



The Northeast Fish Rapper

Newsletter of the Northeastern Division of the American Fisheries Society



President's Message

NED President Jud Krazter

So, what exactly is the Northeastern Division? This is a question I found myself pondering several years ago during my tenure as the Atlantic International Chapter president. While serving in that role, I was expected to participate in monthly conference calls with the rest of the NED Executive Committee. Up until that time the NED was just some vague concept to me. I was very familiar with the Society and my Chapter, having attended several meetings of both, but the NED just did not seem relevant. I'm thinking that many of you can relate.

As you can guess from the fact that I am now serving as NED Presi-

dent, I have since learned just how relevant the NED and the other Divisions are. The American Fisheries Society has over 8,000 members, most of which identify with one of the 48 chapters and/or one of the 22 sections. Governing an organization of that size, consisting of 70 individual units, is inherently challenging. The AFS Governing Board is the body charged with making many of the decisions that affect the direction and function of the AFS. The Governing Board consists of the AFS officers and representatives from each Section and Division. One of the most important duties of the Divisions is to represent their Chapters at the Governing Board. The NED Executive Committee consists of the NED's officers and the President of each

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Chapter in the northeastern United States and eastern Canada. We meet almost every month to discuss and vote on issues relevant to each Chapters' membership.

What are those issues? The big one right now is climate change. AFS President Scott Bonar has made this the main focal point of his presidency, and the Governing Board has been discussing how AFS can make a positive difference in this issue. The Governing Board also helps to formulate and implement the Society's strategic plan, reviews the Society's budget and finances, and makes policy decisions. Of course, there are also plenty of mundane decision like reviewing unit bylaws.

Let me attempt to answer another question for you. Why should you be a member of AFS? Hopefully, most of you are already members, but I'm sure some of you are members of your chapters but not of the Society. Being a Chapter member is very important. The Chapters are excellent for networking and learning from other fisheries professionals in your area. Keep in mind that the Chapters would not exist without AFS. AFS exists to strengthen the fisheries profession, advance fisheries science, and conserve fisheries resources. It does this by publishing journals and books, hosting meetings and workshops, and advising policy on Capitol Hill, but AFS can do none of this without dues-paying members. If that isn't enough reason to become a member, consider all the personal benefits of AFS membership. Through journals, books, and meetings, AFS can help you stay at the cutting edge of fisheries science and management. Involvement in AFS provides opportunities for growing in professionalism, leadership and meeting management skills, and communication. The AFS also provides greater networking and collaboration opportunities than are possible at the Chapter level. I can personally say that I am a much better fisheries biologist because of my AFS membership, and I know many others would say the same thing. If you are a fisheries student or professional but not a member of AFS, I urge you to join, both to help the AFS to accomplish its mission and for your own benefit.

UPCOMING MEETINGS

Pennsylvania Chapter Summer Social

July 18, 2020

Entrioken, Pennsylvania

<https://pa.fisheries.org/>

AFS Annual Meeting*

Abstract Deadline: April 20, 2020

August 30–September 3, 2020

Columbus, Ohio

<https://afsannualmeeting.fisheries.org/>

Wild Trout Symposium

Abstract Deadline: April 24, 2020

September 22–25, 2020

West Yellowstone, Montana

<https://www.wildtroutsymposium.com/>

Northeastern Division and Atlantic International Chapter Joint Meeting

September 27–29, 2020

Maine, Site TBD

<https://aic.fisheries.org/meetings/>

11th International Flatfish Symposium

Abstract Deadline: May 1, 2020

November 15–20, 2020

New Castle, New Hampshire

<https://www.flatfishsymposium.com/international-flatfish-symposium-2020>

Southern New England Annual Meeting

January 2021

<https://snec.fisheries.org/category/meetings/upcoming-meeting/>

New York Chapter Annual Meeting

February, 2021

<https://newyork.fisheries.org/annual-meeting/>

**Read the special COVID-19 statement about the 150th Annual Meeting of the American Fisheries Society here: <https://fisheries.org/2020/03/special-covid-19-statement/>*

CHAPTER UPDATES

New York

Dan Stich, Chapter President

The New York Chapter recently held its 54th annual meeting February 5-7, 2020 in Lake Placid, NY. The theme “Coldwater Fisheries in light of Climate Change” was well-aligned with the two-foot snowstorm that blanketed the Adirondack ski village during the conference. More than 300 members (including 68 students!) were able to attend despite the weather. Of those, more than 100 also attended a fantastic half-day workshop about fish passage led by Brett Towler and Bryan Sojkowski from the US Fish and Wildlife Service. Stacy Furgal (USGS) and others launched the first annual New York Women in Fisheries Breakfast this year, which was attended by more than 80 people. The five plenary speakers included



Susan Cushman (Past-president NY Chapter AFS) addresses a group of more than 80 participants in the first annual New York Women in Fisheries Breakfast.



Things kick off at the 2020 Fish Passage Workshop led by Brett Towler and Bryan Sojkowski, US Fish and Wildlife Service

Brian Lantry (USGS, Great Lakes Science Center, NY), Ashley Moerke, (Lake Superior State University, MI), Tony David (Saint Regis Mohawk Tribe, NY), Nathaniel Hitt (USGS, Leetown Science Center, WV), and Dale William (Craig Newmark Graduate School of Journalism at CUNY). Their talks ranged from historical trends and changes in fisheries, to changes in cultures, and how we approach science communication. Attendees learned about current fisheries research, conservation, and management through more than 50 oral presentations and 48 posters. All talks from the 2020 meeting are now available through the [NY AFS YouTube channel](#) thanks to our talented volunteers.



We awarded 3 Klumb-Spindler student travel awards to undergraduate and graduate students, including Samantha Carey (SUNY Oneonta), McKenzie Frazier (Hobart and William Smith), and Iman Pakzad (SUNY ESF). Justin Herne (NYS Department of Environmental Conservation) and Shane Titus (Seneca Nation of Indians) received diversity-based travel awards. The diversity awards, designed to encourage inclusion and diversity within our membership, are in the second year thanks to Stacy Furgal (US Geological Survey) who was recognized with the 2020 David Bryson Memorial Award for these and other early-career contributions to our profession. Benjamin Marcy-Quay (Cornell University) won the best student presentation award, and Jonathon Stetler (Paul Smith's College) received the best student poster award.



