

The Northeast Fish Rapper

Newsletter of the Northeastern Division of the
American Fisheries Society



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President's Message

NED President Jason Vokoun

Jason Vokoun

Spring has sprung- and the open water fishing season is here at last. For academics like me, it is also the beginning of the busiest time of year. Helping students find ways to effectively use their summer for professional development is a task I relish, but one that takes up much of my spring- including phone conversations with potential employers, writing the classic letter of recommendation, and impromptu advising chats with young people just now realizing that they will indeed grow up (and sooner rather than later) and that they likely desire a career. There exists ample evidence describing the value of seasonal jobs, internships, and volunteering to gain the fisheries experiences that are difficult to get enough of in the classroom. But there is less talk of what these students can bring to the offices that host them, and I submit that there is substantial value to be had. The following is my attempt to discuss how full-time professionals and college students can strategically use seasonal and internship labor to move the needle in creative

ways for fisheries conservation.

Working fisheries scientists, I suggest you ask your best (perhaps returning) student seasonal technicians if they have interest in 'upgrading' their seasonal job into a college credit earning paid internship or even 'extending' the experience into the school year by working in partnership with a professor on 'undergraduate research' or 'independent study' credits. These routes tend to invoke the premise that college credit requires more from students than their labor alone, and that most require documenting intellectual learning outcomes. What this means is that internships for college credit, and the various offerings of research credits and independent studies implicitly demand that students document the contribution of their experience to their professional development and skill set. These outcomes are sometimes as simple as preparing standard operating procedures for field methods they learned on the job (which could then be used to develop training materials for the office.)

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President's Message

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Learning outcomes can also range into data organization, summary and even analyses for students with those skills. These activities can be programmatically efficient for fisheries scientists of course, but can also offer much more. You could strategically use an intern to explore collected data in new ways, or to ask new and emerging questions. These can rightly be first steps or pre-investigations that can document the merits of further investments. Internships for credit and related arrangements can also move your program into new arenas. Think for a minute about the emerging need for science communication, outreach and engagement and associated up-to-date materials that show the relevance of fisheries management to the broader public. Now think about how you don't really have time to get it done; and now recall that a college student's greatest asset is time.

The potential of credit-bearing internships starts to become more and more apparent when we start to think about them strategically. I can attest that students are eager to do 'work that matters' and we can all agree that meaningful work has always been a strong suit of the natural resource conservation disciplines (and is part of why many of us chose this profession way back when.) The challenge then, is to craft opportunities to allow students a stake in learning and serving the fisheries profession in real time. Yes, arranging an internship for credit or partnering with a professor to coordinate undergraduate research takes real effort to set up, from all parties involved. Each University will have their own forms and procedures- but they really are not barriers if we think strategically about what can be accomplished. As the old adage states: you get back more than you give.

Students, I challenge you to take ownership of these opportunities and explore with your professors and employers the options to expand your summer job into something more. Particularly if you are entering your second summer season of fisheries work- think about how these types of credit-bearing opportunities could help you advance your skill set beyond the routine tasks you have already mastered (like measuring fish!) You could get more involved with outreach, or with other parts of the organization you will be working with. Consider asking about getting a window into permitting and annual reporting. With embedded undergraduate research, the possibility of presenting scientific results at a future AFS meeting is probable- and a real 'feather in the cap' for any student. You will also naturally develop stronger relationships with your employers, resulting in better letters of recommendation down the road.

Nothing I have proposed here is at all uncommon for business or engineering majors- private firms know the value of student energy. And while fisheries agencies have a long, rich history of offering experiential learning through seasonal jobs (which importantly mark the beginning of accumulation of 'qualifying experience' needed for most fisheries jobs) perhaps we need to start thinking about these opportunities as more than just jobs. I believe we could collectively benefit if we can start thinking about at least some of them as strategic opportunities to 'test new waters' and hopefully move the needle just a little bit further for fisheries conservation.

Jason Vokoun is an Associate Professor at the University of Connecticut where he is also the Director of the Wildlife and Fisheries Conservation Center. In addition to the academic hats he wears, Jason is the President of the Northeastern Division. He can be reached at jason.vokoun@uconn.edu or by phone at 860-486-0141.

CHAPTER AND SUBUNIT UPDATES

Southern New England Chapter Celebrates 50th Anniversary by Hosting Joint Meeting with the Northeastern Division

Don Danila



For the first time in its 50-year history, the Southern New England Chapter held a multi-day winter meeting and graciously did so in conjunction with the AFS Northeastern Division, creating a regional flair for the conference. The Chapter's Golden Anniversary meeting took place from February 26-28 in Mystic, CT. The first day was devoted to two workshops and the following two days consisted of paper and poster presentations, two plenary talks, a keynote address, Chapter and Division business meetings, and various social events to facilitate peer-to-peer communications. An off-site student-mentor lunch was also set up, allowing for professionals to give advice to future working fisheries scientists. Total attendance was 185, including 36 students. Among the attendees were members of the AFS Governing Board, including Joe Margraf (AFS President), Ron Essig (Past President), Steve McMullin (President-Elect), Doug Austen (Executive Director), Jason Vokoun (NED President), Justin Davis (NED President-Elect), Julie Claussen (International Fisheries Section President), and Sara Turner

(Emerging Leader).

Meeting workshops included "Communicating and Grant Writing for Science Professionals" presented by Rich McBride, Syma Ebbin, and Michelle Staudinger, and "Adaptive Fisheries Management" by Steve Cadrin, Katie Kennedy, and Fred Mattera. The two workshops attracted 29 participants. The Chapter would like to hold additional workshops, perhaps as soon as this coming summer. Anyone with workshop suggestions or who would like to assist in their implementation should contact Bill Duffy at william.duffy@noaa.gov.



Steve Dwyer (L, SNEC President) and Jason Vokoun (R, NED President) were instrumental in organizing the meeting.

Two invited speakers gave plenary addresses, Jon Hare, Director of the NOAA Northeast Fisheries Science Center, spoke about science in support of living marine resource management in the northeastern U.S. shelf ecosystem.

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Many of the past or present serving SNEC and NED Presidents attended the meeting.



John Cooper (L) received the NED Meritorious Service Award from President Jason Vokoun for his decades of support for the Division and its members.



Donna Parrish (left) and Rick Jacobson (right), both Past Presidents of the NED, escort incoming Division President Justin Davis.

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Ron Essig of the U.S. Fish and Wildlife Service connected significant events occurring in federal fisheries legislation over the past 50 years with each of the Chapter Presidents serving during the same time period. The keynote speaker was Julie Claussen of the Fisheries Conservation Foundation, who gave a fascinating talk on her work in Bhutan on the conservation of a large, riverine cyprinid, the Mahseer.

