



NOAA FISHERIES

**NEFSC Science and Research Director's
Annual Guidance Memo for Fiscal Year 2019**

April 16, 2018

Northeast Fisheries Science Center

NOAA Fisheries

Preface

In the face of a rapidly changing natural and human environment we must adapt our science and our organization to meet present and future as well as internal and external challenges.

This Annual Guidance Memo builds off of the framework for the scientific enterprise of which the NEFSC is part – and highlights the anticipated results we would achieve in FY19 to support NOAA Fisheries’ three national Strategic Goals:

1. Maximize fishing opportunities while ensuring the sustainability of fisheries and fishing communities
2. Recover and conserve protected species while supporting responsible fishing and resource development
3. Improve organizational excellence and regulatory efficiency

Cross-cutting priorities for FY19 are communication and collaboration - both internal and external. We must express this commitment to each other and to our external stakeholders and partners. Throughout the year, we will plan multiple events focused on communication and collaboration. Where appropriate, Divisions and Branches are encouraged to pursue development of their annual activity plans by reaching across divisions and outside the NEFSC to build durable and effective partnerships. The Staff Advisory Council will be given dedicated resources to address communication issues throughout the NEFSC. Our recently initiated Facility Directors Board and the Supervisors Council will be continued and these groups will also address issues related to communication, collaboration, and organizational excellence more broadly.

This Annual Guidance Memo gives specific guidance for activities to be emphasized in FY19. This document does not prioritize different aspects of the NOAA Fisheries Mission, nor is it an attempt to prioritize one aspect of the NEFSC Science Strategic Plan over other aspects. Rather, it presents a limited number of high priority results we will endeavor to achieve in FY19 in support of our national and regional strategic goals and priorities.



Jon Hare
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NOAA Fisheries Mission

Stewardship of living marine resources

Through science-based conservation

And management and the promotion of

Healthy ecosystems

Mission & Challenges

The mission of the Northeast Fisheries Science Center (NEFSC) is to provide scientific advice in support of living marine resource management. More specifically, the NEFSC conducts ecosystem-based research and assessments of living marine resources, with a focus on the Northeast U.S. Shelf Ecosystem. These assessments and advice promote the recovery and long-term sustainability of living marine resources in the region, and generate social and economic opportunities and benefits from the use of these resources¹. These assessments and advice are based on the best available science and are provided in an objective and impartial manner. To achieve this mission, the Northeast Fisheries Science Center strives for scientific and organizational excellence. These two elements were captured in The [Northeast Fisheries Science Center Strategic Science Plan](#) (2016-2021).

There are multiple challenges facing the science of living marine resource management in the Northeast U.S. First and foremost is the complexity and array of issues related to living marine resource management: wild-captured fisheries, aquaculture, protected species, habitat, various natural and human interactions, and broader ecosystem interactions.

The second major challenge is the recognition that our stock assessment process needs to be modified to ensure new research can be planned and brought to bear in an effective manner, while also providing regular and timely advice. Working with our partners, we need to continue the development of assessment approaches and modify the manner through which assessments are conducted, while meeting the region's ongoing assessment needs. Changing an operational system during operation is challenging but implementing these changes is a priority for NOAA Fisheries^{2,3,4,5} and the Northeast Fisheries Science Center^{6,7}.

The third major challenge is that the Northeast U.S. Shelf Ecosystem is one of the fastest changing ecosystems in the world. Over the past 15 years, waters in the Northeast U.S. Shelf have warmed in excess of 2°C, in part due to multi-decadal variability in climate and in part longer-term changes in climate. Human use of the ecosystem also continues to change, with changes in fishing patterns, wind energy development, coastal aquaculture, and the potential for offshore aquaculture development. Understanding the effects of these changes in the physical system and human uses of the system on living marine resources is a priority, as is understanding the impacts of these changes on living marine resources management⁸.

