Upper Esopus Creek

Konstantine Rountos, SUNY Stony Brook, Restoring Shinnecock Bay, a tale of two sides of an important New York Bay

Christina Killourhy, SUNY ESF, Centrachid nest predation on the St. Lawrence River following introduction of the Round Goby

William Fetzer, Cornell, Bioenergetic simulation of multiple predator consumption of a shared prey

The Cornell subunit has a number of members preparing to give presentations at the New York Chapter Annual Meeting in Watertown NY as well as the Northeast Fish and Wildlife Conference being held in Saratoga Springs NY. Subunit members have been working with schools as part of the Trout in the Classroom project raising and releasing fish in local streams.

The Chapter has also donated $500.00 to the 2013 EOS Travel Award.

Southern New England Chapter Update:

Chapter President Bill Duffy addresses meeting attendees

Sixty-seven individuals braved a snowstorm and dicey travel conditions to attend the Southern New England Chapter meeting, which was held on January 16 at the Avery Point (Groton) campus of the University of Connecticut. The total included 17 students. By virtue of their registration, 15 attendees who were non-members became affiliate members of the Chapter and we hope that each will consider full AFS membership this year. Program Development Chair David Taylor of Roger Williams University put together a program consisting of fourteen oral presentations and five posters. Seven oral and three poster presentations were given by students. The presentations represented a diversity of topics, including freshwater and marine fishes, invertebrates, and sea turtles, bioengineering, experimental studies, and human dimensions of fisheries. Abstracts of all the papers and posters may be found on the Chapter's website, found at www.snec-fisheries.org.

At the meeting, the Saul B. Saila Best Student Paper Award was presented to Martha Divver of Stony Brook University. Martha's presentation was given at the summer 2012 Chapter meeting and entitled "Diel behavior in adult white perch (*Morone americana*) revealed through acoustic telemetry in the Carmans River, Long Island, NY".

Student paper and poster presenters at the winter 2013 Southern New England Chapter meeting included (left to right) Owen Nichols, Tim Rovinelli, Brandon Russell, Nicole Rodstrom, Molly McCarthy, Erin Adams, Kasey Pregler, Chelsea Blatchley, Andrea Bogomolni, Jan-Michael Hessenauer, and Katherine Thompson

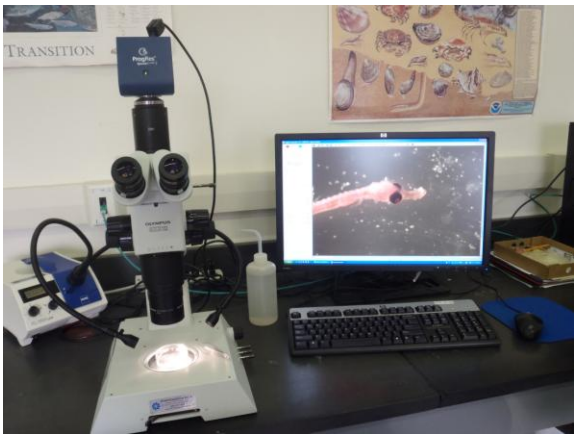
Chapter President Bill Duffy noted that the Chapter did not give out any SNEC Student Travel Awards of $500 (paper or poster presenter) or $200 (meeting attendee) last year due to a lack of response. Students were urged to apply through the Chapter website by May 3 for these grants, which are to be used to defray the cost of travel and other expenses associated with the 2013 AFS Annual Meeting.

Martha Divver (right) receives the Saul B. Saila Best Student Paper Award from Tracy Maynard

This year the meeting will be held in Little Rock, AR during September 8-12. Chapter members were reminded that nominations for Secretary-Treasurer will be needed prior to the upcoming June Chapter meeting. Please contact any of the current officers to make a nomination. Volunteers will be accepted for this office and also to join the Chapter's Board of Directors. Bill also asked members to nominate deserving individuals and organizations for various Chapter awards by April 15. These include the Award of Excellence, Irwin Alperin Outstanding Member Award, Lesa Meng Aquatic Conservation Award, Outstanding Organization Award, and the Special Achievement Award. For more details and descriptions of the criteria applicable to these awards please visit the Chapter website. Send all award nominations to the Chapter Professionalism chair Sean Lucey at Sean.Lucey@noaa.gov

The Chapter's poster session, which is only held during winter meetings, offers another way for students and scientists to present results of their research

Paul Moccio and Nick Wood with their to measure ichthyoplankton from the NY/NJ Harbor at the NY Environmental Measurements Operations Center Taxonomy Laboratory



The microscopic digital image capturing system can also be used for many other things such as taxonomic reference specimens, report figures, etc.

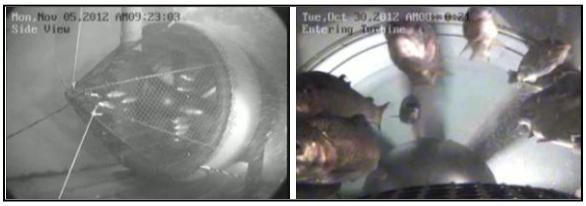
Research Roundup

Fish Interactions with Hydrokinetic Turbines: Valuable Insights from Flume Testing

Submitted by Steve Amaral and Dan Giza

Ducted axial-flow hydrokinetic turbine (Free Flow Power) installed in Alden's larger flume test facility (downstream view on left, upstream view on right). Fish release tube and containment net shown on right were used to introduce fish and force them to pass downstream through the turbine for the survival evaluation.