There were 48 oral paper presentations given in two or three concurrent sessions as well as a Chapter-record 21 poster presentations. One-third of the oral and two-thirds of the poster presentations were made by students. Presentations included diverse subject matter in fisheries, aquatic sciences, and technology. Abstracts may be found on the Chapter's website, www.snec.fisheries.org/SNEC50_abstracts.

During the Chapter Business Meeting, President-Elect Eric Schultz noted that he is reluctantly resigning his position due to his increasing responsibilities at the University of Connecticut. The Chapter is therefore looking for a person to fill this slot as well as the incoming Secretary-Treasurer position, now held by Sara Turner, who will move up to President in the officer progression. Because the 2017 Business Meeting was held at this winter meeting rather than at the upcoming summer meeting, an electronic vote for the election of these two officers will be held sometime this spring. Anyone interested in being nominated for either of these two positions is urged to contact a member of the Chapter's Board of Directors.

Brent Schirmer, President of the UConn Student Sub-chapter reported on their activities, including plans to host a "Fishy 5K" on campus in April (with the hope that advisor Jason Vokoun will run in a fish costume). Matt Devine, President of the newly formed University of Massachusetts-Amherst student subunit, briefly addressed business meeting attendees. This subunit has 21 members, including 12 undergraduates and 9 graduate students, and is advised by Dr. Adrian Jordaan. Events held so far have included "Life in the Day of a Fisheries Scientist", which was presented to 5th grade students.

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Outgoing SNEC President Steve Dwyer received a Certificate of Appreciation from incoming President Sara Turner.

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The student chapter is looking forward to holding a children's fishing derby, assisting in stream clean-ups, and hosting a fisheries science panel night on the university campus.

The Chapter's 2017 Award of Excellence was presented to Bill Hyatt, currently the Chief of CT DEEP's Bureau of Natural Resources, for his lifetime contributions in all fields of fisheries science, including administration, education, management, and research. Joe Pereira of NOAA Fisheries-Milford received the Irwin Alperin Outstanding Member Award for his many years as a mentor, teacher, and sponsor to students, particularly those in high school and college undergraduates. The Lesa Meng Aquatic Conservation Award was given to Paul Ducheney and Rich Murray of Holyoke Gas & Electric for advancing the knowledge of sturgeon passage at Connecticut River dams through a long-term collaborative process supportive of aquatic resource agencies goals. The Outstanding Organization Award went to the Friends of Pleasant Bay, which is an environmental organization dedicated to preserving and enhancing this biologically diverse and productive estuary, the largest on Cape Cod. Renee Mercaldo-Allen was presented a Special Achievement Award for her efforts over many years in overseeing the Steering Committee of the Flatfish Biology Conference. Lucas Nathan of the University of Connecticut won the Saul B. Saila Best Student Paper Award for his presentation at the 2016 Chapter summer meeting



Bill Hyatt received the SNEC Award of Excellence for his distinguished career and achievements within the CT DEEP Bureau of Natural Resources.



Joe Pereira (L) was presented the SNEC Irwin Alperin Outstanding Member Award by Bill Duffy.

entitled "Evaluating the effects of culverts on fine scale genetic structuring of Brook Trout". This was Nathan's second such award in the last 3 years.

At the NED Business Meeting, Curt Orvis, recently retired from the USFWS, was presented the Dwight Webster Award for his career accomplishments in fish passage, which has benefitted the Northeast region and beyond. The President's Award went to Margaret Murphy of the New York Chapter for all of her contributions to AFS over many years. John Cooper received a Meritorious Service Award for decades of support to the NED and its members. Justin Davis ascended as NED President with many thanks given to outgoing President Jason Vokoun.

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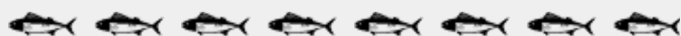


Attendees enjoyed the conference banquet held in the Mystic Aquarium.

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One of the highlights of the meeting was the banquet held in the nearby Mystic Aquarium, where attendees were able to view fish and other aquatic animals from all over the world before and during dinner. And, we had a SNEC 50th anniversary cake to cap off the celebration! It appears that the multi-day meeting was very well received by all and similar meetings in the future may be considered by the Chapter.

Don Danila is the Publicity Officer for the Southern New England Chapter. He can be reached at abcfish@atlanticbb.net.



Mid-Atlantic Chapter

Ed Hale

Planning is underway for the International AFS meeting in Atlantic City, NJ 2018. The following chairs have been identified for individual committees:

Project – Jeff Brust & John Clark

Program –Daphne Munroe (Symposia), Justin Davis (contrib. papers), Jason Vokoun (posters)

Budget and Finance – Rich Wong
 Spawning Run – Jim Vasslides
 Student Activities – Paul Jivoff, Jessica Valenti
 Socials and Breaks – Heather Corbett
 Audio Visual – Tim Daniels

Our Executive Committee is working hard to better serve the chapter. Soon, we will be sending out a survey to assess how best we might help our members grow professionally, as well as a similar survey geared towards assessing how we might provide new opportunities to student members. Please take the time to thoughtfully answer, so that we can respond to your needs and grow the organization together. Finally, Dr. Olaf Jensen of the Institute of Marine & Coastal Sciences, Rutgers University has agreed to provide a keynote address at the Mid-Atlantic Chapter meeting in Dover, Delaware this year based on selected topics in Fisheries. Dr. Jensen has over 15 years of professional experience ranging from Germany, both coasts of the United States, and Mongolia. For more information on the Jensen lab, click [here](#). Dr. Jensen has an extensive publication record and will be sure to provide an excellent address, so mark your calendars for Oct. 26-27, 2017 at the St. Jones Reserve.

Ed Hale is the President of the Mid Atlantic Chapter and a biometrician with the Delaware Division of Fish and Wildlife. He can be reached at Ed.Hale@state.de.us.



A picture of the St. Jones Reserve Visitor Center

UNH Subunit

Meghan Owings

Our relatively new subunit has been making excellent steps developing a variety of programs. In the fall, we held several exciting events, including fish printing on t-shirts, hatchery tours, and our own seminar series. These lectures brought speakers from other universities and nearby organizations to present information



UNH Sub-Unit on a tour of the aquaculture facilities at UNH. This picture is in front of our Anadromous Fish and Aquatic Invertebrate Research (AFAIR) lab. Photo credit: Ben Gutzler

and research to our community allowing our members to learn from and network with local professionals. Since starting our subunit, membership has tripled (with large gains among undergraduates) which we are really excited about! We have several fun and exciting events planned for the semester. We recently toured UNH's aquaculture facilities. In the upcoming months, we have a fundraiser at a nearby favorite restaurant, a fundraiser on campus, guest speakers from local governmental agencies and other AFS subunits, NH Fish and Game Surveys (rainbow smelt, eels, and horseshoe crabs), a fish picture contest, and fish printing t-shirts. Also, we recently collaborated and joined forces with the Sustainable Fisheries and Aquaculture Club for upcoming events and awareness in news relating to our organizations. Overall, we have been very busy and are looking forward to continuing to increase membership and interest from the campus community!

