



**NOAA
FISHERIES**

NMFS Southeast Regional Office Update on Ecosystem and Climate Efforts

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NMFS Southeast Regional Office (SERO) Climate and Ecosystem Projects/Efforts for 2024/beyond

Southeast Geographic Strategic Plan 2024-2027 – SERO and Southeast Fisheries Science Center

- Reflects NMFS' mission to protect, conserve, and recover our vulnerable living marine resources, while supporting the [New Blue Economy](#) and building economic resilience in our fisheries.
- Focused on aligning NMFS science and management priorities on activities that most benefit our constituencies and meet federal mandates.
 - Modernizing our data information systems (taking advantage of new technology and leveraging other agency capabilities);
 - Supporting marine aquaculture production and the expansion of offshore wind energy while reducing conflict and ensuring adequate mitigation;
 - Streamlining stock assessments;
 - Improving organizational efficiency, building partnerships, and communicating more effectively inwardly and outwardly
- One of the Top Geographic Priorities: Inform climate-ready fisheries, habitat, and protected resource conservation and restoration strategies by integrating climate vulnerability and risk information into management advice.



Strategic Goal 1: Adaptively manage fisheries for sustainability and economic competitiveness.

- Challenge moving forward: to provide the science to balance competing needs in a changing climate, and employ an ecosystem approach to management.
- Ensuring sustainable access to fisheries, diverse market opportunities, and participation of underrepresented communities will build resilience to fishery disasters and market disruptions.
- Performance indicators include offshore wind, aquaculture, and equity and environmental justice (EEJ), among others.

Strategies for Goal 1 related to Climate, EBFM, and EEJ (examples)

Manage stocks for optimum yield and increase the sustainability of marine fisheries

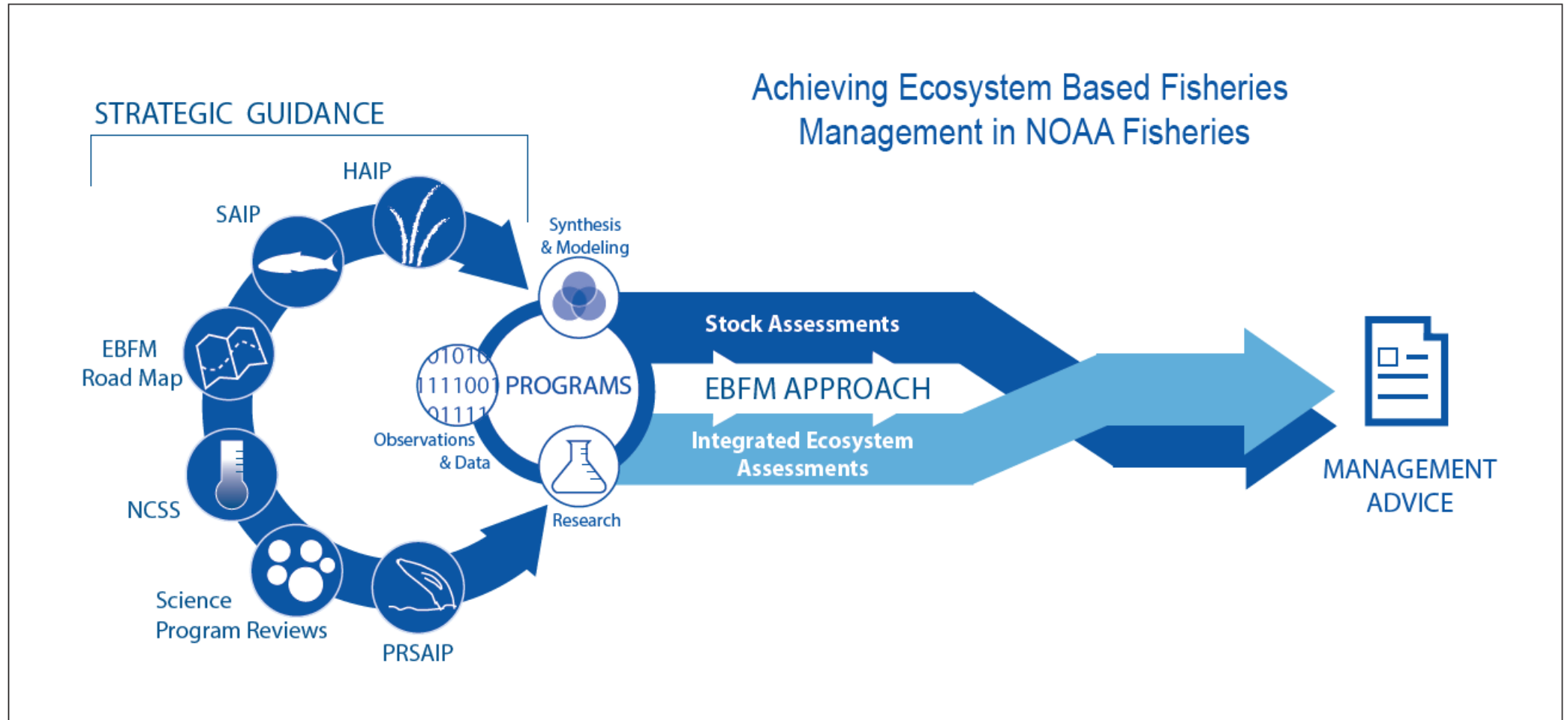
Increase efficiencies of monitoring and assessment strategies that are responsive to key uncertainties, such as climate change, to support the [Next Generation Stock Assessment Improvement Plan](#) and as part of the [Climate, Ecosystems, and Fisheries Initiative \(CEFI\)](#).