The fourth major challenge is that the Northeast U.S. Shelf Ecosystem is home to two highly endangered marine species. There are fewer than 460 North Atlantic right whales and the population is declining. Atlantic salmon populations remain very low. Promoting the recovery of these species in a changing environment (changing climate, increasing human use) will require continued assessment as well as developing and testing recovery approaches. There are a number of other marine mammals, sea turtles, and diadromous fish in the ecosystem that are protected or species of concern.

¹ <http://www.nefsc.noaa.gov/mission.html>

² <http://www.st.nmfs.noaa.gov/ecosystems/ebfm/creating-an-ebfm-management-policy>

³ https://www.st.nmfs.noaa.gov/stock-assessment/saip_and
https://www.st.nmfs.noaa.gov/Assets/stock/documents/SAIPCompleteDraft_2-16-17.pdf

⁴ <http://www.st.nmfs.noaa.gov/stock-assessment/stock-assessment-prioritization>

⁵ <https://www.st.nmfs.noaa.gov/stock-assessment/future-of-stock-assessment>

⁶ <http://www.nefsc.noaa.gov/rcb/stratplan/nefsc-strategic-science-plan.pdf>

⁷ http://www.nefsc.noaa.gov/program_review/pdfs/nefsc-directors-memo-2014-program-review.pdf

⁸ <https://www.st.nmfs.noaa.gov/ecosystems/climate/rap/northeast-regional-action-plan>

Scientific Enterprise

Our goal is scientific excellence: accurate, precise, accountable, objective, efficient, timely, useful, transparent, and novel. Our science is conducted to support the management of living marine resources in the Northeast U.S. Shelf Ecosystem, which extends from North Carolina to Maine, and includes watersheds, estuaries, the continental shelf, and open ocean. The NEFSC science enterprise has six components: research, development of new technology and approaches, monitoring, assessment, providing scientific advice and services, and operations and administration (Figure 1). These components interact with three other components that are external to the NEFSC: management, stakeholders, and services. We must work across this enterprise to be successful.