Meghan Owings is the President of the UNH Subunit. She can be reached at mwowings1@gmail.com.

SUNY ESF Chapter

Erik Hazelton

SUNY ESF's AFS chapter started their semester with their first ever Aquaday event. The day began with a field trip to Butternut Creek where a group of 20 students donned waders and practiced sampling techniques such as electroshocking and seine netting; including macroinvertebrate sampling. The species captured were then used to teach identification. This trip was led by AFS Chapter President Erik Hazelton (MS Student) and Vice-President Ryan Shaw (NRM Junior). Next the students traveled to Willow Bay at Onondaga Lake Park to see what was caught in the trapnets set-up overnight. A variety of species were captured and used to teach species identification. All species identified throughout the day were added to the display board, to show the large diversity of species in the Syracuse area. Students also enjoyed a BBQ lunch and helped with tabling set up by Chapter Treasurer Carolyn Chang (PhD Candidate) and Jess Goretzke (MS Student). At the tabling displays students interacted with the local community and distributed resources about sustainable seafood choices and AFS. Following lunch, students went to see what was caught in the trap net set overnight and found a variety of species. The public joined in the fun and checked out all the cool aquatic species discovered at Willow Bay.

To give the chapter's undergrads more hands-on experience, we started an undergraduate research project on the Meadowbrook Retention Basin in Syracuse, NY. This project was to be formulated, carried out, and developed into a poster by the chapter's undergraduates, with guidance from the graduate students. There is very little data on fish species inhabiting the Meadowbrook Retention Basin, so the undergrads decided to do the first biological assessment on the fish populations. The project was largely led by Crew Stover and Sean Korbas, two junior fisheries majors.

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Undergraduates started sampling the watershed with electroshocking, minnow traps and emigration traps at three different sites to create a long-term data set. After sampling, they analyzed the data to evaluate the effective number of species and the diversity of species in the watershed. There were 11 different species of fish inhabiting the Meadowbrook Retention Basin! The data collected is already being used to develop possible ideas for next year's field sampling. The overall goal to maintain an annual research project, long-term data set, and potentially implement management strategies to this water system.

In February, eleven members traveled to New York State Annual AFS Conference in Buffalo. Chapter member Crew Stover presented his poster on the Meadowbrook Retention Basin research project. Chapter members Erik Hazelton, Ericka Augustyn, Tom Evans, and Carrie Pershyn gave talks on their research. At the end of the conference Ericka was awarded best student lecture by a panel of NYS fisheries professionals. The conference was an excellent place to network with professionals and develop new ideas for future research.

Erik Hazelton is the President of the SUNY ESF Chapter. He can be reached at erikhazelton@gmail.com.



UMaine Subunit

Alejandro Molina Moctezuma

The last half of the year has been a busy one for the University of Maine student subunit. During the fall and spring semesters, members took part in several science outreach activities, organized workshops for the University of Maine community, had several meetings, and put together a seminar series.

In September we hosted a workshop with Dr. Trevor Avery from Acadia University, and Danielle Quinn from Memorial University. The workshop "Introduction to Data Wrangling, Visualization, and Analysis Using R and RStudio" was a great success. Researchers from the University of Maine, agency scientists from the area, and members of the public were in attendance. Club members also organized a Fly Tying and Fly Casting workshop, and our club vice-president Elisabeth Maxwell put together a website development workshop. We also co-hosted a resume workshop for undergraduate students with the UMaine Wildlife Society.

For the last several months, we've been conducting outreach activities to bring science education to different venues in the area. During the Northern Maine Water Festival, we helped kids learn about what fisheries scientists do, and we taught them how to use a dichotomous key. We continued to bring our squid dissection activity to middle school biology classrooms in the greater Bangor area. We've also added a lesson about aquatic macro-invertebrates for high school students to our outreach offerings.

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Subunit members take advantage of free fishing weekend.

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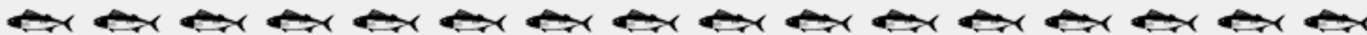
Other activities included a seminar series with the Friends of Sunkhaze Meadows National Wildlife Refuge, in which subunit members present talks about the migrating fish of the Penobscot River at our local library. Subunit members also cleaned the carriage roads at Acadia National Park as part of "Take Pride in Acadia Day". Finally, members also organized an ice fishing event for Maine's free fishing weekend.

As the school year draws to a close and field seasons ramp up, we're looking forward to our annual Spawning Run 5k and spending some time back out on the river. See you all in Tampa!

Alejandro Molina Moctezuma is the President of the UMaine Subunit. He can be reached at alejandro.molina@maine.edu.



Danielle Quinn of Memorial University leads an R workshop for students, faculty, and area professionals at the University of Maine.



An eel weir deployed by UMaine researchers on Souadabscook Stream in Maine. The weir is used to capture eels for analysis of migratory timing and survival through hydroelectric facilities as part of the "Future of Dams" NSF project, a collaborative effort between multiple universities in New England.

NEWS AND MEETINGS

Course on Advanced Telemetry Techniques: Time-to-Event Analysis for Fish Passage Studies

This course is offered in conjunction with the Fish Passage 2017 conference (June 19-21, 2017, Oregon State University). The purpose of this course is to introduce students to time-to-event analysis, developing fundamental understanding of when and why one should apply the various methods, and gaining confidence in their application through hands-on practice. The first half of the day will be spent covering theory, orienting students to the unique characteristics and problems associated with barrier passage data. The afternoon will be spent practicing with actual datasets, covering concepts of increasing complexity to provide an overview of the kinds of approaches that are possible with this powerful suite of tools. Attendees should have decent computer skills, a solid statistical background (familiarity with common regression methods and nonparametric statistics) and should come prepared with a laptop loaded with R statistical software. We strongly recommend R Studio as an interface for working in R. The following R packages are required: `survival()`, `dplyr()`, `coxme()`, and `ggplot2()`.

