SNEC AFS 2026 WINTER SCIENCE MEETING

Wednesday, January 14th, 2026

University of Rhode Island, Kingston, RI

8:30 – 9:00	**Registration and Coffee**
9:00 – 9:10	**Opening Remarks. Michael Burgess, AFS SNEC President**
9:10 - 9:30	**Introduction to AFS, Margaret Murphy, AFS President Elect**
9:30 – 9:45	**Bycatch of three prohibited sharks in Northeast U.S. gillnet and trawl fisheries.** **Graff, Lindsay L., Gregory B. Skomal, Tobey H. Curtis, Steven X. Cadrin, Geoffrey W. Cowles, Alexander C. Hansell, and Lauran R. Brewster.
9:45 – 10:00	**Using telemetry to characterize river herring movements across freshwater and estuarine habitats.** **Adams, Ryan, Trevor Banister, and Nathan B. Furey.
10:00 – 10:15	**Shoreline signals: Fine-scale spatial patterns among nearshore fish and invertebrate guilds.** **Carolan, Melanie, Easton White, Michael Sigler, Michael Palace, and Jennifer A. Dijkstra.
10:15 – 10:30	**Modern portfolio theory for multispecies management.** **Coscino, Connor, S. X. Cadrin, G. DePiper, H. Townsend, G. Fay, and L.R. Brewster.
10:30 – 10:55	**BREAK**
10:55 – 11:10	**Estimation performance of a length-based multispecies fisheries model.** **Perez, Cristina, Gavin Fay, and Sarah Gaichas.
11:10 – 11:25	**Eastern Brook Trout movement and habitat use in streams with physical barriers and high summer water temperatures.** Pelletier, Corey and Graham Forrester.

11:25 – 11:40	**eDNA fish monitoring in Long Island Sound: What matters: Sampling time, location, or filter type?** Liu, Yuan, Richard S. McBride, Renee Mercaldo-Allen, and Christopher Powers.
11:40 – 11:55	**2025 Slope Sea Atlantic Bluefin Tuna (*Thunnus thynnus*) larval sampling results and use cases, including close-kin mark-recapture**. Glancy, Sarah G., David E. Richardson, Christina M. Hernández, Kristen D. Walter, Amanda Jacobsen, Katey E. Marancik, John F. Walter III, and Matthew V. Lauretta.
11:55 – 12:10	**Connectivity, movement and distribution of fishes in offshore wind farm areas.** Brewster, Lauran, Alison Frey, Steven Cadrin, Chris Rillahan, Keith Hankowsky, and Pingguo He.
12:10 – 13:40	**LUNCH & POSTERS**
13:40 – 13:55	**Post-release survival of Little Tunny in a recreational fishery**. Kim, Edward, Caroline Collatos, and Jeff Kneebone.
13:55 – 14:10	**Applying effective environmental forecasts to management strategy evaluation of Yellowtail Flounder.** Wulfing, Sophie, Chengxue Li, Scott I. Large, Vincent Saba, and Gavin Fay.
14:10 – 14:25	**Characterizing and evaluating the impacts of data uncertainty on management strategies to support climate ready fisheries management.** Schneider, Alexandra, Roger Brothers, and Lisa Kerr.
14:25 – 14:40	**Where are the self-provisioning fishers? Investigating shortfalls in the public engagement process in Rhode Island.** Livermore, Julia, Melva Treviño Peña, and Mateja Nenadovic.
14:40 – 15:05	**BREAK**
15:05 – 15:20	**Ghost trap monitoring in Narragansett Bay.** Moore, John, Susan D. Inglis and N. David Bethoney.
15:20 – 15:35	**Black Sea Bass and Tautog seasonal residency and movement in an offshore wind energy area**. Lowndes, Ryan, Jeff Kneebone, and Edward Kim.
15:35 – 15:50	**Trapping European Green Crabs in Wellfleet Harbor: Lessons learned for invasive species control efforts.** Nichols, Owen C., and Dave Seitler.
15:50 – 16:00	**Closing Remarks by AFS SNEC President**
16:30 - 18:00	**Social at … Mews Tavern or Whalers Brewery**

** Denotes student paper

Presenter name is underlined

Poster List

P1	**A data-driven emulator for multi-species biomass prediction and long- term forecasting in the Northeast U.S. Large Marine Ecosystem (NEUS).** **Abbas, Ajmal and Gavin Fay.
P2	**Describing spatial trends in the relative abundance of fishes near an artificial reef off Southern New Jersey.** **O'Connor, Nick, Andre Ascura, Sarah Borsetti, and Doug Zemeckis.
P3	**Not just for the birds: Integrating river herring and waterfowl management within an impounded tributary of the Skutik River.** **Cusick, Becca, Adrian Jordaan, Allison Roy, John Magera, and Chris Federico.
P4	**Assessing the thermal tolerance of Atlantic Sea Scallop (*Placopecten magellanicus*) early life stages**. **Easton, Paxton, Tessa Houston, Brian Beal, Geoff Cowles, Kevin Stokesbury, and Max Zavell.
P5	**Surrogate modeling of Atlantis: Deep-learning approaches for predicting and forecasting biomass.** **Selvaraj, Vishnu and Gavin Fay.
P6	**Developing screening assays to identify potential causes of bivalve larval crashes in hatcheries in the Atlantic coast of the United States.** **Hoffman Blustajn, Ruby, Shannon Murphy, Rob Hudson and Marta Gomez-Chiarri.
P7	**The effect of marine heatwaves on Eastern oysters (*Crassostrea virginica*).** **Rigby, Hadassah, Olivia C. Nieves, Coline Caillon, Cassandra Cerasia, and Johathan B. Puritz.
P8	**Evaluating potential drivers of Winter Flounder (*Pseudopleuronectes americanus*) natural mortality from co-occurring predators and competitors.** **Walsh, Kamran, Alex Hansell, Gavin Pereira, and Gavin Fay.
P9	**Investigating the effects of drought on river herring populations in Connecticut and Massachusetts**. **Dorroh, Reese C., Adrian Jordaan, and Allison H. Roy.
P10	**Intra- and inter-annual dynamics of juvenile river herring and zooplankton populations based on a ten-year dataset.** **Blair, Abigail N, Adrian Jordaan, and Allison H. Roy.