In addition to recognizing successes of these students and (or) young professionals, we celebrated career accomplishments of two members who recently retired. Stephen Patch (US Fish and Wildlife Service) received the Professional Achievement Award for more than 40 years of dedicated service related to hydropower relicensing in New York State. The award was presented by a multi-generational group of regional colleagues at US Fish and Wildlife Service. Dr. John "Doc" Foster (SUNY Cobleskill) received the Honorary Membership Award in recognition of his impact on the profession through undergraduate education. The award was presented by former president and SUNY Cobleskill Professor Mark Cornwell, one of Foster's advisees and one of more than 50+ alumni who were present to congratulate Dr. Foster



Top: Bill Billerman, Mirror Lake Watershed Association accepts the Conservationist of the Year Award from Margaret Murphy (former president NY Chapter AFS and 2020 Local Arrangements Chair)

Middle: Steve Patch receives the Professional Achievement Award for a lifetime dedicated to hydropower relicensing in New York State.

Bottom: Shane Titus (Seneca Indian Nation) and Justin Herne (NYSDEC) receive the second-annual Diversity Awards, designed to foster inclusion of historically under-represented groups in the fisheries profession.

(myself included). Finally, the Mirror Lake Watershed Association was recognized for their work to protect Mirror Lake, located in the Town of Lake Placid, NY.

We are currently working to reschedule an R programming workshop that was scheduled for April 4 with the SUNY ESF Chapter but had to be postponed. For the latest news on this and other events, check out the news, job boards, and science blog on our [website \(https://newyork.fisheries.org/\)](https://newyork.fisheries.org/).

Dan Stich is President of the New York Chapter AFS, and Assistant Professor in the Biology Department at SUNY Oneonta. He can be reached at daniel.stich@oneonta.edu.



Dr. John Foster (center) receives the Honorary Membership Award, surrounded by multiple generations of SUNY Cobleskill alumni he advised.

Mid-Atlantic Chapter



MID-ATLANTIC CHAPTER
AMERICAN FISHERIES SOCIETY

Mike Greco and Mark Sullivan

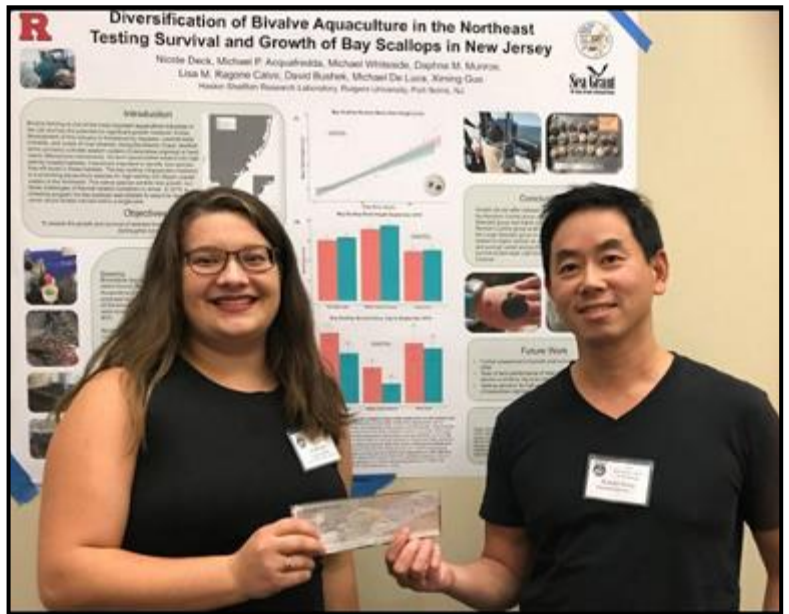
The Mid-Atlantic Chapter of the American Fisheries Society (MAC-AFS) held its annual meeting on November 21, 2019 at the University of Delaware's Virden Retreat Center in Lewes, DE. Despite shortening the meeting to one day, the meeting was an overall success. The meeting brought together 50 attendees and featured 9 oral presentations (3 student) and 9 poster presentations (8 student).

Awards were presented for "Best Student Oral Presentation" and "Best Student Poster Presentation." The "Best Student Oral Presentation" went to Emily Slesinger, a graduate student with Rutgers University's Department of Marine & Coastal Sciences, for her presentation on "The interaction between ocean warming and spawning latitude on U.S. Northeast Shelf black sea bass (*Centropristis striata*) energetics and reproductive potential throughout the spawning season."

The "Best Student Poster Presentation" was awarded to Nicole Deck, a graduate student with Rutgers University's Haskin Shellfish Research Laboratory, for her poster on "Diversification of bivalve aquaculture in the Northeast, testing the survival and growth of bay scallops in New Jersey."

We thank outgoing President Mike Greco (DE Fish & Wildlife) for making this meeting and venue an ideal showcase for student contributions to the Chapter. Also, a special thanks to Jessica Valenti (Rutgers) and Haley Oleynik (University of Delaware) for their help working the registration table prior to the meeting as well as Roland Hagan (Rutgers) for help overseeing the Student Raffle.

During the meeting, the chapter welcomed the following new Executive Committee members: Mark Sullivan (Stockton University) - Chapter President, Ian Park (DE Fish & Wildlife) - President-Elect, Jason Boucher (DE Fish & Wildlife) - Secretary, Nilanjana Das (Stockton University) - student representative.



(L) MAC-AFS Treasurer Rich Wong (DE Fish & Wildlife) presents Emily Slesinger (Rutgers University) with the "Best Student Oral Presentation" award for her work on black sea bass. (R) Rich Wong presents Nicole Deck (Rutgers University) with the "Best Student Poster Presentation" award for her work on bay scallop aquaculture.

