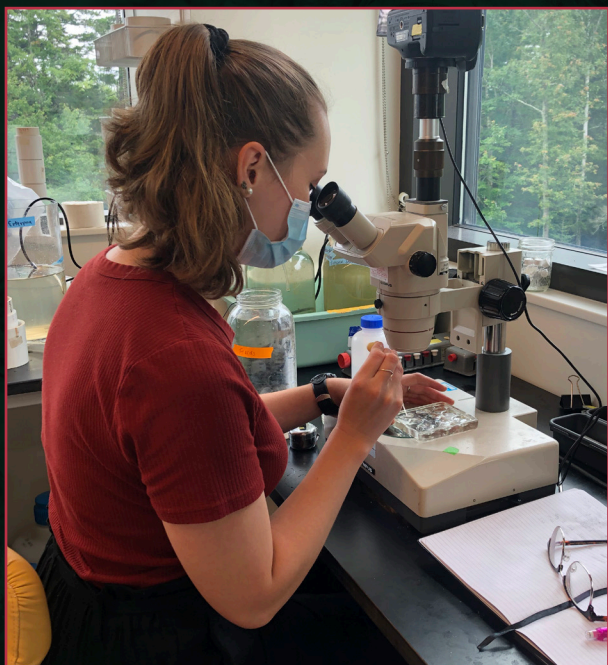


Sea Grant's

American Lobster Initiative



Addressing critical knowledge gaps about the American lobster and its iconic fishery in a dynamic and changing environment


Sea Grant
Northeast





American Lobster Initiative

American lobster (*Homarus americanus*) support one of the largest and most economically valuable single-species fisheries in the United States, worth \$563 million in 2020. From harvesters and dealers to the restaurant and tourism sectors, the fishery and the businesses that rely on it employ thousands of people across the Northeast.

The American lobster's ocean habitat, however, is changing drastically. Studies suggest rising ocean temperatures may directly impact their migration, growth, maturity, and natural mortality. Ecosystem shifts, food web changes, and ocean acidification all impact the lobster and threaten its fishery. While lobsters are resilient animals, the full effects of these changes are unknown. The **Sea Grant American Lobster Initiative (ALI)** is addressing critical knowledge gaps about the American lobster and its iconic fishery in a dynamic and changing environment.

Funded by the National Oceanic and Atmospheric Administration's National Sea Grant College Program, the ALI aims

to increase the American lobster industry's resilience to the biological, economic, and social impacts of ecosystem change in the Northeast. Its two component programs — the **American Lobster Research Program** and its **Northeast Regional Lobster Extension Program** — work together to develop and share new knowledge and understanding with industry stakeholders and resource managers from Maine to New York.

ALI by the numbers

The National Sea Grant Program has invested more than \$6 million in the ALI:

\$2 million each year, from 2019–2021

\$5,397,000 to fund 22 research projects

\$750,000 to fund extension projects in six states

The American Lobster Initiative is comprised of more than:

40 contributing institutions

60 researchers

25 graduate and undergraduate students

20 industry and management partners

Over 20 Sea Grant professionals



Research

From southern New England through Downeast Maine, the environmental conditions that influence how American lobster grow and where they go are dynamic and changing quickly. Increased understanding of the rate and scale of these changes is important for fisheries management.

The National Sea Grant Office is currently funding 22 research projects to help us better understand:

Lobster biology and ecology

- Growth, migration, maturation, larval development, and impacts of ocean acidification
- Distribution and abundance, including ecosystem shifts
- Interactions with other species

The Research Program priorities are informed by listening sessions with regional fishing industry stakeholders, state and federal fisheries managers, and university, state, and federal fisheries researchers.

The ALI supports teams of researchers, as well as research partnerships between state agencies, academia, and industry, to understand the potential ecological and economic implications of those changes for the ecosystem and the fishing communities that rely on it.

Lobster fisheries

- Bait alternatives
- Socio-economic lessons learned from southern New England stock decline as they pertain to Georges Bank and the Gulf of Maine

Extension

Extension programs in six Northeast states developed a collaborative approach to supporting and enhancing the American Lobster Research Program. Extension agents ensure that industry and management stakeholders across the Northeast benefit from the ALI's research efforts and have opportunities to collaborate on project development, implementation, and related outreach and community engagement efforts. A Regional Steering Committee, which consists of industry and management representatives, provides input on emerging industry and management needs and partner engagement.



Broadly, the Extension Program aims to:

- Increase understanding of biological, economic, and social impacts of ecosystem change in the region;
- Identify attributes of a resilient lobster industry;
- Identify research, technical assistance, and outreach needs; and
- Increase opportunities for cross-sector collaboration.

