Meeting 3 Summary

Workgroup on
Developing a Climate-Resilient Fishery Management Plan for Maryland
September 16, 2026
10:30 AM – 12:30 PM
Virtual

Attendance

Workgroup Members
Kiley Dancy, Mid-Atlantic Fishery Management Council
Jorge Holzer, University of Maryland, College Park
Harry Hornick, Retired DNR
Henry Legett, Smithsonian Environmental Research Center
Mariah Livernois, Maryland Coastal Bays Program
Kenneth Rose, Horn Point Laboratory UMCES
Bill Sieling, Chesapeake Bay Seafood Industries Association
Dave Sikorski, Coastal Conservation Association
Ward Slacum, Oyster Recovery Partnership
Troy Tuckey, Virginia Institute of Marine Science
Taylor Woods, USGS Eastern Ecological Science Center

DNR Staff
Amanda Malagari, DNR Project Lead
Tammy O'Connell
Jacob Holtz
Sarah Widman
Andrew Loftus, Workgroup Facilitator

Workgroup Members Not Attending
Greg Casten, ProFish Seafood Company
Sonny Gwin, Commercial Fisherman, Ocean City Maryland
Will Poston, Chesapeake Bay Foundation
Julie Reichert-Nguyen, NOAA Chesapeake Bay Office

Pre-Meeting Background Materials

- Agenda (See Appendix A)
- Review Summary of Meeting 2 - "Impacts and Actions Tables"
- Review the Draft Outline of the FMP Goal and Objectives (See Appendix C)
- Review the Example FMP Objectives with samples from other management plans (See Appendix D)

Workgroup Objectives

1. Exchange existing climate and fisheries data and industry knowledge.
2. Collaboratively develop a climate resilient fishery management plan (FMP) for state-managed fisheries in the Chesapeake Bay and Atlantic coast.

Meeting 3 Objectives

1. Begin converting the management topics from Impacts and Actions Tables (discussed at Meeting 2) into FMP objectives. If time allows, discuss strategies and action items.

Welcome – Andrew Loftus, Group Facilitator

Work Group members were welcomed with a review of the Objectives of this planning process and expectations for Meeting 3. A brief recap of the highlights from Meeting 2 was outlined as:

- Overview of Fishery Management Plans
    - Goal is to protect the resources while allowing sustainable harvest.
    - Adaptation and Resilience FMP will be a broader management tool. It will complement existing species-based FMPs, not replace them.
- Adaptation and Resilience Planning Worksheet
    - Working group proposed new topics and management strategies.
    - That content is included in the "Draft Outline of Goals and Objectives" that forms the basis for Meeting 3 (this meeting).

For a full summary of Meeting 2, please refer to the Meeting Summary.

Presentation – Roadmap to the FMP: Relationship Between Goals, Objectives and Actions in Plan Development

Andrew Loftus, Facilitator

(See Appendix B for the presentation slides)

A presentation was provided to orient Workgroup members on the planned structure of the FMP and to clarify the relationship between the plan Goal, Purpose, and Objectives since the group will be asked to provide feedback into these sections during this meeting.

Group Discussion – Goal

Activity: Rapid fire feedback on the draft Goal for the FMP and potential purpose statements for the FMP that achieve adapting fisheries management to changing climate conditions.

Example Goal (feedback requested)

"The goal of Maryland's adaptation and resilience fishery management plan is to ensure that the ecological integrity of fisheries resources and the ecosystems that sustain them and also the recreational and commercial harvests that support fishing and seafood industries are adaptive and resilient to changes in the environment, especially when driven my climate change"

Feedback - Goal

- would delete the environment phrasing and go directly to climate change
- "driven BY climate change
- "Also" seems to be a weak statement
- Seems like this should reference management somehow - rather than focusing on resilience of ecosystems/fish, focusing on what is more in our control
- Is the ecological integrity part needed? e.g., The goal of Maryland's adaptation and resilience fishery management plan is to conserve fisheries resources and the ecosystems that sustain them
- Very few stock assessments include environmental factors; "plausible future environmental conditions"; convey that long term change is different from annual variation.
- It can be difficult to attribute any environmental change to climate change
- The goal could focus on management rather than the goal of fisheries management
- Integrate climate change into the existing management framework
- saying wise use with conserve is good
- Language about existing and emerging fisheries in the region; applies to many different fisheries
- Maybe simply say " ecological integrity of ALL fisheries resources"...

Group Discussion – Purpose

Activity: Draft some statements that describe the purpose(s) of the FMP.