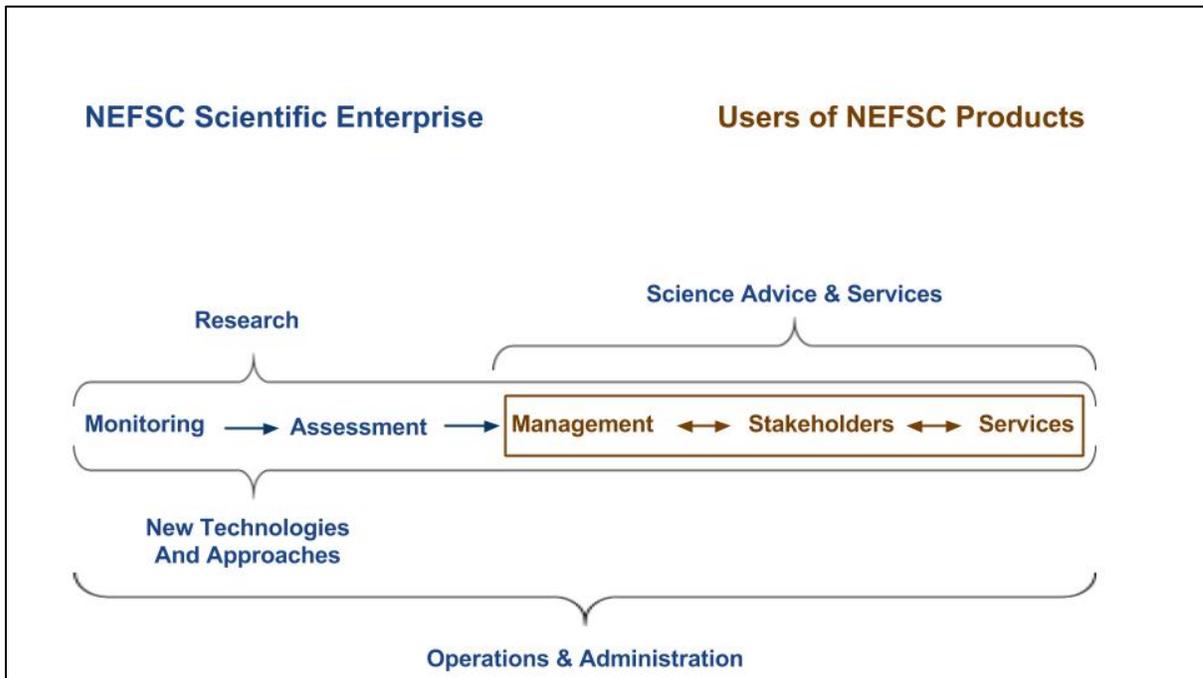


Figure 1. Conceptual diagram of the scientific enterprise that supports stewardship of living marine resources. Blue represents the scientific enterprise of the NEFSC and brown represents external partners: managers, stakeholders, and services.

Monitoring is the systematic collection of data that provide information on changes in biological, physical, chemical, or human conditions. NEFSC data collection systems are designed to support the development of assessments and other scientific advice and services.

Assessments estimate the current status of managed species and the social and economic status of human systems connected to these species with the goal of providing the best available science and scientific advice for making decisions that support management goals and objectives.

Scientific Advice and Services broadly support management programs and decision-making. These activities develop a wide variety of products that support the NOAA Fisheries mission and the decisions of managers in the region. The goal is to develop science-based decision tools to support the sustainability of living marine resources, to enhance coastal community resilience and society's capability to respond to changing ecosystem conditions, and to manage risk to different components of the ecosystem.

Research includes laboratory experiments, field-based experiments and process studies, retrospective analyses, and modeling studies designed to understand and predict changes to living marine resources, the ecosystems they depend upon, and the human communities with which they interact.

New Technologies and Approaches are developed and evaluated to improve scientific advice. These technologies and approaches can apply to any element of the NEFSC scientific enterprise or connecting elements across the NEFSC scientific enterprise. New technologies include passive and active acoustics, imaging of water column and benthic habitats, gear engineering, electronic monitoring of fisheries, and genetic applications such as measurements of environmental DNA to assess ecosystem services. New approaches include more involvement of industry in monitoring and research activities and improvements to assessment and advice processes.

Operations and Administration are fundamental to the scientific enterprise and represent the internal functions and services necessary for the NEFSC to operate. These functions and services include secure and safe facilities and IT infrastructure, highly functioning workforce management support, effective personnel management, active communication techniques and strategies; effective and compliant budget execution, budget planning, procurement, grants, and contracts; and enabling IT support at the facility- and programmatic levels.

Outside of the NEFSC Science Enterprise, there are three other components of living marine resource management with which NEFSC science interacts.

Management includes all organizations involved in managing living marine resources in the Northeast U.S. Shelf ecosystem. First and foremost is the NOAA Fisheries Greater Atlantic Regional Fishery Office (GARFO), which is responsible for management of living marine resources in the Northeast region. The Atlantic States Marine Fisheries Commission, the two regional federal fishery management councils, and the NOAA Fisheries Highly Migratory Species Management Division are also important management bodies in the region. Other federal agencies are also supported, including the Bureau of Ocean Energy Management, the Army Corps of Engineers, and the U.S. Fish and Wildlife Service. Where resources overlap, management organizations in the southeast U.S. are also supported. These include the Southeast Regional Office and South Atlantic Fishery Management Council. There are also a number of advisory groups that review and use NEFSC science including those concerned with protected species like whales: the Atlantic Scientific Review Group, Status Review Teams, and Take Reduction Teams. NEFSC science also supports internationally managed resources through engagement in bilateral discussions of transboundary resources with Canada, and contributions to the advisory processes in the Northwest Atlantic Fisheries Organization, the International Council for the Exploration of the Sea, the International Commission for the Conservation of Atlantic Tunas, and the North Atlantic Salmon Conservation Organization. At the state level, we support management by participating on state planning bodies such as the Long Island Sound Management Committee and groups focused on oyster restoration in the Chesapeake Bay. This is not meant to be an exhaustive list, but provides examples of the wide array of managers and decision-makers who use NEFSC science.