P11	**When do fish make up their minds? Pinpointing temperature preference in Black Sea Bass shuttle-tank trials.** **Moore, Alison and Lauran Brewster.
P12	**Do offshore wind farms reshape benthic predator-prey interactions?** **Travers, Bologna, Melissa Cronin, Max Zavell, David Bethoney, and Kevin Stokesbury.
P13	**Yellowfin Tuna (*Thunnus albacores*) illegal, unregulated, unrestricted fishing in Palau: A suitability model for USCG enforcement.** **Bateman, Hailey, Adrian Ililau, Spencer MacKenzie, Aiden Garcia, and Teeon Palacios-Camacho.
P14	**Performance of supplemental sampling strategies to mitigate the impacts of wind energy placement to the NEFSC Bottom Trawl Survey.** **Roman, Catalina, Gavin Fay, and Angelia Miller.
P15	**The microbiomes of the epiphyte *Vertebrata lanosa* and its host seaweed *Ascophyllum nodosum*.** **Hamilton, Elizabeth, Jose Navarro, Amari Savage, Tomasz Lukaszczyk, Clayton Penniman, and Lisa M. Nigro.
P16	**The gut microbiome of the Eastern Oyster (*Crassostrea virginica*).** **Corona, Mirian, Tyra Torres, Carey-Roblero-Morales, Alexandra Carabetta, Lisa A. Waidner, Wade Jeffrey, Tyler W. Griffin, J. Evan Ward, and Lisa M. Nigro.
P17	**Consequences of differing maturity definitions on management regulations for a gastropod fishery.** Zavell, Max, Nicholas Calabrese, Adam Delargy, Stephanie Merhoff, Brittany Morgan, Andie Painten, Sandra Shumway, Sierra Wachala, Kevin Stokesbury.
P18	**Understanding catch variability for Winter Flounder from a fixed gear survey.** Galligan, Bryan, M. Conor McManus, and Richard Balouskus.
P19	**Trends in Connecticut's Largemouth Bass (*Micropterus nigricans*) proportional stock density since 1980.** Bellofiore, Kaleb, Andrew Bade, and Joshua Mouser.

See you at the summer meeting in Massachusetts!

Abstracts of Oral Presentations

Bycatch of three prohibited sharks in Northeast U.S. gillnet and trawl fisheries

Graff, Lindsay L.[1], Gregory B. Skomal [2], Tobey H. Curtis [3], Steven X. Cadrin [1], Geoffrey W. Cowles [1], Alexander C. Hansell [4], and Lauran R. Brewster [1]

[1] School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, USA.

[2]Massachusetts Division of Marine Fisheries, New Bedford, MA, USA.

[3]Highly Migratory Species Management Division, National Marine Fisheries Division, Gloucester, MA, USA.

[4]Northeast Fisheries Science Center, National Oceanic and Atmospheric Administration, Woods Hole, MA, USA.

Shark species can be susceptible to overexploitation due to their life history traits, and incidental capture can impact recovery. Three prohibited species in the Northwest Atlantic—Dusky (*Carcharhinus obscurus*), Sand Tiger (*Carcharias taurus*), and White shark (*Carcharodon carcharias*)—remain at risk despite more than two decades of federal and state protection. Using Northeast Fisheries Observer Program data from 1993–2024, we quantified bycatch in gillnet and trawl fisheries and identified predictors of at-vessel mortality. Annual fleetwide bycatch and mortality were estimated by expanding observer data to total commercial effort using Vessel Trip Report records (1996–2024). Across the study period, gillnets accounted for most captures, averaging 128 Dusky (95% CI: 0–255), 20 Sand Tiger (13–26), and 4 White sharks (2–6) annually, while trawls averaged 85 Dusky (13–158), 45 Sand Tiger (8–82), and 4 White sharks (2–6). Estimated annual at-vessel mortality averaged 72 (0–157), 5 (2–7), and 3 (1–4) in gillnets, compared to 34 (0–73), 3 (0–6), and 1 (0–1) annually in trawls. Generalized linear models evaluated biological, environmental, and fishery predictors of at-vessel mortality, revealing higher mortality with increasing shark size and greater risk in gillnets than trawls. Spatial analyses identified regions of elevated incidental capture in the Mid-Atlantic Bight

and southern New England, where commercial fishing overlaps with known essential habitat for these species. This study establishes a quantitative baseline for prohibited shark bycatch, which should be considered in managing coastal shark populations in the Northwest Atlantic.

Using telemetry to characterize river herring movements across freshwater and estuarine habitats

Ryan, Adam [1], Trevor Banister [1], and Nathan B. Furey [1]

[1]Department of Biological Sciences, University of New Hampshire, Durham, NH.

Anadromous river herring (Alewife: *Alosa pseudoharengus;* Blueback Herring: *A. aestivalis*) utilize marine, estuarine, and freshwater environments. Estuaries often serve as nursery habitat for juveniles, but little is known about adult river herring estuarine movements and habitat use post-spawning. Alewives (n = 29) and Blueback Herring (n = 21) were implanted with acoustic telemetry tags during their freshwater spawning migration in the Bellamy River in Dover, New Hampshire, a system where dams have recently been removed. An array of acoustic telemetry receivers was deployed throughout the migratory corridor, including freshwater and brackish regions of the Bellamy River, Great Bay estuary, and the outmigration route – the Piscataqua River. Detections were used to estimate habitat use, residency time, and minimum survival. Acoustic telemetry receivers detected 46 river herring (96%) in the Bellamy River, 29 (58%) in Great Bay, and 16 (32%) on seaward receivers in the lower Piscataqua River that were presumed to have successfully emigrated. Residency time did not significantly differ between the Bellamy River and Great Bay (~6.3 and 7.0 days respectively) but was significantly shorter in the Piscataqua River (~ 4.4 hours), suggesting rapid outmigration following estuarine exit. Approximately 39% of detected individuals (n = 18) exhibited oscillation behavior, making multiple trips between the estuary or lower river and upriver habitats, but it is unclear if these movements are on and off spawning grounds. These results suggest adult river herring extensively occupy estuarine habitats and move through them in complex ways, highlighting their importance following freshwater residence periods.

Shoreline signals: Fine-scale spatial patterns among nearshore fish and invertebrate guilds

Carolan, Melanie [1], Easton White [2], Michael Sigler [3], Michael Place [4], and Jennifer Dijkstra [1]

[1] Center for Coastal and Ocean Mapping/Joint Hydrographic Center, University of New Hampshire, Durham, NH.

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[3] Shoals Marine Laboratory, University of New Hampshire, Durham, NH.

[4]Department of Earth Sciences, University of New Hampshire, Durham, NH.

The difficulty of sampling mobile marine fish and invertebrates in shallow, complex, and hard-bottomed coastal and marine environments has led to nearshore fisheries monitoring gaps. To address this, Remote Underwater Video Systems (RUVS) were used to determine densities of commercially and ecologically important marine species around Appledore Island in the Gulf of Maine. Observed ecological guilds included American Lobsters, Atlantic Pollock, Cunner, seals, and several species of flatfish and crabs. Random Forest models informed by high-resolution bathymetric and environmental datasets were used to determine the relative importances of geographic position, bathymetrically derived seafloor characteristics, and biogenic habitat variables for predicting fine-scale guild distributions. The percentage cover of kelp bed observed in the video deployments emerged as the most influential predictor for Cunner, the most common middle trophic level forage fish in the nearshore Gulf of Maine. Co-occurrences of guilds, as indicated by multivariate cluster and indicator species analyses, were further visualized and quantified using the percent overlap of spatial distributions and Spearman rank correlation coefficients. From these analyses, Cunner and crabs, Cunner and seabirds, crabs and American Lobsters, and Atlantic Pollock and seals were found to co-occur. These findings are relevant to fishery conservation and management research focused upon the density, interdependence, and life history characteristics of nearshore commercially and ecologically important species.