Atlantic International Chapter

Peter Emerson, AIC President

January seems like a decade ago. If someone told me that the photos of the AIC ice fishing trip on Lake Memphremagog were taken in January of 2019, I might be convinced. Time has taken on new meaning during these last three chaotic weeks. This is an era of anxiety and uncertainty, and while our roles may be reduced or temporarily silenced, our optimism and commitment to our natural resources should remain forever strong. To all of our AIC professors and students, consultants and government biologists, parents and children: we will weather this, we will again be on the water, we will again be present to remind the rest of the world the value, relevance, and importance of our fisheries and the water they inhabit. Take this time to reach out and remind each other that this too will pass, that we will again be sharing stories at a conference, on a boat, on the ice, or crowded like herring on a 16

-hour car trip to Prince Edward Island. This too will pass!

The annual chapter meeting was held in Price Edward Island in 2019, at the Rodd Brudenell Resort from September 22-24. Thirty-three members travelled from as far as Sherbrooke, Quebec. Nineteen presentations were given, with sessions focused on American Eel, Atlantic Salmon, Use of Technology in Fisheries Research, and Citizen Science. Given the smaller than normal turnout the Executive Committee made a push to reconnect with former institutions and former members, and to take a deeper look at social media opportunities that haven't been maximized. For starters, the Quebec and University of New Hampshire (UNH) subunits have been underrepresented at recent annual meetings. The Quebec subunit is new, only forming a few years ago. The student energy is undeniable, as was showcased by the numerous events and socials on their schedule. The UNH subunit also has new blood, with two professors leading the surge. Dr. Elizabeth Fairchild and Dr. Nathan Furey are recent additions to the Executive Committee. Both subunits anticipate sending numerous students and professors to the annual meeting in Maine in 2020. Other efforts to increase participation include a newly formed Social Media



AIC members on the ice of international Lake Memphremagog. Student members from Quebec subunit (McGill and Concordia Universities represented) and University of New Hampshire subunit with staff from Vermont Fish and Wildlife went fishing on the Vermont side of the border during Vermont's annual free ice fishing day on January 25, 2020.

Subcommittee chaired by Dr. Trevor Avery from Acadia University. This group will add depth to the Chapter, as most of the real work will be led by student members who are already incorporating social media in their daily lives. Finally, the Chapter will be reaching out to retired former and current members to encourage them to continue to make time for the AIC and the annual meeting.

Vermont Fish and Wildlife (VFWD) hosted a free ice fishing event on January 25th. Twelve students from the Quebec subunit, 4 students from the UNH subunit, and 3 employees from VFWD arrived on Lake Memphremagog and watched the sun rise. This in itself was an accomplishment, considering all 19 spent the previous night making dinner and telling stories late into the night. Floor space only for sleeping, and not a single complaint about the lack of sleep, the noisy breakfast and the rush out the door at 5:30 a.m. The long trek to "Twin Islands" took about 20 minutes, and after a quick ice safety lesson and some tips on jigging, the crew spread out to drill holes, set tip-ups, and play with the fish-finder. Lake trout, yellow perch, white perch and rainbow smelt went in the bucket. By the end of the day everyone caught at least one fish and promises were made for another effort the summer of 2020.

The Chapter is currently scurrying to arrange a joint NED/AIC meeting September 27-29 in Maine. Executive Committee members are working with Maine representatives to choose a site and to arrange a workshop on Communicating Science to the General Public.



Acadia student Brandon Nilsen went home with desert! The AIC annual meeting was held in Prince Edward Island in September 2019 which included a raffle and silent auction. Brandon was the winner of the fabled fruit cake, as created by Local Arrangements Host Rosanne McFarlane of Prince Edward Island Forest, Fish and Wildlife Division.



STUDENT SUBUNIT UPDATES

Marine Academy of Technology and Environmental Science

Dr. John Wnek

The MATES subunit has been working on a CRABB survey analysis over the past year investigating crabbing activities in Barnegat Bay. We recently presented our work to scientists from NJ Fish and Wildlife and NJ Department of

Environmental Protection, and plan to draft white paper on the project this spring.



Quebec Subunit

Maddie Murray

The 2019-2020 academic year marked a fantastic period of growth for the recently inaugurated Quebec student subunit. This year's biweekly meetings featured presentations from industry, conservation, academia and student research perspectives, bringing together a diverse and vibrant student membership representing several major universities in the Montreal area.

A highlight from this seminar series includes Dr. Pete Emerson (President of the Atlantic International Chapter) and Max Veillette's presentation about their ongoing survey efforts of Lake Memphremagog, which spans the international, Quebec-Vermont border. They led a discussion about the importance of international collaboration, and the importance for researchers to appreciate and draw from the perspectives of anglers.

Our students got a taste of this practical perspective when Pete invited the AIC students to Memphremagog for an ice-fishing trip this past January. Over a dozen AFS Quebec members had an incredible time catching perch, smelt, and even a few lake

trout! A first-time experience for many, the students returned with new skills, new friendships, and a renewed enthusiasm for the commonality that unites us: a passion for fish!

Indeed, AFS Quebec students show their bubbling enthusiasm at every meeting, which often turns into long and enthusiastic discussions with the invited speakers at the local student bar. One such instance was incited by an exceptional presentation delivered by Dr. Steve Sutton and Charles Cusson of the Atlantic Salmon Federation on the topic of contemporary salmon conservation. Technical questions about research methodology soon gave way to philosophical debates about consumer ethics and the role and responsibilities of scientists in affecting policy change.

Other notable seminars hosted by AFS Quebec this term include Professor Pedro Perez-Neto (Concordia University) on spatial and quantitative ecology using fish models, as well as subunit president Maddie Murray's research with the Monterey Bay Aquarium's Seafood Watch program. We hope to further spotlight student research in upcoming meetings and foster an environment for peer learning and mentorship. We are invigorated by the spirit shown by the AFS community in the past year and are looking forward to future opportunities to connect with chapters in the Northeastern Division!