Stakeholders include the individuals, communities, businesses, organizations, and agencies that rely on or have an interest in living marine resources. Examples are commercial and recreational fishermen and businesses; aquaculture operations; fish and shellfish dealers, processors, and sellers; the shipping, offshore energy, and pharmaceutical industries; local, state, and federal agencies; federally-recognized tribes; other nations; non-governmental organizations; and research organizations and institutions. Defined as such, stakeholders involve a large array of individuals, groups, and governments concentrated in the northeastern U.S. but extending nationally and internationally.

Services include all the benefits that stakeholders obtain from living marine resources. These services can be divided into four categories⁹. Supporting services are necessary for the production of other services. For example, forage fish provide a supporting service to their predators. Provisioning services are products obtained from living marine resources, for example, seafood purchased by consumers. Regulating services are benefits obtained from management of living marine resources. For example, conserving Essential Fish Habitat¹⁰ protects the productivity and carrying capacity of fish and shellfish populations. Cultural services are nonmaterial benefits obtained from living marine resources through spiritual enrichment, recreation, and aesthetic and educational experiences such as recreational fishing, whale watching, aquariums or waterfront festivals.

⁹ <http://www.nefsc.noaa.gov/ecosys/ecosystem-status-report/ecosystem-services.html>

¹⁰ <http://www.habitat.noaa.gov/aboutus/statutoryauthorities.html>

Core Science

Core science is science that falls within the NEFSC Science Enterprise (Figure 2) and directly addresses the elements of the NOAA Fisheries mission: fisheries management, aquaculture, protected species management, and habitat and ecosystem management. As such, core science is broad, but there are boundaries; the connection to the NOAA Fisheries mission must be direct. *Core monitoring* includes those programs that directly contribute data to the NEFSC's fisheries, protected species, and ecosystem assessment activities. *Core assessment and advice* activities include fisheries, protected species, and ecosystem assessments, as well as economic and social analyses associated with fisheries, protected species, aquaculture and ecosystems. *Research and the development of new technologies* that are directed and designed to support the NEFSC Science Enterprise are also core - we need to continually work to improve our monitoring, assessments, advice, and services. Finally, core *operations and administration* functions of the NEFSC are those fundamental to executing our work: facilities, IT, budget, procurement, grants, communication, and administration.

FY19 Priorities & Anticipated Results

National Goals and Priorities

In general, the priority for FY19 is to support activities that achieve anticipated results that directly contribute to the three national NOAA Fisheries Strategic Goals:

- Maximize fishing opportunities while ensuring the sustainability of fisheries and fishing communities.
- Recover and conserve protected species while supporting responsible fishing and resource development.
- Improve organizational excellence and regulatory efficiency.

The priorities and anticipated results outlined here are consistent with overarching national strategic goals, national priorities, and shared priorities with GARFO.

Science Operations & Program Reviews

Numerous reviews of NEFSC science and operations have been conducted over the past 5 years. Addressing actions identified in these reviews and plans should continue to be an important element of FY19 activities. These reviews have identified numerous opportunities for improving our science and our organization. Some of these reviews have been part of a formal NOAA Fisheries Program review process¹¹: Stock Assessment [Data Collection Program](#), [Stock Assessment Methods](#), [Protected Species Science](#), [Economics and Human Dimensions Program](#), and [Ecosystem and Climate Science](#). In addition, there have been independent reviews of the [Observer Program](#), [Scallop Survey Methods](#), External [Communications & Stakeholder Engagement](#), and [Northeast Cooperative Research Program](#). Deloitte Consulting also recently reviewed human resources and budgeting functions at the NEFSC and an external review of the Data Management System Program will be conducted during FY18. As an FY19 Priority, the NEFSC will review the function of the Directorate, thus completing external reviews of all scientific and administrative programs at the NEFSC.