Greater demand for renewable energy has led to considerable interest in generating power with hydrokinetic turbines installed in river, tidal, and marine environments. An attractive aspect of hydrokinetic turbines is their ability to extract energy from flowing water without the need for a dam. Many different hydrokinetic turbine designs have been developed and several companies have recently tested prototypes in the field. However, similar to conventional hydro turbines, a major concern associated with hydrokinetic projects is the potential for aquatic organisms to be struck by rotors or blades. To provide data that can be used to address this issue, Alden has conducted a series of laboratory studies funded by EPRI and the U.S. DOE that exposed fish to three hydrokinetic turbine designs installed in a large flume with flowing water. The turbines that were evaluated included a cross-flow spherical turbine developed by Lucid Technologies and two ducted axial-flow designs, one developed by Current-to-Current and the other by Free Flow Power. Flume testing has included survival evaluations of fish entrained through each turbine design, as well as behavioral observations of fish approaching and passing downstream of each unit. Testing has been conducted primarily with rainbow trout (about 4 to 12 inches in length), but evaluations with smallmouth bass (4 to 12 inches), hybrid striped bass (3 to 8 inches), and white sturgeon (3 to 7 inches) have also been performed. Consequently, the results of these studies should be representative of what many of the fish species that inhabit U.S. waterways will experience when encountering hydrokinetic turbines. In general, survival rates were shown to be very high (98 to 100%) for fish passing through the three turbine designs evaluated, and active avoidance of turbine entrainment was noted for all of the test species, with the exception of sturgeon (however, sturgeon larger than those tested are expected to have greater ability to avoid turbine entrainment). The information and data generated from these tests will be extremely valuable to project developers and regulatory agencies when assessing the potential impacts that existing and future hydrokinetic turbine installations may have on fish populations.



Rainbow trout swimming upstream of a ducted axial-flow hydrokinetic turbine (Free Flow Power) following a survival trial release.

Endangered Atlantic Sturgeon in the Delaware River Require Higher Standards for Dissolved Oxygen

Submitted by Desmond M. Kahn and Matthew Fisher

The Delaware River spawning stock of Atlantic sturgeon has been grouped with the Hudson River stock into the New York Bight Stock Complex. This stock complex has been declared Endangered by the National Marine Fisheries Service earlier this year. Because of this endangered status of the Delaware River spawning stock, threats to survival and growth of this stock of Atlantic sturgeon should be eliminated, if possible.

Over several continuous decades of the mid-twentieth century, oxygen was essentially zero for summer and fall months in twenty miles or more of tidal River in the spawning and nursery zones that sturgeon now inhabit (Albert 1988, Sharp 2010), a condition known as anoxia (complete depletion of oxygen in water bodies). We should consider the proposition that this anoxia in past decades (ca. 1945 to 1970) almost certainly caused virtual failure of reproduction of the Delaware River spawning stock of Atlantic sturgeon over that period. As explained below, current oxygen levels in the River are still a threat to reproduction of Atlantic sturgeon. An improvement in the goal for dissolved oxygen could pay benefits in enhanced survival and growth of Atlantic sturgeon in the Delaware River.

Measured levels of dissolved oxygen in the tidal Delaware River have been dangerously low for juvenile sturgeon in some recent summers. Currently, likely spawning locations of Atlantic sturgeon in the Delaware, though not known with certainty, are considered to exist both upstream and downstream of Philadelphia. Among the last five years, oxygen levels reached their lowest level in 2010. While young-of-year Atlantic sturgeon were first collected in the River in 2009 and were again collected in 2011, none were found in 2010 (Delaware Division of Fish and Wildlife, unpublished data). This raises the question of whether the failure to collect young-of-year sturgeon in 2010 was due to catastrophic mortality of this year class due to hypoxia.

The Delaware River Basin Commission regulates dissolved oxygen levels in the River by requiring wastewater dischargers, such as municipal sewage plants and large industrial facilities, to meet certain criteria in their discharge waters. In 1967, the Commission set the current water quality goal for minimum levels of dissolved oxygen at a twenty-four hour average of 3.5 mg/liter for parts of the Delaware River, which include probable sturgeon spawning zones. This goal of 3.5 mg/l is inadequate to prevent mortality and reduced growth of young-of-year Atlantic sturgeon.

An Atlantic sturgeon. Photo courtesy of Matt Altenritter

What can the Commission do to correct the deficiency in this water quality goal of only 3.5 mg/l of dissolved oxygen as a twenty-four hour average? A modeling study conducted for the Commission during the 1990s estimated that dissolved oxygen could be increased by between 1 and 2 mg/liter by significantly reducing the ammonia content of wastewater discharges (also described as reducing the nitrogen-based biological oxygen demand). Though this measure would have a cost, it is economically feasible to increase the dissolved oxygen level by reducing the nitrogen-based biological oxygen demand. This would be accomplished by reducing the large volume

of ammonia currently discharged. Ammonia is converted first to nitrite and then to nitrate when exposed to oxygen. By extended aeration prior to discharge, the ammonia concentration can be greatly reduced (E. Sildorff, Delaware River basin Commission, personal communication).