Example Purpose Statements (feedback requested)

- Framework for integrating environmental and climate change adaptation and resilience into fisheries management.
- Enable the Maryland Department of Natural Resources to prepare for and respond to environmental change, especially climate change.
- Build pathways for addressing fisheries adaptation and resilience priorities in other sectors.
- Incorporate ecosystem-based management principles and strategies into the existing fisheries management framework.
- Foster innovative management approaches for a changing environment.
- Complement existing fishery management plans.

Feedback - Purpose

- Not sure what "in other sectors" refers to in the 3rd bullet
- I would refer Fisheries-based Ecosystem Management (EBFM rather then EFM)
- What are the sectors you are referring to?
- Can we add any examples of 'innovative management approaches to the second-to-last statement?

- in number 5-" innovative and adaptive fisheries management approaches"... We should make sure and state "adaptive fisheries management" so public understands the nature of FMPs
- Understand factors affecting stock dynamics, monitor dynamics & their drivers over time, & use this information to project dynamics in the future

Group Discussion – Objectives

Activity: Review the Draft Outline of the FMP Goal and Objectives. Establish an objective for each main topic in the outline.

(See Appendix C for the original unedited document)

Objective Topic. Altered Stock Dynamics

Assess environmental influences on stock assessment inputs and drivers (growth, reproduction, mortality, fishing, abundance); Adapt existing/new monitoring programs to capture these changes for use in stock assessments

Identify changes in stock dynamics in a timely manner

Enhance our understanding of changing stock and ecosystem dynamics, and facilitate pathways for consideration of these factors in management

Objective Topic: Ecosystem Approaches

Increase our understanding of the ecosystem and climate dynamics that impact aquatic resources [add specificity]

Incorporate that understanding into management approaches

Integrating ecosystem approach guidelines

Objective Topic. Spatial and Temporal Distribution and Emerging and Diminishing Fisheries

Incorporate diverse sources of monitoring data, especially to monitor migratory species

Detect and document spatial and temporal shifts in distributions and their implications to fishers, existing and possible future fisheries

Clarify that productivity is included; coming and going

Have a robust monitoring and reporting system that allows us to achieve each of the bullets

Objective Topic. Support Recreational and Commercial Fishing Activities

Promote programs that support robust recreational and commercial fisheries in a changing climate

Objective Topic. Habitat

Coordinate and collaborate with other industries and governance bodies to conserve, protect, and restore habitats and the connectivity between them.

[Maryland does not have an Essential Fish Habitat policy at the state level]

Objective Topic. Robust Monitoring & Data

Prioritize data collection and monitoring programs

Put in place the tools that are needed to implement this plan

Develop an information and data system

Objective Topic. Science-Informed Management

Structure for making management decisions using the information in a timely way

Adaptive management means that our approach will change as we gather new information

Objective Topic. Engagement and Partnership

Have a structure in place to involve partners in the decision-making process.

Perhaps use this section to push partnerships outside of DNR with other agencies and management bodies; Expand how DNR can be involved in those management decisions

Objective Topic. Interjurisdictional Management

[More relevant and specific to climate, environmental]

Additional Comments

- We need to remind the politicians that engagement and partnership and adaptive management is a priority and these are the people that are being involved; it can be subtle but should still be clear (it still needs to be said somewhere, say the obvious); we can work with legislators to advocate for our priorities
- How can we work more efficiently or adapt what we have to get the information we need

Notes from the Virtual Meeting Chat

- Not sure if this is focused enough but maybe something like - Enhance our understanding of changing stock and ecosystem dynamics, and facilitate pathways for consideration of these factors in management
- A thought about the support fisheries section - maybe add language about supporting the PEOPLE in those industries through education, information exchange, training programs, etc.?
- I had a similar thought that a reference to fishing communities would be good there.
- I'm hearing that we need to define some terms. We can add that to the beginning of the plan

- Maybe we could incorporate aspects of the engagement and partnerships section into each of the other sections? Like, engaging with the fishing community to support programs for climate-ready fisheries
- I agree engagement/partnership could also be referenced in some other places like monitoring. For example, in our EAFM guidance doc we have this recommendation "Continue to engage industry and identify other platforms of opportunity (academia, state sampling programs, etc.) in the oceanographic and fisheries monitoring and research in the Mid-Atlantic region. "
- Could any amount of funding from the USDA to the Maryland processing industry also be used?