In addition to these reviews, there are agency and regional plans for improving NEFSC science that guide our work: including the [Habitat Assessment Improvement Plan](#), [Stock Assessment Improvement Plan](#), [Northeast Regional Action Plan](#), [Ecosystem Based Fisheries Management Roadmap](#), [NEFSC Strategic Plan](#), and [NOAA Marine Aquaculture Strategic Plan](#). There are also fishery management council-led reviews of programs in which the NEFSC is involved. These include a three-year review of the standardized bycatch reporting methodology and the review of the Research Set-Aside Program that will be completed by the New England Fishery Management Council.

National Strategic Goal 1. Maximize Fishing Opportunities While Ensuring the Sustainability of Fisheries and Fishing Communities

NOAA Fisheries is responsible for managing U.S. fisheries in federal waters to help secure our nation's food security. U.S. fisheries are among the largest and most sustainable in the world. The U.S. science-based fishery management process is designed to provide optimum yield while preventing overfishing and taking into account the

¹¹ <http://www.st.nmfs.noaa.gov/science-program-review/>

protection of marine, estuarine, and coastal riverine ecosystems. Commercial (including seafood and support industries), recreational, and subsistence fishing opportunities strengthen the economy and our fishing communities. Aquaculture is an important and growing U.S. industry with the potential to provide a significant sustainable supply of healthy seafood for the nation and global markets. The NEFSC provides high-quality stock assessments and ecological and socioeconomic information required for federal management of fisheries, and contributes to the science and assessment of state-managed fisheries. With our partners, NOAA Fisheries executes its scientific enterprise to reduce the number of stocks subject to overfishing, increase the number of rebuilt stocks, support and enhance aquaculture, and develops ecosystem-based fisheries management approaches in the region. This substantially increases the economy in both revenue and jobs.

The NEFSC also provides and continues to develop ecosystem-based fisheries management, which recognizes the physical, biological, economic, and social interactions among fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals.

Priorities & Anticipated Results to maximize fishing opportunities

National Priority: Leveraging existing resources, identify and implement high-priority, near-term actions from the Ecosystem-Based Fisheries Management (EBFM) Roadmap

NEFSC Anticipated Results:

Support continued development of ecosystem-based fisheries management in the region by continuing to develop and evaluate the Fishery Ecosystem Plan in partnership with New England Fishery Management Council, completing the annual State of the Ecosystem reports for each council, and conducting Mid-Atlantic Fishery Management Council risk assessments and supporting EAFM policies. {Scientific Advice & Services Enterprise}

National Priority: Maintain and enhance stock assessments to support management of U.S. fisheries:

NEFSC Anticipated Results:

Integrate the new Marine Recreational Information Program catch estimates into NEFSC assessments and advice as scheduled by the Northeast Regional Coordinating Committee. {Assessment Enterprise}

Complete the first year of tasking for the Atlantic Cod Stock Structure Working Group, a US- Canadian effort to better understand cod stock structure in the Northwest Atlantic and the management implications of insights gained from that work. {Research Enterprise}

Conduct gear-performance evaluation for the NEFSC bottom-trawl survey fishing operation and examine potential effects on stock assessments in collaboration with the Northeast Trawl Advisory Panel (NTAP). Collaborate on other priority joint research with NTAP and provide research results and improved understanding to the stock assessment process. {Research Enterprise}

Expand internal and external collaboration to improve stock assessments using the new research- and management-track assessment framework, including better integration of ecosystem science into fish stock and protected species assessments. {Assessment Enterprise}

Establish protocols for incorporating cooperative and external research into the assessment processes. {Assessment Enterprise}

Coordinate with the Southeast Fisheries Science Center and the Highly Migratory Species Management Division on high priority research and assessments. {Assessment Enterprise}

National Priority: Implement stock assessment prioritization.

