

Cooperative Research in the Northeast Region: Stakeholder Priorities



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EXECUTIVE SUMMARY

Cooperative research provides a means for the fishing industry to contribute to the science and management process through data collection and sharing, technology development, and expert insight. Over the past several decades, cooperative research has been increasingly used in the Northeast to address research questions, develop new technologies, and inform management. In an effort to assess the efficacy of cooperative research in the region and identify priorities and topical focuses going forward, the Northeast Fisheries Science Center's (NEFSC) Cooperative Research Branch (CRB) conducted a series of engagement sessions from Maine to Virginia in August and September 2019. Stakeholders across the region identified clear and consistent priorities that covered both cooperative research approaches and topics.

The priorities for cooperative research approaches that were identified by stakeholders across the region were: 1) Increase inclusion of cooperative research data in stock assessment and management processes, 2) Recognize shortfalls of previous research and identify alternative approaches, 3) Involve industry partners in all phases of research, 4) Engage members of the recreational fishing community in the scientific process, 5) Improve communication about cooperative research opportunities and progress, 6) Improve coordination among the cooperative research community, and 7) Expand funding opportunities for cooperative research.

The priorities for cooperative research topics that were identified by stakeholders across the region were: 1) Industry-based surveys, 2) Research to understand the impacts of offshore wind energy development, 3) Research to understand and improve NEFSC survey performance, 4) Research to understand the impact of climate change on fisheries resources, 5) Socioeconomic research, 6) Seafood marketing, and 7) Conservation gear engineering.

Other priorities identified by stakeholders that were distinct to specific states and sub-regions were: 1) Cooperative biosampling, 2) Cooperative tagging, 3) Ecosystem science, 4) Research to minimize marine mammal interactions, 5) Research to support emerging fisheries, 6) Recreational fisheries research, 7) Stock structure research, 8) Aquaculture research, and 9) Resource species priorities.

The 2019 stakeholder engagement efforts clearly emphasized the need to enhance communication, coordination, and collaboration among cooperative research groups, industry members, and agencies in the region. To address this need, the NEFSC CRB will be piloting Annual Cooperative Research Summits in New England and the Mid-Atlantic in May and June 2020. The Summits will consist of presentations from industry members and scientists involved in cooperative research, group discussions that address the interests of participants, and a poster and networking session to coordinate cooperative research across the region, clarify available funding opportunities, and forge new partnerships. The NEFSC CRB encourages everyone that is interested in or has participated in cooperative research to attend a Summit.

The NEFSC CRB is grateful for the stakeholders that provided input during the engagement sessions and helped to identify the priorities presented in this report. Thank you!

INTRODUCTION

Cooperative research is the partnering of scientists with members of the fishing industry and other stakeholders to collect fundamental fisheries information and develop new tools to support sustainable fisheries (CRCMWG 2015). At its heart, cooperative research is about providing members of the fishing community with opportunities to contribute to the science and management processes. Thus, cooperative research takes many forms, including but not limited to conservation gear engineering, fishery-dependent data collection, industry-based surveys, specimen collection, and environmental monitoring. In the northeast US, the practice of applying a cooperative research approach to address research questions, develop new technologies, and inform science and management has grown (Kennelly 2016, Gawarkiewicz & Mercer 2019). Cooperative research has been demonstrated to be key to understanding and effectively managing the diverse and ever-changing fisheries and ecosystems in the northeast region and has been instrumental in building trust among the scientific and fishing communities.

The Northeast Fisheries Science Center (NEFSC) is dedicated to engaging stakeholders from fishing communities, and the NEFSC's Cooperative Research Branch (CRB) plays a key role in this process. First, by working to communicate the needs of fishing communities to the larger NEFSC and second by facilitating the development of timely and novel research projects to answer science questions and improve management of the region's fisheries. In the past, this has included fostering partnerships between the fishing industry and science community, improving information about commercial fishing operations and harvested species, and producing tools to collect and share data to advance science and fishing. CRB recognizes that meaningful dialogue is vitally important to cooperative research, and launched an effort in 2019 to consult with stakeholders across the region to evaluate research priorities, approaches, and methods. The goal was to develop a path forward in which all partners involved in cooperative research, including industry participants, academic researchers, governmental researchers, and managers, can work effectively and productively.