Advance climate science and ecosystem-based fishery management (EBFM) to build climate and economic resilience in U.S. seafood and fishing sectors

- Increase the production and communication of scientific products to support EBFM (e.g., ecosystem status reports, risk and vulnerability assessments, and identification of fishery and ecosystem drivers and related ecosystem indicators).
- Increase use of climate and EBFM science in adaptive management for fisheries by improving accessibility and use of Management Strategy Evaluation and Marine Spatial Planning tools.
- Implement Fishery Ecosystem Plans for the Southeast councils

Mitigate and adapt to climate-driven changes in fisheries habitat

- Conserve and protect high-priority areas of EFH as identified through finer scale habitat mapping and assessments.
- Identify areas that may be important for future fish and shrimp reproduction and juvenile production given the potential for climate-driven shifts in fisheries and their habitats.
- Improve fish passage, restore coastal and coral reef ecosystems, and enhance community resilience—including underserved communities and tribes—through collaboration on landscape scale efforts.



Source: [NMFS 2018. Tech Memo – Implementing a next generation stock assessment enterprise](#)

Strategic Goal 2 : Safeguard protected species and propel their recovery

- Advancing our understanding of the impacts of climate change on protected species and their habitat is critical when proposing science-based solutions for conservation and recovery.

Strategies for Goal 2 related to Climate, EBFM, and EEJ (examples)

Model and predict the effects of climate change on protected marine species to improve conservation outcomes

- Implement the NOAA Fisheries Climate Science Strategy Regional Action Plans by leveraging Inflation Reduction Act funding for dedicated spatial modeling support.
- Improve management and recovery plans and identification of climate-related science priorities by reviewing climate vulnerability assessments and incorporating climate-informed conservation recommendations.

Strategic Goal 3: Diversify our workforce, promote equity and environmental justice, and improve our mission performance through organizational excellence

Strategies for Goal 3 related to Climate, EBFM, and EEJ (examples)

Environmental Justice Strategy

- Continue to identify and recognize underserved communities in the Southeast Region through partnerships, application of vulnerability indices, and other tools.
- Develop an actionable plan to advance NOAA Fisheries equity and environmental justice strategy in the U.S. Caribbean, Gulf of Mexico, and South Atlantic based on underserved community input.
- Solicit local and indigenous traditional ecological knowledge to help inform agency decision-making.
- Improve equitable participation in decision-making by soliciting inclusive nominations for Southeast council appointments, take reduction teams, and other committees.
- Prioritize advancement of equity and environmental justice in ongoing and future activities, including in equitable climate mitigation, and conservation and management solutions.

