Spring 2021

The Northeast Fish Rapper

Newsletter of the Northeastern Division of the American Fisheries Society

President's Message

NED President Ed Hale

I hope you are all excited at the potential return to something of a normal work routine in the next year. I know, I remain hopeful for more in person meetings. This past year has marked one of the most challenging and interesting inflection points for our society, as we all have had to deal with COVID related impacts in one way or another. Many of you have risen to meet this challenge by adapting to social distancing procedures for field and laboratory studies, participating in numerous online meetings as well as hosting and attending virtual conferences. As socially awkward as I am, even I look forward to an in person social event. Hopefully, I will get to meet some of you in person at the annual meeting of the American Fisheries Society in Baltimore, MD from November 6-10, 2021.

Your officers at the Northeastern Division, along with the Presidents of the Chapter units have all been working hard to adapt current meetings, plan for multiple contingencies, and accommodate members as best they can. Further, staff at the society, along with the current society officers including President Brian Murphy, are all working to continue to adapt and deliver high performance publications, meetings, events, and professional development opportunities. Brian has identified four focus areas for his presidential term including increasing public visibility and trust in our work, redoubling efforts to increase diversity, improving equity and inclusion, helping members advance their careers, and planning for the rebranding

In this issue

Editors

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needs of the society. So, we at the Division and Chapter levels have been involved with attempting to implement strategies that help address all of these issues. Despite significant gains on many initiatives, we still have much to do. And I encourage all of you to get involved with AFS at some level, so you can contribute to the mission of our organization.

For those of you unfamiliar with the mission of the organization, AFS strives to improve the conservation and sustainability of fishery resources and aquatic ecosystems by advancing fisheries and aquatic science and promoting the development of fisheries professionals. As members of AFS, we all work cooperatively to achieve this end and I encourage each of you to maximize your suite of benefits by becoming full members of the society. I know that I have benefitted greatly from being involved with AFS through exposure to different perspectives and new opportunities to advance my career.

Our membership meeting will be held in conjunction with the annual meeting this year in Baltimore, MD this fall. But, several of our chapters have already had an opportunity to host their own subunit meetings so far, with many groups offering low cost/free meeting registrations and webinar opportunities for career development. And I think we can and should, as a group share in their successes. The Mid-Atlantic Chapter held a virtual networking lunch as part of their annual meeting connecting students with professionals. The Pennsylvania Chapter reported participation beyond their normal meeting boundaries, with broader national participation at their annual meeting. The New York Chapter had more than 200 meeting participants at their annual meeting, including two live events with their Women in Fisheries group and videos uploaded to YouTube. The Southern New England Chapter had 96 registrants and nine students present their work at their winter meeting. And the Atlantic International Chapter featured three student subunit led virtual seminars with at least 60 attendees per seminar. So, everyone is hard at work trying to adapt to our new virtual lifestyle and move forward as best we can. For more information, take a look at the articles from each chapter within the newsletter.

Respectfully,
Ed

UPCOMING MEETINGS

Southern New England Chapter
June, 2021, Date TBD
Virtual
https://snec.fisheries.org/

Pennsylvania Chapter Summer Social
July 17, 2021
Raystown Field Station
https://pa.fisheries.org/wp-content/uploads/2014/03/2021SummerSocial.pdf

Atlantic International Chapter
September 26-28, 2021
Virtual
https://aic.fisheries.org/meetings/

AFS Annual Meeting
November 6-10, 2021
Baltimore, Maryland
https://afsannualmeeting.fisheries.org/

Northeastern Division
In Conjunction with the AFS Annual Meeting
November 6-10, 2021
Baltimore, Maryland
https://ned.fisheries.org/

Mid Atlantic Chapter
In Conjunction with the AFS Annual Meeting
November 6-10, 2021
Baltimore, Maryland
https://mid-atlantic.fisheries.org/

New York Chapter
February, 2022
Long Island, New York
https://newyork.fisheries.org/annual-meeting/

CHAPTER UPDATES

Mid Atlantic Chapter

Ian Park, Chapter President

The Mid-Atlantic Chapter of the American Fisheries Society (MAC-AFS) held its annual meeting on November 13, 2020. Like many other chapters, this year's meeting was held virtually with the theme "Caught in the Middle-Adapting to Change in Fisheries." Despite most of us being overwhelmed with webinars and zoom meetings, the chapter meeting brought together 82 attendees and contributed sessions consisted of 11 full presentations, 7 larval presentations, and 1 unique songscape. Larval presentations represented a new category highlighting 3-5 minute overviews of new or developing projects. Awards were presented for "Best Student Oral Presentation" and "Best Student Larval 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 titled "Spawning Phenology of a Rapidly Shifting Marine Fish Species Throughout Its Range." The "Best Student Larval Presentation" was awarded to Heidi Yeh, a Ph.D. Student in Oceanography with Rutgers University's Department of Marine and Coastal Sciences, for her presentation titled "Oyster Microbiome Dynamics Driven by Salinity and Seasonality in the Delaware Bay." We thank outgoing President Mark Sullivan (Stockton University) for making this unusual meeting and venue a success and allowing for the continuance of student contributions to the Chapter. Also, a special thanks to Nilanjana Das (Stockton University) for her help organizing a virtual networking event. During the meeting, the chapter welcomed the following new Executive Committee members: Ian Park (DE Fish & Wildlife) - Chapter President, Dr. Jim Vasslides (Barnegat Bay Partnership) - President -Elect, Keith Dunton (Monmouth University) – member at large, and Devon Scott (University of Delaware) - student representative.

Heidi Yeh (left) and Emily Slesinger (right) show off their presentation awards to chapter members since they were unable to be presented in person.

Atlantic International Chapter

Pete Emerson, Chapter President

The Atlantic International Chapter has maintained a high energy level throughout the pandemic, resulting in three mini-conferences hosted by the Quebec Student, the University of New Hampshire, and the University of Maine subunits. Each subunit brought their own version of a virtual party to the meetings, and most importantly, maintained a sense of belonging to the Chapter that remains intact as we approach our field seasons. Keep an eye out for more subunit-hosted seminars which will remain open to all. While we miss gathering as one at conferences, fishing events and whatever excuse we can come up with to get together, it was encouraging to see that the membership made time to get together where it was safe (finally, ice fishing was considered the safest place to convene! Talk about a silver lining!). Quebec subunit president Brian Gallagher made an effort to get folks outside for Vermont's free fishing day in January. Sadly, only Pete Emerson showed up...fortunately Brian brought a few of his friends from the Quebec subunit that were riding out the pandemic in the sticks (aka any town Vermont). Wish we had some photos to share, but the temperatures plummeted, the wind picked up and the fish weren't biting so the cameras had no reason to come out. We plan to make the free fishing day an annual event, so stay tuned for summer 2021 and certainly winter 2022.