The instructors are Ted Castro-Santos, and Elsa Goerig. Ted is a Research Ecologist at the USGS' S.O. Conte Anadromous Fish Research Center. His research interests center on fish passage, employing an integrative approach and including topics ranging from biomechanics, hydraulics, physiology, and behavior. Elsa is a postdoctoral research fellow at Harvard University. Her work focuses on fish swimming performance and passage success at culverts and dams, mostly through field studies.

Date: Sunday June 18th, Full Day

Cost: General - \$260, Agency - \$210, Student - \$80

Please visit fishpassage.umass.edu for more information about this and other courses, and about the international conference on engineering and ecohydrology for fish passage.



OTN and Dalhousie Researchers Tag Weasel Sharks in Cabo Verde

Anja Samardzic

The waters of Cabo Verde off the coast of West Africa hold one of the last remaining hotspots for sharks in the North Atlantic Ocean containing more than 60 elasmobranch (shark, skate, and ray) species. In spite of this, the region is also one of the least researched sites.

In 2015, OTN deployed 18 acoustic receivers in a Cabo Verdean ocean area believed to have a large aggregation of Atlantic weasel sharks. Due to the high fishing pressure along the West African coastline, Cabo Verde is thought to be an important stronghold for this enigmatic species, which inhabits the inshore waters of western Africa. The high productivity of this ocean region in conjunction with the ability to study and protect habitats means it could offer some degree of sanctuary for threatened shark species.

During a follow-up mission in December 2016, OTN field personnel successfully fitted 14 Atlantic weasel sharks with internally implanted Vemco V13 acoustic tags, as well as external marker tags. Additionally, nine nurse sharks were fitted with external marker tags.

Sharks are among the most threatened wildlife on the planet, particularly in the Atlantic and even more so off the

coast of West Africa. Although some researchers have highlighted methods for sustainable shark fishing, evidence suggests that the worldwide decline in sharks is triggered by a high demand for shark fins combined with unsustainable fishing practices, which lack adequate management and garner unwanted accidental catches – such as those in Cabo Verde.

The team, made up of OTN field technician, Joe Pratt, Dalhousie PhD student, Manuel Dureuil, and Dalhousie University Director of Animal Care, Dr. Chris Harvey-Clark spent three weeks in the field working with partner organizations including: Biosfera, the Instituto Nacional do Desenvolvimento das Pescas, the University of Cabo Verde, and Maio Biodiversity Foundation.

By using weasel sharks as an umbrella species, researchers hope to raise awareness for sharks in the West African region where detailed scientific information is scarce, preventing science-based management efforts. This study also provides the opportunity to train local researchers on non-lethal catch and minimally invasive research methods while improving scientific infrastructure in Cabo Verde.

This article was originally published by the Ocean Tracking Network.



A weasel shark internally implanted with a Vemco V13 acoustic tag and an external marker tag.

Book Review: Truth or Truthiness, Distinguishing Fact from Fiction by Learning to Think Like a Data Scientist

Richard McBride

In 2005, Stephen Colbert coined the term 'truthiness,' which has been entered into the Oxford Dictionary as "the quality of seeming or being felt to be true, even if not necessarily true." Scientists seek to distinguish truth from truthiness using causal inference from evidence-based analysis, the essence of data science. It comes down to this: As pundits debate on television, corporate suits testify before congress, or politicians espouse from the podium, skeptics ask 'how do we know anything?'

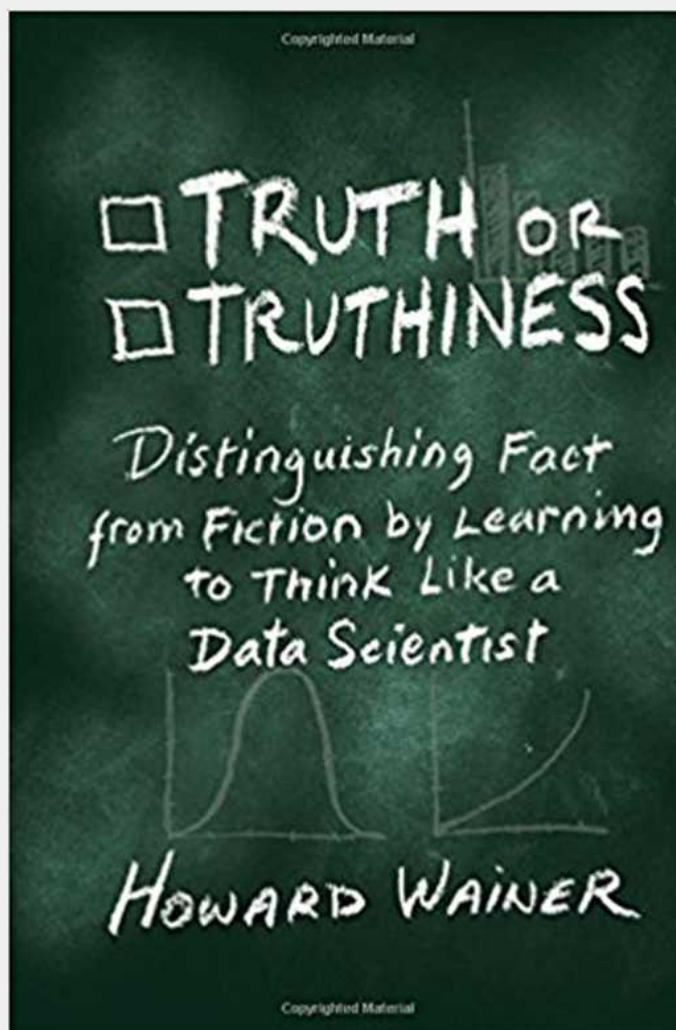
Howard Wainer has written this book to remind of the value of data science in separating truth from truthiness. A statistician, indeed a student of John Tukey at Princeton, Dr. Wainer writes to a broad audience in this book. He introduces simple models and lays out statistical constraints common to many studies in a way that should reach most educated and persistent readers. He provides many real-life examples, particularly from his field of education research. Want to understand why tenure persists in the face of criticism that it protects slackers? The data show that it is a matter of money, where tenure leads to lower salaries across all teachers.

This is a short, pity book that will challenge you to ask if your own methods and your evidence can discern truth from truthiness. In an eclectic writing style, it touches on a range of points, such as the reality of limited data that most policy makers face, and the fallacy of 'more data is better.' Dr. Wainer's examples and perspective put you in the middle of these challenges, while reminding us that there is a gold standard of evidence-based data science out there.