Modern portfolio theory for multispecies management

Coscino, Connor L.[1], Steve X. Cadrin[1], Geret DePiper[2], Howard C. Townsend[3], Gavin Fay[1], and Lauran Brewster[1]
[1]School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, USA.
[2]Harte Research Institute, Texas A&M University, Corpus Christi, TX, USA.
[3]Office of Science and Technology, National Marine Fisheries Service, Oxford, MD, USA.

Historically, fisheries management has focused on single species management and largely overlooked multispecies and economic interactions. Failure to account for these linkages has led to suboptimal yields and overfishing. Modern Portfolio Theory, a financial framework based on the principle of diversification, provides a useful perspective for addressing these challenges. In finance, a portfolio of assets (e.g., stocks, bonds, cash, etc.) will have lower volatility than any individual component when assets are imperfectly correlated, thus reducing the uncertainty of returns (i.e., risk). Applied to fisheries, fish stocks can be thought of as renewable assets that can produce revenue indefinitely if harvested sustainably. A multispecies portfolio produces revenue covariance due to biological, technical, and economic interactions and shared drivers of population change. Leveraging this revenue covariance, managers can explore harvest strategies to reduce financial risk in the fishing industry (i.e., reducing the uncertainty around expected revenue). This presentation demonstrates the application of Modern Portfolio Theory to fisheries using a New England case study and advances recent work by incorporating more realistic biological constraints and additional diagnostic tools. Results suggest that New England fisheries, as a whole, efficiently use catch diversification to mitigate year-to-year revenue volatility given harvest constraints, but declines in harvestable biomass have diminished the capacity for diversification to reduce financial risk. Application of portfolio theory can help explore the cause, effect, and distribution of financial risk and clarify management priorities. Future research will explore how management options may reduce fleet-specific risk.

Estimation performance of a length-based multispecies fisheries model

Perez, Cristina M. [1], Gavin Fay [1], and Sarah Gaichas [2]
[1]School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, USA.
[2]Hydra Scientific LLC.

Multispecies models are increasingly used to support ecosystem-based fisheries management. Understanding how assumptions in predator-prey dynamics affect parameter estimation is critical for determining when these models can be reliably informed management. We used simulation testing to evaluate a length-based multispecies model (Hydra) across two scenarios differing in trophic interactions strength; a high interaction scenario and a low interaction scenario for two predators (Atlantic cod and spiny dogfish), and two prey (Atlantic herring and Atlantic mackerel). Hydra was used as both an operating model, configured to reflect population and fishery dynamics, and as an estimation model, fit to synthetic datasets generated from the operating model with observation error under the two scenarios. Simulated datasets included catch, survey abundance indices, catch and survey size compositions, and diet composition data. Both scenarios were first evaluated using a no-observation error run to verify parameter identifiability. In both cases, the estimation model successfully reproduced the operating model parameter values and trajectories, confirming that the model structure and inputs were correctly specified. Across the 100 stochastic simulations, performance varied among species and scenarios, but the estimation model generally captured the expected temporal trends in biomass across species, closely tracking the operating model trajectories in most cases. However, some large estimation errors in biomass were observed for Atlantic herring in the low interaction scenario and dogfish in the high trophic interaction scenario. These discrepancies propagated into estimates of total mortality, where biases reflected the combined trajectories of fishing and predation mortality especially in the low interaction scenario. Recruitment estimates for herring and mackerel were also biased relative to the operating model. These findings show that the magnitude of trophic interactions can influence estimation reliability and highlight the importance of accurately representing predator-prey dynamics in multispecies assessment models.

Eastern Brook Trout movement and habitat use in streams with physical barriers and high summer water temperatures

Pelletier, Corey[1], and Graham Forrester [2]
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Stream temperatures are increasing in freshwater systems, causing fish to seek refuge. We tested whether selection for cool locations was influenced by mean temperatures within sites (sites were 0.7–2.5 km long), conditional on other habitat variables (depth and cover), and restricted by the spacing of in-stream barriers that might limit movement and opportunities to select habitat. We studied Eastern Brook Trout across four stream sites in Rhode Island, United States. Each site varied in mean summer temperature and the distance between barriers. Using radio telemetry, we tracked 60 trout from June–August 2021. Habitat selection was quantified by measurement of temperature and other habitat variables at used (n = 321) and available (n = 677) locations. Used locations were similar in temperature to those available (mean = 18.1 and 21.2 ℃) within the two cooler sites, whereas trout in the two warmer sites selected cooler locations (used = 19.1 and 20.5 ℃, available = 24.0 and 24.4 ℃). Fifteen trout emigrated 1–8 km downstream into areas that were cooler, or similar, in temperature to their original site. Seven emigrants traversed downstream barriers while relocating to cooler locations, so their ability to do so was uncompromised by barriers. Trout thus displayed nuanced responses to summer warming that were conditional on mean temperatures within sites. Despite the ability of fish to access thermal refuge, there may be energetic tradeoffs with moving long distances and future ability to traverse barriers in the upstream direction.

eDNA fish monitoring in Long Island Sound: What matters: Sampling time, location, or filter type?

Liu, Yuan[1], Richard S. McBride [2], Renee Mercaldo-Allen [3], and Christopher Powers [1]
[1]Gloucester Marine Genomics Institute, Gloucester, MA, USA.
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We applied eDNA metabarcoding to characterize fish communities associated with oyster farm sites in Long Island Sound across three consecutive years (2017–2019). In 2017, we evaluated the utility of eDNA metabarcoding as a fisheries monitoring tool in the region. In 2018, we extended sampling to a full 12-month period to assess whether the spatiotemporal patterns observed during an initial three-month survey persisted throughout the year. In 2019, we expanded sampling toward the western end of Long Island Sound to include additional farm sites and compared fish community profiles generated using six membrane filter types commonly used in eDNA studies. Understanding spatial and temporal variation in eDNA signals is essential for robust ecological interpretation. We will present results highlighting both the strengths of eDNA metabarcoding and key considerations for applying this approach to marine fisheries monitoring.

2025 Slope Sea Atlantic Bluefin Tuna (*Thynnus thunnus*) larval sampling results and use cases, including close-kin mark-recapture

Glancy, Sarah G. [1], David E. Richardson [2], Christina M. Hernández [3], Kristen D. Walter [4], Amanda Jacobsen [1], Katey E. Maranick [2], John F. Walter III [5], and Matthew V. Lauretta [5]

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[5]Southeast Fisheries Science Center, National Oceanic and Atmospheric Administration, Miami, FL, USA.

Targeted sampling in the Slope Sea during mid July 2025 resulted in catch numbers of bluefin tuna larvae higher than any previous western Atlantic sampling. Method and equipment adjustments maximized catch and efficiency onboard. Sample processing to date has yielded thousands of bluefin tuna larvae. Slope Sea larvae will be included in the existing Close-Kin Mark-Recapture project to address lingering questions on the nature of Slope Sea spawning. These individuals will be an important input for multiple studies on Bluefin population structure and life history. The number of larvae caught allows for multiple studies to be completed on the same spawning patch, a unique opportunity in the Atlantic.