The Executive Committee had a difficult decision to make as it prepared for the 2020 annual meeting. With the planned joint NED/AIC meeting cancelled due to the pandemic, it became clear that a rushed business meeting would need to occur to elect new officers. Instead, the ExComm decided to cancel the business meeting, which allowed the AIC to satisfy the bylaws and continue operating with the same board members. This will allow a smoother transition to new ExComm members as we plan our annual meeting to be held in September 2021.

Regarding the fall meeting, we recognize that our International border adds complications that other Chapters might not experience. Therefore, as the ExComm plans the fall meeting it will ensure that contingencies exist for a virtual experience that can include opportunities for student and professional presentations and posters. Keep an eye on the AIC website for updates for a September virtual conference that will take place over a few weekday afternoons and evenings.

Pennsylvania Chapter

George Merovich, Chapter President

The Pennsylvania Chapter of the American Fisheries Society held its annual technical meeting on Feb 11 and 12, 2021. Registration was free and the virtual format allowed 149 folks from across the country to attend the first day of talks. Dr. Prosanta Chakrabarty "zoomed" in from Canada to deliver the plenary on "Ichthyology in the Age of Covid." The technical sessions included topics on climate change impacts to fishes, conservation and assessment of fish and fisheries, and invasive species. "Lightning talks" accompanied poster presentations on a variety of fisheries and aquatic topics. Workshops on the second day included instructional sessions on PA DEPs Data Tools by Dustin Shull, and Interactive Mapping in R by Matt Shank. Garrett Herigan, who is attending Coastal Carolina University (Department of Coastal and Marine Systems Science) won the best student presentation. Sydney Stark from Penn State University won the best student lightning / poster presentation. Sydney also received this year's Cooper Award, which will provide funding to present her work at the next national AFS conference.

Our next business meeting will take place during our summer social, which will be held at the

Raystown Field Station on July 17 (info here https://pa.fisheries.org/). Additionally, we are planning our first joint meeting with PA Trout Unlimited for February 2022. We are looking forward to the networking opportunities that will abound post-COVID, hopefully. Everyone is excited about the idea.

Finally, check out some photos and documentation of recent activities and fieldwork that took place across the state in summer 2020 under COVID protocols! These activities were highlighted in our Fall 2020 newsletter.

(L-R): Doug Fischer, Geoff Smith (PFBC), and Aaron Henning (SRBC) electrofishing on the lower Susquehanna River. Photo courtesy of @ichthyoAaron

(L-R): Caroline Benfer, Nick Smith, Eimile McKinnon with wild brook trout captured during fish surveys in the Upper Standing Stone Creek watershed. Photo by L. Stenger.

Tim Wertz (PADEP) with a brown trout on Slab Cabin Run

New York Chapter

Dan Stich and Heidi O'Riordan

The NY Chapter held its annual meeting virtually and free with membership February 24 - 26, 2021. More than 200 students and professionals registered for the meeting, themed "Embracing Diversity: Resilient Fish and Fisheries". A little over 100 people attended the live plenaries related to diversity, equity, and inclusion in science and in our profession. The Women in Fisheries (WiF) subcommittee hosted two live events (aleWiF social & trivia and breakfast breakout rooms) and more than 100 people registered for the series of free R workshops that preceded the meeting. We were also able to support 4 student and 2

diversity awards, all of which included paid membership to American Fisheries Society for one year. Plenaries are available now through the NY AFS YouTube Channel, and contributed presentations will be available soon. Workshop materials remain available through the we-r-nycafs webpage.

Four students were honored with awards at the annual meeting: Connor McDonnell (SUNY Cobleskill) received the "Best Student Poster Award", and Nathan Backenstose (University of Buffalo), Kyle Wirebach (SUNY Buffalo State), and Aaron Heisey (SUNY Brockport) took home "Best Student Presentation" honors. Additionally, Lindsay Agness received the chapter's "Conservationist of the Year Award".

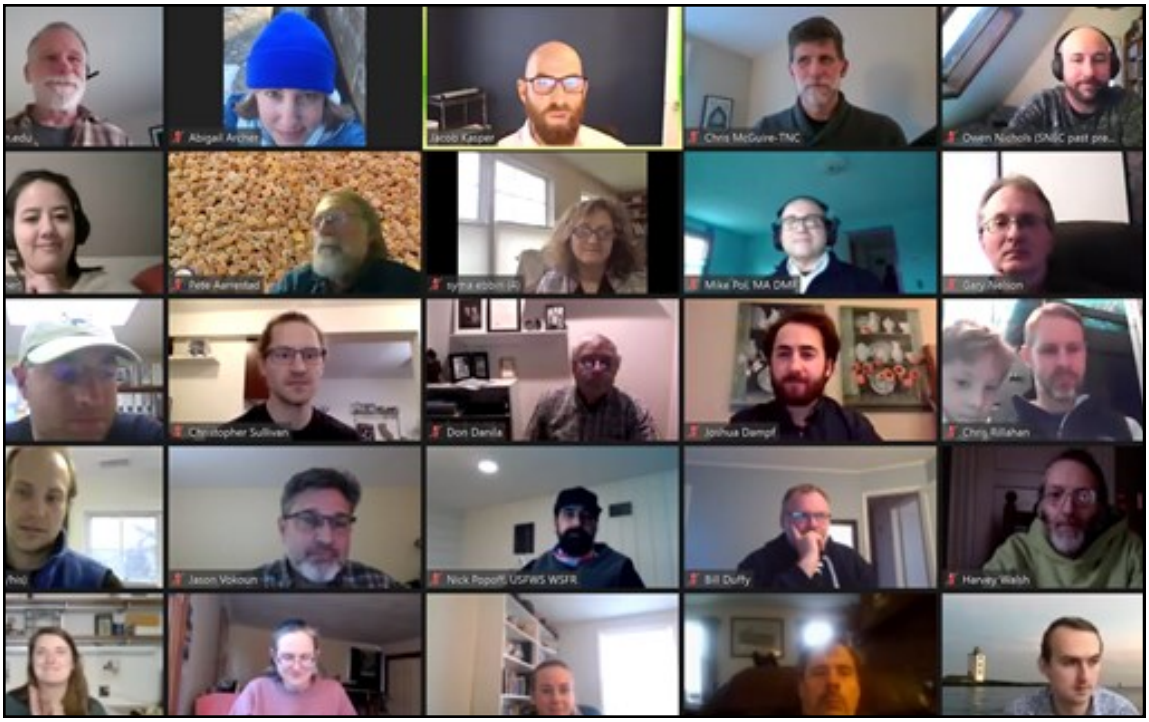
Our next meeting will be held on Long Island in February 2022. We are hoping for an in-person event or hybrid event themed "Urban Fisheries Issues" with concentrations on outreach and marine/diadromous projects. We hope to see you there!