Truth or Truthiness, Distinguishing Fact from Fiction by Learning to Think Like a Data Scientist by Howard Wainer was published in 2016 by Cambridge University Press. You can find out more about the book at

<http://www.cambridge.org/us/academic/subjects/statistics-probability/statistics-and-probability-general-interest/truth-or-truthiness-distinguishing-fact-fiction-learning-think-data-scientist?format=HB&isbn=9781107130579>

Richard McBride a Supervisory Research Fishery Biologist at the Northeast Fisheries Science Center's Woods Hole Laboratory.

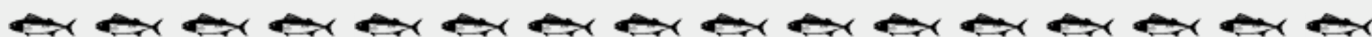


AFS Student Subsection Forum

Lisa Izzo

Are you a member of the American Fisheries Society? If so, then you are also part of the Student Subsection of the Education Section! The Executive Committee this year has been working to re-establish communication between the Subsection and students and young professionals in AFS, including the creation of the Student Subsection Forum! We hope this will be a new way to communicate with students across all divisions, but we need your help. We invite all of you to create discussions about your student subunit, seek advice from other students on your research or your job search, or let us know how we as the Student Subsection can help you.

To get to the Forum, log in to your AFS Membership Account, click on My Participation, and find the Student Subsection Forum under My Communities. We hope to hear from you soon!



8th Annual Otsego Ice Fishing Clinic 60 anglers catch 60 perch on a 60°F day

Scott Wells

Event Summary On a very mild winter day at Canadarago Lake, the NYSDEC and OPRHP teamed up for an 8th straight year to ice fish with the public during the Wednesday of president's week. With no safe ice again this winter on Otsego Lake off Glimmerglass SP, the event was held for the 3rd time on the mid-west shore of Canadarago Lake. Staff from the local park provided some snacks and warm drinks on site at the boat ramp, while DEC/OPRHP fisheries staff and volunteers educated and guided some 60 attendees at this free event. Despite a warming spell over the prior weekend, the slushy lake surface refroze by Tuesday and a solid 10-11 inches of ice remained. Air temperatures rose quickly on Wednesday and were in the 50's for most of the day and likely reached around 60°F+ under the mid-day rays when most attendees were forced to shed their jackets. We saw many new faces this year and a few local anglers came out with their own gear to fish with us. After the brief introduction for newcomers, the on-ice crew took over to guide anglers on bottom fishing with light tackle, manage tangles, rebait hooks, and demonstrate how to drill holes and deploy tip-ups. Many youth were quite serious about their fishing.

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Typically, the fish bite is intermittent during the day and we often get fish on tip ups at this event. However, this year our fleet of some 25 tip-ups were quiet compared to the active jiggers. Some 60 yellow perch were caught during the event mostly on small colored jigs with live spikes (fly grubs). We had holes drilled parallel to the shoreline off the boat ramp along the drop off in some 6 to 24 feet of water (fow) extending 100 yards or more northward. Early on, one small chain pickerel was captured and comprised the only other fish species iced by our group that day. The majority of the yp appeared to be young 2-4 year old fish measuring about 4-7" but we did capture several dozen fish over 8" and a few nice jack perch (12"). Despite the bright day on the ice, random fish were biting the entire time and many folks caught more than one perch. Tom H (Parks) performed his usual afternoon fillet-fest, sending many happy anglers home with boneless fillets to fry up. Even the press gals from Utica took part and caught perch with us but the Chinese film crew from NYC was just too busy at their first-ever ice fishing event to take a rod in hand to fetch a tip-up flag; maybe next time?

DEC staff: Scott Wells, Paul Sweeney, Russell Moore, Katherine Sessions. OPRHP staff: Tom Hughes, Rich Sheckells (and his crew); plus volunteers Kate O'Conner of the Cazenovia Preservation Foundation, and Brandon Forster (student) at SUNY Cobleskill. Thanks to all who attended and helped with yet another successful free ice fishing event in DEC Region 4.

For China's Xinhua News Network's coverage of the event "The Joys of Ice Fishing" please visit <http://newsvideo.su/video/6128374>

For the Utica Observer-Dispatch's coverage of the event "Hot Time on a Frozen Lake" please visit <http://www.uticaod.com/news/20170225/hot-time-on-frozen-lake>

Scott Wells is a Warmwater Fisheries Biologist for the NYS Dept. of Environmental Conservation. He can be reached at scott.wells@dec.ny.gov



Fort Plain Cub Scout Pack 61 had a great time on the ice.

Managing Muskellunge in a Large River

Rob Wnuk

The Pennsylvania Fish and Boat Commission began stocking Muskellunge in the upper Susquehanna River in the 1960s. We always assumed the stockings were successful because anglers reported good fishing. But, because Muskellunge are difficult to sample in large rivers, we'd never evaluated the population.

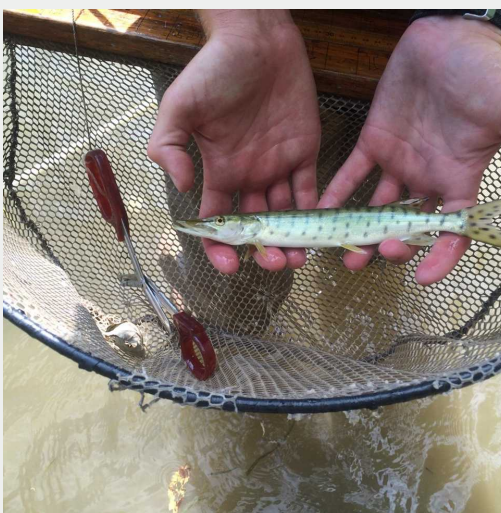
That changed last year. In the spring of 2016, biologists from the Pennsylvania Fish and Boat Commission's Area 4 Fisheries Management Office successfully used daylight boat electrofishing to collect adult Muskellunge. The survey extended from the Pennsylvania/New York border (River Mile 357.54) downstream to the confluence with the West Branch Susquehanna River (River Mile 123.50). In 13 days of effort we captured 24 adult Muskellunge and shocked but missed 16 others. Most of the misses came during the early part of the survey when we were refining our techniques. Mean catch per unit effort (captured fish only) was 1.54 Muskellunge/hour across 45 sampling sites.

We were a little surprised that daylight boat electrofishing was an effective method to sample adult Muskellunge in a large river. However, the big surprise came when we aged the fish. Back-calculations showed that the muskies reached at least 13 inches by the end of their first growing season. This was surprising because we stock the river with 6 to 7 inch fingerlings at the end of September and the growing season is usually done a month later. Thus, the fish shouldn't have been longer than 9.5 inches at age 1. The large size of these fish at age 1 suggested that most, if not all, may had resulted from natural reproduction.