Connectivity, movement and distribution of fishes in offshore wind farm areas

Brewster, Lauran[1], Alison Frey [1], Steven Cadrin [1], Chris Rillahan [1], Keith Hankowsky [1], and Pingguo He [1]
[1]School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, USA.

To meet growing demand for renewable energy, offshore wind farms have expanded into areas that support important fisheries. Turbine foundations introduce hard substrate, often into soft-sediment environments, creating three-dimensional habitats that can alter ecosystem structure. Our study evaluates the individual and additive impacts of multiple turbines to understand how offshore wind development affects fisheries resources. The Block Island Wind Farm, installed in 2015–2016, includes five 6-MW turbines spaced 0.6 nautical miles apart. In collaboration with commercial and recreational fishermen, we used passive acoustic telemetry and baited stereoscopic video systems to assess horizontal and vertical reef effects on three important species with differing movement ecologies. Tagging efforts targeted black sea bass (*Centropristis striata*; n=63), striped bass (*Morone saxatilis*; n=50), and summer flounder (*Paralichthys dentatus*; n=35). Video systems were deployed for one hour at four distances from turbines (0 m, 100 m, 200 m, 450 m). Preliminary tagging results from two field seasons indicate local and regional connectivity among turbines and adjacent habitat. Summer flounder preferred hard bottom adjacent to turbines, while black sea bass moved among turbines and nearby natural hard bottom. Video transects (~800 h across 86 deployments) show diverse fish assemblages utilizing turbine structures, with abundance and community composition varying seasonally and with distance from turbines. These findings highlight species-specific responses and the importance of integrating movement ecology when assessing wind-farm impacts. This work provides stakeholders—including fishermen, fisheries managers, and wind-farm operators—with information needed to evaluate how individual turbines and turbine arrays influence fisheries and ecosystems.

Post-release survival of Little Tunny in a recreational fishery

Kim, Edward [1], Caroline Collatos [1], and Jeff Kneebone [1]
[1] Anderson Cabot Center for Ocean Life, New England Aquarium, Boston, MA.

Little Tunny (*Euthynnus alletteratus*) is the target of an intensive catch-and-release recreational fishery throughout the United States east coast. However, no estimates of post-release survival are available to quantify the magnitude of incidental mortality or to inform management efforts and recommend best practices to anglers. To address this gap, we used acoustic telemetry to assess the fates of Little

Tunny caught and released by recreational anglers and to calculate conditional and overall rates of post-release survival. Little Tunny (n = 49) were caught using standard tackle and practices aboard charter vessels in Nantucket Sound, Massachusetts, tagged with external acoustic transmitters (n = 20 of which were accelerometers), and monitored by an array of acoustic receivers deployed throughout the region. Survival was inferred based on visual assessment of acceleration values and the extent of horizontal movement between receivers. Survival rates were estimated using a longitudinal survival analysis. Thirty-eight fish were assigned as survivors, and hook location had the greatest effect on survival wherein 85.8% of fish hooked in the jaw, 30.0% of fish hooked deeper than the jaw, and 75.0% of foul-hooked fish survived, although the foul category was not significant. Adjusting these rates based on the proportions of hook locations in the sample (77.8%, 14.2%, 7.9%, respectively), overall post-release survival was estimated at 77.0%. Overall, Little Tunny are resilient to catch-and-release fishing, but anglers should consider modifications to tackle and practices that maximize the incidence of jaw hooking and mitigate injury and stress in the event of internal hooking.

Applying effective environmental forecasts to Management Strategy Evaluation of Yellowtail Flounder

Wulfing, Sophie[1], Chengxue Li[2], Scott I. Large[3], Vincent Saba[4], and Gavin Fay[1]
[1]School for Marine Science and Technology, University of Massachusetts Dartmouth, New Bedford, MA, USA.
[2]University of New Hampshire, Durham, NH, USA.
[3]School of Marine and Atmospheric Sciences, Stony Brook, NY, USA.
[4]National Marine Fisheries Service, National Oceanic and Atmospheric Administration, Woods Hole, MA, USA.

The US Northeast Continental shelf is the fastest warming marine ecosystem in the United States, so understanding this change is imperative to maintaining the sustainability and productivity of this region's fishery. Fished stocks in the region have exhibited different distributional shifts in response to changing ocean temperatures, chemistry, and currents. Management Strategy Evaluation (MSE) is a technique in fisheries management to simulate and compare the likely outcomes of different management actions, assess trade-offs of different management options, and has been used to create more climate-ready management plans. The Georges Bank Yellowtail Flounder (*Limanda ferruginea*) is an important stock to the Northeast groundfish fishery and its recruitment has been shown to be impacted by bottom ocean temperatures. However, predicting future environmental covariates such as bottom temperature can be challenging, as these conditions are subject to high stochasticity. For this reason, our goal is to analyze the different choices made when projecting or forecasting future

environmental conditions within assessments, what subsequent catch advice is generated from the MSE, and how this affects long-term fishery dynamics. Preliminary results focusing on recruitment-environment relationships have shown that different projection decisions, including integrating environmental forecasts, have a limited impact on the model performance and output, and we will expand on these findings by comparing the MSE results under different climate scenarios, informed by ocean model forecast products.

Characterizing and evaluating the impacts of data uncertainty on management strategies to support climate ready fisheries management

Schneider, Alexander[1], Roger Brothers[1], and Lisa Kerr[1]
[1]School of Marine Sciences, University of Maine, Portland, ME, USA.

Fisheries management along the U.S. east coast is facing emerging challenges with recent increases in both the uncertainty of fishery independent and dependent data streams and the impact of climate change on fish stock dynamics and distribution. Stock assessments are the foundation of fisheries management, providing critical information on stock status and fishing rates that inform recommended harvest levels. Diminished data quality can impact assessment model results and the confidence intervals around model estimates and catch projections. Oftentimes, increased scientific uncertainty results in more precautionary management and lower catch limits. Simultaneously, the Northeast U.S. has experienced rapid increases in temperature, which directly impacts the distribution, phenology, and productivity of species. These changes can be difficult to account for in stock assessment and add to uncertainty in management decisions, making disentangling these effects more difficult and even more critical. We synthesized the data challenges associated with key data inputs of stock assessments on the U.S. east coast, focusing on fishery-independent surveys, biological port sampling of commercial catch, and recreational catch and effort data. Essential fishery-independent surveys have experienced substantial changes to sampling area and effort; biological sampling of commercial catch has declined by 71% between fiscal years 2017 and 2023; and recreational data collection methods have changed substantially. We are applying management strategy evaluations to assess the performance of Northeast fisheries management in the context of these data uncertainties and climate change with the aim of identifying robust strategies to support climate-ready fisheries.