The SNEC recently created a diversity, equity, and inclusion group. Check out pg. 15 in the "Fisheries News" section to learn more!

Southern New England Chapter

Sara Turner

The Southern New England Chapter held its first ever virtual meeting via Zoom on Monday, January 11. The meeting had 12 oral presentations and 3 virtual posters with speed talks. There were a total of 96 registrants, and approximately 70 people were logged in at a time. Breakout rooms were set up during breaks and lunch to allow smaller group discussions between talks. The meeting was very successful, and SNEC will be hosting another virtual meeting in June! Date TBD. Check out our website for updates: https://snec.fisheries.org/



Southern New England Chapter members participate in the chapter's first ever virtual meeting

STUDENT SUBUNIT UPDATES

Marine Academy of Technology and Environmental Science

The evolution of the first AFS high school subunit

Dr. John Wnek

The Marine Academy of Technology and Environmental Science (MATES) is a specialized math and science high school located in Ocean County, New Jersey. The focus of the school is to integrate natural resource education into its curriculum, and conduct community-based projects focusing on the local ecosystem. MATES is an official subunit of the Mid-Atlantic Chapter of the American Fisheries Society (MAC-AFS), where our student members focus on community projects. As the first high school subunit designated by the AFS in 2015, our greatest challenge was to define the many aspects of "fisheries" to the students and the benefit of being a part of the AFS. We decided that the community-project focus was a great way to get our students involved and establish goals within our subunit to meet the overall goals of the AFS.

The MATES student subunit at the MAC-AFS meeting at the Jacques Cousteau National Estuarine Research Reserve in February 2020, presenting the results of their project, Crabbing Responsibly at Barnegat Bay (CRABB).

The MATES "NOAA Team" which are members of the MATES student subunit of the MAC-AFS that retrieved and assessed over 900 derelict crab pots from Barnegat Bay, NJ. Pictured are some of our initial subunit student members.

Initially, we worked on a derelict fishing gear recovery project in conjunction with a local partner, the Conserve Wildlife Foundation of New Jersey, funded through the National Oceanic and Atmospheric Administration. Our subunit grew in numbers from 6 to 15 students as we recovered over 900 derelict crab pots from Barnegat Bay, NJ between 2015 and 2019. In 2019, our sub-unit addressed recreational blue crab practices throughout Barnegat Bay through a survey. We had 14 MATES subunit members who developed and administered a recreational crabbing survey under the advice and mentorship of the NJ Department of Environmental Protection and Ocean County Parks, NJ. The project was titled "Crabbing Responsibly at Barnegat Bay" (CRABB), where we gathered survey data electronically and through personal interviews to determine crabbing practices, knowledge and perceptions. Our subunit shared their findings in a final written report and presentation to the NJDEP and other partners just prior to the quarantine in 2020. It has been a challenge, since late winter 2020, due to COVID-19 precautions and MATES being in a hybrid instructional model. However, we are excited to start a new project that is addressing

the problem of high density of stinging sea nettle in Barnegat Bay, NJ. This new group of 14 students, the MATES Sea Nettle Team, includes high school freshmen and sophomores who are now part of our subunit. The team will work with partners and local residents through a research and education initiative to reduce sea nettle populations in these high density areas.

We are fortunate to work with some of the college subunits at both Rutgers and Stockton Universities that provide opportunities for our students to meet, and even present research and projects. We thank our Mid-Atlantic Chapter of the AFS for their leadership and Roland Hagan (MAC-AFS) for encouraging us to get involved and guiding us through the application process and our initial subunit meetings. If you are interested in more information about our high school subunit, please feel free to contact us at projectterrapin@gmail.com.

University of Maine

Matt Mensinger and Erin Peterson

The UMaine student subunit has enjoyed a successful year despite converting most of our programming a virtual format. In August, we hosted the second installment of the Atlantic International Chapter's student lighting talk series which showcased nine talks from UMaine students and faculty covering topics from larval respiration to river-wide fish community assessments. We had over 50 people tune-in from across the AIC!

In November, we embarked on a socially distanced field trip to a local eel weir. Erected every fall, this weir rests atop the foundation of a historic commercial eel weir which has since been modified for University research. We enjoyed learning about weir operation and the American eel life cycle and really appreciated a break from virtual meetings.

Our winter slate was highlighted by student lightning talks, guest speakers, and fish trivia. While we canceled our annual ice fishing event, we purchased two ice fishing kits and compiled a local ice fishing guide to allow members to explore the ice in small groups. Additionally, local fly-fishing expert Kory Whittum led us in a virtual fly-tying event where we learned the science behind fly fishing and how to tie a "Master Splinter" mouse pattern.

April marks the return of our annual Spawning Run 5K. Although we've gone virtual this year, we still made shirts for event. This year's design features a suite of sea-run fishes in a race to their upstream spawning grounds, and proceeds from this event support our Outreach and Education fund.

Like everyone else, we are looking forward to meeting in person this fall (fins crossed!). Until then, stay in touch with us on Facebook (@UMaineAFSStudent), Twitter (@UMaineAFS), or email (umaineafs@gmail.com).

(Left) Students circled-up to discuss weirs and eels during a fall field trip.

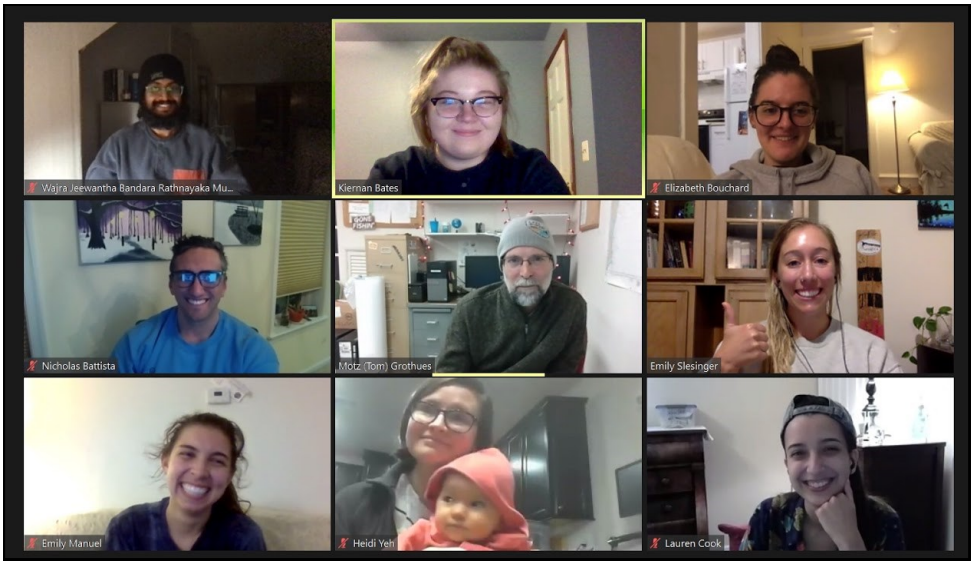
(Top) Logo for our annual Spawning Run 5K fundraiser. Can you identify the four sea-run species? Designed by Megan Hess.