The underside of an Atlantic sturgeon. Photo courtesy of Matt Altenritter.

In summary, experimental evidence discussed above demonstrates that young-of-year Atlantic sturgeon suffer reduced growth and increased mortality at reduced levels of dissolved oxygen; they have been compared to rainbow trout in their oxygen requirements. The current hypoxic conditions in the tidal Delaware River in summer are dangerously close to lethal limits for survival and growth of young-of-year Atlantic sturgeon. The Delaware River Basin Commission has the ability to raise dissolved oxygen levels in the Delaware River by requiring dischargers to reduce high levels of ammonia in discharge water. Modeling studies conducted in the late 1990s indicated that removing ammonia pollution could raise dissolved oxygen levels by 1 to 2 mg/liter, which would reduce the likelihood of negative impacts of hypoxia on growth and survival of young-of-year Atlantic sturgeon. The benefit of this improvement in water quality will be enhanced restoration of the Delaware River spawning stock of Atlantic sturgeon, which could eventually join the American shad and striped bass as fully restored stocks of wild fish.

Cooperative Research Networks Continue to Support Innovative Research in Fisheries

In the fall of 2010, the NOAA Fisheries Northeast Cooperative Research Program (NCRP) awarded more than $3 million to network groups charged with tackling difficult challenges in Northeast and Mid-Atlantic fisheries. These network projects support fishing industry, academic, non-governmental and state and federal government partners that are developing multi-disciplinary approaches to minimizing catch of non-target species (or bycatch) while promoting the harvest of target species.

More than 80 individuals from 35 organizations have developed project teams that are focused on improving the industry's ability to avoid certain species so that healthier stocks can be fully harvested. This is being done by developing more selective fishing gear, focusing on patterns of fish distribution and environmental factors, and facilitating the real-time exchange of information to identify bycatch hot spots.

Additionally, some teams are exploring innovative survey methodologies to enhance stock assessments for selected species. Along with scientists and state and federal mangers, project participants include fisherman and gear manufacturers who provide ideas, at-sea expertise, and practical guidance on the projects.

Northeast Groundfish Network Projects

GEARNET: The Gear Conservation Engineering and Demonstration Network (GEARNET) led by the Gulf of Maine Research Institute (GMRI), Massachusetts Division of Marine Fisheries (MADMF), UMass-Dartmouth School for Marine Science and Technology (SMAST), Superior Trawl, F/V Guardian, and New Hampshire Sea Grant is working on gear-related research, the transfer of new technologies to the fishing industry to limit their bycatch of non-target species and more fully harvest allocated species, and reducing fishing costs such as diesel fuel.

Initial projects have focused on topless flatfish trawls, raised-footrope gillnets and gillnet selectivity, the use of electric rod and reel to target haddock, expanded use of haddock trawls, improving fuel efficiency, and a flume tank workshop for trawl gear fishermen to gain an in-depth understanding of gear design and operation. GEARNET scientists are also working in conjunction with Coastal Enterprises, Inc. to provide opportunities for fishermen to finance the purchase of semi-pelagic doors, fuel flow meters, and acoustic trawl monitoring equipment that will increase vessel fuel efficiency and decrease the impact of trawl gear on fishing habitat. More information on this network can be found at www.gearnet.org.

FAST: The Fishing Area Selectivity Tool (FAST) project, led by GMRI's Fisheries Technical Assistance Program and Ocean Data Products team, in partnership with and industry advisors, is piloting a versatile online tool for fishermen to map and track species encounters in order to identify bycatch 'hotspots' so they can be can be avoided. The FAST tool is being developed to produce maps that combine historical observer information, oceanographic data layers such as temperatures and currents, and near real-time, self-reported fishery data at a scale that will be useful to fishermen.

After discussions with industry groups, the pilot FAST project will focus on how this tool can be used to reduce gillnet interactions with harbor porpoise in the Gulf of Maine. Through this pilot project, groups of fishermen have agreed to share when and where a take occurs among themselves. The tool incorporates an alert system that will notify the participating fleet when a take has been self-reported. By logging into the web-based portal, fishermen can compare their own real-time information with historic interactions, as well as potentially related oceanographic information. Sharing this information in real-time will enable fishermen to be more proactive in avoiding these animals.

The focus of the pilot FAS T project has been presented to the Harbor Porpoise Take Reduction Team for additional input and feedback from interested parties. Future uses of the FAST tool could allow groups of fishermen to focus on any species of interest to reduce bycatch and/or to more efficiently harvest target species.

CCCHFA: Another groundfish-based network project, coordinated by the Cape Cod Commercial Hook Fishermen's Association, and working with Duke University and the Georges Bank Fixed-Gear Sector, is also exploring the use of temporal and spatial tools to increase the efficient use of fishing allocations by reducing bycatch and damage to catch from scavengers such as hagfish, spiny dogfish, and fleas.