Appendix A: Agenda

Workgroup on Developing a Climate-Resilient Fishery Management Plan for Maryland

September 16, 2026

10:30 AM – 12:30 PM

****Meeting is entirely virtual****

https://meet.google.com/ikc-tzmt-yvh

Background Materials

1. Review "Impacts and Actions Tables" found in the Summary of Meeting 2, Appendix C. Adaptation and Resilience Planning Worksheet. THIS WILL FORM THE BASIS FOR MEETING 3!
2. Review the Draft Outline of the FMP Goal and Objectives. The input from the Impacts and Actions Tables was captured, reorganized, and converted into the outline format. THIS WILL BE THE FOCUS OF OUR DISCUSSION!
3. Review the Example Objectives with samples from other management plans.

Workgroup Objectives

1. Exchange existing climate and fisheries data and industry knowledge
2. Collaboratively develop a climate resilient fishery management plan (FMP) for state-managed fisheries in the Chesapeake Bay and Atlantic coast.

Meeting 3 Objectives

1. Begin converting the management topics from Impacts and Actions Tables (discussed at Meeting 2) into FMP objectives. If time allows, discuss strategies and action items.

Meeting Agenda

10:30 AM Welcome – Andrew Loftus, Group Facilitator

- Brief Recap of Meeting 2
- Objectives of Meeting 3
- Self-Introductions

10:45 AM Roadmap to the FMP: Relationship between Goals, Objectives and Actions in plan development – Andrew Loftus

Questions and Discussion

11:00 AM Group Discussion – Rapid fire feedback on the draft goal for the FMP and potential purpose statements for the FMP that achieve adapting fisheries management to changing climate conditions

Share your feedback through Menti. Join by scanning the QR code below or on the website www.menti.com.

Enter the code 4226 4196 to join our session.



Workgroup members can submit responses in the Menti until September 28, 2026.

11:15 AM. Group Discussion – Review the Draft Outline of the FMP Goal and Objectives. Establish an objective for each main topic in the outline.

12:15 PM Closing Remarks and Discussion of Meeting 4

12:30 PM Adjourn

Connection to Google Meet

By phone: Dial 1-609-429-5986 PIN 320 918 559#

By internet: Video call link https://meet.google.com/ikc-tzmt-yvh

Appendix B. Presentation

Roadmap to the FMP: Relationship Between Goals, Objectives and Actions in Plan Development

FMP Workgroup

Workgroup Objectives

1. Exchange existing climate and fisheries data and industry knowledge.
2. Collaboratively develop a climate resilient fishery management plan (FMP) for state-managed fisheries in the Chesapeake Bay and Atlantic coast.

Meeting 2 Recap

Overview of Fishery Management Plans

- Goal is to protect the resources while allowing sustainable harvest.
- Adaptation and Resilience FMP will be a broader management tool. It will complement existing species-based FMPs, not replace them.

Adaptation and Resilience Planning Worksheet

- Working group proposed new topics and management strategies.
- That content is included in the “Draft Outline of Goals and Objectives” that forms the basis for Meeting 3 (this meeting).

Meeting 3

Meeting 3 Objectives

1. Rapid fire feedback on the draft goal for the FMP and potential purpose statements (15 minutes).
2. Begin converting the management topics from the Impacts and Actions Tables (discussed at Meeting 2) into FMP objectives. If time allows, discuss strategies and action items.

Issue: Largemouth bass is a very popular fishery, but the species is impacted by multiple environmental threats.

Vision: The largemouth bass population is healthy and people enjoy fishing.

Goal: Develop a management framework that guides the maintenance and improvement of largemouth bass fisheries of various populations or stocks in Maryland tidewater.

Objectives	Develop biological reference points for population assesments.	Identify, protect, promote, and improve quality habitats for tidewater largemouth bass.
Strategies	Use the biological reference points to assess population status.	Identify valuable habitat and habitat conditions for largemouth bass and promote their protection.
	Compare current indices to reference points and assess significant differences between current indices and historical reference points.	Improve habitat conditions for largemouth bass and species on which largemouth bass depend.
	Establish reference points for angler exploitation of largemouth bass populations in tidewater.	

Appendix C. Draft Outline of the FMP Goal and Objectives (Unedited)

Draft Outline of the Goal and Objectives for the Fishery Management Plan for Adaptation and Resilience

Goal

Example Goal (feedback requested)

The goal of Maryland's adaptation and resilience fishery management plan is to ensure that the ecological integrity of fisheries resources and the ecosystems that sustain them and also the recreational and commercial harvests that support fishing and seafood industries are adaptive and resilient to changes in the environment, especially when driven my climate change.