Rutgers University

Together, but Virtual

Emily Slesinger

The Rutgers University AFS Student Subunit was established in 2017, and our membership is comprised of a mixture of undergraduate and graduate students at Rutgers University. In the spring of 2020, as everyone abruptly transitioned to remote learning and virtual hanging out, we embraced the new normal. Rutgers University and its field stations are spread throughout the state of New Jersey, with in-person meetings or events typically leaving one group of students with a ~2 hour drive. The new virtual setting allowed us to connect more frequently with all students at Rutgers, strengthening the connection across campuses and field stations. In addition, we used the virtual platform to plan and meet with the Stockton University Student Subunit to plan a career panel at the November 2020 Mid-Atlantic Chapter annual meeting. Since the start of the pandemic, we have hosted several educational and fun events. In the fall of 2020, we led a discussion after watching the "Picture a Scientist" documentary on sexual harassment in the sciences, hosted our first Fish Trivia night, and provided a virtual presentation practice session in preparation for the Mid-Atlantic Chapter annual meeting that was held in November 2020. Our practice session was successful as one of our members, Emily Slesinger, won best presentation and another member, Heidi Yeh, won best larval presentation. This current spring semester of 2021, we are still embracing the virtual setting with another successful Fish Trivia night and have an end of the school "you-survived-another-virtual-learning-year" party. We plan to organize an activity that can be done together, but virtually through an online platform. Altogether, we do miss in-person interactions and the freedom to plan events throughout New Jersey, but appreciate the community we can lean on for learning, support, mentorship, and camaraderie.



Rutgers Subunit enjoying a fun virtual trivia night via Zoom!

California University of Pennsylvania

Dr. David Argent

The pandemic has created a challenging environment for the CalU subunit. But over the past year we have managed to maintain a core group of about 8-10 people.

Last fall, we did a fun canoe trip down the Yough River. We had also planned a trip to the Pittsburgh Zoo, but due to COVID the zoo closed - so that was out. As we entered spring I tried to pass on as many Zoom opportunities as possible to our students, ranging from virtual conferences to workshops. Participation varied in those events but, I can tell you that some participated with the PA Chapter meeting in mid-February. I am hopeful that more students will continue to participate with upcoming AFS opportunities.

For the remainder of this spring, we are planning to finally make that trip to the Pittsburgh Zoo from last year, but perhaps we won't be able to do a behind scenes tour, as we have done in the past. I am hopeful that with the increasing rate of vaccinations and re-opening of businesses that we can return to full force in the fall.

Quebec Subunit

Brian Gallagher

The last year or so has been an exciting time for the Quebec subunit. For me, the excitement all began with our last in-person event. Last January, just before the COVID pandemic, our subunit went on an ice fishing trip to Lake Memphremagog in Vermont, that also involved the University of New Hampshire subunit and several other colleagues from the Atlantic International Chapter. All of us were graciously hosted by Pete Emerson, current president of the Atlantic International Chapter, at his home in northern Vermont. This trip was great fun and was eventually written up as a short piece in Fisheries Magazine (https://afspubs.onlinelibrary.wiley.com/doi/abs/10.1002/fsh.10453?af=R).

In subsequent months, we gradually transitioned to conducting all of our events online, which was kickstarted by a virtual conference that we hosted in July. This conference was part of a series hosted by various student subunits in the Atlantic International Chapter throughout the summer, which drew attendees from throughout New England and Canada. The Quebec subunit conference kicked off this series with some presentations by graduate students in Quebec and Nova Scotia, plus a keynote presentation by Dr. Olivier Morissette from the Quebec Ministry of Forestry, Wildlife and Parks. Our social media team also live-tweeted the conference on our Twitter page (@AFSquebec). Our next event was a virtual career panel in November that featured several subunit contacts from the USA and Canada discussing relevant skills and lessons for obtaining a job in fisheries and conservation. This was an event that underlined the benefits of the online format, as our panelists all joined us from far-away places in British Columbia, Virginia and Hawaii.

In the new year so far, we have focused on rebuilding our Executive Committee and tuning into events organized through the AFS parent society. The highlight so far has been our opportunity to join a massive student-led seminar series organized by our colleagues at West Virginia University. It will ultimately feature students from dozens of US states and several Canadian provinces over the next several months. We also sponsored a recent AFS webinar that featured bestselling author Paul Greenberg, which attracted over 130 registrants! We are starting to plan for in-person activities when they are allowed again but look forward to participating in and hosting more virtual events in the meantime!

Stockton University

Nilanjana Das

Despite the many challenges posed by Covid-19, the Stockton subunit was able to have its most active and engaging year yet! This past October, members met at Big Brook Preserve for a day of socially-distanced fossil hunting after which everyone left with at least one fossil and new shark tooth identification skills. In November, the Stockton and Rutgers subunits created a Virtual Networking Event which took place during the annual meeting of the Mid-Atlantic Chapter. Guest speakers included NOAA researchers Dr. Camilla McCandless, Audy Peoples and Dr. Ann Petersen, as well as Dr. John Wnek from the

Stockton subunit members at Big Brook Preserve for our first Shark Tooth Hunting event.

Participants at the Virtual Networking Event during the annual meeting for the Mid-Atlantic Chapter .

Marine Academy of Technology and Environmental Science (MATES). Each speaker provided valuable insight on their career paths, challenging transitions between education and employment, and specific guidance for careers in academia, government agencies or environmental education.

During this spring semester, the Stockton subunit is most excited to provide a Boating Safety Certification course for our members in partnership with Coast Boating School. Participation in such events all year has been really rewarding and we look forward to planning more opportunities