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Projects Related to Climate Change

- Coordinated on the drafting of the **Climate and Ecosystem Tools Profile: A Synthesis of Climate Tools and Actions to Move Toward Climate Ready**; which would outline the various tools and resources available to manage fisheries under a changing climate. This will be a NOAA Tech Memo (currently under review)
- Reviewed the Inflation Reduction Act (IRA) Proposals from South Atlantic, Gulf, and Caribbean
 - Received IRA funding to hire term FTE to work with Gulf, South Atlantic, and Caribbean Councils on IRA funded projects.
- [Climate Ecosystem and Fisheries Initiative \(CEFI\)](#) ([see fact sheet](#))
 - CEFI is a cross-NOAA effort to build the nationwide, operational ocean modeling and decision support system needed to reduce impacts, increase resilience, and help adapt to changing ocean conditions. The system will provide decision makers with the actionable information and capacity they need to prepare for and respond to changing conditions today, next year, and for decades to come.
 - The CEFI is an essential part of the [U.S. Ocean Climate Action Plan](#) and NOAA's [Climate Ready Nation Strategic Plan](#).
 - SERO Sustainable Fisheries Division (SFD) staff is on the Decision Support Team
 - SERO staff participated in the CEFI Summit (May 2024)
 - Working with the SEFSC to determine demo projects for CEFI
- Identifying, reaching, and engaging underserved communities – *Southeast Region Equity and Environmental Justice Implementation Plan (EEJ)*
Action Items:
 - Analyze the social, cultural, and economic impacts of NOAA Fisheries services and management decisions (e.g., fisheries management, aquaculture, climate change, and habitat conservation) on underserved communities.
 - Incorporate national and regional EEJ goals, objectives, and actions, where applicable, into the next version of the Southeast Climate Regional Action Plan.

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Projects Related to EBFM

- National EBFM Roadmap Update (2024, ongoing)
 - Staff participated in the development of the updated roadmap document
 - Staff participates in the NOAA EBFM Workgroup
 - [US Caribbean EBFM Roadmap Implementation Plan](#) - published in 2019
- SERO Staff participates in the development of the *EBFM Retrospective Analysis*
- Coordinated on the drafting of the **Climate and Ecosystem Tools Profile: A Synthesis of Climate Tools and Actions to Move Toward Climate Ready**; which would outline the various tools and resources available to manage fisheries under a changing climate. This will be a NOAA Tech Memo (currently under review)
- Identifying, reaching, and engaging underserved communities – *Southeast Region Equity and Environmental Justice Implementation Plan (EEJ)*

Action Items:

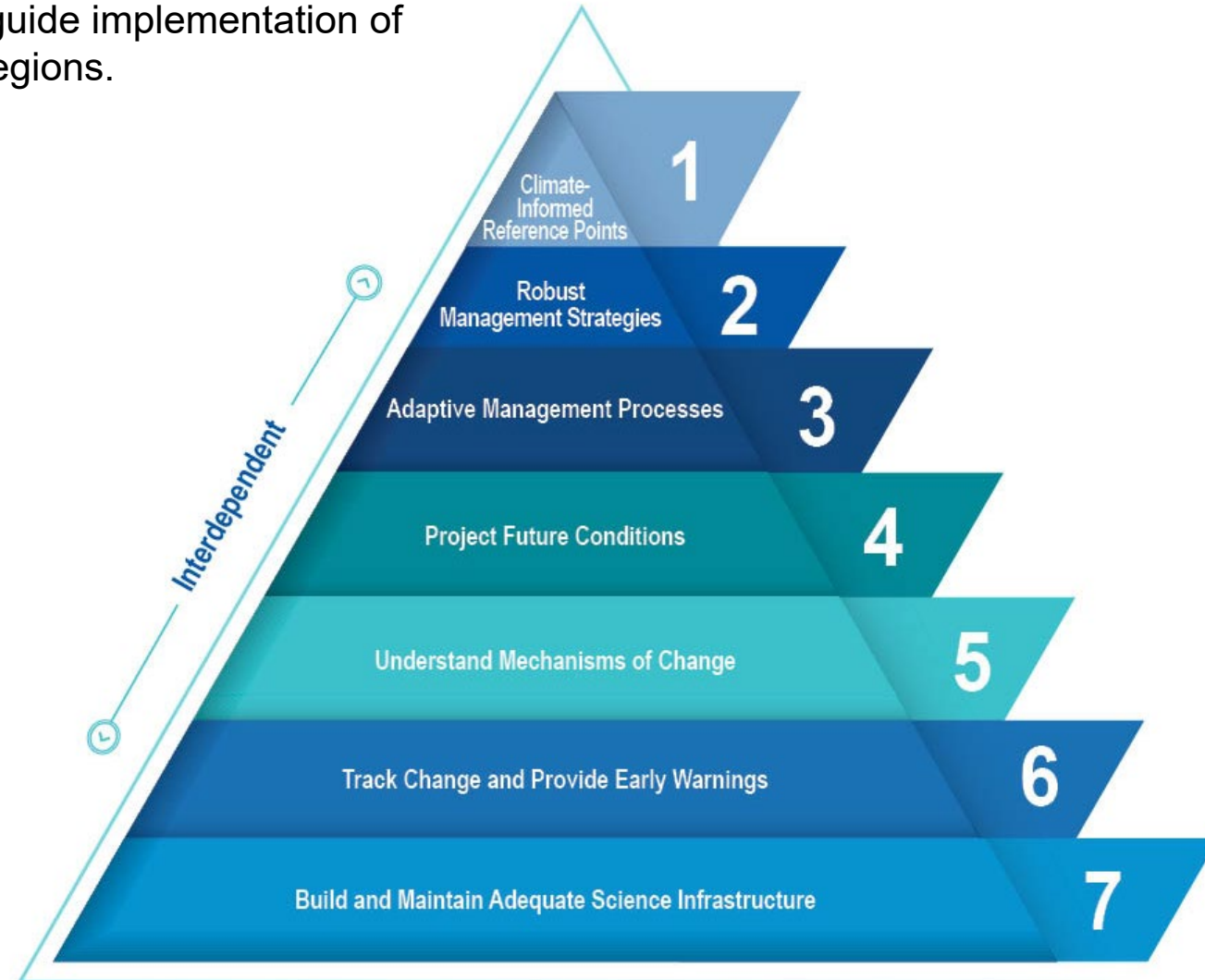
- Work with the regional fishery management councils to encourage involvement of underserved communities in participatory research and citizen science designed to integrate local and traditional ecological knowledge and human values/preferences into the fishery management
 - Work with underserved fishery participants, NOAA Sea Grant, and state and territorial partners in disaster response agencies to identify core challenges and lessons learned from recent and historic disaster events, including effective recovery strategies; review and use this information to help improve and monitor disaster response efforts in the Southeast.
- Reviewed the Inflation Reduction Act (IRA) Proposals from South Atlantic, Gulf, and Caribbean
 - Received IRA funding to hire term FTE to work with Gulf, South Atlantic, and Caribbean Councils on IRA funded projects.

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Other Past Efforts (Recent)

[Southeastern Regional Action Plan \(SE RAP\) \(2023\)](#) – to guide implementation of the NOAA Fisheries Climate Science Strategy in each of its regions.

- The SEFSC and SERO developed the first RAPs for the Gulf of Mexico in 2016 and the Southeast US Continental Shelf in 2020. These RAPs highlighted some of the expected changes to the region and identified priority climate-related actions to pursue. Since 2016, significant progress has been made to address those actions, but more work remains.
- The updated SE RAP identifies priority actions to continue to implement the [NOAA Fisheries Climate Science Strategy](#) and advance climate-informed decision making, resilience and adaptation in the Southeast U.S. Continental shelf, Gulf of Mexico, and U.S. Caribbean.



A brief U.S. Caribbean RAP is included in the SE RAP, and identifies 22 actions to initiate directed climate work.