Purpose

Example Purpose Statements (feedback requested)

- Framework for integrating environmental and climate change adaptation and resilience into fisheries management.
- Enable the Maryland Department of Natural Resources to prepare for and respond to environmental change, especially climate change.
- Build pathways for addressing fisheries adaptation and resilience priorities in other sectors.
- Incorporate ecosystem-based management principles and strategies into the existing fisheries management framework.
- Foster innovative management approaches for a changing environment.
- Complement existing fishery management plans.

Vision for Climate Resilient Fisheries

Example Vision (feedback requested)

Maryland's fisheries resources, fishing communities, and the ecosystems that support them are resilient to changes in the environment, especially due to climate change. Maryland builds a management system that is rooted in partnership and informed by science to support adaptive decision-making across sectors. Fisheries managers and fishing communities work proactively and optimize opportunities that arise as a result of changing natural and human environments.

Objectives

Note: The Project Team developed the draft outline by capturing workgroup input from the Impacts and Actions Tables (Meeting 2) and reorganizing the topics by shared themes.

Objective Topic. Altered Stock Dynamics

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Stock Assessments

- Assess and prioritize the specific environmental parameters that influence stock dynamics across species.
- Understand the basic relationship between the prioritized set of environmental parameters (e.g., temperature, DO, salinity, pH, impervious surface) and established stock assessment parameters (e.g. growth, mortality, spawning, recruitment). Then assess if stock assessment parameters have changed over time due to changes in stock dynamics.
- Monitor seasonal and long-term changes in stock assessment parameters. Adjust monitoring programs so that changes can be detected outside of the current timeframe or methodology.
- Monitor short-term changes in stock assessment parameters due to nonlinear environmental changes and extreme events. Assess how multiple environmental parameters are deviating from the norm, how those deviations could impact fish species, and if there is a pattern to those deviations.
- Establish species-specific sensitivity thresholds for multiple environmental parameters (e.g., DO, pH, salinity, temperature) based on the physiological limits of fish species.
- Consider how long-term and short-term changes to stock dynamics influence the availability of the fishery and the corresponding adaptive management measures.
- Consider the use of dynamic reference points.
- Incorporate environmental and climate parameters into stock assessment analyses to project current and future impacts to species.

Fish Health and Safety

- Assess the potential for parasites and diseases to spread given projected environmental conditions.
- Consider the appropriate timeline for implementing safety measures in the case that fish products are not safe to interact with (e.g., public notices). Coordinate with existing food safety protocols.

Ecosystem Approaches

- Explore the possibility of establishing environmental reference points for the prioritized set of environmental parameters.
- Assess thresholds for environmental tipping points. Develop management protocols that can be triggered when environmental conditions are unsuitable.
- Consider employing Management Strategy Evaluation (MSE) and forecast modelling. This approach simulates what would happen under the future climate if we did x or y

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based on game theory. It can help incorporate social fishing preferences. Incorporate climate change, habitat, species, social, and economic interactions.

Robust Food Web

- Expand the scientific understanding of the interactions between fished species and forage fish, predators, and other non-fished species.
- Monitor spatial/temporal changes in forage composition.

Objective Topic. Spatial and Temporal Distribution and Emerging Fisheries

Monitoring

- Monitor changes in the spatial distribution of species within Maryland waters and along the Atlantic coast.
- Monitor changes in migration patterns within Maryland waters and along the Atlantic coast.
- Establish and enhance processes for interjurisdictional coordination and monitoring for cross-boundary species.

Onboarding of Emerging Fisheries and Offboarding of Diminishing Fisheries

- Identify species in southern jurisdictions that have the potential to become established in Maryland and species likely to expand or shift distribution into northern jurisdictions.
- Establish a process for determining if a novel or emerging species could support a fishery and setting up a monitoring and management program.
- Assist in building recreational and commercial demand for novel or emerging fisheries.
- Establish a process for determining when a population no longer supports a fishery and which management actions are most appropriate.

Diversify Fishing Portfolios

- Explore developing a program to help commercial and recreational fishermen transition towards alternative fisheries if their preferred species becomes scarce.
- Adjust spatial and temporal gear use requirements to reduce conflicts with species during sensitive life history stages.
- Explore options for managing bycatch to maximize the value of harvested fish and minimize the possibility of dead discards across all species {Note: Allow commercial harvesters to keep more of what they catch and avoid killing unnecessary fish.}
- Assess licensing and gear structures to allow for flexible permitting of spatially and temporally available species.