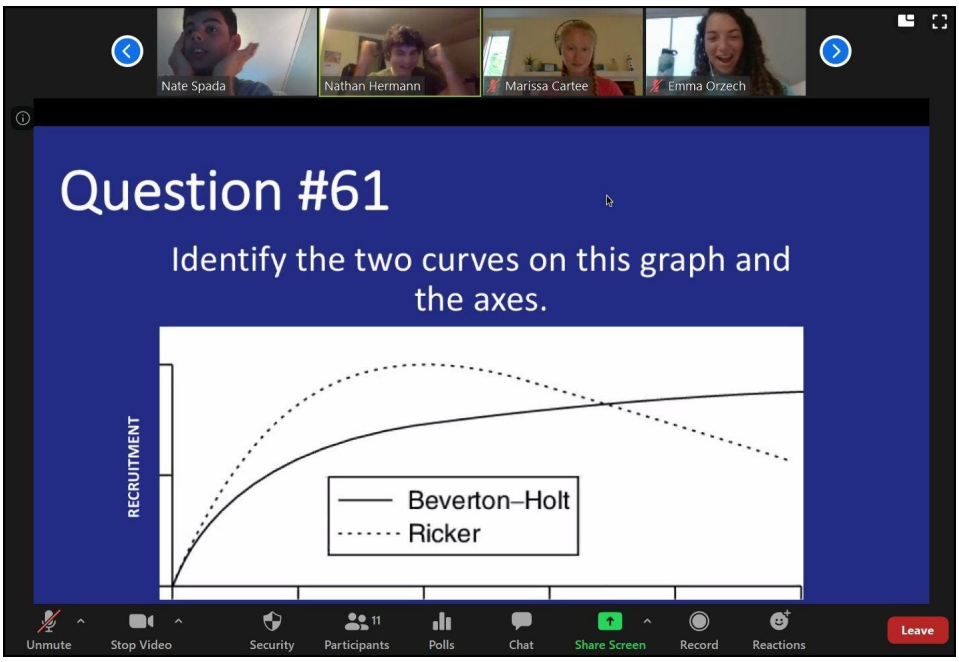
University of New Hampshire

Mike Doherty

Happy 2021! As warmer weather approaches, we are excited for the future, and happy to update our colleagues in the NED with what we've been up to the past year.

We revitalized our subunit last winter, and are all quite proud of the engagement and enthusiasm displayed by our members, despite the difficult circumstances. Though our activities over the last year have been 100% virtual, our membership has only increased, and we have been able to offer both academic and social opportunities. Our events range from a fisheries trivia night, to participating in (and partly hosting) an AIC subunit seminar series, featuring some impressive work by students in our chapter. We have also been able to update our own subunit bylaws to best reflect the needs of our student members and are currently accepting new designs for a subunit logo that represents our valued, regional fisheries. This month we successfully held our annual officer elections, marking the first "changing of the guard" since our revival.

Through all of our procedural updates, we are ready and waiting with optimism to see what the next year will bring us, and looking forward to working with the rest of the NED to continue providing meaningful and rewarding opportunities to our members.



One of the more challenging questions during our fisheries trivia night.

University of Connecticut

Brandon Smith

Despite the challenges presented by the current pandemic, we have been working hard to actively recruit and grow our subunit here at the University of Connecticut. With limited hands-on opportunities, our focus has been on professional development and creating a welcoming environment for new members to gain valuable fisheries knowledge. During the fall and spring semesters, we have held both resume and networking workshops, as well as hosted guest speakers. Our members have been keeping up with fisheries news and research through our news discussion, held during our regular meetings. This new activity has proven to be very informative and a good way to hold constructive dialogue and share our thoughts.

In the fall semester, a few members got together for a fishing trip at a local lake. The trip was a great success, with members catching multiple different species, including largemouth bass, black crappie, bluegill, yellow perch, and chain pickerel! Everyone had a good time, especially those members who had not gotten a chance to fish in many years. As spring approaches, we hope to get our members outside to enjoy what nature has to offer.

A successful afternoon fishing trip with the UConn subunit at Mansfield Hollow Lake

SUNY - ESF

Iman Pakzad

2020 was definitely a rough year, but despite all the limitations we managed to have a fairly fruitful year. By hosting our virtual meetings, we managed to keep people engaged, including having presenters share their work at each meeting. There was no shortage of interest in generating club merchandise as we received far more design ideas in 2020 compared to years past. To keep the ball rolling and to get a taste of fresh air, we also hosted a series of socially distanced field trips, featuring several field tech demonstrations for electrofishing and seining. We had a strong turnout for the NYS annual meeting this year, with 4 students presenting and many more as attendees.

Because we wanted to make an effort to give back in these hard times, our biggest achievement of this roller coaster of a year was our raffle. It began with the generous donation of a Kayak from Cara Hodkin, our former president. From there, our members worked diligently reaching out to their family and friends selling tickets for the raffle. Ultimately we succeeded in raising a grand total of $465 which we then donated to the Dr. King Elementary school in order to fund the purchase of new books.

Despite the ups and downs, we gave it our all and with luck we will do even more in the coming year as more and more people receive the vaccine and everything slowly returns to normal.

FISHERIES NEWS

Ocean sunfishes strandings in New England are increasing, with rescuers and researchers asking 'why'?

Carol "Krill" Carson and Richard McBride

Ocean sunfishes (*Mola mola*) are attracted to Cape Cod beaches, and not in good way. In 2008, the New England Coastal Wildlife Alliance (NECWA) started receiving calls about stranded ocean sunfish, both live and dead, primarily on the shores of Cape Cod. Some years as few as 10 ocean sunfish stranded, but over the past 5 years, stranding numbers increased significantly with more than 127 animals stranding in the 2020 season.

Ocean sunfish primarily strand in our area from late summer through late fall. They are big, with an average length of 150cm and an average weight of 230 kg (See Figure 1). Examination of the gonads by scientists at NOAA Fisheries, reveal both immature and mature fish at these sizes.

Cape Cod acts as a geographic trap for these and many other species (Figure 2). While some ocean sunfish are sighted alive and can be rescued, unfavorable currents or wind traps many others in Cape Cod Bay, preventing them from continuing south before they become cold-shocked or cold-stunned. However, a few years ago, in collaboration with Dr. Samir Patel, Coonamessett Farm Foundation, satellite tags were attached to two ocean sunfish in Cape Cod Bay in September, and both animals were able to navigate out of the Bay and eventually headed south past Nantucket Island. By monitoring these strandings, scientists hope to learn more about why they are increasing and find ways to prevent fatalities.

Want to help? NECWA is an all-volunteer nonprofit organization based in southcoast Massachusetts. In 2008, NECWA established the New England Basking Shark and Ocean Sunfish Sighting Network (www.nebshark.org), which now includes monitoring of other species, including diamondback terrapins and torpedo rays. Most "Team Mola" members are retirees living in New England, but NECWA also works with high school and college students, as well as professionals still in the work place. Team Mola volunteers are trained by NECWA and are provided with gear and supplies needed for rescues and necropsies. Many work closely with NECWA staff to develop effective ways to rescue stranded animals, and they monitor and necropsy the less fortunate sunfishes to collect biological samples for a network of scientists.