Where are the self-provisioning fishers? Investigating shortfalls in the public engagement process in Rhode Island

Livermore, Julia[1], Melva Treviño Peña[2], and Mateja Nenadovic[3]
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State regulators at the Rhode Island Department of Environmental Management's Division of Marine Fisheries (DMF) have made efforts to improve transparency and public access to fisheries management meetings but currently have a limited understanding of what resource user groups may be underrepresented in the decision-making process. Therefore, the DMF has a need to identify resource users that currently have no voice in fisheries management. In collaboration with researchers at the University of Rhode Island, the research team plans to conduct a directed, exploratory study to identify communities that are fishing for sustenance and self-provisioning purposes in Rhode Island and investigate why they are not effectively being engaged by the state's current public engagement efforts. These communities are likely to comprise fishers of racial and ethnic minoritized backgrounds who rely, at least in part, on self-provisioned fish for food. As such, fisheries management decisions directly affect their access to local seafood and their opinions are critical to developing effective and informed management measures. Research will include observations of and interviews with self-provisioning fishers (primarily recreational harvesters) to better understand how they fish, what they know about the management process and engagement, and determine why they may not be participating in civic spaces relevant to fisheries decision-making. These data will be compiled, along with public meeting attendance metrics to find ways to improve fisheries management in Rhode Island moving forward.

Ghost trap monitoring in Narragansett Bay

Moore, John[1], Susan D. Inglis[1], and N. David Bethoney[1]
[1]Commercial Fisheries Research Foundation, Saunderstown, RI, USA.

Abandoned, lost, and discarded fishing gear, also known as ghost gear, can have broad impacts. While this issue affects many types of gear, traps, and pots, lines and buoys are often lost in coastal waters because they are left unattended. To prevent lost traps from continuing to

catch fish, escape panels are secured with biodegradable rings that corrode and release over time, allowing animals to escape. To test the function of these panels and other aspects of lost traps, in May 2025, two sets of three traps were placed and left in three different environmental areas of Narragansett Bay. These experimental trawls were monitored monthly for bycatch, trap, and ghost panel conditions. Monitoring involved both underwater camera footage and physical inspections. Due to seasonal changes in water conditions and the intense vessel activity in Narragansett Bay, several adjustments were necessary to meet our goals. Preliminary results show that after 7 of the targeted 18 months of observation, all panels are in place, and the diversity and amount of bycatch have decreased over time. Here, we will present these findings and discuss the challenges encountered in conducting this type of research in a busy port, along with the adaptive methods used.

Black Sea Bass and Tautog seasonal residency and movement in an offshore wind energy area

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Black Sea Bass (*Centropristis striata*) and Tautog (*Tautoga onitis*) are popular gamefishes among recreational and commercial anglers in the northeast United States. Both species are highly sought-after from vessels and are frequently caught in both nearshore and offshore waters of southern New England. Many offshore fishing sites in this region are located in designated offshore wind energy areas (WEA), where construction of turbines and power stations as well as cable-laying is ongoing. Given the importance of Black Sea Bass and Tautog to anglers, we began an acoustic telemetry study to assess the influence of WEA construction and operation on their residency and movements. Internal acoustic transmitters were deployed in Black Sea Bass (n = 91) and Tautog (n = 11) caught by rod-and-reel in the WEA from 2022 through 2025 and subsequently monitored from release to December 2025 using an extensive array of bottom-moored receivers within the WEAs south of Cape Cod, along with a network of inshore receivers in Nantucket Sound, Massachusetts. Data were also supplemented with acoustic detections shared by other members of the Atlantic Cooperative Telemetry Network via MATOS. This presentation focuses on preliminary findings regarding the residency, movements, and migratory patterns of the two species both within and outside the WEA, along with directions for future research.

Trapping European Green Crabs in Wellfleet Harbor: Lessons learned for invasive species control efforts

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The European green crab (*Carcinus maenas*) is an invasive species that can have negative ecological and economic effects, including predation on shellfish and damage to eelgrass habitat. We conducted a 16-week experimental harvest of green crabs in Wellfleet Harbor using specially modified traps designed to prevent accidental catches of diamondback terrapins. The primary objectives of this project were to collect detailed data on green crab catch (relative abundance, size frequency, sex composition, reproductive status), implementing responsible disposal through composting, and providing this information to the Town of Wellfleet to support natural resource management. From May-September 2025, we trapped >6,500 green crabs during weekly hauls of 30 baited traps. Green crab catch peaked on July 22 (>1,000 crabs). We captured more males (55%) than females (45%), although sex ratio varied during the season. We evaluated gear performance in order to optimize future trap design. Lessons learned during this collaborative, community-based project will inform natural resource management and future green crab control efforts.

Abstracts of Poster Presentations

A data-driven emulator for multi-species biomass prediction and long- term forecasting in the Northeast U.S. Large Marine Ecosystem (NEUS).

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Marine ecosystem models such as Atlantis generate intricate multi- species biomass data essential for understanding population dynamics and facilitating resources management. However, the simulations require significant computational resources, restricting their scalability for quick scenario evaluation and extended prediction. In this research, we created a machine learning ecosystem model emulator, aimed at reliably replicating and predicting biomass trends for 51 species within the Northeast U.S. Large Marine Ecosystem (NEUS) using 58 years of Atlantis Model output. This data set contains species identification, fleet operations, spatial shapes and time-related data, with biomass designated as the predicted variable. Our central contribution lies in strengthening the modeling pipeline through advanced hyperparameter optimization and careful algorithm selection, enabling the emulator to effectively learn from a highly diverse and zero-inflated dataset. The Machine learning emulator model achieves high accuracy and was validated through parity plots and species-specific Atlantis vs predicted time series visual representations. Forecasts from the model projected until 2035 showed consistent long-term predictive capacity and reflected significant trends in inter-annual variability among species. These findings indicate that a well-tuned machine learning emulator can accurately replicate Atlantis outputs, greatly lowering computational expenses. Our work facilitates advanced scientific evaluations, including spatial generalization and the impact of fishing fleets and changes in habitat on ecosystem dynamics, which will be further developed in later stages of the research.

Describing spatial trends in the relative abundance of fishes near an artificial reef off Southern New Jersey

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Artificial reefs enhance the productivity of fisheries, promote species richness, and serve as a habitat refuge for commercially and recreationally important species such as Black sea bass (*Centropristis striata*). Assessing fish communities in these structured habitats can be challenging as traditional survey methods, such as bottom trawls, are difficult to employ. Chevron traps have been used as an alternative survey method in these types of environments, often complemented by underwater video cameras to enhance species detection and ensure traps are fishing effectively. The objective of this study was to use video footage collected from Chevron traps to examine whether there was a change in abundance of a structure-associated species (*C. striata*) and sand-associated species (sea robin species, *Prionotus* spp.) with increasing distance from an artificial reef site in New Jersey. Chevron traps were deployed seasonally during 2022 at the Atlantic City Artificial Reef as part of a broader fisheries survey. At each deployment, six camera-mounted Chevron traps were set at 200-meter intervals for 90-minute deployments. For three fall deployments, the first 60 minutes of footage were analyzed, and observed species were identified to their lowest taxonomic level. Structure-associated species (*C. striata*) showed higher abundance within 200 meters of the reef, while sand-associated species (*Prionotus* spp.) increased beyond that distance. No significant difference in abundance was detected by trap distance for either species; however, the abundance of *C. striata* varied between deployments ($p = 0.019$), likely due to differences in environmental conditions. These findings inform future fishery surveys in structured environments.