NEFSC Anticipated Results:

Work with the Northeast Regional Coordinating Committee to implement changes to the assessment process with a goal of enabling scientific developments, including new information and understanding, and improving the responsiveness of science and management to the changing ecosystem. {Assessment Enterprise}

National Priority: Modernize and streamline our fishery information systems and data collection

NEFSC Anticipated Results:

Develop expanded capability to collect accurate and precise observer data electronically, reducing data transcribing errors, streamlining data delivery, and reducing time required to create output products. {Monitoring Enterprise}

Develop a common database structure to support HabCam datasets at the NEFSC so data can be readily accessed by all NEFSC staff. {New Technologies Enterprise}

Collaborate with GARFO and external partners to advance efforts to collect, manage, and use fishery-dependent data in support of the Fishery Dependent Data Vision by developing a unified trip management system and initiating technical teams to integrate pre-trip notifications, vessel trip reports, dealer data, Northeast Fisheries Observer Program data, and biosampling data into a unified system. {Monitoring Enterprise}

National Priority: Facilitate marine aquaculture production to increase overall U.S. seafood production.

NEFSC Anticipated Results:

Provide biological and socioeconomic science products and advice to a more diverse group of customers, supporting expanded sustainable coastal and offshore aquaculture. {Scientific Advice & Services Enterprise}

Conduct research to identify and forecast ecosystem services and aquaculture-ecosystem interactions relevant to the expansion of sustainable offshore aquaculture, and support GARFO in enabling a regulatory framework for aquaculture in federal waters. {Research & Scientific Advice and Services Enterprise}

Rebuild research and service program to address diseases affecting Northeast shellfish aquaculture. {Research & Scientific Advice and Services Enterprise}

National Priority: Advance effective and practical electronic technologies to improve collection of fishery-dependent data.

NEFSC Anticipated Results:

In collaboration with GARFO and our regional partners, expand development and support of electronic reporting in fisheries across the region; assist with the implementation of electronic monitoring in the Northeast groundfish fishery and slippage monitoring in the mid-water trawl fisheries. Develop and assess requirements, standards, operating procedures, and data warehousing. {Monitoring & New Technologies Enterprise}

National Priority: Focus habitat conservation efforts on essential fish habitat and deep-sea coral protection in support of regional fishery management councils.

NEFSC Anticipated Results:

Evaluate the impacts of natural and anthropogenic ecosystem changes on fish and shellfish stocks in support of stock assessments, fisheries management actions, and other spatial decision-making. {Research & Scientific Advice and Services Enterprise}

Proactively address regional fisheries issues in offshore wind development projects and regional planning by working with GARFO, and ensuring NEFSC science advice and data streams are considered in these processes. To address fisheries and offshore energy interactions, support establishment of an inclusive and effective regional fisheries monitoring and research framework.

National Priority: Implement Regional Action Plans in support of the Climate Science Strategy.

NEFSC Anticipated Results:

Reliable and effective ecosystem survey efforts in the Northeast U.S. shelf ecosystem, and stronger partnerships with other ecosystem observing activities in the region. {Monitoring}

Better understanding through field and model studies of how the changing climate is affecting groundfish population dynamics, monitoring, assessment, and management. {Research}

National Priority: Maximize fishing opportunities, revenue, and jobs in U.S. fisheries while ensuring long-term sustainability of the resources.

NEFSC Anticipated Results:

Produce a common set of indicators of social and economic well-being for the Northeast region's fishing fleets and for each Northeast region fishery management plan. Performance indicators will be automated to enable annual updates and posting online. {Monitoring}

Analyze the results of a fishing crew survey to document differences in crew remuneration and perceptions of fishery management processes among fisheries and ports to better understand the effects of fishery management on fishing crew and coastal community resilience. {Research & Scientific Advice and Services Enterprise}

National Strategic Goal 2: Recover and Conserve Protected Species While Supporting Responsible Fishing and Resource Development

NOAA Fisheries is responsible for recovering protected species that are facing extinction and conserving marine mammals. These species are key components of their ecosystems and have particular social and cultural importance. These valuable and vulnerable living resources depend on our collective efforts to conserve them. The NEFSC conducts high-quality science for the recovery and conservation of protected species, including assessments of current status and understanding and reducing human impacts. Science activities include using innovative technologies to survey and assess protected species populations and track their movement; investigating contributing factors to the well-being or mortality of protected species; developing bycatch reduction techniques; supporting the implementation of adaptive management measures; implementing guidelines for reducing anthropogenic sound in oceans; understanding impacts of habitat loss; and focusing on science related to understanding the effects of changes in climate on the resources we manage. In 2019, NOAA Fisheries will continue to focus efforts on the recovery Atlantic salmon and North Atlantic right whales, other marine mammals, diadromous fish, and sea turtles.