- The Caribbean RAP only includes actions that would meet Objectives 4-7, as that information is needed before addressing Objectives 1-3.

Table 3. Caribbean Regional Action Plan

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
Objective 1: Climate-informed reference points				
		No current or planned activities under this objective owing to insufficient baseline data.		
Objective 2: Identify robust strategies for managing LMRs under changing climate conditions				
C2.1		Priority Action , Continue to incorporate climate and ecosystem considerations into Essential Fish Habitat and Habitat Areas of Particular Concern designations, National Environmental Policy Act Reviews, restoration planning, and other management actions and products.	Ongoing	SERO, HC, PR, HMS, ST, SAFMC, NOAA Restoration Center
C2.2		Continue and expand incorporation of climate-related information and uncertainty into protected species reference points and related ESA actions (i.e. incidental take recommendations, biological opinions, listing, recovery, critical habitat designation) in a consistent manner across the region.	Ongoing	SERO, SEFSC, PR, ST, Academia
Objective 3: Adaptive Management Processes				
C2.3		Initiate outreach and participatory research focused on identifying possible climate change impacts on fishery-dependent businesses (including commercial, for-hire, recreational fishing, and seafood markets) and identifying needs and opportunities to build resilience in fishing-dependent socioeconomic systems.	Future funding needed	SEFSC, SERO, CFMC

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
Objective 4: Identify Future States of Marine & Coastal Ecosystems				
C2.4		Assess impacts of increasing temperatures on sea turtle sex ratios, thermogenetic spawning triggers for ESA-listed fish and elasmobranchs, and maintaining coral resilience. Conduct field- and lab-based experiments to identify thermally resistant genotypes of ESA-listed coral species like <i>Acropora palmata</i> to inform restoration efforts.	Ongoing with future funding needed	SEFSC, SERO, PR, CRCP, NGOs, AOML
C2.5		Develop small-scale, nested biogeochemical hydrodynamic models of particular bays, reef systems, and estuaries forced by relevant oceanographic and atmospheric processes (e.g., Gulf Stream, AMO, North Atlantic Oscillation [NAO], ENSO, local meteorological fields, river discharge). These models would allow investigation of such factors as temperature dynamics at reef scales, bay and estuarine circulation and productivity patterns, and changes to freshwater outflow and water quality from increased numbers of storms. The models could allow forecasts of impacts to reef, seagrass, and mangrove habitats, thus supporting ongoing site-specific Essential Fish Habitat research and LMR management. This work is envisioned to be a component of the CEFI and will require collaboration with AOML and GFDL.	Future funding needed	SEFSC, AOML, GFDL
Objective 5: Understand Mechanisms of Change				
C2.6		Explore how extreme events (hurricanes) change the distributions of LMRs such as Caribbean spiny lobster and queen conch.	Future funding needed	

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
C2.7		Improved understanding of distribution of sargassum in the Gulf of Mexico, southeast U.S., and Caribbean, and how sargassum distribution impacts productivity and survival of larval/juvenile fishes.	Future funding needed	SEFSC, AOML
Objective 6: Track Change and Provide Early Warnings				
C2.8		Complete and deliver Ecosystem Status Report for the U.S. Caribbean to stakeholders/management bodies (e.g., Councils, HQ-HMS Management Division).	Ongoing, 2022?	SEFSC, University of Miami, CFMC, AOML
C2.9	C2.20	Leverage the National Coral Reef Monitoring Program's (NCRMP) ongoing fish, benthic, and climate survey efforts to expand surveys to mesophotic reefs in the USVI and Puerto Rico that represent a potential thermal refuge for reef species. Leverage work by SEFSC on deep reef fish genetics and habitat utilization as well as work in mesophotic zone.	Ongoing, but future funding needed	SEFSC, NCRMP
C2.10	C2.20, G2.20, S2.23	Priority Action , Conduct broad-scale, multi-platform, multi-species surveys of variability in marine mammal, sea turtle, and seabird abundance, distribution, and density in order to understand how oceanographic and biological attributes contribute to observed species patterns in space and time in the Caribbean.	Future funding needed	SEFSC
C2.11	Links to C2.5, C2.13	Increase temporal and geographic scope of collection of environmental data (dissolved oxygen, salinity, temperature) in order to better monitor and predict such factors as technical interactions of fisheries and protected resources, or hotspots of critical habitat and aggregation areas. This project could be addressed by the CEFI.	Future funding needed	SEFSC, State partners