The next step was to document the extent of natural reproduction. We used daylight boat electrofishing to sample young-of-the-year (YOY). Sample sites were located in areas with little current, muck bottoms, and weed beds or woody debris for cover. We sampled in August and early September, prior to any stocking, to ensure that the YOY were wild. In 13 days of effort we captured 31 YOY and missed 6 others. Mean catch per unit effort (captured fish only) was 2.85 YOY/hour across 33 sites. Wild YOY were present throughout the upper Susquehanna



Penn State interns Marty Kelly (L) and Josh Masich with a 43.5 inch female Muskellunge.



A wild YOY Muskellunge from the Upper Susquehanna River.

River. They ranged from 6.0 to 10.5 inches long with the smaller ones coming in early August and the larger ones in late August. Their growth rate was amazing. We could see them getting bigger by the day.

Collecting biological data on this previously unassessed fishery completely changed our management. We terminated stocking in 2016 and will commence annual monitoring of adults and YOY in 2017. Hopefully, annual monitoring will provide a much better understanding of the dynamics of a wild Muskellunge population in a large river.

Rob Wnuk is an Area Fisheries Manager for the Pennsylvania Fish and Boat Commission. He can be reached at rw nuk@pa.gov

Baseline Data Collected for Emerging Offshore Waved Whelk Fishery in the Mid-Atlantic

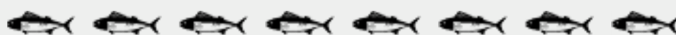
by Sarah Borsetti, Daphne Munroe, and Eleanor Bochenek

The waved whelk (*Buccinum undatum*) is a subtidal gastropod caught commercially in baited traps, primarily in Canada and Europe. The species remains largely unregulated in the Mid-Atlantic region, but a small fishery is in development. Despite the increasing interest in this fishery, important baseline biological data is not currently available to managers or fishers. PIs Daphne Munroe and Eleanor Bochenek of Rutgers University received funding from the NOAA Saltonstall-Kennedy Grant program to work collaboratively with industry and federal fishery scientists to fill some of these data gaps. Through the use of fisheries cooperative sampling and federal sampling programs, they, along with graduate student Sarah Borsetti, have been able to identify this species range in the Mid-Atlantic, and examine the possibility of a sustainable fishery.

Samples from the Mid-Atlantic revealed two trends in the distribution of waved whelk. First,

whelk appear to inhabit depths between approximately 40 and 75 meters, and second that their southern limit appears to be close to 38°N. This information will be useful for both novice whelk fishermen and serve as a baseline species distribution for managers. Throughout the Mid-Atlantic, median whelk lengths are larger than the estimated size of sexual maturity. This suggests that there would be mature individuals available to the fishery, should size limits greater than the size of sexual maturity be put in place. This research on whelk biology and population demographics will help establish a foundation for management strategies to ensure sustainability of the stock and responsible fishery development.

Sarah Borsetti is a graduate research assistant at Rutgers University studying the spatial variance in life history characteristics of waved whelk in the Mid-Atlantic. She can be contacted at sarahbor@hsrl.rutgers.edu.



Whelk fishing off the New Jersey coast aboard the F/V Bear



A bucket of Yellow Perch from Otsego Lake, NY

OTN Conducts Collaborative Arctic Study with University of Windsor and DFO

Anja Samardzic

This summer, as part of a collaborative study between the Ocean Tracking Network (OTN), Fisheries and Oceans Canada (DFO), and the University of Windsor, principal investigator Nigel Hussey and fellow researchers spent several weeks in the Canadian Arctic to continue ongoing tracking projects and fill knowledge gaps in the animal telemetry index. The data gathered on the team's six-year study of Greenland halibut, Greenland sharks, Arctic skate and more recent work focused on narwhals will provide valuable information on the movement and distribution of deep sea fish (and of course a marine mammal) and help advise coastal community fishery development and management.

This season's collaboration involved working with the DFO marine mammal team led by Jack Orr to continue the novel tracking of Greenland sharks. This tracking approach uses combined mark report and pop-up satellite tags to generate the first horizontal tracks for the largest Arctic deep water fish

predator. Over the course of the season, the team successfully tagged ten individual sharks in Tremblay Sound near the community of Pond Inlet, where they set up basecamp for a three-week period, and all the tags have successfully transmitted to date.

The collaborative team then achieved a first by attaching a Bluetooth-linked VMT (mini receivers that listen for tagged fish) to a SMRU satellite tag on a narwhal. This will help them determine the viability of using narwhal as "animal oceanographers" or "bio-probes" to monitor sustainable fisheries across the Arctic. A team at Dalhousie University has already developed the bio-probe technology for use on grey seals. While marine autonomous vehicles (robo-probes) are also used in the collection of oceanographic and animal data, bio-probes will collect information where robo-probes can't go, due to their limited range of movement and ability to navigate the oceans.

Continued on next page



PI Nigel Hussey from the University of Windsor (Canada) and Yuuki Watanabe from the National Institute of Polar Research (Japan) in Baffin Bay (Photo: Amanda Barkley).

Continued from previous page

In the second phase of the field season in Baffin Bay, high resolution daily diary loggers with cameras were attached to Greenland sharks to assist understanding of post-release survival from fisheries and to examine their ecology (predator-prey interactions are one example of this). The team were joined by expert Yuuki Watanabe from the National Institute of Polar Research in Japan to do this work. High-resolution accelerometers were also attached to Greenland halibut for bioenergetics works, while deep-water baited cameras were deployed in Scott Inlet to examine species diversity and undertake population assessments in conjunction with scientists from Memorial University.

The team also worked closely with commercial fisheries in Baffin Bay, who have been incredibly open in sharing their data, allowing the team to gather valuable information to determine suitable locations for moorings that don't compromise either fishing or research activities. A total of 43 new moorings were situated offshore in Baffin Bay, mainly along the shelf edge on the drop off to deep water and where most fishing is concentrated. The edge may serve as a "conveyor belt", building predictable seasonal movements of Greenland halibut. Around 200 Greenland halibut were acoustically tagged at various sites along the shelf edge for this study.

Thus, the team had a very successful summer of Arctic research, and they look forward to sharing the results and footage with the science community and beyond. This work would only have been possible through the support of the local communities, the Government of Nunavut, CanNor, DFO and the crews of the Nulijuk and Kiviuk.