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- Note for Discussion: Question of commercial licenses and how those will be passed down if fishing resources become limited (some are limited entry). The licensing workgroups are currently talking through this issue. We could include a license item in the FMP and mirror that in the licensing law. The FMP will allow us to create pilot programs related to fishing and gear use.

Invasive Species

- Coordinate with existing management plans to monitor and manage the spread of invasive fish due to environmental and climate changes.

- Prioritize early detection monitoring and proactive actions rather than reactive actions. Look ahead to other species that we could anticipate coming into Maryland waters. Determine if there are science gaps in understanding the potential impacts of invasive species on existing fisheries. Conduct risk assessments for Maryland.

- Develop a series of questions for DNR to consider before deciding if the management goal for an invasive species should be to extirpate the species or establish a sustainable fishery. Once decided, communicate the management goal to interested and impacted parties.

- Promote public awareness and education about the spread and impact of invasive species. Communicate the differences between invasive species and naturalized species. Share voluntary best practices and regulatory requirements for invasive species management and control. The public and partners can use the Maryland's Invasive Species Tracker to report invasives and track the spread.

Objective Topic. Support Recreational and Commercial Fishing Activities

- Explore the use of new technologies and gear types.

- Explore options to maximize fishing access in response to severe weather conditions.

- Develop a better understanding of how environmental and climate changes may present economic challenges to fishing activities.

- Coordinate across DNR and its partners to implement projects that support resilient coastal infrastructure for fishing.

- Coordinate across DNR and its partners to implement projects that maintain public access to fishing locations.

- Explore expanding aquaculture as an alternative to supplement wild-capture fisheries.

Objective Topic. Habitat

- Improve our understanding of how fish currently use nearshore habitats and how habitat use could change given projected environmental conditions.

- Assess the current status of and the potential future condition of coastal habitats, including geographic distribution and ecosystem quality.

- Determine priority areas for habitat conservation and restoration based on current and projected habitat distributions and ecosystem parameters.

- Identify pathways to connect fish habitat priorities with other sectors, especially with land management priorities and processes.

- Implement shoreline conservation, protection, and restoration strategies to maximize and preserve as much quality fish habitat as possible while utilizing nature-based solutions to support habitat transitions with sea level rise and protect shorelines from flooding.

Objective Topic. Robust Monitoring & Data

Robust Science Infrastructure

- Develop a data stream where fisheries and environmental datasets can be compiled, standardized, and shared across the state and with partners.

- Establish adequate data processing and sharing plans to fully utilize data that are collected. Assess how DNR and its partners can use data from multiple sources and surveys to supplement each other, and use data from existing datasets for novel analyses.

Data Collection and Survey Design

- Assess existing survey designs so that they can be adapted if needed while maintaining the integrity of the datasets.

- Assess if existing surveys could be adapted to monitor multiple species.

- Explore using novel technologies, networks, and methodologies to collect, process, and share data. Explore the continued expansion of electronic reporting across fisheries so that commercial fishing data are more readily available for monitoring and detection purposes.

- Develop options for electronic self-reporting to collect recreational fishing data.

Understand Mechanisms and Impacts, and Project Future Conditions

- Understand the mechanisms of how environmental and climate change impact fisheries resources, the surrounding ecosystems, and the human communities that rely on them.

- Develop a recommended set of climate change projection scenarios that are specific to Maryland. Standardize these projections across modelling efforts (e.g., UMCES sea level rise projections).

- Note for Discussion: Utilize species distribution models to identify projected overlaps. Ex: Studying the physiology of species x climate projections to find out where the ideal habitats between the suite of species overlap. The results can identify where we can

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allocate resources to maintaining and restoring key habitat areas bay wide (Troy). Could we also identify specific regions or habitat qualities that are more susceptible or accommodating to new species.

Objective Topic. Science-Informed Management

- Develop a process for adaptive and timely decision making (e.g. RAD framework).
- Use climate projections to inform decision making.
- Provide early warnings of changes to fisheries resources and ecosystems.
- Assess how adaptive management actions could integrate with existing emergency response processes. Coordinate response actions across managing bodies.
- Assess at what point an advisory could convert into a regulatory closure.
- Public notices to implement short-term or temporary actions (Note: Establish criteria that would flip the trigger).
- Develop a program to implement pilot projects to test adaptive management strategies.

Objective Topic. Engagement and Partnership

- Build and expand effective engagement and partnership strategies with interested and impacted parties in fishery resources.
- Leverage existing pathways for interested and impacted parties to be involved in collaborative and inclusive decision-making processes.
- Encourage interested and impacted parties to exchange knowledge (e.g., scientific, technical, historical, cultural, industry).