APPROACH

In August and September 2019, the NEFSC CRB spearheaded an effort to collect input from stakeholders across the northeast region to inform a strategic plan. The purpose of the effort was to gather input on the successes, challenges, and priorities for cooperative research, inclusive of all interested parties and their diverse goals and values. The CRB hosted eight meetings from Maine to Virginia in centers of fishing activity or towns that neighbored



Figure 1. Infographic depicting the locations of meetings, miles traveled, and number of stakeholders consulted by the NEFSC CRB.

fishing communities (Figure 1). The goal was to hear from members of local fishing and research communities and those in dependent industries, recognizing that their specific geographic location leads them to "... share common values, norms and beliefs created through a history of shared experiences" (NRC 1999).

In order to reach a diversity of stakeholders, CRB distributed invitations and information using several different mediums, including printed mailers and posters, a website



Figure 2. Infographic depicting the communication mechanisms used by and types of stakeholders consulted by the NEFSC CRB.

(<https://www.fisheries.noaa.gov/new-england-mid-atlantic/cooperative-research-building-collaboration-future-fisheries>), industry newspapers, email

announcements, social media, and word of mouth (Figure 2). Each meeting was scheduled for 2 hours and varied in attendance numbers and audience composition. Participants included members of the commercial and recreational fishing community, fishing business representatives,

researchers (academic and non-profit), state agency representatives, port representatives, offshore wind developers,

New England and Mid-Atlantic Fishery Management Council members, and other interested citizens. Stakeholders who were unable to attend the meeting were invited to submit written feedback directly to CRB. In total, over 160 stakeholders contributed input. More details about the communications plan are provided in Appendix I. For each meeting, the room was arranged in a circle to facilitate back and forth conversations between participants. CRB staff facilitated the discussion and took detailed notes on the input provided. The agenda of the meeting was created with the intent of spurring a discussion among the participants, and included introductions, presentation of the purpose and intended outcomes, and discussion of cooperative research successes, challenges, and priorities. Discussing the purpose and intended outcomes of the workshops helped to establish the desire for an open dialog and establish clear expectations for participants. The discussion was centered on how and why cooperative research projects have both been successful and challenged in the past, as well as what approaches, topics, and applications should be a priority for the cooperative research community to focus on going forward. During each meeting, CRB staff recorded the main discussion points on large posters displayed around the room. This enabled participants to follow along with the points being made, fill in holes, and correct any errors. In order to encourage open participation, there were no audio or video recordings of these meetings.

The NEFSC CRB compiled, compared, and quantified the recommendations from stakeholders in the detailed notes from the meetings, the summarized notes from the posters, and the written notes from participants unable to attend the meetings. The priorities for cooperative research in the region were quantified by the frequency of discussion across the region. Priorities for cooperative research that were discussed at the majority of the meetings were included as regional priorities and are detailed in the following section. Many other local research recommendations were made by stakeholders and these are outlined in Appendix II.

In addition to identifying regional priorities for approaches and research, as described above, CRB also used language analysis software (MaxQDA) to analyze the input received (Strauss & Corbin 1998). CRB staff imported all notes and written input, manually tagged topics, and allowed the software to identify priorities. The goal was to ensure that the cooperative research priorities identified below were representative of the input received and not influenced by human subjectivity.

RESULTS

The regional priorities for cooperative research that were identified by stakeholders in the northeast fell into two categories: *Cooperative Research Approaches* and *Cooperative Research Topics*. Priorities within the Cooperative Research Approaches category are focused on methods to improve the efficacy and applicability of cooperative research. Priorities within the Cooperative Research Topics category are focused on specific science questions that were identified as timely and important. Specific regional priorities within each of these categories are detailed below, followed by a section detailing the qualitative analysis of stakeholder input. Quotes in italics are from stakeholders who participated in the 2019 engagement sessions.