Not just for the Birds: Integrating river herring and waterfowl management within an impounded tributary of the Skutik river, ME

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Magurrewock Stream, located on the Baring Division of Moosehorn National Wildlife Refuge, has a complex history of management targeting a variety of species. Historically, this impounded tributary of the Skutik/Schoodic/St. Croix River has been managed for migratory bird habitat and waterfowl production. In recent years, improvements to aquatic connectivity have led to a resurgence of river herring (*Alosa pseudoharengus* & *A. aestivalis*) back into the system. Managing this dynamic system has its challenges, including ageing infrastructure, fishway style, beaver activity, and personnel required to conduct daily active management. This study aims to address questions about how and where adult river herring are moving within four interconnected, impounded water bodies, and quantify juvenile river herring densities based on spawning habitat use. For this study, we recorded water levels within three impoundments along the west branch of Magurrewock Stream and recorded management actions multiple times a week for the spring and summer season. We used PIT tags to track adult upstream and downstream movements, and we used a variety of nets to determine juvenile river herring habitat use and densities. Data collected will guide conclusions concerning the effects that water level management may have on river herring use of available habitat throughout the freshwater tributary system during various life stages. This information will help to inform efficient temporal management of fishways and water levels in the impoundments under varying run densities and water level conditions. Understanding the relationship between flow and habitat-use will inform river herring management across the species' native range.

Assessing the thermal tolerance of Atlantic sea scallop (*Placopecten magellanicus*) early life stages

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Ocean warming affects numerous traits in early life history stages of invertebrates and fishes, which may reduce recruitment and harvestable biomass. A prime example is the Atlantic sea scallop (*Placopecten magellanicus*), which supports one of the most valuable fisheries in the northwest Atlantic with annual landings over $350 million USD. This fishery may be at risk due to its high sensitivity to projected future ocean conditions; prior studies have quantified decreases in recruitment, growth, biomass and population distribution

shifts across the Mid-Atlantic Bight (MAB). Few studies, however, examine the response of planktonic larvae to future conditions, resulting in a critical knowledge gap on the thermal tolerance for larvae. To address this, fully factorial experiments were conducted to evaluate the physiological response of larvae across a range of current and future environmentally relevant temperatures. This study provides empirical physiological data which can be incorporated into bio-physical model parameterizations and used to improve predictions of future population dynamics in the MAB under expected temperature escalations. The results of this study will help sustain stock biomass and aid in adaptive fisheries management under future temperature projections.

Surrogate modeling of Atlantis: Deep-learning approaches for predicting and forecasting biomass

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Whole-of-system marine ecosystem models like Atlantis Serve an important role in evaluating multispecies interactions and studying how alternative management techniques may affect fisheries sustainability and broader ocean conditions. Although these models represent intricate ecological process, they are computationally intensive which makes it tough to run them frequently or employ them in settings where quick turnaround is essential. To help bridge this gap we developed a deep learning based statistical emulator that provides a faster way to approximate catch and biomass patterns across species, fleet, and spatial regions, while also generating short-term forecasts of expected conditions. The deep learning model shows strong consistency with underlying ecosystem patterns and produces forecasts that follow observed temporal behavior. By highly reducing computation time, the emulator allows near real-time scenario exploration, supports uncertainty analysis, and offers more flexibility for how managers can use model outputs. Across the training, validation, and test datasets, the emulator reached an overall R2 score of 85%. Visual comparison indicate that it tracks biomass levels well, reproduces most spikes, and captures broad temporal patterns across species and fleets. As a future enhancement, we plan to incorporate explicit fleet species interaction effects into the model to examine how fishing pressure influences biomass trajectories, enabling deeper insight into management responses. Overall. This work shows that deep learning based emulators can effectively approximate complex ecosystem model behavior. The deep learning emulator can project ecosystem dynamics in seconds. Such tools provide a practical path to support ecosystem based fisheries management decision m

Developing screening assays to identify potential causes of bivalve larval crashes in hatcheries in the Atlantic coast of the United States

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In recent years, there has been a major increase in larval crashes in bivalve hatcheries along the Atlantic Coast of the United States. The Bivalve Hatchery Health Consortium (BHHC) aims to identify potential causes of larval crashes and develop management tools. During the 2024 and 2025 seasons, the BHHC hatcheries collected incoming water (before treatment), tank water, and larval samples at different time points in at least two production runs. Live larvae from early during the production run (1 - 5 days post fertilization) were shipped overnight to our lab, washed, and incubated in filtered sterile seawater (FSSW) overnight to allow the shedding of infectious agents to the water (shed water). At the end of the production run, hatcheries reported the quality of the run. Larval assays were done to identify the source and type of agent leading to low larval performance. A 7-day alternative larval assay was also developed to represent chronic hatchery issues. Hemocyte assays were developed as a rapid year round alternative diagnostic test. Incoming, tank, and shed water were filtered and the different filtration levels and used in larval or hemocyte exposure assays to identify which water types retain pathogens. Healthy larvae or hemocytes were exposed to FSSW (negative control), the unfiltered sample water, 10 micron-filtered water (eliminating protozoan and metazoan parasites), and 0.22 micron- filtered water (eliminating bacteria). These assays replicated clinical signs observed in larvae from hatchery crashes, indicating their potential to guide the process of identification of causes of these larval crashes.

The effect of marine heatwaves on Eastern oysters' (*Crassostrea virginica*)

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In the last century, the global frequency and duration of MHW have increased by 34 and 17%, respectively. Researchers have inferred massive invertebrate deaths cascading to the ecosystems supported by their reefs (Liu et al., 2023). Healthy established reefs provide important habitat for hundreds of species and are a crucial component of global ocean health, filtering nutrients and bacteria. The purpose

of this project was to investigate the heat tolerance of Eastern Oysters and nutrient intake under the stress of simulated marine heat waves. A bucket tank system was used with a 2-hour condition every 2 days a week. There were 3 conditions control (ambient, ~25o), heatwave 1(~30o), and heatwave 2 (~40o). 3 random samples were analyzed using a Coulter, which counts particles in samples, to determine the number of algae cells left after the condition was run. This normalized was correlated to implications on metabolic processes. There is a positive correlation between heat and metabolic processes until a threshold presumably between 30-400C. The correlation becoming negative supports the hypothesis of heat tolerance. This data can provide vital information on predicting the future of marine invertebrates compared to global temperature increases for researchers, fisheries, communities, policy builders, and more.