Priorities & Anticipated Results to Recover and Conserve Protected Species

National Priority: Improve the quality of protected species stock assessments.

NEFSC Anticipated Results:

Improved protected species data collection, assessment, and management obtained by using innovative and cost-effective technologies (passive acoustics, genomics, advanced tagging, autonomous systems, photo identification, and image recognition). {New Technologies and Approaches Enterprise}

National Priority: Reduce the negative impacts of human activities on protected species by advancing scientific understanding, and developing and implementing guidance and tools.

NEFSC Anticipated Results:

Reduce entanglement of North Atlantic right whales through advanced technologies developed with fishermen, engineers, and other partners {Research & Scientific Advice and Services Enterprise}

Understand the factors limiting the recovery of the endangered populations of Atlantic salmon and North Atlantic right whales, research ways to promote recovery, and collaborate with GARFO to support management. {Research Enterprise}

National Strategic Goal 3: Improve Organizational Excellence and Regulatory Efficiency

Improving organizational excellence and regulatory efficiency is a continual process that helps us be more responsive, to deliver better services, and to fulfill our mission. To achieve organizational excellence, NOAA Fisheries emphasizes strategic planning, effective program execution and performance monitoring, and identification and management of risks and challenges. Regulatory efficiency includes identifying and addressing existing regulations and processes that may be outdated, unnecessary, or ineffective, or that inhibit job creation and growth. Increased and improved interactions with GARFO is critical to supporting organizational excellence and regulatory efficiencies goals.

Priorities & Anticipated Results to Improve Organizational Excellence

National Priority: Improve science focus on real-time current management issues and data needs.

NEFSC Anticipated Results:

External review of the NEFSC Director's Office to evaluate operations and make recommendations for improvement {Operations & Administration Enterprise}

An "onboarding" process that prepares new staff to better understand the NEFSC mission, operation, culture, and our regional fisheries to better unify our workforce's sense of purpose and collective understanding of our work.

National Priority: Improve communication of data, products, and activities to external audiences.

NEFSC Anticipated Results:

Improve external communication and engagement, especially fishing industry engagement, through successful launch and execution of an external outreach plan (calendar with messaging, audiences, products, roles/responsibilities). {Operations & Administration Enterprise}

Track and report the quantity and quality of NEFSC publications and reports to allow evaluation of NEFSC data and products and to ensure the Public Access for Research Results timeline and requirements are achieved. {Operations & Administration Enterprise}

NEFSC work with GARFO leadership to improve the working relationships between the two organizations {Operations & Administration Enterprise}.

National Priority: Ensure that NOAA employees and contractors work in a safe and secure environment.

NEFSC Anticipated Results:

Improved observer safety, oversight of observer code of conduct to be responsive to the National Observer Safety Review, protection of observer and fishermen rights, improved observer retention, and progress toward a professional observer corps. {Operations & Administration Enterprise}

Completed renovation and consolidation of the James J. Howard Marine Sciences Laboratory at Sandy Hook, NJ. {Operations & Administration Enterprise}

National Priority: Proactively recruit qualified individuals at all experience levels and grades, whose diverse background, educational experience, and skills will advance the overall mission of the agency.

NEFSC Anticipated Results:

Promotion of workforce diversification by increasing the number of student internships at NEFSC, strengthened bonds with universities serving underrepresented communities, and increased employment/research opportunities for recent graduates of the Living Marine Resources Cooperative Science Centers. {Operations & Administration Enterprise}