Figure 3. Word cloud of key terms from the 2019 cooperative research stakeholder engagement workshops.

COOPERATIVE RESEARCH APPROACHES

1) Increase Inclusion of Cooperative Research Data to Assessments and Management

“Management needs to recognize good, time sensitive research and use it.”

Stakeholders across the region strongly recommended that effort be devoted to not just conducting cooperative research, but to applying results to stock assessments and management. Frustration with limited use of cooperative research results, including those produced by governmental agencies, academic institutions, and research organizations, was prevalent. Stakeholders strongly recommended that clear pathways be developed for applying cooperative research, whether it be novel fishing gear, data sources (fishery-dependent and fishery-independent data, fishermen's ecological knowledge), or parameters (e.g. discard mortalities, catchabilities). Enhancing communication and collaboration between cooperative researchers, members of the fishing community, and end users (stock assessment scientists, ecosystem modelers, survey groups, fisheries managers) was identified as a method to achieve this goal.

2) Recognize Shortfalls of Previous Research and Identify Alternative Approaches

“We need to acknowledge that mistakes were made and start anew.”

Stakeholders across the region recommended that the fisheries community recognize where there are shortfalls in existing approaches to research and management (such as exclusivity and rigidity) and implement new collaborative approaches that have been demonstrated to be effective in other countries, regions, and in peer-reviewed literature. A desire to prioritize collaboration and transparency was paramount.

3) Involve Industry Partners in All Phases of Research

“The best ideas come right from the fishermen.”

Stakeholders across the region recognize that there is a continuum of cooperative research, from using industry vessels as platforms to involving industry partners in every phase of research. There is a strong desire for cooperative research efforts to be holistically inclusive of industry partners, using their expertise to identify research questions, develop project plans, implement research, and interpret and apply results. This includes offering fair incentives for providing high quality, high resolution data and considering practicality for industry research partners.

4) Engage Members of the Recreational Fishing Community in the Scientific Process

“We must respect what all groups bring to the table and understand each other's perspective and area of expertise.”

Stakeholders across the region recommended greater involvement of the recreational fishing community in cooperative research efforts. Participants in recreational fishing and fishing businesses provide unique perspectives and resources that would enhance the value of cooperative research going forward.

5) Improve Communication about Cooperative Research Opportunities and Progress

“A successful cooperative research project involves two-way communication between industry members, scientists, and managers”

Stakeholders across the region recommended that all partners participating in cooperative research focus on improving communication. Specifically, there was a desire for cooperative research scientists and administrators to ensure regular and ongoing communication with stakeholders to discuss current research, successes, challenges, and needs. Face time at the docks was strongly recommended, but regional cooperative research summits to bring together members of the fishing community, scientists, and managers were also proposed.

6) Improve Coordination Among Cooperative Research Community

“No one knows what everyone else is doing. We need regionalized meetings that highlight the cooperative research work that is being done.”

Stakeholders across the region recommended that groups working on cooperative research better coordinate their efforts to maximize collaboration and efficiency. Many different agencies and institutions conduct cooperative research, but there are limited opportunities or resources to coordinate research efforts. To improve coordination, stakeholders recommended regional cooperative research summits, informational websites, and expanded networking opportunities.

7) Expand Funding Opportunities for Cooperative Research

“We have ideas, but we need money.”

Stakeholders across the region were concerned that the funding available to support cooperative research projects has declined in recent years. In order to realize the full potential of cooperative research in the northeast region, expanded and diversified funding opportunities are needed. Stakeholders highlighted the importance of funding flexibility to accommodate the logistical limitations of cooperative research (fishing seasons, variable compensation rates, etc.).

COOPERATIVE RESEARCH TOPICS

1) Industry-Based Surveys

“Using industry vessels for surveys is logical and cost effective. We know how to fish and want to help with the science.”