Evaluating potential drivers of Winter Flounder (*Pseudopleuronectes americanus* P) natural mortality from co-occurring predators and competitors

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Winter Flounder (*Pseudopleuronectes americanus*) historically supported major fisheries throughout New England, but fishery removals have declined over time. Failure of winter flounder populations to improve despite curtailed fishing pressure suggests that factors other than fishing mortality may be mediating their population dynamics. Natural mortality is a poorly resolved process in stock assessment, and although a large body of literature exists on how different stressors affect winter flounder productivity, little is known about how these factors affect natural mortality. Factors potentially responsible are predation and competition from co-occurring fishes, particularly as changing environmental conditions alter species community composition and predator-prey overlaps. The 2026 Winter Flounder Research Track Assessment Working Group began an investigation into the influences of co-occurring species on winter flounder natural mortality. Natural mortality of Gulf of Maine and Southern New England/Mid-Atlantic winter flounder was estimated by calculating catch ratios of the change in Northeast Fisheries Science Center (NEFSC) bottom trawl survey cohort abundance between years for fully selected ages. Relationships between mortality rate estimates and predator and competitor indices were examined. Several species were identified as having significant positive relationships with winter flounder mortality, including Ocean Pout (*Zoarces americanus*), White Hake (*Urophycis tenuis*), and Monkfish (*Lophius americanus*). More significant relationships were identified in the Southern New England/Mid-Atlantic stock

region than in the Gulf of Maine. This work progresses efforts to better understand drivers of winter flounder natural mortality and identifies potential covariates to inform time varying natural mortality in stock assessment.

Investigating the effects of drought on river herring populations in Connecticut and Massachusetts

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Intensifying drought conditions—driven by climate and land-use change and growing water demand—are reshaping freshwater ecosystems. Drought can reduce reservoir spillage and streamflow, restricting hydrologic connectivity between freshwater and marine systems. For anadromous fishes—those that spend most of their lives in saltwater and migrate into freshwater systems to spawn—connectivity between systems is vital for successful reproduction and population persistence. Blueback Herring (*Alosa aestivalis*) and Alewife (*A. pseudoharengus*), collectively known as river herring, have experienced drastic population declines over the past century, due in part to dams and other barriers that alter migratory connectivity. The dependence of river herring on freshwater spawning habitats makes them particularly vulnerable to hydrologic variability. Our research investigates how drought-driven changes in freshwater connectivity influence river herring population dynamics in sites with different hydrologic conditions in Connecticut and Massachusetts. Specifically, we will (1) quantify and compare adult year-class strength over 10+ years, and (2) evaluate how connectivity loss affects juvenile emigration timing and in-lake mortality. By integrating otolith-derived age and growth data and scale-derived spawning checks with hydrologic metrics, we will develop models linking drought severity to recruitment and population resilience. Results will inform adaptable, climate-ready management and restoration strategies by identifying the life stages and watershed characteristics
most sensitive to hydrologic stress.

Intra- and inter-annual dynamics of juvenile river herring and zooplankton populations based on a ten-year dataset

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Juvenile river herring (Alewife: *Alosa pseudoharengus;* Blueback Herring: *Alosa aestivalis*) consume zooplankton as a primary food source and, when in high densities, can exert top-down pressures on zooplankton densities and size structure. Understanding how the relationship between zooplankton and river herring varies within summers and among years is crucial to predicting juvenile river herring growth, survival, and recruitment. This study will assess intra-annual patterns in juvenile river herring and zooplankton densities to characterize seasonal trophic dynamics. Additionally, this study aims to evaluate inter-annual patterns of juvenile river herring and zooplankton densities to determine the strength of the link between trophic levels. To achieve these objectives, I will use a twelve-year dataset (2015–2026) of river herring, zooplankton, and water quality data from four lakes in eastern Massachusetts. Juvenile river herring were sampled at night once per month from June through August using a pelagic purse seine. During each sampling event, three vertical zooplankton tows were conducted, water samples were collected for nutrient analysis, and water quality parameters were measured using a multiparameter sonde. Understanding the linkage between river herring and zooplankton, and the factors that modify this relationship, will provide insight into the environmental variables that influence early life-stage success and support management strategies that conserve river herring.

Do offshore wind farms reshape benthic predator-prey interactions?

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Introducing turbine foundations through offshore wind development may alter predator-prey interactions by modifying habitat structure, which can attract new species and redistribute others. Using fisheries-independent data collected by the Commercial Fisheries Research Foundation, predator-prey interactions were evaluated between commercially important crustaceans and predatory fishes in the Revolution Wind Farm lease area for two years during construction. Using a Before-After-Control-Impact design, 16 stations (6 ventless and 4 vented

traps per station) were sampled twice a month from May to November in 2023 (the initial construction year) and in 2024 (during construction). Dominant crustacean species included: Jonah crab (*Cancer borealis*, n = 16,885), rock crab (*Cancer irroratus*, n = 12,484), and American lobster (*Homarus americanus*, n = 9,346). Predatory fishes present included: black sea bass (*Centropristis striata*, n = 4,842), red hake (*Urophycis chuss*, n = 3,448), cunner (*Tautogolabrus adspersus*, n = 1,896), and scup (*Stenotomus chrysops*, n = 596). Species-level patterns in presence, abundance, size distribution, sex ratios, and condition were examined across turbine-affected sites. Crustacean trap catch was found to be lower where red hake or cunner were present, with both species showing significant negative associations with total crustacean catch across survey years. Traps containing multiple predatory fish species exhibited the lowest crustacean catch relative to traps containing a single predator species. Studying predator-prey dynamics at a wind farm will provide insight into the potential ecological changes influenced by introducing turbine foundations.

Yellowfin Tuna (*Thunnus albacores*) illegal, unregulated, unrestricted fishing in Palau: A suitability model for USCG enforcement

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Illegal, Unreported, and Unregulated Fishing (IUUF) poses severe economic and ecological threats across the Pacific, contributing to billions in global losses annually and undermining food security for Pacific Island nations. To support U.S. Coast Guard operations in District Oceania, we developed a Yellowfin Tuna (*Thunnus Albacares*) habitat suitability model to help predict where fishing activity is most likely to occur and are commonly targeted by longliners. Using environmental variables known to influence yellowfin distribution, sea surface temperature, chlorophyll-a concentration, and sea surface height anomaly, we created a normalized suitability model in ArcGIS Pro which was then compared to Global Fishing Watch data. Our preliminary results show that fishing effort strongly aligns with predicted high-likelihood areas, particularly along the southwestern boundary of Palau's EEZ. Most observed activity remains legal, consistent with restrictions established by the Palau National Marine Sanctuary. The resulting operational dashboard that integrates environmental data, Automatic Identification System (AIS) behavior, and apparent fishing effort to provide Coast Guard operators with GEOINT-driven decision support for patrol planning and IUUF enforcement. This approach demonstrates how habitat suitability modeling can enhance maritime domain awareness and offers a scalable foundation for future forecasting and species expansion.