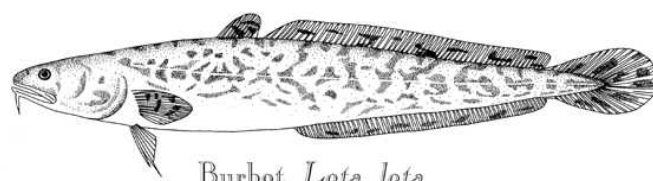
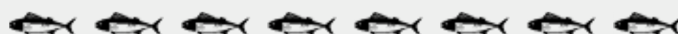
This article was originally published by the Ocean Tracking Network



PI Nigel Hussey outfits a Greenland Shark with an accelerometer and a camera in Scott Inlet, Baffin Bay (Photo: Yuuki Watanabe).

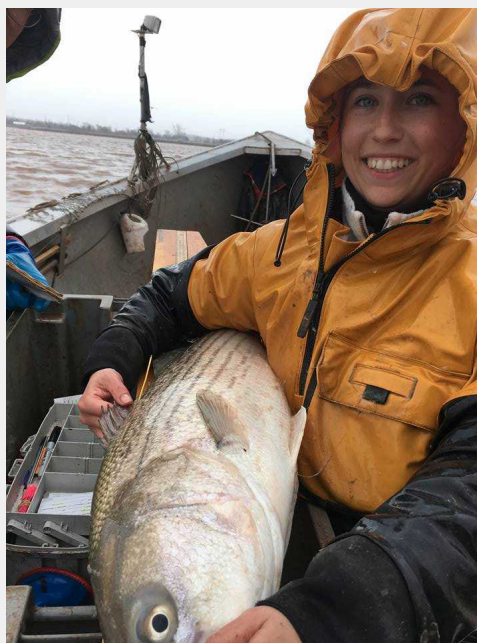
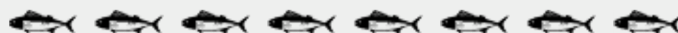


UMaine researcher Berlynn Heres with a large, silver-phase American Eel captured at the Souadabscook Stream weir.



*Burbot *Lota lota**

A burbot, drawn by former NED President, John Cooper.



Acadia University researcher Lita O'Halloran with a tagged Striped Bass. For more information on Acadia's Striped Bass Research Team, find them on Facebook at <https://www.facebook.com/StripedBassResearchTeam/>

Recent Publications

IS MOTIVATION IMPORTANT TO BROOK TROUT PASSAGE THROUGH CULVERTS?

E. Goerig, T. Castro-Santos

Culverts can restrict movement of stream-dwelling fish. Motivation to enter and ascend these structures is an essential precursor for successful passage. However, motivation is challenging to quantify. Here, we use attempt rate to assess motivation of 447 brook trout (*Salvelinus fontinalis*) entering three culverts under a range of hydraulic, environmental, and biological conditions. A passive integrated transponder system allowed for the identification of passage attempts and success of individual fish. Attempt rate was quantified using time-to-event analysis allowing for time-varying covariates and recurrent events. Attempt rate was greatest during the spawning period, at elevated discharge, at dusk, and for longer fish. It decreased during the day and with increasing number of conspecifics downstream of the culvert. Results also show a positive correlation between elevated motivation and successful passage. This study enhances understanding of factors influencing brook trout motivation to ascend culverts and shows that attempt rate is a dynamic phenomenon, variable over time and among individuals. It also presents methods that could be used to investigate other species' motivation to pass natural or anthropogenic barriers.

Published in the Canadian Journal of Fisheries and Aquatic Sciences, 2016.
DOI:10.1139/cjfas-2016-0237

EXAMINATION OF A SINGLE-UNIT, MULTIPLE-PASS ELECTROFISHING PROTOCOL TO RELIABLY ESTIMATE FISH ASSEMBLAGE COMPOSITION IN WADEABLE STREAMS OF THE MID-ATLANTIC REGION OF THE USA

M.K. Shank, A.H. Henning, A.S. Leakey

Electrofishing is a valuable tool used to collect fish assemblage data, which is often vital to ecological assessments; however, wadeable electrofishing protocols vary in optimal reach length and number of passes based on study objectives, stream size, and geographic region, among other factors. This study examined a method intended to efficiently assess fish assemblage composition through the use of a single-unit, width-based electrofishing protocol using multiple passes. Fish assemblage data were collected using backpack or tote barge electrofishing equipment from 93 wadeable streams 2.3–76.4 m in width in the Susquehanna River basin (SRB). Results indicated that >97% of total species present were collected after the first two electrofishing passes, regardless of stream size. New species were more often captured on subsequent electrofishing passes in larger streams. Compared with other studies our results suggest less electrofishing effort is

necessary to accurately estimate fish assemblage composition in smaller streams and in more depauperate ichthyofaunal regions. A single electrofishing pass satisfied the objective of obtaining 90% assemblage similarity in small streams 5 m wide. Two electrofishing passes were necessary to reach 90% assemblage similarity in larger wadeable SRB streams > 5 m in width. Results suggest a single electrofishing unit and a crew of 4 individuals can obtain reliable estimates of fish assemblage composition from wadeable streams of various sizes, which may be desirable when personnel or gear is limited. The shortcomings of single-unit, multiple-pass electrofishing (e.g., inability to model abundance or species richness) reinforce the need for managers and researchers to choose electrofishing protocols based on study objectives. Overall, our results suggest that the single-unit, multiple-pass protocol performed throughout a reach equal to 10 times the stream width is appropriate to reliably estimate fish assemblage composition in streams of the mid-Atlantic and northeastern regions of the United States.

North American Journal of Fisheries Management. 36(3):497-505.
<http://www.tandfonline.com/doi/abs/10.1080/02755947.2016.1141122>

NATURAL GAS DRILLING IN THE MARCELLUS SHALE REGION: WELL PAD DENSITIES AND AQUATIC COMMUNITIES

D.H. Keller, R.J. Horwitz, J.V. Mead, T.J. Belton.

Few studies have examined the relationship between natural gas development and surface water quality using well pad density (the number of well pads/km²) as an indicator of potential impacts to aquatic life, specifically fish, salamander, and crayfish assemblages. We tested the hypothesis that animal assemblages, assessed by densities of ecologically important species, will differ among groups of watersheds with different well pad densities. In 2011, sites were sampled in Pennsylvania between July 13 and September 14 (N = 28; 10 = no well pads, 8 = low density, 10 = moderate density). We did not detect evidence of impact on fish, salamander, and crayfish assemblages. It should be noted that this study primarily assessed infrastructure-related impacts. Watersheds under investigations in this study area included no stream withdrawals for drilling and relatively low well pad density (0.541 well pads/km²), which reduces the amount of roads and pipeline as well as sediment runoff reaching the stream from this and other infrastructure during development. In addition, setback and landscape limitations also kept well pads relatively far from surface waters, and these watersheds remained highly forested after development because most were in state

forests. Therefore, these findings represent the least intrusive scenario for impacts to aquatic communities while extracting natural gas.

