

Atlantic States Marine Fisheries Commission
Atlantic Mackerel Cooperative Research Initiative
Paired Acoustics-Biological Sampling For Atlantic Mackerel
Request for Proposals (RFP)

Funding Opportunity Description

Summary

The NOAA Fisheries Northeast Fisheries Science Center (NEFSC) and the Atlantic States Marine Fisheries Commission (ASMFC) seek one Atlantic mackerel fishing vessel to charter for twelve research cruise days in the Northwest Atlantic in winter and spring 2027. The project aims to advance methods for detecting and quantifying Atlantic mackerel using active acoustics.

Background

The [Atlantic Mackerel Research Initiative](#) is a two-year cooperative effort between scientists, managers, and the fishing industry to address uncertainties in population dynamics and biomass estimates of Atlantic mackerel, which is managed by the [Mid-Atlantic Fishery Management Council](#). The goal is to advance our understanding of the stock through collaborative research, with focus on five research elements: 1) acoustic detection, 2) spawning seasonality, 3) egg surveys, 4) movement and mixing, and 5) ecosystem drivers.

Accurate biomass estimates and stock assessments are critical for the sustainable management of Atlantic mackerel, a species of high ecological and commercial importance. Currently, the methods to accurately detect and estimate mackerel biomass using active acoustics are unreliable. Development of a target strength model for Atlantic mackerel, the mathematical relationship between fish size and its acoustic backscattering cross-section, is needed to accurately convert acoustic backscatter into relative fish abundance and biomass. By pairing directed trawling with simultaneous high-resolution active acoustic sampling, this research will directly observe how Atlantic mackerel scatter sound in situ. This exploratory research aims to refine acoustic data collection methods, to address key uncertainties in future mackerel stock assessments.

Goal

The goal of this project is to develop a robust target strength (TS) model for Atlantic mackerel in the Northwest Atlantic using active acoustics data paired with empirical catch and biological information from a trawl.

Scope of Work

Timeframe and Spatial Scope

Trawl catch and acoustic data will be collected during approximately twelve research cruise days

during the mackerel fishing season from February–March 2027. The exact timing will be decided in consultation with the selected fishing vessel captain and may be completed across two separate multi-day cruises. The primary objective is to observe and sample Atlantic mackerel across a range of conditions, including in high-density aggregations and when intermixed with other species, to effectively model and refine species-specific target strength (TS) in mixed catch scenarios. The expected spatial domain of this research includes the Gulf of Maine, George’s Bank, and Southern New England. The NEFSC and the collaborating fishing industry partner will work together to select cruise dates and target regions that maximize the probability of encountering these varied sampling conditions.

Participating Vessel

One commercially permitted fishing vessel that targets Atlantic mackerel in the northeast USA (Maine to North Carolina) will be selected to participate in the project. The selected vessel must operate out of a port in either Massachusetts or Rhode Island for the duration of this research to ensure proximity to the target sampling area and maximize efficiency of sampling days. Vessels that do not home port in Massachusetts or Rhode Island should include an estimate of relocation costs in their application, including fuel and dockage fees. A full list of vessel requirements is provided in the “Vessel Requirements” section.

Calibration

The NEFSC will perform standard sphere calibrations on the echosounders installed on the participating vessel prior to conducting this research. Calibrations must be conducted in a water depth greater than 8 fathoms (15 meters) and typically take approximately 4-8 hours to complete. The vessel captain will be responsible for keeping the vessel on station during the calibration and for working with the science team to operate calibration equipment.

Data Collection

Acoustic Data Collection and Analysis

Acoustic data will be collected using a Simrad EK80 wideband echosounder as well as the vessel’s commercial echosounder. The NEFSC will provide, install and operate the EK-80 on the vessel that is selected to participate in this research. The captain of the vessel will be responsible for recording acoustic data using the vessel’s existing echosounder system to maximize data availability. During each research trip, acoustic data for both echosounders will be recorded consistently using predefined settings for each system. As acoustic data is being recorded, the captain will provide real time annotations of echograms, with a focus on identifying mackerel.

Fishing Operations and Net Geometry

Upon identifying mackerel schools within the targeted sampling region using on board echosounders, the vessel will execute a trawl tow using commercial fishing gear. The tow duration will be determined by the captain in consultation with the scientific research team ahead of the first research cruise, with the goal of sampling all sizes of mackerel observed on the echosounder. For each tow, the vessel crew will deploy, operate, and monitor vessel-mounted and net-mounted sensor systems, with equivalent capabilities as the Simrad PX system, to document real-time net geometry and environmental conditions for each tow.

Catch Processing

Once the catch is brought aboard, the vessel crew will assist the science team with transporting the catch into a sheltered sampling area. The science team will process the tow by sorting the catch, identifying all organisms to the species level, and collecting aggregate weights and lengths for all species present using an electronic data collection system, including electronic fish measuring boards and motion-compensated scales. Furthermore, to support target strength modeling, the scientific team will perform detailed biological workups on a representative subset of individual Atlantic mackerel from each tow. For these selected mackerel, stratified by size bins, the team will record individual weights and lengths, conduct bioelectric impedance analysis (BIA), and determine the sex, maturity, and reproductive stage of each fish.

Data Analysis

The NEFSC will pair the acoustic and biological data from each tow to develop standardized algorithms and machine learning classification techniques to filter noise, identify species/aggregations, and efficiently classify Atlantic mackerel in echograms. Echoview software and open-source custom-written software will be used to process and analyze the data. Biological metrics (such as length-frequency distributions) will be directly modeled against the concurrent EK80 acoustic backscatter data to calculate the species-specific TS. After the acoustic data is processed and analyzed, the captain will meet with the science team to review echograms and identify schools of mackerel and other species. This step will be critical to refining the target strength algorithms.