Performance of supplemental sampling strategies to mitigate the impacts of wind energy placement to the NEFSC Bottom Trawl Survey

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Restricted access of fishery independent surveys to offshore wind energy areas has the potential to alter the spatial coverage and information content of long-term scientific monitoring datasets. Understanding how to mitigate these impacts is essential for preserving the reliability of data products used in stock assessments and management advice. This is especially important in the Northeast US where abundance indices rely on the NOAA Northeast Fisheries Science Center bottom trawl survey, which provides standardized observations across years. To address this challenge, we developed a spatially explicit, multispecies simulation modeling framework for this survey to evaluate how supplemental sampling inside wind energy areas can compensate for information loss when these areas are unavailable to standard survey sampling effort. The simulation framework includes a population dynamics operating model, an observation model that reproduces both the current survey and potential supplemental sampling strategies, design and model-based estimators used to derive survey indices, and performance metrics to compare data products across scenarios. Here we focus on fixed-station supplemental sampling inside wind-impacted areas, comparing an approach that pools supplemental and standard survey data directly with one that applies a known calibration factor to account for potential bias in the supplemental observations, using Scup and Summer flounder as case study example species. Preliminary results indicate that fixed-station supplemental sampling produces lower relative error, lower absolute relative error, and more stable coefficients of variation compared with the survey operating exclusively outside wind areas.

This work provides a reproducible framework for evaluating which combinations of supplemental sampling might sustain survey data quality under increasing spatial constraints from offshore wind development. The results provide an alternative for mitigating survey impacts from wind-area exclusions, showing that fixed supplemental stations can stabilize index precision even when some bias remains.

The microbiomes of the epiphyte *Vertebrata lanosa* and its host seaweed *Ascophyllum nodosum*

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Vertebrata lanosa is a small red seaweed that grows on the intertidal brown seaweed *Ascophyllum nodosum*. It is currently gaining culinary interest and is known as the “sea truffle” because it has a similar flavor to white truffles. The seaweed species are found on both coasts of the North Atlantic Ocean. *A. nodosum* prefers the intertidal zone within rocky sheltered coastal areas. It is found in cooler waters, with Long Island Sound as its southern range in the United States. *V. lanosa* nearly exclusively grows on *A. nodosum*, where its rhizoids penetrate the host’s epidermal layer. Lab cultivation of *V. lanosa* is possible without *A. nodosum*, but the growth rate is slow. A better understanding of the host-epiphyte relationship is necessary to understand what may be needed to increase growth for commercial aquaculture. Microbial communities likely play important roles in the host-epiphyte relationship. This study examines the prokaryotic and fungal communities associated with both seaweeds, focusing on similarities as well as differences despite physical connection. Samples were taken at Bluff Point State Park, the western-most known extent of *V. lanosa* in Connecticut, and Beavertail State Park in Rhode Island during the summer in 2024. Samples included tissues and surface swabs from both species. 16S rRNA and ITS2 gene analysis indicated that the host and epiphyte shared some microbial communities but also had taxa that were unique to each seaweed.

The gut microbiome of the Eastern Oyster (*Crassostrea virginica*)

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Oysters are economically and environmentally vital organisms. The gut microbiome of bivalves is an important indicator of their overall health, but its makeup is not currently well understood. In this study, we investigated the gut microbiome of the Eastern Oyster, Crassostrea virginica. Samples were collected in locations along the east coast. In addition, samples from Connecticut and Florida were depurated in sterile seawater clearing feces from the oysters' gut. Both the digestive gland and feces samples were processed for microbiome analysis. Samples were sequenced using 16S rRNA gene V4 primers and sequenced on an Illumina Miseq. NDMS ordination analysis showed a different microbial makeup from gut samples collected in different locations. Cleared-gut microbiomes were found to be different than fecal microbiomes and varied by location. In addition to DNA, we are processing RNA samples to determine which microorganisms may be the most active in each environment.

Consequences of differing maturity definitions on management regulations for a gastropod fishery

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The channeled whelk, *Busycotypus canaliculatus*, is the primary whelk species in the southern New England multi-species whelk fishery and is currently overfished. Here, the definition of maturity as it pertains to size-at-maturity (L_{50}) estimates were reassessed to update life history

traits from a decades-old stock assessment. Whelk were sampled seasonally (2021, 2022, 2023) in three regions of southeastern Massachusetts: Buzzards Bay, Vineyard Sound, and Nantucket Sound. Specimens were dissected to assess size-at-maturity and life history traits. Data showed that reproductive development and maturity were conflated in previous literature definitions of maturity and was redefined based on biological principles. Literature definitions of female maturity resulted in an estimated L_{50} of ~89 to 105 mm shell width (SW) and ~154 – 175 mm shell length (SL), while the revised biological definition used here resulted in a 28 to 42% decrease in SW (61 to 66 mm) and 26 to 37% decrease SL (109 to 117 mm) L50. In contrast, male L50 determinations remained similar, regardless of maturity definition. Throughout this study, there were more males than females collected (mean ± SD: 65 ± 10%), because the fishery has removed proportionally more females due to their larger size and higher likelihood to be above the harvestable size limit. The results presented here highlight the need for a more precise data-based definition of maturity, as maturity classifications can drastically alter size-at-maturity estimates and fishery management decisions.

Understanding catch variability for Winter Flounder from a fixed gear survey

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In 1999, the Rhode Island Division of Marine Fisheries (RI DMF) established a fishery-independent survey of Winter Flounder *Pseudopleuronectes americanus* spawning stock in response to severe declines in commercial landings and abundance indices. The survey utilizes fyke nets in the brackish coastal ponds where Winter Flounder breed in the winter. Previous analyses for this species, including presence/absence and catch per unit effort indices observed in the fyke net survey, have been assumed to reflect the true spawning stock abundance. However, environmental factors such as water temperature and dissolved oxygen are known to affect the catchability of various flatfish species, and may confound survey-derived indices, especially considering long-term reductions in ice cover and increases in temperature due to climate change. To improve the reliability of spawning stock abundance estimates, we tested the effects of a suite of environmental variables on the relative catchability of Winter Flounder in RI DMF fyke nets. Candidate predictor variables included descriptions of water temperature, air temperature, salinity, dissolved oxygen, precipitation, and wind speed alongside control variables that

were specific to the fyke survey. We tested for variable importance using the random forest model (RFM) machine learning algorithm and predicted partial dependence of relative catchability on selected variables. Although Rhode Island Winter Flounder show no sign of recovery over the 25-year survey period, improved stock assessment indices will support further management efforts.

Trends in Connecticut's Largemouth Bass (*Micropterus nigricans*) Proportional Stock Density since 1980

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Increasing the size-structure of sportfish, often measured using Proportional Stock Density (PSD), is a common goal of fisheries management. However, PSD can be influenced by sampling methods as well as several spatial, temporal, and seasonal effects. Herein we sought to assess trends in Largemouth Bass (*Micropterus nigricans*) size distribution through time and investigate if the observed trends are driven by changes in sampling design or likely reflect true changes in the underlying populations. The Connecticut Department of Energy and Environmental Protection Fisheries Division has collected length-frequency data on Largemouth Bass using night boat electrofishing from over 200 waterbodies since 1980. To assess temporal trends in size structure, PSD values were calculated for each sample since 1980, and a linear model was fit to PSD as a function of year. Mixed-effects models were then fitted to determine the relative influence of sampling methods (e.g., targeted vs. all-species sampling and electrofisher setting) and environmental confounds (e.g., wind, conductivity, and date) on PSD. These results will help managers contextualize PSD estimates taken from night boat electrofishing and enhance our understanding of apparent changes in size structure through time in Connecticut.