This project analyzed Northeast Fisheries Observer Program information on catch and discards from 36 gillnet vessels for patterns in time and space to support the use of options such as 'move on' strategies. Related patterns in bycatch and/or catch damage that can be detected using this type of information can inform fishing strategies by determining the distance away from a high bycatch or damage location a fisherman must move, or the number of hours or days they must wait until the factors that influence the pattern have changed. For example, the length of time it takes for a school of dogfish to move out of an area, or how far one must move to reduce the chances of encountering the school. Such strategic decisions can benefit fishermen by helping them maximize revenues by limiting bycatch and or damaged catch, and benefit the fishery resource by minimizing the bycatch of juveniles and non-target species, especially stocks of concern. This method may also be useful to minimize interactions with protected species, such as harbor porpoise and sturgeon. The results of this analysis are being reviewed for broader applicability in fixed gear fisheries and vetted through the CCCHFA for practical utility.

REDNET: This network group is working to redevelop a sustainable Acadian redfish trawl fishery in the Gulf of Maine. Led by researchers from MADMF, SMAST, and the Maine Department of Marine Resources, and working with industry and management partners, this project has conducted experimental fishing trips designed to show the industry's ability to catch redfish cleanly.

Information from these experimental fishing trips informed a request from the New England Fisheries Management Council for NOAA Fisheries to pursue exemptions allowing sector vessels to more efficiently target redfish. A new measure has subsequently been proposed to expand on a previous sector exemption by allowing groundfish sector trawl vessels to harvest redfish using nets with codend mesh as small as 4.5 inches (77 FR 66947; Nov. 8, 2012).

The next component of the REDNET project investigates codend mesh selectivity work, which can assist the evaluation of the proposed mesh size exemption for unwanted impacts on other groundfish species and/or juvenile redfish. This component of the research will test several codend mesh sizes between 4.5 inches and 6.5 inches to determine the selectivity of each mesh size. Additional work on bycatch reduction for the redfish fishery may be conducted if the need arises. Marketing research on redfish has also been completed and outreach is under development as part of the REDNET project.

Southern New England and Mid-Atlantic Fishery Network Projects

Squid Trawl Network: This group, led by investigators from the Cornell University Cooperative Extension (CCE), SMAST, and University of Rhode Island, has developed a collaborative approach to reduce bycatch in the Southern New England/Mid-Atlantic *Loligo* squid trawl fishery. This project has been seeking solutions to bycatch issues in the squid fishery by evaluating and optimizing several potential gear solutions including the use of drop chain, large mesh

panels, and sorting grids to reduce the non-target catch of flounder, scup, and butterfish.

The project team has also established an outreach website located at www.squidtrawlnetwork.com to reach as many stakeholders in the *Loligo* fishery as possible. This website includes information on the squid fishery, current research, and an interactive discussion board for website subscribers to voice their concerns and opinions, and post topics to begin online discussions.

The Squid Trawl Network is currently working with scientists from the Northeast Fisheries Science Center to develop innovative survey techniques using both a traditional survey net and acoustic survey equipment to better estimate the catchability of pelagic species such as butterfish. This information may help to improve stock assessments for these species, and alleviate some of the pressure on the squid fishery to avoid exceeding the butterfish bycatch cap.

Garden State Seafood Association Squid Research: Another network group, coordinated by the Garden State Seafood Association and including scientists from CCE, Rutgers University, the University of Delaware, and the University of New Hampshire, is developing additional experimental approaches to butterfish bycatch reduction in the longfin inshore squid (*Loligo)* fishery. This collaborative effort is focusing on developing ecologically informed models for the purpose of reducing butterfish bycatch in the Mid-Atlantic Bight squid fishery using Integrated Ocean Observing System (IOOS) habitat models developed in conjunction with the Fisheries and the Environment (FATE) project, and merged with behavioral models of squid fishermen.

Additional aspects of this project include a diet analysis of *Loligo* to better understand their role as a predator in the Northeastern US continental shelf ecosystem. The results of this study are expected to improve ecosystem-based management of *Loligo* and their prey species. The work of this group also includes the modeling of bycatch reduction and the effects of predation by squid on the population dynamics of butterfish. The goal of this portion of the project is to combine the results of the habitat modeling, *Loligo* diet analysis, and gear modifications developed under the Squid Trawl Network to examine population level impacts of different bycatch reduction strategies.

For more information on any of these network projects or the Northeast Cooperative Research Program, visit our website at www.nefsc.noaa.gov/coopresearch/ or contact Carolyn Woodhead at carolyn.woodhead@noaa.gov or 978-281-9197.

The Penobscot River Restoration Project

The Penobscot River Restoration Project is an unprecedented collaboration between the Penobscot Indian Nation, seven conservation groups, hydropower companies PPL Corporation and Black Bear Hydro, LLC, and state and federal agencies, to restore 11 species of sea-run fish to the Penobscot River, while maintaining energy production. Below is a sub-set of the pre-dam removal research that has been conducted over the last few years to provide baseline data on the river and its ecological communities. For more information on the Penobscot River Restoration Project, check out their website here: http://www.penobscotriver.org/

Great Works Dam Removal- A Milestone Event on the Penobscot River
Charlie Baeder, Monitoring Coordinator, Penobscot River Restoration Trust

The Great Works Dam removal marks a pivotal time in the Penobscot River Restoration Project. It represents a mile-stone in a long process of engagement, work, and fundraising, and the beginning of a new era of improved fish passage on the Penobscot River.