Stakeholders across the region recommended continuing and expanding the use of industry-based surveys to understand the distribution and abundance of resource species and the status of the region’s marine ecosystems. Recommendations for species-specific industry-based surveys included: Atlantic halibut longline survey, yellowtail flounder supplemental survey, and summer flounder supplemental survey. In addition to species-specific industry-based surveys, stakeholders recommended that a cooperative research approach be used to explore novel survey methods, including acoustics, video trawls, and fixed gear. Finally, stakeholders also recommended a cooperative research approach to understand how shifting phenology is impacting the availability of resource species to traditional surveys. For all industry-based surveys, stakeholders recommended that members of the fishing community be directly involved in the development of methods and protocols, in addition to operations.

2) Research to Understand the Impacts of Offshore Wind Energy Development

“We need baseline surveys and consideration of alternative fishing strategies in wind farms.”

Stakeholders across the region recommended that a cooperative research approach be applied to address the many science questions surrounding offshore wind energy development. This included assessments of ecological, oceanographic, and socioeconomic impacts, as well as the impacts of exclusion of the NEFSC bottom trawl survey. Stakeholders recommended that the fishing community be involved in developing research priorities related to offshore wind energy and fisheries, developing methods and protocols, and interpreting results. Stakeholders strongly felt that on-the-water cooperative research was needed immediately to begin to understand the impacts of offshore wind energy development on fisheries resources and ecosystems.

3) Research to Understand and Improve NEFSC Survey Performance

“Size and longevity of surveys are often conflated with quality. We all want surveys to be good, but we have to work together to get there.”

Stakeholders across the region recommended that a cooperative research approach be applied to understand and improve the performance of the NEFSC bottom trawl survey. Recommendations included cooperative research on shoulder seasons, gear performance, and catchability. In order for this research to be successful, stakeholders highlighted the need for adoption of research results, including changes to survey data use (e.g., adoption of efficiency corrections) and/or survey methods.

4) Research to Understand the Impact of Climate Change on Fisheries Resources

“Our oceans are changing; our laws should be changing too”

Stakeholders across the region recommended that a cooperative research approach be used to understand the impacts of climate change on fisheries resources. Members of the fishing industry have a unique understanding of how a changing climate has impacted the species they target and the environment that they rely upon and should be consulted as a source of key ecological knowledge. Other recommendations for cooperative research projects to understand the impact of climate on fisheries resources include: using fishery-dependent data to assess changing species distributions and productivity, using supplemental surveys to assess changing accessibility of species to surveys, and outfitting fishing vessels with sensors to understand changing ocean processes.

5) Socioeconomic Research

“Economics can make or break a fishing season. It’s not all about how many fish are out there.”

Stakeholders across the region recommended continued and expanded cooperative research efforts to understand socioeconomic factors impacting fisheries resources and fishing communities. Specific recommendations for socioeconomic research included: assessing the impacts of different management approaches (catch shares, daily limits, hook limits, time/area

closures) and assessing the economic value of recreational and commercial fisheries in the northeast region. Stakeholders also recommended using a cooperative research approach for Management Strategy Evaluation, as members of the fishing community have a valuable understanding of the economic and social impacts of different management actions.

6) Seafood Marketing

“We are not here to make the last dollar or fish the last fish, we are here to bring food to tables and sustain the ocean”

Stakeholders across the region recommended that a cooperative research approach be taken to advance seafood marketing and waste reduction in the region. Specifically, stakeholders felt that industry, scientists, and managers should work together to highlight the sustainability of USA wild caught seafood and the nation’s efforts to achieve sustainability. Specific recommendations for cooperative research focused on seafood marketing and waste reduction included: market research, research on the fate of domestic seafood, full-retention fishery pilots, and seafood gleaning,

7) Conservation Gear Engineering

“Conservation engineering, haddock separator, changes in mesh shape/size for reduction in undersized fish caught.”

Stakeholders across the region recommended continued and expanded cooperative research efforts to develop modifications to fishing gear or novel fishing gear to reduce bycatch, minimize environmental impacts, expand fishing opportunities, and maximize profitability. Specific recommendations for conservation gear engineering projects included gear modifications to reduce protected species bycatch, and development of gears fishable within offshore wind farms.