Dr. Pedro Peres-Neto delivering an engaging seminar on spatial and quantitative ecology using fish models at an AFS Quebec student subunit meeting

Rutgers University

Sarah Borsetti

Students at Rutgers University created a subunit within the Mid-Atlantic Chapter (MAC) of the American Fisheries Society (AFS) in the Fall of 2017. Since this time, we have been building our membership of fisheries graduate and undergraduate students at Rutgers. Our members are based throughout the state at various campuses and field stations and this subunit aids in fostering interaction between students that have a passion for fisheries science.

Recently, in December 2019, 12 students from the subunit participated in an interactive 'Introduction to GIS' course taught by Anna Bashkirova, an undergraduate in Ecology, Evolution, and Natural Resources at Rutgers studying Geomatics. This hands-on 6-hour course introduced participants to ArcGIS and provided students an opportunity to learn how to view, manip-



CV building workshop lead by the Vice-President of the Rutgers Subunit, Emily Slesinger

ulate, and analyze spatial data. Students were able to work through two analysis independently using Exxon Valdez oil spill data. Additionally, students participated in an interactive CV Workshop, led by the subunit's Vice-President Emily Slesinger. Students discussed how to best build a CV to make themselves as competitive as possible for graduate school, jobs, and scholarships. The Mid-Atlantic Chapter was generous in providing resources which made this workshop possible.

The subunit is working on starting a webinar series hosted at Rutgers main campus which would allow for live in-class participation or remote involvement. These webinars will host speakers selected by subunit members and range in topics such as career advice, graduate school, social media, and much more. Our subunit works very closely with other NJ subunits and will open the webinar to their membership allowing for a greater student network across the state.



Anna Bashkirova leading the 'Introduction to GIS' course at Rutgers University

University of Maine

Matt Mensinger and Gabriella Marafino

We welcomed many new faces to the UMaine AFS community this year after saying goodbye to our graduating members last May. The subunit enjoyed a busy fall semester where fish printing and fly-tying workshops were fan favorites. This year, we started a new UMaine AFS tradition: "Fish Book Club". Unlike your typical book club, where everyone reads an assigned piece of literature, members shared their favorite fish-themed novel, journal article, textbook, cookbook, etc. With selections from Hemmingway to Kurlansky, we added plenty to our reading lists and plan to make the book club a biannual event!

In January, we partnered with the Maine Science Festival to host our first ever "Fish Explorations" pop-up event at the Maine Discovery Museum in Bangor. We showcased some of our outreach materials including fish printing, telemetry demonstrations, and macroinvertebrate identification. The event was a hit for museum guests and subunit members alike!

In March, we hosted our annual ice fishing trip to Hermon Pond. The event coincided with free-fishing weekend across Maine, which afforded everyone an opportunity to get out on the ice. Our trip was preceded with a seminar on ice fishing

techniques and safety protocols led by veteran ice fisherman Kory Whittum. With tip ups and jigging rods aplenty, we were gifted with crappies, yellow perch, and good times.

Although many of our spring events were postponed, we are using this time to regroup, recharge, and plan for another great year. Stay in touch by following us on Facebook (@UMaineAFS) or shooting us an email (umaineafs@gmail.com). Best fishes!



The Sarahs (Vogel and Rubenstein) demonstrate PIT Tagging during our pop-up event at the Maine Discovery Museum



UMaine AFSers take a break from jigging during our annual ice fishing trip to Hermon Pond

UMass—Amherst

Tucker Catanzaro

The University of Massachusetts - Amherst AFS subunit had a very successful fall and spring semester. This past fall we elected new officers and worked on encouraging students, both undergraduate and graduate, to join. In November, we held a free screening of the Patagonia film 'Artifishal' which was well attended by students from many different majors, all showing an interest in protecting our natural resources. In the fall semester we also held a fly-tying event with the Pioneer Valley chapter of Trout Unlimited and we hope to hold more events with them in the future. For the rest of the spring semester, we planned to have guest speakers from the USFWS and other agencies, hold community events such as a river cleanup and "Day in the Life of a Fisheries Scientist" for elementary students, and to have a meeting where graduate students answered questions from undergraduate members about graduate school and research. While the spring semester did not pan out as expected, I am sure that in the fall semester we'll continue to increase awareness about fisheries science and build a community of students who are passionate about conserving our natural resources.



UMass Amherst fly-tying event with Trout Unlimited's Pioneer Valley Chapter



California University of Pennsylvania

Dr. David Argent

The CalU chapter assisted the PA Fish and Boat Commission with steelhead collection in November. In December, they performed a fundraising event, selling handmade gyo-taku tee-shirts and freshwater drum otolith earrings. For spring 2020, the chapter is planning a canoeing trip (once the weather breaks), and will be helping the PA Fish and Boat Commission with their spring walleye and muskellunge collection. In addition, they will be volunteering at the Linesville Hatchery Open House. We also have a possible trip, behind the scenes at the Pitts-

burgh Zoo and Aquarium. Lastly, various members are working on aging projects - from muskellunge spine aging to scale aging of redhorses.



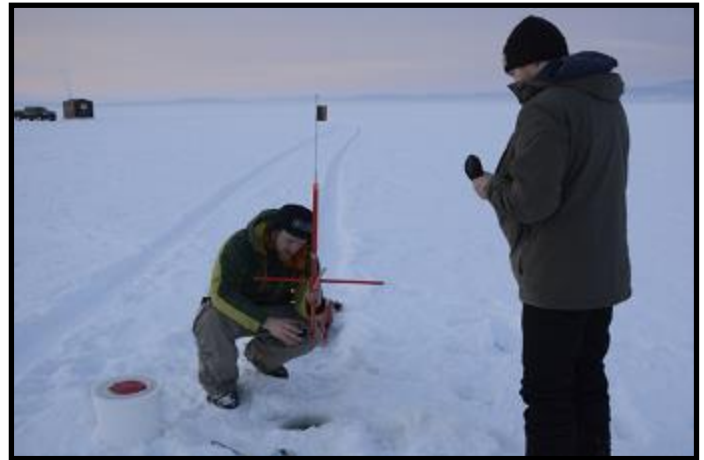
CalU subunit president Dan McConnville selling handmade gyo-taku tee-shirts

University of New Hampshire

Mike Doherty and Nate Spada

Here at UNH, we are excited to announce our subunit's revival! Over the past semester we have been hard at work getting ourselves back in action after a couple of dormant years and getting UNH students excited about AFS. We already have a robust roster, and are ready to start planning future activities. To kick-off this exciting time, a few of our members joined the Atlantic International Chapter's subunit celebration ice fishing trip. Fun was had by all. We are fortunate to have a number of graduate and undergraduate students among our members, all with diverse backgrounds, expertise, and interests. Some of our members are researching Arctic char ecology, while others are hard at work with lumpfish aquaculture. We

are all looking forward to meeting you and learning from you. Here's to collaboration and making the most of our subunit's renewed place in the North-eastern Division of the American Fisheries Society!