Necropsies are conducted in the field under all types of environmental conditions to collect

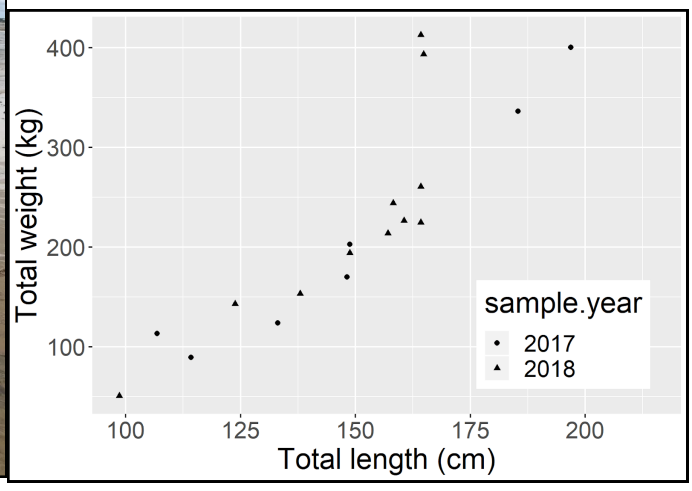


Figure 1. (Left) How do you weigh an ocean sunfish? Very carefully, as seen here for a specimen weighing > 635 kg (> 1400+ lb) found during October 2014. (Below) Length-weight data for several individual sunfish collected in 2017 and 2018.

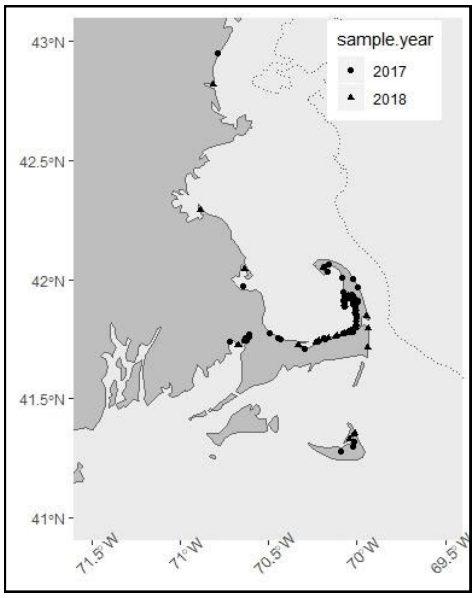


Figure 2. (Left) Locations of stranded ocean sunfish on and near Cape Cod, Massachusetts in 2017 and 2018. (Below) The photo shows an unlucky individual, high and dry on the beach.

body measurements, body weights, photographs, external parasites, and various internal tissues. Over the years, NECWA staff and Team Mola volunteers have collected internal and external parasites, mucus, a skin/reticulated collagen/muscle plug, gonads, jaws, teeth, pharyngeal gill teeth, whole eyes, otoliths (ear stones), hearts, stomachs and vertebra. Some material is archived and some goes directly to other researchers. NECWA is currently working with Richard McBride and Emilee Tholke (NOAA Fisheries) and their team on reproduction, with John Logan (Division of Marine Fisheries, MA) and his team on a diet and toxicity, and with Scott Elzey (Division of Marine Fisheries, MA) and his team on aging sunfish using rings in the vertebra. A few years ago, NECWA provided over 300 DNA samples (muscle & skin) from stranded animals in our area to Northeastern's Ocean Genome Legacy Center.

Still interested? Please contact krillcarson@mac.com.

Carol "Krill" Carson is a marine biologist and President of the New England Coastal Wildlife Alliance (NECWA) and Richard McBride is the Supervisory Research Fishery Biologist for NOAA Fisheries, at the Woods Hole Laboratory.

Collaborative partnership tracks valued aquatic species in Nova Scotia, Canada

Maggie Sutherland

Apoqnmatulti'k (Mi'kmaw for "we help each other") is a three-year collaborative study that aims to increase understanding of movements and seasonal habitat use of key species for Mi'kmaw and coastal communities: American eel (katew), American lobster (jakej), and Atlantic tomcod (punamu). The study takes place in two ecosystems: the Bay of Fundy and Bras d'Or Lake.

This project is conducting research that is guided by, and responds to, community knowledge and priorities. Research questions, experimental design and methodology are co-developed to reflect the values of all partners and facilitate knowledge sharing and learning across cultures and sectors. This

Deploying acoustic receivers in the Bay of Fundy

Acoustic tags are attached to the outer shell of the lobster, enabling researchers to track them and better understand where they travel within the ecosystem.

approach enhances the quality of the information collected and ensures it is transparent and accessible to communities that rely on healthy coastal ecosystems.

To date, the project has engaged four masters' students, one postdoctoral research fellow, nine undergraduate students, and one research assistant. Additionally, a community liaison is based in each study area to conduct outreach and engagement activities and connect community members to project work. A wide variety of workshops have been hosted under the project, including data visualization and analysis, field and metadata training, and fish surgery training. Data collected will be shared with communities, managers, and decision-makers to support the stewardship of aquatic resources.

The project is funded by a NSERC Strategic Partnership Grant, and is co-led by the Ocean Tracking Network (OTN), the Unama'ki Institute of Natural Resources (UINR), the Mi'kmaw Conservation Group (CMM), the Marine Institute of Natural & Academic Science (MINAS), Fisheries and Oceans Canada (DFO), Acadia University and Dalhousie University.

For more information visit apoqnmatultik.ca and follow our Facebook page for updates on our project at www.facebook.com/apoqnmatultik.

Diversity, Equity, and Inclusion

Lian Guo

If you were training for a marathon, how would you prepare? The answer may seem obvious: get a good pair of running shoes and start a training schedule. If instead you choose to sit on the couch, it makes completing the race when the day comes extremely difficult, if not impossible. This analogy fits well with achieving progress in diversity, equity, and inclusion (DEI) in the fisheries profession. Our marathon in the American Fisheries Society is to be a diverse, equitable, and inclusive professional society. We can finish that marathon by doing anything but sitting on the couch.

Events in the last year (including the murders of

George Floyd, Breonna Taylor, and more people of color) have brought issues of social inequity to the forefront and invigorated existing or new DEI efforts. These critical efforts are highly valued, and yet are often predominantly carried out by individuals who have experienced marginalization or discrimination first-hand. As a woman of color in fisheries, I can tell you that I am involved in four different fisheries DEI efforts primarily because I don't like feeling alone or without a role model in my workplace, and I don't want other people to feel the same. We need to shift the baseline of who is engaged in DEI efforts if we are ever going to finish this marathon in fisheries. We all have many commitments, but our baseline for DEI work should at least be increasing our awareness and self-education of social inequities in fisheries. Developing awareness determines our ability and drive for pursuing further action and enacting sustained, positive change. It is everyone's responsibility to work toward this common goal which will help the fisheries profession be more welcoming, innovative, and equitable.