QUALITATIVE ANALYSIS OF STAKEHOLDER INPUT

Thematic content analysis of the notes detailing each engagement session was carried out in accordance with the basic tenants of grounded theory (Strauss 1998). The analysis and iterative coding process was conducted using MaxQDA qualitative analysis software. Sets of notes from each stakeholder engagement session were analyzed and coded by themes that emerged and existing contextual knowledge (following methods of Strauss 1998). Once the initial coding was completed, two reviewers independently grouped codes into categories then reconciled those differences into a master hierarchy of categories composed of codes.

The thematic content analysis identified categories that were consistent with the frequency of occurrence exercise (Figure 4). This result reinforces the objectivity of the regional priority identification. The qualitative analysis also identified differences in the prevalence of discussion themes between locations, which reflects the distribution of different fisheries and issues across the region (Figure 4).

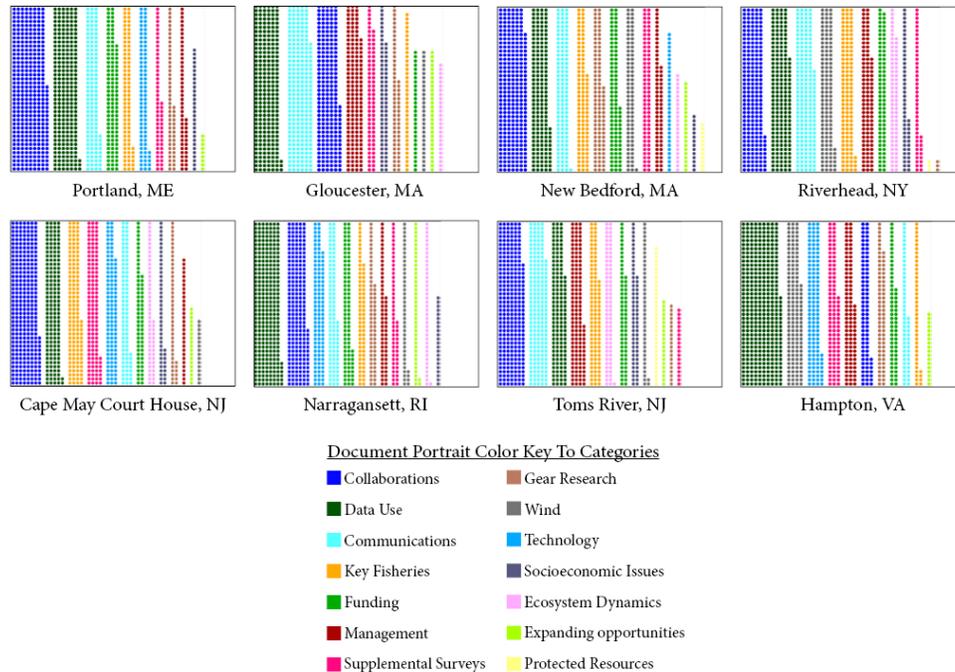


Figure 4. Document portrait depicting the frequency occurrence of topics discussed at the eight engagement sessions.

DISCUSSION

Cooperative research in the northeast region has grown in scope and scale over the past several decades, with hundreds of scientists and fishing community members involved. There is a clear desire from the scientific and fishing communities to expand the implementation and application of cooperative research in the region. This includes employing a cooperative research approach to a wider variety of research questions and as well as involving new industry partners. In order to advance the efficacy of cooperative research, however, clear and achievable paths for applying the results of cooperative research, enhanced communication and coordination, and expanded funding are needed.

The findings detailed in this report exhibit consistencies with previous cooperative research strategic visioning exercises in the northeast, but also provide new insights and priorities (GMRI 2009). Priorities for cooperative research approaches that exhibit consistency over time include: enhanced coordination and communication, early and regular collaboration with industry partners, responsiveness to management needs, and expansion of funding opportunities (GMRI 2009). Priorities for cooperative research topics that exhibit consistency over time include: industry based surveys, conservation gear engineering, and survey performance research (GMRI 2009). New cooperative research priorities that were identified through the 2019 stakeholder engagement workshops include: offshore wind research, climate change research, recreational fisheries research, seafood marketing, and socioeconomic research. The priorities for cooperative research in the northeast region are responsive to an ever-changing suite of challenges and

opportunities, and should be assessed regularly to ensure that cooperative research efforts are focused and effective.