Through industry interviews, social science efforts, stakeholder meetings, and multimedia science communication products, extension agents work with both state-specific and regional stakeholders. They also provide regular updates on the research projects to expand awareness of the effects of biological, social, and environmental change on the lobster population and fishery. The ALI Extension Program strives to add regional capacity in the Sea Grant Network for lobster-related issues and challenges while remaining nimble to support new research and outreach priorities as identified by industry and management partners.



Regional Steering Committee

Patrice McCarron | Maine
Lobstermen's Association, ME

Carl Wilson | Bureau of Marine Science, Maine
Department of Marine Resources, ME

Annie Tselikis | Maine Lobster
Dealers' Association, ME

Mike Theiler | Jeanette T Fisheries, CT

Colleen Bouffard | Marine Fisheries Division,
Connecticut Department of Energy
and Environmental Protection, CT

Aubrey Ellertson | Commercial
Fisheries Research Foundation, RI

Conor McManus | Division of Marine
Fisheries, Rhode Island Department of
Environmental Management, RI

Kim McKown | New York State Department of
Environmental Conservation, NY

Pat Augustine | Former Governor Appointee
to the Atlantic States Marine Fisheries
Commission, NY

Beth Casoni | Massachusetts Lobstermen's
Association, MA

Allison Murphy | NOAA Fisheries Greater
Atlantic Regional Fisheries Office, MA

Heidi Henninger | Offshore Lobstermen's
Association, NH

American Lobster Initiative Research and Extension Projects



CONNECTICUT

Concepcion, Connecticut Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: Connecticut

MAINE

Brady, University of Maine, 2019 • Projecting climate-related shifts in American lobster habitat and connectivity

Brady, University of Maine, 2021 • An ecosystem-based approach to modeling climate-related impacts on American lobster habitat

Goldstein, Wells National Estuarine Research Reserve, 2019 • Potential influence of increased water temperatures on the distribution of female American lobsters and shifts in larval recruitment

Goldstein, Wells National Estuarine Research Reserve, 2021 • Understanding environmental drivers of egg production and stability

Golet, University of Maine, 2020 • Incorporating changes in thermal habitat and growth to improve the assessment of American lobster stocks and spatial distribution

Harrington, Maine Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: Maine

Mills, Gulf of Maine Research Institute, 2019 • Resilience, adaptation, and transformation in lobster fishing communities

Mills, Gulf of Maine Research Institute, 2020 • Understanding and improving spatial distribution projections for lobster

Peters, Department of Marine Resources, 2021 • Answering an industry question, “Who’s eating juvenile lobsters?” using predator stomach content analysis

Stoll, University of Maine, 2020 • Defining indicators of resilience in the American lobster fishery

Tokunaga, Gulf of Maine Research Institute, 2019 • Fish less, earn more: Assessing maximum economic yield effort levels in Gulf of Maine’s lobster fishery

Waller, Department of Marine Resources, 2020 • Testing and developing effective non-invasive female maturity assessment methods and protocols

Wahle, University of Maine, 2019 • Linking the Gulf of Maine pelagic food web to lobster recruitment dynamics

MASSACHUSETTS

Grabowski, Northeastern University, 2021 • Investigating the impacts of range-expanding species to the American lobster fishery

Jordaan, University of Massachusetts, 2020 • Bait alternative development and future visioning in the New England lobster fishery

Pineda, Woods Hole Oceanographic Institution, 2020 • Surface convergences: a critical pelagic microhabitat for American lobster postlarvae?

Pugh, Massachusetts Division of Marine Fisheries, 2020 • Understanding the cause of low dissolved oxygen in Cape Cod Bay and initiating a hypoxia warning system for the lobster fishery

Pugh, Massachusetts Division of Marine Fisheries, 2019 • Growth in large offshore lobsters: addressing a critical data gap in the US Lobster Stock Assessment

Rheuban, Woods Hole Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: Massachusetts (Woods Hole Sea Grant)

NEW HAMPSHIRE

Bradt, New Hampshire Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: New Hampshire

Carlioni, New Hampshire Fish and Game, 2021 • The influence of season and temperature on the distribution and abundance of juvenile lobsters

Henninger, Atlantic Offshore Lobstermen’s Association, 2020 • Assessing the broad-scale distribution and abundance of lobster larvae and their potential food sources

NEW YORK

Chen, Stony Brook University, 2021 • How warming waters could change the American lobster stock dynamics under different management regulations

Clemetson, New York Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: New York

RHODE ISLAND

Collie, University of Rhode Island, 2020 • Early life history of American lobsters in coastal southern New England waters

Cygler, Rhode Island Sea Grant, 2019 • Sea Grant Northeast Regional Lobster Extension Program: Rhode Island

VIRGINIA

Rivest, Virginia Institute of Marine Sciences, 2019 • Effects of multiple stressors on American lobster reproduction, egg development, and emerging larvae

For additional information on the ALI, questions, or comments, please contact Amalia Harrington (amalia.harrington@maine.edu), the Northeast Regional Lobster Extension Project Coordinator based at Maine Sea Grant.