Data Storage

The NEFSC will be responsible for ingesting the acoustic, catch, and biological data into secure databases at NOAA Fisheries. All acoustic data will ultimately be archived at NOAA's National Center for Environmental Information (NCEI) that is optimized for large acoustic datasets, and ensures data longevity and metadata tracking.

Data Confidentiality

This research will be conducted outside of directed fishing operations, and thus all data collected while at sea is considered non-confidential. Thus, the acoustic, catch, and biological data will be utilized in presentations, reports, and other public-facing venues without restriction.

Compensation

Vessels will be compensated at a daily rate for their participation in this research. Recognizing that operational costs vary widely between vessels, applicants must propose a daily charter rate for their vessel that covers all costs associated with operating the vessel, including compensation for one captain and at least two crew, fuel, and provisions for six scientific crew and vessel crew (including three meals per day and hot and cold beverages).

Additional funds will be allocated to the selected fishing vessel for travel to participate in an in-person project kick-off meeting in Narragansett, RI.

Project Meetings and Communication

The selected vessel will be required to participate in meetings and maintain regular communication with NEFSC scientists to plan research cruises, review data, discuss preliminary results, and plan next steps. These meetings may be in-person or virtual.

Minimum Fishing Vessel Requirements

- Minimum length of 80 ft, minimum beam of 20 ft, and a draft between 10 ft and 16 ft.
- Sound, seaworthy, and U.S. Coast Guard certified to carry at a minimum 9 passengers (6 scientific crew, the Captain and 2 mates).
- Living and sleeping space for 6 scientific crew and 3 vessel crew.
- At least one functional marine toilet and shower.
- Sufficient drinking water and coffee for 6 scientific crew and 3 vessel crew.
- 3 meals per day (breakfast, lunch, and dinner) for 6 scientific crew and 3 vessel crew. Meals shall be provided during each day of vessel operation under this contract and must include protein, carbohydrates, and vegetables/fruits.
- Fuel capacity to sustain a trip of greater than 300 nautical miles (150 nautical miles one way) from port and remain at sea for a minimum of 10 days.
- Generated power capacity for scientific sampling equipment, computers, and communications.
- Freezer storage (minimum 20 cubic feet, -10°F) for the exclusive use of storage of scientific samples.
- Enclosed space that can accommodate six scientists for sorting, weighing, and biologically sampling large volumes of catch, including a sorting table at chest height or conveyor to expedite processing of the catch.
- Seawater washdown capability.
- Instrumentation to provide precise depth and location (latitude and longitude) information and radar.
- A VHF and UHF radio.
- Satellite internet connection, such as Starlink.
- Necessary personal and safety protective equipment for fishing operations for captain and crew.
- Demonstrable experience and required equipment for catching Atlantic mackerel with mid-water and/or bottom trawls.
- Hull-mounted transducer fully compatible and able to seamlessly communicate with an EK80 echosounder system.
- Equipped with net mensuration system with doorspread and headrope sensors that can accurately measure net geometry.
- Adequate berthing space, food storage, meal preparation capabilities, and sanitary facilities to accommodate six scientific staff in addition to the vessel crew.

The ASMFC will not be responsible for oil, repair, maintenance, losses, or any other expenses or liabilities sustained in the operation of the vessel in connection with this contract. Fuel costs and slip fees are to be included in the daily charter rate.

Further Application Evaluation Criteria

Vessels that meet the minimum requirements will be ranked according to the following criteria and selected based on their combined ranking:

- Qualifications and experience
 - Including but not limited to mackerel fishing experience, expertise with acoustic systems, and experience participating in cooperative research.
- Vessel capabilities
 - Including but not limited to space for scientific equipment in the wheelhouse and on deck, availability of a Simrad ES-80 echosounder, availability of a Simrad TrawlEye or equivalent system that can provide real-time acoustic down-looking and up-looking views of the net opening and identify when fish enter the trawl, and availability of integrated oceanographic sensors with equivalent capabilities as eMOLT sensors for logging continuous environmental data (temperature and depth) for the duration of every tow.
- Cost Effectiveness
 - Including but not limited to vessel charter day rates, slip fees, and relocation costs.

To Apply

1. To apply, applicants must complete a Google Application Form. All questions must be answered thoroughly. Failure to provide a response to any of the questions in the Google Application Form will result in the applicant being disqualified.
2. The Google Application Form can be found at the following link:

<https://forms.gle/MGyYhw7fXudv2kLaA>
3. Questions regarding information in this RFP or the Google Application Form should be submitted via phone or e-mail to:

Name: Jason Morson
Northeast Fisheries Science Center
Email: jason.morson@noaa.gov
Phone: (267) 809-6527

4. Submission, Modification, Revision, and Withdrawal of Applications
 - a. The deadline for application submission is **midnight EST, October 30th, 2026.**
 - b. ASMFC reserves the right to consult with and to consider information from its own sources, including information from state and federal agencies regarding the proposer's prior performance or the status of outstanding investigations or warrants involving the proposer.
 - c. Late proposals
 - i. Any proposal, modification, or revision received after midnight EST on October 30th, 2026 is "late" and will not be considered.

- d. ASMFC is not liable for any costs incurred by vendors/contractors in developing or submitting their response to this RFP.

Funding Availability

ASMFC reserves the right to reject any and all proposals and make no award under the RFP if such action is in the best interest of ASMFC and NEFSC.