The occasion also marks the end of the initial baseline science that has occurred in the watershed for the last several years. During this period, researchers from academia, the Penobscot Indian Nation, non-profit groups, state and federal agencies, and private consultants have been assessing the baseline condition of the Penobscot River watershed ecosystem. They have collected data on fish passage, geomorphology, water quality, wetlands, birds, mammals, and marine nutrients. Although several studies will be ongoing during the next few years, others will be on hold until after the lowermost dam, in Veazie, is also removed. Following dam removal, many of these studies are planned to resume so that a clear before-after picture can be taken of the effects of dam removal. The hope is that the lessons learned may be applied to river, fish and ecosystem restoration efforts around the country and, possibly, around the world.

The following articles are representative of the scientific work that has been conducted in the Penobscot watershed the last few years. Some of the work was conducted on behalf of the Penobscot River Restoration Trust, some of the work was conducted by others. It is presented here as it describes the state of the ecosystem and the collaborative science at this point in time. What the work suggests is that this restoration enterprise has strong potential for success and must be pursued with sustained commitment. Dams impact fish. This is well-known and it has been documented here. Dams delay or prevent migrations and they increase mortality. The stark contrast in alewife numbers between Benton Falls (Kennebec River) and Veazie (Penobscot) in 2011 — 3 million fish vs 2 thousand fish — speaks volumes. Open fish passage restores fish runs. Great Works is the pivotal first step towards the Penobscot's restoration. Congratulations!

Acoustic Telemetry: An Established Monitoring Tool for Assessing Pre-dam Removal Conditions for Diadromous Fishes of the Penobscot River
James Hawkes, Graham Goulette, Joe Zydlewski, Gayle Zydlewski, and John Kocik

Acoustic telemetry is a modern research tool that allows researchers to remotely monitor tagged animals. Passive fixed position receiver networks collect temporal data to provide information on migration behavior,

routes, areas of high mortality as well as seasonal activity patterns of individual animals. The National Oceanic and Atmospheric Administration, University of Maine and United States Geological Survey have deployed an extensive array of more than 100 telemetry receivers in the Penobscot River, estuary and Bay each year since 2005. This array has been used to monitor several diadromous fish species, including Atlantic salmon and shortnose sturgeon that are protected under the US Endangered Species Act. Additionally, with the Penobscot River Restoration Project in early planning phases, research on pre-restoration fish ecology was particularly important.

As a result, data collected since 2005 have been used for risk assessment of proposed in-stream construction and repair or removal activities which may threaten fish during migration periods or sensitive periods during their life history. Additionally, these data provide documentation of habitat use of fish prior to dam removal and other proposed restoration activities. Once dam removal has occurred we will be able to identify any changes of habitat use, behaviors and migration corridors as species are reintroduced to areas that have been inaccessible for decades.

Researchers recording data on acoustic telemetry receivers that are used to track Atlantic salmon smolts, American shad, shortnose sturgeon, and Atlantic sturgeon as they migrate through the Penobscot River.

Quantifying the Structure of Fish Assemblages in the Penobscot River

Stephen M. Coghlan Jr., Joseph Zydlewski, Daniel Hayes, Ian Kiraly

The Penobscot River once provided spawning and juvenile rearing habitats to migratory fish. The construction of dams blocked migrations of these fish and fragmented habitats, changing the structure of fish assemblages throughout the river. The Penobscot River Restoration Project is anticipated to increase passage of anadromous and resident fishes and improve the connectivity among currently fragmented habitats. The purpose of this study is to quantify and characterize fish assemblages in the lower ~70 kilometers of the Penobscot River, along with major tributaries. This will aid in understanding the influence of fragmentation in a large river system and provide a benchmark from which post-dam removal assessment can measure.

Boat electrofishing surveys were conducted during 2010 and 2011, in both the early summer and fall. “Stratified-random” sampling was conducted using 500 meter transects. Three factors had clear effects on fish assemblage composition. In general, fish assemblage structure differed according to longitudinal position along the river. The tidal section of the river was distinct in composition: many diadromous fishes were restricted tidal waters below Veazie Dam, although Atlantic salmon, sea lamprey, and American eel were captured or observed upstream. Species richness was relatively high below Veazie Dam. Lastly, areas above and below dams differed greatly in composition, with dam head ponds favoring more warm water and lentic species. These data indicate that the restoration of connectivity through dam removal will likely result in predictable shifts in fish assemblages.

Electrofishing the Penobscot River to survey fish assemblages pre-dam removal. Fish are stunned, held in a holding tank for identification and data collections, the released back to the river. Photos courtesy of Steve Coghlin.

Pre-Dam Removal Geomorphic Monitoring on the Penobscot River, Maine

Alice Kelley, Daniel Belknap, Andrew Heller, Charles Baeder, Matthias Collins

Dams change the geomorphic and biologic characteristics of watersheds. Frequently, removal is seen as an effective way to restore lost habitats and rebuild ecological communities. The largest of these projects on the North American East coast is currently being under taken in Maine. The Penobscot River Restoration Project plans to remove two dams and build a fish bypass on the Penobscot River, in an effort to restore 11 species of sea-run fish, while maintaining energy production. The removal of the first dam is scheduled for summer of 2012.

In anticipation of dam removal, geomorphic monitoring was undertaken at monumented river cross-sections within the dam removal area to provide baseline data on channel bathymetry, sediment size, and bank conditions. Data collection included repeated, seasonal photographic surveys, bathymetric surveys at each cross section, video-based channel sediment characterization, bank geomorphology studies, and geophysical characterization of impoundment sediment thickness. Data collected have been uploaded to Google Earth, a freely available interactive satellite imagery display and mapping program, as a means of displaying information and providing public access to spatially referenced data.