Published in *Hydrobiologia* (2017).
doi:10.1007/s10750-017-3112-8
<https://link.springer.com/article/10.1007/s10750-017-3112-8>



CAN LARGEMOUTH BASS TRANSPLANTED FROM AN UNEXPLOITED POPULATION GENETICALLY CONTRIBUTE TO AN ACTIVE FISHERY? A TEST CASE FOR GENETIC MANAGEMENT OF EXPLOITED FISH POPULATIONS

J.M. Hessenauer, J.C. Vokoun, A. Welsh, J.P. Davis, R. Jacobs, E.O'Donnell

Recreational fishing is one of the most popular outdoor activities in the world, resulting in substantial effects on recreational fish stocks. Recent studies have found that recreational angling may drive fisheries-induced evolution, resulting in changes in the size, behavior, and physiology of exploited recreational stocks. Traditional harvest-based management of recreational fisheries may be unable to mitigate these changes, especially with the rise of catch-and-release practices for many fisheries. We explored the potential to genetically manage exploited fisheries by introducing individuals from unexploited populations as a means to mitigate selection from recreational angling. We stocked 77 individuals from

an unexploited population of Largemouth Bass *Micropterus salmoides* and 79 individuals from an exploited population into a third water body (with an active fishery) and evaluated the extent to which each group of stocked fish contributed to fall age-0 recruits. Fifty-four percent of the sampled age-0 Largemouth Bass with reliable parentage were hybrids of stocked and resident parents. Individuals from the exploited and unexploited populations contributed to the age-0 sample in proportion to their initial abundances. No sex-biased contribution was detected between the exploited and unexploited individuals stocked into the pond, although the largest females had the highest contribution to the age-0 sample. Age-0 fish originating from hybridization between unexploited and resident parents had significantly higher condition than age-0 recruits originating from two resident parents. We conclude that individuals from unexploited populations can successfully reproduce in an exploited system and that genetic management may be a feasible option for mitigating the effects of recreational fisheries-induced evolution.

North American Journal of Fisheries Management 37, Issue 2: 271-283.
<http://www.tandfonline.com/doi/abs/10.1080/02755947.2016.1264504>

BLACK BASS DISPERSAL FOLLOWING TOURNAMENTS ON LAKE CHAMPLAIN

G.A. Maynard, T.B. Mihuc, V.A. Sotola,
D.E. Garneau, M.H. Malchoff

Lake Champlain is consistently ranked as one of the top fisheries for black bass *Micropterus* spp. in the United States. Tournament fishing on the lake has become increasingly popular, with dozens of tournaments held annually since the early 2000s and at least 60 more planned for 2017. The largest of these tournaments launch from Plattsburgh, New York, and their frequency has generated concerns among fishery managers and the public over post-weigh-in mortality and stockpiling. However, relatively little is known about the disposition of tournament-caught black bass in large (>750 km²) lake systems. To address this information gap, we T-bar-tagged 1,141 Largemouth Bass *M. salmoides* and 1,160 Smallmouth Bass *M. dolomieu* collected from tournament anglers launching from Plattsburgh during 2011 and 2012. Additionally, 38 Largemouth Bass and 53 Smallmouth Bass caught during professional bass tournaments were implanted with radio

tags prior to release. Angler-reported T-bar recaptures yielded a 9.8% recovery rate, with over half of the tag recoveries occurring within the first month postrelease, primarily within 5 km of their release. Radio-tagged fish were tracked for up to 383 d following release into Cumberland Bay, 1 km northeast of Plattsburgh. Overall, 43% of radio-tagged Largemouth Bass and 56% of radio-tagged Smallmouth Bass left the bay, although there was variation in dispersal patterns between years. One T-bar-tagged fish and no radio-tagged fish returned to their proximate capture locations. Despite the absence of fish returning to their original capture location, results from both T-bar tagging and radiotelemetry suggest that long-term (>1 month) stockpiling in Cumberland Bay is not an issue. However, short-term (<1 month) stockpiling, coupled with an abundance of publicly accessible fishing areas in Plattsburgh, may warrant concern for increased black bass mortality during the weeks after release.

Published in the North American
Journal of Fisheries Management.
37(3):524-535.
<http://www.tandfonline.com/doi/abs/10.1080/02755947.2017.1296515>



An aerial view of the Plattsburgh, NY seawall and waterfront on Lake Champlain

DIDYMOSPHENIA GEMINATA IN PENNSYLVANIA: AN INVESTIGATION OF CURRENT AND HISTORIC DISTRIBUTION, HABITAT SUITABILITY, AND NUTRITIONAL CONTENT

M.K. Shank, M. Potapova, K. Maloney,
D. Honeyfield, and D.E. Spooner

Didymosphenia geminata (didymo) is a benthic freshwater diatom capable of producing nuisance blooms that impact the recreational, ecological, and aesthetic value of freshwater ecosystems. Recently, didymo has expanded its range and ecological tolerances leading to massive blooms in areas where it was previously undocumented or had existed in low abundance. Since 2007, these blooms have been increasingly observed in Pennsylvania, yet currently no inventory of its distribution or assessment of watershed vulnerability exists for the state. The intent of this study was to conduct a comprehensive assessment of didymo throughout PA and provide relevant technical information that could help inform management efforts. This study addresses three important research questions regarding didymo in PA streams:

- 1) What is the current and historic distribution of didymo in Pennsylvania?
- 2) What is the potential habitat suitability for nuisance didymo blooms in Pennsylvania?
- 3) How does didymo presence affect the nutritional content of biofilms?

Report to Pennsylvania Sea Grant.
<https://seagrant.psu.edu/topics/invasive-species/research/didymosphenia-geminata-pennsylvania-investigation-current-and>

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Acknowledgments

The Northeast Fish Rapper is produced by volunteers. It would not be possible without contributed content from Northeastern Division members. Our next edition will be published in Fall 2017. We are always looking for writers to contribute to our "Fisheries in the News" section. These news briefs can be based on original research, management actions, or articles published in other news outlets and should range from 350-750 words. If you have a particular interest you wish to write about, let us know! Additionally, we are always looking for photographs and artwork to include in the Rapper. If you have interesting pictures from field work, fishing trips, or anything else you'd care to share, send it along, no writing necessary. A big thanks goes out to everyone who contributed to this edition of the Fish Rapper. We appreciate all of your effort!

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