Subunit members Tyler Parent and Lars Hammer having fun in the ice.



*Subunit President Mike Doherty and lumpfish.
Photo by Tim Briggs, NH Sea Grant.*



Subunit Faculty Advisor Dr. Elizabeth Fairchild and Subunit Secretary Mary Kate Munley reviewing live feed counts. Photo by Sarah Schaier, UNH College of Life Sciences

Stockton University

Nilanjana Das

The Stockton University Student Subunit of the American Fisheries Society has had a busy year with members taking advantage of new public outreach, volunteer, and networking opportunities! The subunit started off the fall semester with public outreach by leading hands-on kid's activities at Stockton's annual "Coast Day" and organized local beach clean ups.

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During meetings, members often shared their results from summer research programs like REUs, heard from guest speakers, or discussed the current events in fisheries biology research or management. Professional development workshops were also led in conjunction with the university's Career Education and Development Office regarding resume/CV building and essential interview tips. Members then had the opportunity to apply the skills they practiced during meetings through poster and oral presentations at the annual meeting for the Mid-Atlantic Chapter of the American Fisheries Society! During the spring semester, the executive board led meetings centered around internship searching and also launched a new series of "Alumni Feature Friday" posts on social media to encourage networking amongst members and professionals within the fisheries field!



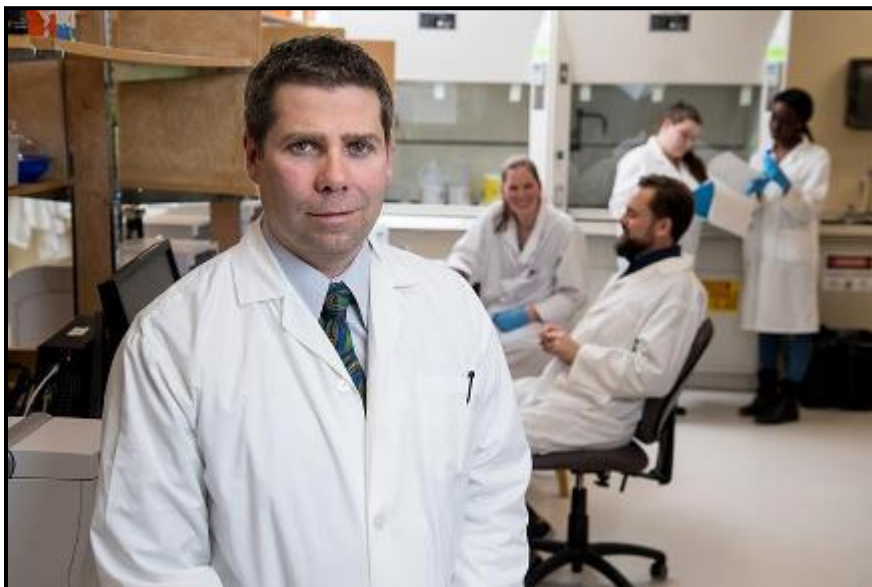
Stockton Student Subunit members after a cleanup on Brigantine Beach.

FISHERIES NEWS

eDNA Research at Canadian Rivers Institute

Canadian Rivers Institute Fellow Dr. Scott Pavey has received \$239,000 in funding for research that will contribute to the Genomics Network for Fish Identification, Stress, and Health (GEN-FISH). GEN-FISH is aimed at using DNA barcoding to identify the location and

abundance of Canada's freshwater fish species, and better understand how fish respond to stressors. GEN-FISH received \$9.1 million from Genome Canada and Agriculture and Agri-food Canada, with additional financial support from provincial governments, Canadian universities and other partners.



Dr. Pavey will be contributing his expertise in environmental DNA and state-of-the-art equipment in the CRI Genomics Laboratory. He will be responsible for all of the GEN-FISH work in New Brunswick and will work to develop stress-monitoring tools. Visit here for further details: <http://blogs.unb.ca/newsroom/2020/02/fishing-for-facts-in-canadas-lakes-and-waterways.php>

2nd CALL FOR ABSTRACTS

General Theme: Interdisciplinary Solutions to Flatfish Challenges

Abstracts due May 1, 2020



November 15-20, 2020; New Castle, New Hampshire USA

Historic Wentworth-by-the-Sea Hotel

More information and abstract submission at:

<https://www.flatfishsymposium.com/international-flatfish-symposium-2020>

Linda E. Bireley

In Memoriam

Don Danila

Linda E. Bireley, formerly of Lyme, CT, passed away on November 8, 2019 after a prolonged battle with a debilitating illness. She was born on December 9, 1949 in Washington, DC and grew up in northern Virginia. Family activities on or near the water during her youth spurred her interest in the environment and science. Linda received her Bachelor of Arts in biological sciences in 1971 and Master of Science in marine microbiology in 1974, both from the University of Connecticut. She received a Ph.D. in biological oceanography in 1985 from the Graduate School of Oceanography at the University of Rhode Island. Linda began her professional career in 1973, working at the Millstone Environmental Laboratory in Waterford, CT under contract to Northeast Utilities. At first she was employed by Woods Hole Oceanographic Institute and then by Normandeau Associates. Her work quantified the impacts of electric power generation on planktonic communities through field and laboratory work that included collecting, enumerating, and identifying phyto-, zoo- and ichthyoplankton found in cooling water withdrawn by Millstone Power Station from Long Island Sound. In 1977, she became directly employed by Northeast Utilities as a senior scientist at the Millstone Lab. Her work expanded to developing methods to assess all potential impacts of electric power generation on aquatic ecosystems, including fisheries resources. Linda analyzed the effects of losses of estuarine fish eggs and larvae entrained through Millstone Power Station on indigenous fish populations. She later focused on adult estuarine fish assemblages and developed an innovative application of time-series analysis to document power plant-related changes in those fish assemblages. As she gained experience, Linda became responsible for supervising 9 to 15 technicians and scientists researching potential effects to aquatic resources by the operation of most Northeast Utilities system hydro- and steam electric power generating facilities. In 1993, Linda was promoted to a manager position and transferred from Millstone to Northeast Utilities headquarters in Berlin, CT. There she became involved in management processes associated with company environmental