Over the two-year monitoring period, few changes were noted in river bathymetry or bank characteristics. Channel sediment characterization revealed that, within the study area, the Penobscot River channel in both flowing and impounded reaches is dominated by coarse sediment with a predominately sand matrix. This is in striking contrast to fine-grained sediment storage noted in many impoundments, and is interpreted to be an artifact of the region's complex Late-Pleistocene and Holocene geological history.

Repeated, seasonal photographic surveys were conducted to provide baseline data on bank conditions before dam removal on the river occurs.

River herring and American shad bycatch avoidance in the Atlantic herring and mackerel fisheries

UMass Dartmouth School for Marine Science and Technology (SMAST)

Managers of the Atlantic herring and mackerel fisheries are considering regulations to reduce river herring and shad bycatch. However, these regulations will likely come at considerable cost to the fisheries, and the effect of bycatch on river herring and shad populations is unknown. This collaborative project between the Sustainable Fisheries Coalition, Rhode Island bottom trawl fishermen, the Massachusetts Division of Marine Fisheries, and SMAST seeks to reduce river herring and shad bycatch without any changes to the current management or enforcement policies; aiding in the effort to rebuild river herring and shad populations without the cost of management action to fishermen. The project involves increasing portside sampling of Atlantic herring and mackerel landings, a near real-time information system on the location of river herring and shad bycatch events, and testing if oceangraphic features can be used to indicate areas with a high probability of bycatch.

For more information, weekly updates are posted here: http://www.umassd.edu/smast/smastnewsyoucanuse/bycatchavoidanceprograms/

Multi-Agency Effort Helps Monitor Northern Snakehead in Queens

M. Cohen with a feisty snakehead.

Since 2006, DEC Region 2 Fisheries has been monitoring an isolated population of Northern snakehead (*Channa argus*) in Flushing Meadows, Queens (NYC) with much interest from other parties. The saltwater of Long Island Sound seem to be keeping *C. argus* confined to Willow/Meadow Lakes and the connecting waters below. This year on October 16th a diverse team from New York City Department of Environmental Protection (NYCDEP) and New York City Department of Parks and Recreation (NYCDPR) joined DEC staff from Regions 2 and 4 to electrofish Willow Lake. A total of eight snakeheads were captured in three nighttime shocking runs around the entire lakeshore. Only one specimen was a juvenile (221 mm or 8.7") with the larger adults measuring up to (813 mm or 32") and weighing 5.33 kg, which is almost 12 lbs. This feral population seems to be stable yet not dominating the lake which is also home to fellow competitors like largemouth bass and common carp. Such a species mix may be hindering the 'invasive species boom' we

often see in other waters. See also: http://www.dec.ny.gov/animals/45470.html

S.Wells with the first three adult snakehead captured.

The sampling team included: survey authority and R2 fisheries manager Melissa Cohen; James MacDonald, R2 Fisheries; Betsy Ukeritis, R2 Public Affairs and Education ; Tom Baudanza, NYCDEP in Kingston; Scott Wells, R4 Fisheries in Stamford; and Katie Conrad from NYCDPR in East Harlem. All snakeheads were tagged and bagged for later analysis to determine diet, growth, and age at capture.

M. Cohen, T. Baudanza, B. Ukeritis processing the catch.

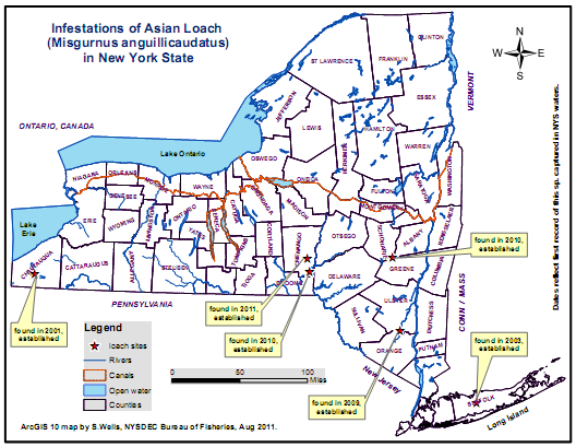
The Asian loach invasion in New York State

S. M. Wells, R. L. Poprawski, R. E. Schmidt, M. J. Peterson

The Oriental weatherfish (Misgurnus anguillicaudatus) is a popular aquarium pet and lesser known as a food source or baitfish. Commonly referred to as the Dojo, Asian pond, weather, or Japanese/Chinese 'loach', etc.; it is a subtropical and temperate species native to Asia that has successfully invaded various waters in Europe, Australia, and the USA. Fishbase reports that the majority of its introductions are believed to be fish farm escapees resulting in unknown ecological impacts to native fishes and their communities. However, USA introductions are more likely from illegal aquaria release and food source stocking but very little has been written about wild loach in North America. Loach share many habitat and physiological similarities with another introduced Asian, the snakehead (Channa spp.). Both are cold hardy, facultative air breathers, prefer slow moving or stagnant waters, and considered valuable table fare by many Asians yet loach receive little press because they are not a predator like snakeheads.