Recognizing the need to enhance communication, coordination, and collaboration in region, the NEFSC CRB will be piloting Annual Cooperative Research Summits in New England and the Mid-Atlantic in spring 2020. The Summits will consist of presentations from industry members involved in cooperative research, presentations from scientists involved in cooperative research, group discussions of short-term and long-term cooperative research priorities, and a poster and networking session to coordinate cooperative research across the region, clarify funding opportunities available, and forge new partnerships. The NEFSC CRB hopes that the Summits facilitate regional coordination of cooperative research, development of new partnerships, and enhanced efficacy in applying cooperative research results to assessments and management.

The NEFSC CRB would like to thank all of the stakeholders who provided input on the successes, challenges, and priorities of cooperative research in the northeast region. The thoughts and expertise that were shared openly and passionately will guide an evolution of cooperative research that is responsive and effective. The CRB looks forward to forging new lanes for communication, coordination, and application of cooperative research in the northeast region.

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Appendix I. Communications Plan

CRB staff worked closely with NEFSC's Research and Communications Branch (RCB) to create a communications plan that leveraged established channels and existing outreach relationships for the purpose of advertising this series of meetings throughout the region. A central pillar of the communications plan was the development of an informational website that described the objectives of the meetings, their times and locations, included the agenda, included a link to join the newly created Cooperative Research email list, and had the email and phone number of the CRB staff member that served as the main point of contact (POC) for this project. The tone of the website was inviting and emphasized a call to action for interested parties to make their voice heard. A table was created in Google Sheets to track all direct communications from stakeholders with most coming to the POC and the rest addressed to the CRB Branch Chief. The table columns included Date, Name, Profession or Affiliation, Content of the communication, and notes for following up as needed. During the organization phase CRB acknowledged that these workshops were being held during a productive time of year for members of the fishing industry in the region, and that could impact in-person attendance. Therefore, communications efforts emphasized that reaching out to the POC could help those unable to attend have their input included.

Appendix II. Local Cooperative Research Priorities

1) Cooperative Biosampling

Stakeholders in southern New England recommended continued and increased collaboration with members of the recreational and commercial fishing community to collect specimens for biological analysis.

2) Cooperative Tagging

Stakeholders in the Mid-Atlantic recommended continued and increased collaboration with members of the recreational and commercial fishing community to tag, release, track, and recapture fish and shellfish.

3) Ecosystem Science

Stakeholders in northern and southern New England recommended applying a cooperative research approach to ecosystem science, including studies to explore species interactions, water quality, habitat, and anthropogenic stressors.

4) Research to Minimize Marine Mammal Interactions

Stakeholders in northern New England recommended continued and expanded cooperative research on fishing gear technology to reduce protected species interactions, specifically North Atlantic right whale entanglements.

5) Research to Support Emerging Fisheries

Stakeholders in southern New England and the Mid-Atlantic recommended pursuing cooperative research to expand fishing opportunities with emerging species, such as Jonah crab and shortfin squid.

6) Recreational Fisheries Research

Stakeholders in the in Mid-Atlantic recommended expanded cooperative research with the recreational fishing community, including explorations of catch-per-unit-effort and gear modifications to minimize discard mortality.

7) Stock Structure Research

Stakeholders in northern and southern New England recommended expanding cooperative research efforts to understand stock structure of commercially important species, such as red hake and Atlantic cod.

8) Aquaculture Research

Stakeholders in the Mid-Atlantic recommended that the cooperative research approach be applied to exploring tradeoffs and co-existence of aquaculture and wild harvest fisheries.

9 Species Priorities

Stakeholders across the northeast region prioritized research on specific species, including Atlantic halibut, groundfish, whelk, summer flounder, black sea bass, shortfin squid, whiting, and tautog. The prioritized species were different in each state due to variable fishery participation, availability, and value.