compliance and with correspondence between the utility and environmental regulatory agencies. She also worked to implement a comprehensive and standardized environmental management system for the entire corporation to improve enterprise-wide environmental compliance, a project based on the international standard of ISO 14001. Throughout her career Linda was a highly respected scientist, supervisor, and manager and she retired from Northeast Utilities in 2004.

Linda joined the American Fisheries Society in 1980 and served the organization in many roles. This started with the Southern New England Chapter, where she served on various committees and performed student paper judging. In 1989, she organized a joint meeting between the Southern New England Chapter and the New England Estuarine Research Society, another organization with which she was engaged. Besides being very active in the Chapter she was also a member of two sections, Equal Opportunities and Estuaries, for which she was elected section president during 2001-02. Linda served the Chapter through elected positions as secretary-treasurer (1991-92), president-elect (1992-93), and president (1993-94). In 1995, appointed as a representative of the Chapter, she was instrumental in helping to form the Connecticut Department of Environmental Protection Fisheries Advisory Council. She served the FAC first as secretary and then as its chair from 1999 through 2001, finally resigning as a mem-

ber in 2010. Linda was a major force in advancing the organizational structure of this organization and expanded communications among resource users, other interested groups, and the Department. Her efforts in obtaining additional funds for DEP through testimony and other communications with the Connecticut Legislature were particularly noteworthy. Within the AFS Northeastern Division, Linda served as a student liaison (1993-94), Student Travel Grants Committee chair (1993-95), first vice president (1996-97), president-elect (1997-98), and president (1998-99). In her role as Northeastern Division president, Linda served on the AFS Governing Board during 1997-99. She also served on the Parent Society Strategic Plan Revision, Display and Advertising, Nominating, Management, Distinguished Service Award, Outstanding Chapter, and J.F. Allen Scholarship Committees. Linda initiated the effort to bring the 1998 AFS Annual Meeting to Hartford and was instrumental in its planning and success. In 2000, Linda received the highest recognition at the national level of AFS by being nominated for Second Vice President of AFS. Linda received the Northeast Division's President's Award in 2001 and the Chapter's Irwin Alperin Membership Service Award in 2002. Both these awards acknowledged her considerable years of service to the Chapter, Division, Parent Society, and other units of AFS. Throughout all her years in AFS, Linda especially served as a mentor and role model for young women entering the fisheries profession.

In efforts outside of AFS, but allied with the best interests of the organization, Linda was a leading force on the local level for the consideration and eventual inclusion of the Eightmile River in southeastern CT as part of the National Wild and Scenic Rivers System.

Both before and after her retirement, Linda was also very active in her community of Lyme and was known there as an outstanding public servant. She served as an EMT with Lyme Ambulance for 28 years, including becoming Crew Coordinator during both 1992-94 and 2003-04. When she retired as a responder, she continued to provide quality control by reviewing run charts. Linda also served as Open Space Coordinator and did substantial trail work for the Lyme Land Conservation Trust, serving as its Vice President and Stewardship Committee chair. Linda was

instrumental in obtaining grants for financing the repair of the Moulson Pond fish ladder and for obtaining automatic external defibrillators for the Ambulance Association. Linda also coordinated the maintenance and monitoring of Lyme's three fish ladders. She will be honored by the Lyme Conservation Trust, who will name the Moulson Pond fish ladder after her. Linda's belief was that "our sense of well-being has so much to do with our sense of place" and this was reflected in all of her volunteer activities.

For those wishing to honor Linda's memory, donations may be sent to Michaeljfox.org or Parkinsons.org.

Words from the West Coast

Dr. Robert Lackey

Oregon State University Professor Robert Lackey, presented a talk, "*Darwin Was Right: A Scientist Needs a Heart of Stone*," at the 56th Annual Meeting of the of the American Fisheries Society, Oregon Chapter, March 6, 2020. Polls show that public trust in the political and policy impartiality of scientists is low. Lackey encouraged AFS members, especially scientists, to recognize that scientific information communicated by scientists to managers, policy makers, and the public should be the relevant, unvarnished facts, including probabilities, uncertainties, and caveats. Only scientists can credibly provide such information, but scientists will not be trusted unless they are — and are perceived to be — even-handed and policy-neutral. The talk is available online:

https://media.oregonstate.edu/media/0_melddnvc



DIY Topography Table for AFS Outreach

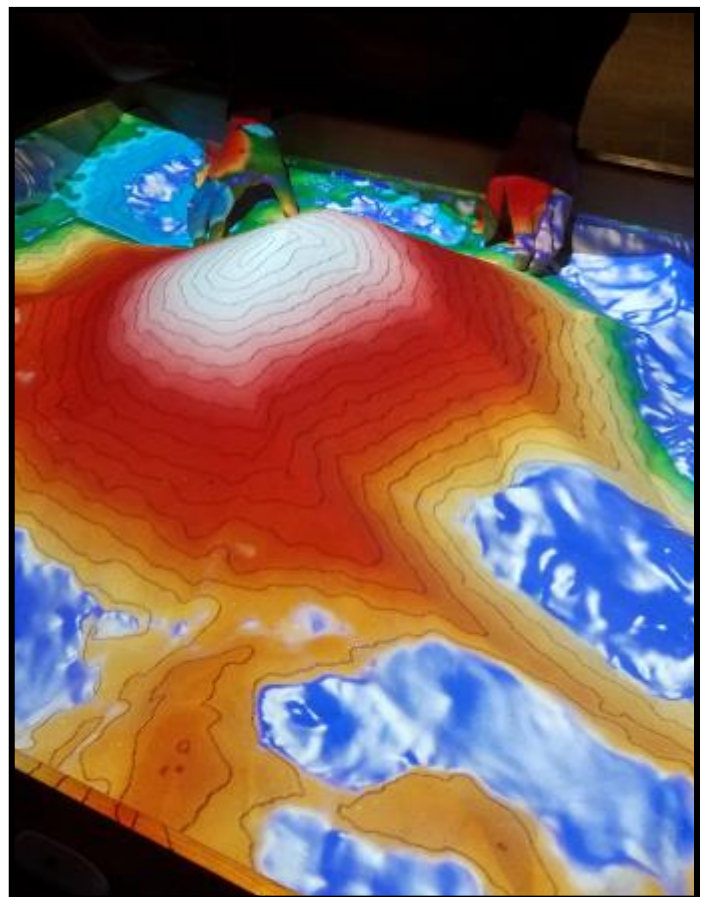
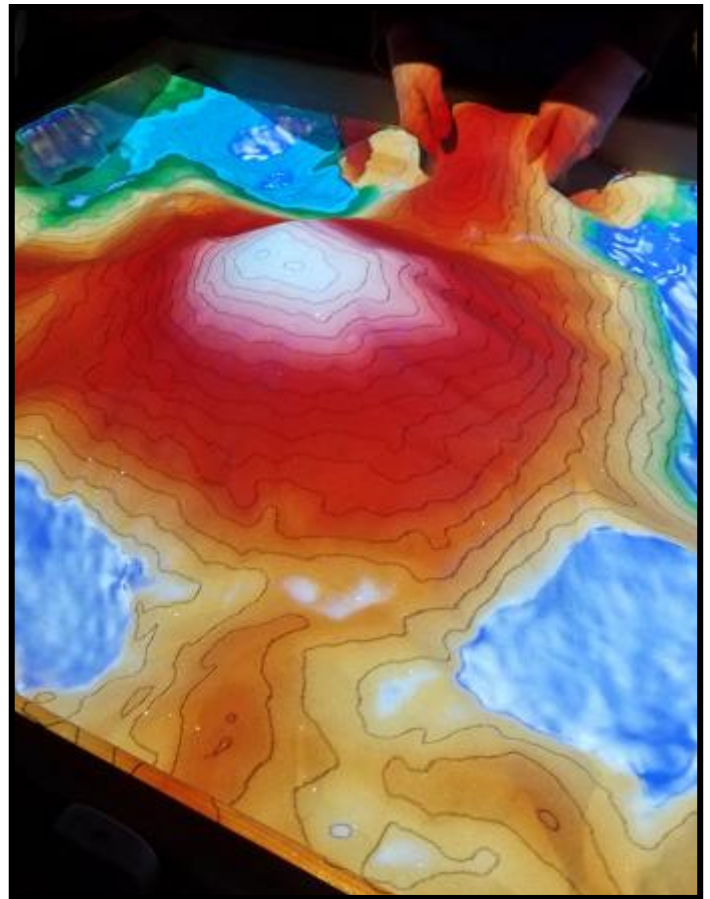
Sarah Vogel

Perhaps one of the most satisfying things about being a member of the American Fisheries Society and its Northeastern Division, are the opportunities we have to engage in education and outreach. Planned activities allow us to connect with our communities, give back to local schools, and promote awareness of fishery-related issues. They allow us to be mentors and educators and push us to grow as professionals. There are many ways to participate in education and outreach and the University of Maine's AFS Student Subunit may have found one of its favorites.

Developed by researchers at UC Davis, the Augmented Reality Sandbox, provides a great way to engage children and adults alike. It provides a great introduction to geoscience concepts from geology to hydrology, and beyond. It lets users build geographical features such as mountains, rivers, and lakes in a contained sandbox. As features are built, a color-coded contour map is projected that changes as users move sand around. There is even a built-in water simulator that allows users to create "rain" that realistically flows and gathers in low areas.

DIY plans are available at <https://arsandbox.ucdavis.edu/> which provides step by step instructions on building the physical table, assembling the technological parts, and addressing software set up. These plans are relatively easy to navigate even for novices, as the UMaine AFS Subunit found out. The best part of the process are the many help forums that are available for troubleshooting...and, of course, the look on peoples' faces when they see the sandbox in action for the first time. Many lesson plans and education ideas are available online to enhance the experience. Now that we all have more time on our hands, if you're interested, we highly recommend building this DIY project. It's a great way to a little wow to your already robust education and outreach programs.

Sarah Vogel is a graduate student and past-president of the UMaine subunit. She can be reached at sarah.vogel@maine.edu





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Originating in 1974 and held every 3-4 years, this symposium offers attendees exposure to the latest information on status, science, technology, philosophy, and preservation of coldwater wild salmonids in an international forum for professional wild trout biologists and fishery advocates. The 13th international Wild Trout Symposium will be held September 22–25, 2020 at the Holiday Inn in West Yellowstone, Montana, USA, adjacent to the west entrance to Yellowstone National Park.