Scott Wells and Justin Hulbert presenting their research State at the 2011 AFS conference.

Prior to 2010, loach were recorded as established in three watersheds of New York State until the recent discovery of two new breeding populations in central New York. In both instances local landowners reported unusual catches in minnow traps baited with bread, which evidently is one of the most productive and least time consuming methods of harvesting loach. The source of these two infestations is unknown and remains under investigation. At least two of the five loach-infested watersheds located across New York State support multiple year classes and three have been infested for years (see map). Field observations and laboratory work has revealed new information on its life history. Unfortunately, late discoveries of loach in several watersheds has probably resulted in range expansion and increased competition of space/food with natives. Successful eradication of loach in the wild may be impractical because of its similarities with snakeheads (inhabits wetlands, breathes air), unknown dispersal range, and continued illegal stocking. Preventing new introductions via education, public outreach, and timely law enforcement may be our only defense against the spread of loach and other alien fishes.



Locations within New York State with confirmed infestations of Asian loach (so far).

The Mill River Restoration Project

The construction crew starting to break apart the Hopewell Mill Dam's spillway. Photo credit: Beth Lambert

The Mill River Restoration is a collaborative project that will restore the Mill River in Taunton, Massachusetts to a free flowing river that provides passage for fish into Lake Sabbatia and the Canoe River watershed above. Restoration of the river's floodplain and river habitats will help protect the City of Taunton from flooding, provide a recreational resource and improve the health of the city.

The first step in the project is the removal of the Hopewell Mills dam located at the Taunton State Hospital. This will provide passage for fish that migrate to the river from the ocean, including river herring, shad and American eel. One fishway was also created in 2012. Two more dams are going

to be removed or fishways installed before completion of the project. For more information about this restoration project, see: http://millriver.blogspot.com/, or watch the video here: http://www.nature.org/ourinitiatives/regions/northamerica/unitedstates/massachusetts/explore/ma-rivers-run-free.xml

Mill River looking upstream through the former spillway site. Photo credit: Beth Lambert

Pennsylvania Chapter members holding three paddlefish collected this past October from the Allegheny River at the tailrace of Kinzua Dam/Allegheny Reservoir during YOY walleye surveys. The Chapter members left-to-right are Brian Ensign (Pennsylvania Fish and Boat Commission, Area 2 Fisheries Management Division office in Tionesta, PA), Bob Hoskin (USACE Pittsburgh District office in Warren, PA), and Brent Pence (U.S. Forest Service, Allegheny National Forest office in Warren, PA). Brian Ensign is currently serving on our Chapter's Executive Committee. The fish were almost certainly stocked by the New York DEC in Allegheny Reservoir. All three fish were checked for coded wire tags (all were already tagged) and released alive.

Fisheries in the News

Save Sandy Pond

John Gibson
(rjgibson@nf.sympatico.ca)

The Sandy Pond Alliance, a volunteer group of scientists and others, based in St. John's, Newfoundland (www.sandypondalliance.org) are taking the Canadian federal government to court for the potential destruction of Sandy Pond, a pristine lake near Placentia Bay, in the southwestern part of the Avalon Peninsula, Newfoundland. The case will be held in the Newfoundland Supreme Court on 27 -28 February.

The present federal government has considerably weakened the provisions of the original Fisheries Act, which forbade 'harmful alteration, disruption or destruction of fish habitat'. In 2002 the introduction of Section 5 (Mining and Minerals Effluent Regulations) in Schedule 2 changed the Act to allow discharge of deleterious substances into water bodies, in essence negating the conservation aspects of the Fisheries Act. Under recent amendments the minister can now designate lakes as exempt from the Fisheries Act. Governor in Council decisions preclude access to public information. If it is legal to do this, literally the flood gates are open. There would be no tripping of Environmental Assessments etc. The first pristine lakes to be destroyed under the 'Schedule 2' regulation were two lakes in central Newfoundland (Trout Pond and un-named adjacent lake) in 2006. Despite many letters, meetings, support from competent scientists, etc., the loss of the lakes proceeded.

Sandy Pond was included in Schedule 2 in 2009 to allow a Brazilian mining company (Vale) to use the lake as a 'Tailings Impoundment Area' (TIA) for toxic wastes, a cheaper alternative than building the usual confined reservoir. Therefore when the federal and provincial governments gave permission for the loss of Sandy Pond we decided to take the federal government to court, as we believe such destruction is contrary to fisheries conservation, and should not continue.

A Sandy Pond brook trout. Photo by D.E. Messervey.

Sandy Pond is a deep lake of 37.83 ha. Only three species are present, brook trout (*Salvelinus fontinalis*), a relict dwarf rainbow smelt (*Osmerus mordax*) and American eel (*Anguilla rostrata*). The book trout grow very large, 3 -5 lbs, and are piscivorous, feeding on dwarf smelt. The brook trout are a 'different' shape and colouration, in that they are unusually fat, and are silvery, and are probably now the largest brook trout on the island, providing exceptional trophy trout recreational angling. The lake is an isolated post glacial lake and these fish are likely to be unique genotypes. The proposed TIA flooded area would cover 74 ha, and inundate 45.0 ha of