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
C2.12		Priority Action , Promote the <i>Acropora cervicornis</i> Data Coordination hub (AcDC) to maximize participation and collaboration among coral restoration practitioners and researchers.	Ongoing. Additional funding would increase effectiveness.	NOAA through collaborative multi agency, NGO, and university research efforts both national and international.
C2.13	C2.5, C2.9, C2.10, C2.19, C2.20	Expand survey data collection of ocean variables to better align with the biogeochemical data collection standards established by the Intergovernmental Oceanographic Commission (IOC) and the BGC-Argo program.	Future funding needed	SEFSC, AOML
C2.14	G2.21; S2.25	Priority Action , Conduct comprehensive cross-regional climate vulnerability assessment for Atlantic HMS.	Ongoing	HMS, HQ OSF, SEFSC, SERO, NEFSC, GARFO, OST, Academia, others
Objective 7: Infrastructure to Deliver Actionable Information				
C2.15		Priority Action , Identify Caribbean focused staff to participate in the southeast regional climate change team.	Ongoing	SERO, SEFSC, HQ, HMS
C2.16		Priority Action , Build Capacity: Identify and secure the staffing resources needed to conduct the work of this Action Plan (i.e., climate science researcher/coordinator, survey statistician, modelers, fisheries disaster experts and other additional skill sets)	Ongoing; future funding needed	SEFSC, SERO

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
		through hiring new FTEs, contractor services, or cooperative research programs.		
C2.17		Include NOAA's climate professionals on NOAA teams assisting federal action agencies during the feasibility and design phases of federal civil works projects to ensure incorporation of the information and actions needed to fully address climate change. services	Ongoing	SEFSC, SERO, AOML
C2.18		Priority Action , Strategic Planning: Host virtual climate change workshop with partners in the region. Workshop will include participants from SEFSC, SERO, HMS, AOML, Councils, and others.	Ongoing	SEFSC, SERO, HMS, AOML, Councils, others
C2.19	C2.20	Expand science research surveys beyond NCRMP and Southeast Area Monitoring and Assessment Program (SEAMAP)- Caribbean. Focus of these surveys will eventually include mangrove, seagrass, and coral reef habitats, sargassum, fishes, marine mammals, commercial and recreational fisheries, and sea turtles.	Future funding needed	SEFSC

Source: <https://www.fisheries.noaa.gov/s3/2023-06/508-SERAP-Final-May23.pdf>

Action Number	Connection to other activities	Action Name/Description	Time Frame	Partners
C2.20	Links with C2.9, C2.10, C2.13, C2.19	Priority Action , Strategic Planning: Build on existing sampling and develop a comprehensive and collaborative monitoring program for climate and other ecosystem and ecological information necessary to meet NOAA Fisheries mission for Caribbean species and habitats, including ecosystem approaches to fisheries management (e.g., Ecosystem Based Fisheries Management), restoration, and science programs. Fully-established program will include components of the marine ecosystem from physical oceanography to marine mammals, sea turtles, and seabirds.	Future funding needed	SERO, ST, SF, HMS, PR, HC, AOML, NOAA IEA, and Climate Programs, State partners, USFWS, others
C2.21		Priority Action , Support the application and development of the Climate, Ecosystems, and Fisheries Initiative in the Caribbean region.	Future funding needed	SEFSC, AOML, GFDL
C2.22		Priority Action , Increase awareness of ecosystem status reports, vulnerability assessments and other climate tools for use by managers and stakeholders. (e.g., disseminate information from the ecosystem status report for the Caribbean and island-specific risk assessments, allowing exploration of multiple pressures and drivers, including climate, specific to each island jurisdiction).	Ongoing	SEFSC, SERO, HMS, Councils, HMS AP, CRCP NCRMP, public