Save the date, and please circulate and post this notice
Questions: WT-XIII Chairman, Kevin Meyer, kevin.meyer@idfg.idaho.gov, (208) 854-8916

RECENT PUBLICATIONS

The effect of normoxia exposure on hypoxia tolerance and sensory sampling in a swamp-dwelling mormyrid fish

Submitted by Shelby Clarke

Abstract: Effects of energetic limitations on the performance of sensory systems are generally difficult to quantify. Weakly electric fishes provide an ideal model system to quantify the effects of metabolic stressors on sensory information acquisition, because they use an active-sensing strategy that permits easy measurement of the sensing effort. These fishes discharge an electric signal and sense perturbations of the resulting electric field. We used the mormyrid *Petrocephalus degeni* to quantify the relationship between routine metabolic rate and the rate of sensory sampling (rate of electric organ discharge, EOD) while under progressive hypoxia by quantifying the critical oxygen tension (PC-MR) and the critical electric organ discharge threshold (PC-EOD). PC-MR was significantly higher in fish acclimated to normoxia for over 40 days compared to animals tested within 1–5 days of capture from a hypoxic swamp, which suggests high costs of maintaining hypoxia tolerance; however, there was no acclimation effect on PC-EOD. All *P. degeni* reached their PC-EOD prior to their PC-MR. However, below the respective critical tension value, EOD rate decreased more gradually than the metabolic rate suggesting that the fish were increasing the proportion of their energy budget allocated to acquiring sensory information as dissolved-oxygen levels dropped. Trade-offs between sensory sampling and other physiological functions are also suggested by the increase in routine EOD rate with long-term normoxia acclimation, in contrast to metabolic rate, which showed no significant changes. These results highlight the relationship between sensory sampling and metabolic rate in response to progressive hypoxia and the plasticity of hypoxia tolerance

Reference: Clarke, S. B., Chapman, L. J., & Krahe, R. (2020). The effect of normoxia exposure on hypoxia tolerance and sensory sampling in a swamp-dwelling mormyrid fish. *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, 240, 110586.

DOI: <https://doi.org/10.1016/j.cbpa.2019.110586>

Atlantic Striped Bass: An Inter-jurisdictional Fisheries Management Success Story

From the AFS publication: “From Catastrophe to Recovery: Stories of Fishery Management Success”

Submitted by Ron Essig

Abstract: The Striped Bass, *Morone saxatilis*, is an extremely important commercial and recreational species with a coastal migratory stock in the United States referred to as “Atlantic Striped Bass” managed by the Atlantic States Marine Fisheries Commission (ASMFC). Atlantic Striped Bass has four major contributing stocks including the Chesapeake Bay, which comprises 70-90 percent, the Hudson River, the Delaware River, and the Albemarle Sound-Roanoke River (A/R). The collapse of Atlantic Striped Bass in the late 1970s precipitated federal funding and legislation like the Emergency Striped Bass Study for research on causative factors of the decline and potential management recommendations. The 1981 ASMFC Interstate Fishery Management Plan (ISFMP) for Atlantic Striped Bass was non-mandatory and mostly ineffective until the 1984 Atlantic Striped Bass Conservation Act provided regulatory authorities to the ASMFC and the federal government to close fisheries in states out of compliance with ISFMPs. Restrictions and moratoria on harvest imposed in several states reduced mortality, and under favorable environmental conditions, and given Striped Bass life history, multiple years of good recruitment occurred. This allowed target thresholds for female spawning stock biomass to be

achieved and the ASMFC to declare recoveries of Atlantic Striped Bass stocks from 1995 to 1998. Regulation of river flows was particularly important for the A/R stock recovery and this stock is presented as a case study. During the 20+ years following recovery, long-term monitoring by states in support of adaptive management was primarily supported by the stable, non-appropriated funding of the Sport Fish Restoration Act. Monitoring includes spawning stock characterization and biomass estimation, juvenile abundance surveys, cooperative coastwide tagging, and harvest data collection. Future issues facing the recovered Atlantic Striped Bass include interspecies effects of relatively high abundance, management of stocks separately instead of as a single coastal stock, and ecosystem-based fisheries management. Key lessons learned in the Atlantic Striped Bass recovery are that: high societal value of the species provided the political impetus to create and fund the recovery program; coordination of management and enforcement efforts among all jurisdictions was essential for this migratory species; and fully-funded long-term monitoring programs are critical to adaptive population management.

This chapter was written by Ronald J. Essig, R. Wilson Laney, Max H. Appelman, Fred A. Harris, Roger A. Rulifson, and Kent L. Nelson. The book is available through the AFS Bookstore at <https://fisheries.org/bookstore/all-titles/professional-and-trade/55080c/>.

The role of sand lances (*Ammodytes* sp.) in the Northwest Atlantic Ecosystem: A synthesis of current knowledge with implications for conservation and management

Submitted by Michelle Staudinger

A new paper released in March 2020 in the journal *Fish and Fisheries*, describes the ecosystem role of sand lances (*Ammodytes* sp.) in the Northwest Atlantic Ocean (NWA). The working group and paper



Sand lance. (Photo by NOAA)

were led by a collaborative team of 24 coauthors representing 15 state and federal agencies, academic and nonprofit institutions. The paper calls for increased focus on sand lance and their ecological role in the Northwest Atlantic Ocean, which is changing rapidly and facing increased pressure and risks from climate change, fishing and offshore wind energy development.

Although it is known that sand lance serve as an energy conduit linking upper and lower trophic levels, specific aspects of their regional ecology, population dynamics, and vulnerability to current and future stressors are poorly understood. This is in part because their small size, elongate body form, and unique behavior of burrowing into the seabed make them difficult to sample, using typical survey methods. Sand lance form dense schools that appear to fluctuate widely in abundance and distribution over seasonal, annual, and decadal scales. Unlike most forage fishes, sand lance are strongly associated with bottom habitats comprised of clean sandy sediments located in relatively shallow water depths of < 100 meters. This “place-based” aspect of their ecology can make them a spatially predictable resource for predators, but also increases their vulnerability to climate change and other human impacts such as overfishing, sand mining, and oil spills.

continued on next page

Through a data and literature synthesis, 72 regional predators including 45 fish species, 2 squids, 16 seabirds, and 9 marine mammals were found to consume sand lance. Priority research needs identified during this effort include basic information on the patterns and drivers in abundance and distribution of sand lances, improved assessments of reproductive biology schedules and investigations of regional sensitivity and resilience to climate change, fishing and habitat disturbance. Food web studies are also needed to evaluate trophic linkages and to assess the consequences of inconsistent zooplankton prey and predator fields on energy flow within the NWA ecosystem. Synthesis results represent the first comprehensive assessment of sand lances, in the NWA and are intended to inform new research and support regional ecosystem-based management approaches.

DOI: <https://doi.org/10.1111/faf.12445>



Tern chick with sand lance

Photo by Keenan Yakola (UMass-Amherst)

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