present aquatic habitats. For lost habitats Vale calculated 18.11 ha as required fish habitat compensation for the three fish species present. Using the same variables and references as the proponent I re-calculated the 'Habitat Equivalent Units' as brook trout 25.5 ha; smelt 34.8 ha; eel 15.7 ha. In addition to Vale's incorrect calculations the planned 'compensation' is inadequate. The compensation plan was finalized three years after acceptance of the Environmental Impact Study, and consists mainly of removal of a partial vegetation barrier on a lake in Salmon Cove River, Conception Bay, on the east side of the Avalon Peninsula, purporting to compensate for 12.12 ha of the lost 18.11ha, even though no new habitat is created, and the lake is probably presently at carrying capacity with brown trout, salmon and smelt. Further questionable 'compensation' is 7.4 ha with enlarging two bog ponds, and 0.2 ha with placing spawning gravel in Salmon Cove River. Also a naive plan is to "relocate appropriate fish species of Sandy Pond to watersheds where the species already exists". Fishery Managers have known for decades, that, if the fish survived, there would be reduced fitness of the receiving stock and loss of local specific adaptive strategies. This 'compensation' cannot replace a unique ecosystem, and is really merely a public relations strategy.

Our court case is important in that we hope we can save other lakes across the country from similar vandalism. We welcome your support in this vital legal change to save fish and aquatic habitats in Newfoundland and Labrador and throughout Canada.

Natasha Gownaris conducting "surgery" to implant an acoustic tag into a Nile tilapia from Sibiloi National Park on Lake Turkana, Kenya. The fish need to be anesthesized, so an elaborate, solar powered, flow through system to pump the anesthetic over their gills had to be set up. Forty tilapia were tagged and they all survived the surgery (they were kept in a series of recovery tanks for a couple of hours before releasing).

Recent Publications

Spatial and temporal patterns of anadromous alosine bycatch in the US Atlantic herring fishery

Jamie M. Cournane, Jacob P. Kritzer, & Steven J. Correia

Fisheries Research

River herring, which comprise two species of anadromous alosines (alewife, *Alosa pseudoharengus*, and blueback herring, *Alosa aestivalis*), are under consideration for listing under the US Endangered Species Act. River herring populations have not rebounded despite reductions in directed fishing on these species and improvements in their freshwater and estuarine habitats. We examined recent (2005–2009) spatial and temporal patterns of fishing effort in the US fishery for Atlantic herring, *Clupea harengus*, and river herring bycatch patterns in this fishery. During the year, Atlantic herring fishing activity shifts spatially and temporally from the Northern Mid-Atlantic Bight and Southern New England waters in January–February, to Southern New England waters in March–April, to the Gulf of Maine in May–June, expanding to the Gulf of Maine and Georges Bank in July–August and September–October, respectively, and then contracting to the Gulf of Maine and Southern New England waters in November–December. At-sea fisheries observer data indicate that river herring bycatches in the Atlantic herring fishery occur mostly during January–April and September–December, primarily in Southern New England and the Northern Mid-Atlantic Bight waters. We discuss possible management measure to reduce these bycatches. Similar size, shape, and schooling behaviors between river herring and other pelagic species—and the high volume nature of the Atlantic herring fishery—limit the potential efficacy of gear-based bycatch mitigation measures. Hence, approaches such as regulatory management measures (e.g., time–area closures and catch caps) and improved fleet communication strategies (e.g., "move-on" rules) may be more practical and effective in minimizing river herring bycatch in the Atlantic herring fishery.

For more information, go to : http://www.sciencedirect.com/science/article/pii/S0165783612002342

Landscape-Scale Evaluation of Asymmetric Interactions between Brown Trout and Brook Trout Using Two-Species Occupancy Models

Tyler Wagner , Jefferson T. Deweber , Jason Detar & John A. Sweka

Transactions of the American Fisheries Society

Predicting the distribution of native stream fishes is fundamental to the management and conservation of many species. Modeling species distributions often consists of quantifying relationships between species occurrence and abundance data at known locations with environmental data at those locations. However, it is well documented that native stream fish distributions can be altered as a result of asymmetric interactions between dominant exotic and subordinate native species. For example, the naturalized exotic Brown Trout Salmo trutta has been identified as a threat to native Brook Trout Salvelinus fontinalis in the eastern United States. To evaluate large-scale patterns of co-occurrence and to quantify the potential effects of Brown Trout presence on Brook Trout occupancy, we used data from 624 stream sites to fit two-species occupancy models. These models assumed that asymmetric interactions occurred between the two species. In addition, we examined natural and anthropogenic landscape characteristics we hypothesized would be important predictors of occurrence of both species. Estimated occupancy for Brook Trout, from a co-occurrence model with no landscape covariates, at sites with Brown Trout present was substantially lower than sites where Brown Trout were absent. We also observed opposing patterns for Brook and Brown Trout occurrence in relation to percentage forest, impervious surface, and agriculture within the network catchment. Our results are consistent with other studies and suggest that alterations to the landscape, and specifically the transition from a forested catchment to one that contains impervious surface or agriculture, reduces the occurrence probability of wild Brook Trout. Our results, however, also suggest that the presence of Brown Trout results in lower occurrence probability of Brook Trout over a range of anthropogenic landscape characteristics, compared with streams where Brown Trout were absent.

Newsletter editor, Megan Altenritter (shown here in a very late stage of pregnancy) with a shortnose sturgeon on the Penobscot River, ME

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