In the Southern New England Chapter (SNEC) of the American Fisheries Society, we are committed to helping our members maintain a baseline of DEI work. We have formed a new monthly Diversity, Equity, and Inclusion discussion group where we read or watch a resource selected by a rotation of discussion leaders, and then discuss our thoughts and brainstorm steps our chapter could take to address the issues presented. So far, we have discussed the academic experiences of Black, Indigenous, and People of Color (BIPOC) majoring in environmental science, navigating microaggressions, and biases in teaching/mentoring and scientific publications. A common theme has been sharing how uncomfortable or foreign it can feel to discuss social issues, but that this discussion space is helping set aside time to prioritize DEI and increase our understanding of what issues exist.

SNEC would like to extend an invitation to all NED members to join us for these monthly discussions, currently scheduled on the third Friday of each month at 1pm EST. If you would like to be included on the email list for this discussion group, please email Lian Guo (lguo@umass.edu) with "SNEC DEI discussion group" as the subject header. We hope you will join us to shift the baseline for diversity, equity, and inclusion efforts in fisheries.

Lian Guo is a PhD Candidate at the University of Massachusetts Amherst, the President-Elect for the Equal Opportunities Section and member of the Inclusion Standing Committee, as well as a co-host of the Fisheries Diversity and Inclusion Podcast.

NOAA Enforcement Deploys Remotely Operated Vehicles to Patrol the Seas

Bill Duffy
NOAA Fisheries GARFO

NOAA's Office of Law Enforcement (OLE) enhanced efforts in 2020 to help ensure compliance with gear regulations in the_Northeast/Mid-Atlantic American Lobster Trap/Pot Fishery (https://www.fisheries. noaa.gov/national/marine-mammal-protection/northeast-mid-atlantic-american-lobster-trap-pot-fishery-mmpa). OLE deployed remotely operated vehicles this last summer and fall to inspect gear in the lobster trap fishery. Work conducted thus far shows that Remotely Operated Vehicles can be an effective tool to inspect offshore lobster gear.

Entanglement in fishing gear is one of two primary threats to the North Atlantic right whale species' survival (the other is vessel strikes). NOAA Fisheries implemented the Atlantic Large Whale Take Reduction Plan, (https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/atlantic-large-whale-take-reduction-plan), which reduces injuries and deaths of large whales due to incidental entanglement in fishing gear. The plan includes requirements such as the use of sinking groundlines, surface gear markings, a minimum number of traps per trawl, and weak links. The take reduction team is in the process of updating these requirements to further reduce the risk of entanglement.

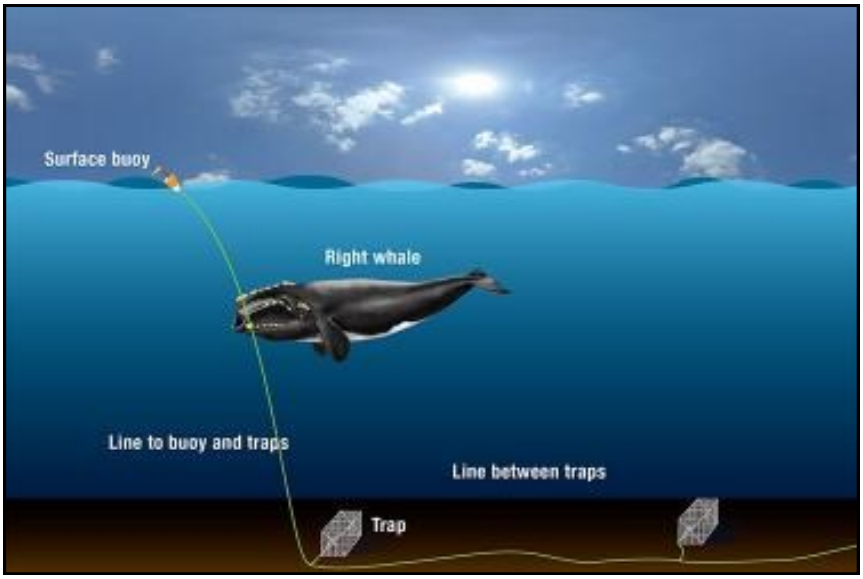
The lines connecting traps to each other (groundlines) or to the surface buoy (vertical lines) can entangle marine mammals. Large whales, including critically endangered North Atlantic right whales, are particularly susceptible to entanglement because their habitat and feeding areas overlap with fisheries. The gear can cut into a whale's body, cause serious injuries, and result in infections and death. In addition, non-compliance with gear requirements listed under 50 CFR §697.21 (e.g., gear marking and identification, escape vents, ghost panels, and minimum trap requirements) negatively impacts law abiding fishermen and the lobster fishery in general.

It is OLE's responsibility to enforce these rules in order to protect species like the right whale. The use of remotely operated vehicles has made it possible for OLE to inspect gear without having to physically retrieve the gear. The ROVs are equipped with a video camera, lighting, sonar, and a manipulator arm. When deployed, the ROV can detect and record most gear or tag violations from the ocean surface down to the ocean floor. The ROV can also detect improper trap configurations.

Ensuring a Successful ROV Deployment

To start, a location is selected based on fishing trends, observed activity, or reports of noncompliance. Once a site has been chosen one or two enforcement officers (EO) work with the vessel captain to locate lobster gear for inspection. After the gear has been located, gear technicians launch the ROV while an EO inspects the gear via a live video feed. The video is recorded during ROV deployment and may be saved as evidence. If a violation is documented, an EO follows up with further investigation

and enforcement action as needed. In addition, all information collected during the operation may be considered for future gear inspection operations. Lastly, following ROV deployment, management staff who work on protected resources and relevant fishery management plans at the Greater Atlantic Regional Fisheries Office are notified about relevant information gathered in the operation.



While calm weather is preferred for ROV operations, testing has shown that the negative impact of inclement weather on ROV deployment and use at sea can be mitigated to a degree. One technique is to deploy and haul the ROV in the lee of the wind and seas. The addition of a heavy clump weight attached to the tether aids in reducing drag from the tether in the water. Enhanced camera lighting can also counter poor visibility that can occur due to increased turbidity in the water column or low light conditions produced by overcast skies. In addition, sonar aids operators in gear location when underwater visibility is reduced.

Moving Forward

To date, ROVs and the vessels used for their deployment have primarily been contracted through the private sector. OLE has also field tested different ROV systems at sea in hopes of purchasing a new ROV in 2021. The addition of a portable ROV along with trained operators will be a valuable asset for enforcement. A portable ROV unit along with a control console and tether can be easily deployed from NOAA, Coast Guard, and state marine patrol vessels to conduct underwater inspections at a reduced cost.

"We are excited about the usage of ROVs in our ongoing efforts to promote gear compliance in offshore lobster fisheries," said James Landon, Director of NOAA's Office of Law Enforcement. "The successful deployment of this technology improves our ability to effectively and safely do our jobs and should help to boost NOAA efforts to protect endangered species like the North Atlantic right whale."

Efforts are currently underway to expand the underwater inspection operations that were conducted in the 2020 fishing year into the 2021 season. While underwater inspection operations to date have only been used to inspect fixed gear in the lobster fishery, the hope is to expand ROV operations in the near future to other fixed gear fisheries (e.g., gillnet fisheries and offshore aquaculture). For more information about OLE's evolving ROV project please contact Caleb Gilbert, compliance liaison, at (978) 281-9338 or caleb.gilbert@noaa.gov.

RECENT PUBLICATIONS

Exploring the Feasibility of Selectively Breeding Farmed Atlantic Surfclams *Spisula solidissima for Greater Heat Tolerance*

In the North American Journal of Aquaculture

Submitted by Michael Acquafredda

Abstract: Bivalve aquaculture is an important and rapidly expanding sector in global food production, yet climate change presents numerous challenges to its continued expansion. The Atlantic surfclam *Spisula solidissima* is emerging as an attractive alternate species for aquaculturists across the northeastern United States since it is native, grows rapidly, and complements the region's established farming framework. However, the species is vulnerable to prolonged high temperature conditions, an issue that will be exacerbated by rising ocean temperatures and is particularly problematic on shallow coastal farms. In this study, we evaluated the response of adult farmed Atlantic surfclams to heat stress after juvenile exposure and the ability for heat tolerance to be passed to subsequent generations. We found that when juvenile Atlantic surfclams were exposed to prolonged lethal temperatures, the adult survivors withstood subsequent heat stress for significantly longer than individuals not exposed to lethal temperatures as juveniles. We also found that selective breeding enhanced heat tolerance in first-generation Atlantic surfclam progeny. Moreover, growth of the heat-selected progeny was not significantly different from that of control Atlantic surfclams. Although more research on this topic is necessary, this work suggests that selective breeding may be a viable strategy for enhancing survival of cultivated bivalves vulnerable to heat stress.

Farmed Atlantic surfIcams (Spisula solidissima)

Reference: Acquafredda, M. P., X. Guo, and D. Munroe. 2021. Exploring the Feasibility of Selectively Breeding Farmed Atlantic Surfclams *Spisula solidissima* for Greater Heat Tolerance. *North American Journal of Aquaculture* 83(1):3–14.

DOI: https://doi.org/10.1002/naaq.10168

Evidence of successful river spawning by lake trout (*Salvelinus namaycush)* in the Lower Niagara River, Lake Ontario

In the Journal of Great Lakes Research

Submitted by Alex Gatch

Abstract: Restoration of a wild-produced lake trout *Salvelinus namaycush* population in Lake Ontario has not been successful despite the adult population often meeting or exceeding restoration targets. Lack of high-quality spawning habitat in Lake Ontario is suggested as one impediment to recruitment of wild lake trout, although the quantity and location of spawning habitat is poorly understood. If high-quality spawning habitat is limited in Lake Ontario, lake trout may be using uncommon spawning locations such as rivers. Anecdotal angler accounts point to the Niagara River as a lake trout spawning location. To better understand the potential of the Niagara River as a spawning location, egg and juvenile fish collections were conducted 12–14 river kilometers from the mouth of the Niagara River from 2010 to 2012; and mature female lake trout

with surgically implanted acoustic tags were monitored from 2015 to 2019. Genetic analyses confirmed 60% of collected eggs and 93% of collected post-hatch juvenile fish in the Niagara River were lake trout. Tagged female lake trout returned to the Niagara River over consecutive years during the spawning season. The short duration of lake trout presence in the river (mean = 56 days/year) suggests female lake trout use the Niagara River primarily for spawning. Diversity in spawning locations may provide lake trout population's resilience against environmental variability through a portfolio effect. Improved identification of riverine spawning locations, including their overall contribution to wild recruitment, may be a useful tool for managers to restore a wild-produced population of lake trout in Lake Ontario.

Alex Gatch with a 20lb lake trout

Reference: Gatch, A., D. Gorsky, Z. Biesinger, E. Bruestle, K. Lee, C. Karboski, M. L. Bartron, and T. Wagner. 2021. Evidence of successful river spawning by lake trout (*Salvelinus namaycush*) in the Lower Niagara River, Lake Ontario. *Journal of Great Lakes Research* 47(2):486–493.

DOI: https://doi.org/10.1016/j.jglr.2020.12.007

Spawning phenology of a rapidly shifting marine fish species throughout its range.

In ICES Journal of Marine Science

Submitted by Emily Slesinger

About the article: This paper assessed the spawning timing, duration and output of black sea bass throughout their range to investigate whether the spawning strategies for black sea bass are well-suited for spawning at higher latitudes where their range has been shifting. We found that while the timing and duration of spawning matched was well aligned at the higher latitudes (i.e., earlier spawning start and shorter spawning duration), their reproductive output was the lower in these higher latitude regions. This result was surprising because typically fish that have shorter spawning durations increase their reproductive output. Further monitoring of black sea bass reproduction would be beneficial as these results have implications for black sea bass population as their abundance continues to shift northward.

Abstract: Ocean warming is leading to poleward range shifts for many fish species, and while well described, potential life history phenology differences within fish populations along a gradient from their historic to current distributional range have not been studied. In a rapidly shifting fish population, the Northern stock of black sea bass (*Centropristis striata*), we investigated spawning phenology and output across the US. Northeast Shelf to comprise locations in their historic and more recently occupied range near their northern

range boundary. Spawning started later in the northern extreme of our study but also ended earlier, leading to decreased spawning duration from south to north. Spawning phenology was mostly driven by Julian day followed by temperature and latitude. Gonadosomatic index, a proxy for reproductive output, was lower in the northern region, indicating that black sea bass did not compensate for the shorter spawning season there. Hepatosomatic index was lower in the northern regions indicating lower prespawning liver energy reserves, potentially leading to lower reproductive output. These results suggest a potential for lower recruitment in the recently occupied range and should be further investigated to predict the impacts of ocean warming and for proactive fisheries management as black sea bass distributional range expands poleward.

Reference: Slesinger, E., O. P. Jensen, and G. Saba. 2021. Spawning phenology of a rapidly shifting marine fish species throughout its range. *ICES Journal of Marine Science.*

DOI: doi:10.1093/icesjms/fsaa252

Emily Slesinger with a black sea bass

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Meet the Editors

Matt Mensinger is a PhD student at the University of Maine and President of the UMaine Student Subunit. His research aims to understand the risk of predation during Atlantic salmon smolt migration. He has been editing the Northeast Fish Rapper since 2019. He can be reached at mattthew.mensinger@maine.edu.

Robert Jarrett is a PhD student at the University of Maine and member of the UMaine Student Subunit. His research centers on the indirect effects of climate change on the American Lobster, focusing largely on their changing habitat use and interaction with non-native species. He can be reached at robert.jarrett@maine.edu.

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