Objective Topic. Interjurisdictional Management

- Initial focus on centralizing resources within DNR, then prioritizing implementation of interjurisdictional management requirements.
- Explore the possibility of establishing a data portal for sharing across state and federal jurisdictions.
- Interactions with protected resources (e.g., marine mammals, turtles, fish). Note: Look at ASMFC plans for guidance.

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Appendix D. Example FMP Objectives

Example FMP Objectives

Cownose Ray (2026, MDNR)

- Utilize the best available data to support science-based management of the cownose ray resource.
- Determine the biologically appropriate levels of harvest and allocation of the resource.
- Provide public education and raise awareness about cownose rays.
- Promote the effective coordination of state, federal and local agencies, organizations, and other interested and impacted parties to meet cownose ray outcomes for the ecology, culture, and economy of Maryland.
- Develop and incorporate an ecosystem-based framework for assessing and managing the cownose ray resource throughout Maryland.
- Implement adaptive management strategies that are compatible with the management objectives of this plan and are periodically reviewed to ensure their effectiveness at achieving the goal of this plan.

Catfish FMP (2021, MDNR)

- Develop scientifically defensible data streams that can be used to assess management strategies for four native or non-native, non-invasive catfish species and two invasive catfish species occurring in targeted rivers of Maryland's Chesapeake Bay.
- Promote fishing for tidal populations of catfish in the Chesapeake Bay using available tools for disseminating information.
- Create a framework for routinely soliciting public input when reviewing progress toward the goal of this plan.
- Implement adaptive management strategies that are compatible with the management objectives of this plan and are periodically reviewed to ensure their effectiveness at achieving the goal of this plan

Tidal Bass FMP (2014, MDNR)

- Assess current status of largemouth bass populations by using long-term surveys of tidewater areas in Maryland.
- Develop biological reference points for assessing largemouth bass populations.
- Identify, protect, promote, and improve quality habitats for largemouth bass.
- Achieve stakeholder expectations that are within bounds of our management principles.
- Incorporate ecosystem considerations in all aspects of largemouth bass management.

Red Drum FMP Amendment 2 (2002, ASMFC)

- Achieve and maintain an escapement rate sufficient to prevent recruitment failure and achieve a static SPR at or above 40%.
- Provide a flexible management system to address incompatibility and inconsistency among state and federal regulations which minimizes regulatory delay while retaining substantial ASMFC, Council, and public input into management decisions; and which can adapt to changes in resource abundance, new scientific information and changes in fishing patterns among user groups or by area.
- Promote cooperative collection of biological, economic and sociological data required to effectively monitor and assess the status of the red drum resource and evaluate management efforts.
- To restore the age and size structure of the Atlantic coast red drum population.

Cobia Amendment 1 (2019, ASMFC)

- Provide a flexible management system to address future changes in resource abundance, scientific information, and fishing patterns among user groups or area.
- Implement management measures that allow stable, sustainable harvest of Atlantic cobia in both state and federal waters.
- Establish a harvest specification procedure that will allow flexibility to respond quickly to stock assessment results or problems in the fishery, while also providing opportunities for public input on potential significant changes to management.
- Promote continued, cooperative collection of biological, economic, and social data required to effectively monitor and assess the status of the Atlantic cobia resource and evaluate management efforts.
- Manage the Atlantic cobia fishery to protect both young individuals and established breeding stock.
- Develop research priorities that will further refine the Atlantic cobia management program to maximize the biological, social, and economic benefits derived from the Atlantic cobia population.

Northeast Regional Action Plan (2016, NOAA)

- Identify climate-informed reference points
- Create robust management strategies for a changing climate
- Incorporate adaptive decision processes
- Project future conditions
- Understand how things are changing and why
- Track changes and provide early warnings
- Build our science infrastructure

California MLMA Master Plan, Chapter 12

- Maintaining ecological resiliency
- Maintaining socioeconomic resiliency
- Supporting fisheries transitions and emerging fisheries
- Strengthening monitoring and data used for management

Ecosystem Approach to Fisheries Management Guidance (2019, NOAA)

- 1. Continue to work with NOAA on the implementation of the NMFS Climate Science Strategy in the Northeast region.14
- 2. Re-evaluate stock identification of Council-managed species - a Working Group could be established modeled after the International Council for the Exploration of the Sea (ICES) Stock Identification Methods Working Group.
- 3. Identify new species likely to become established in the Mid-Atlantic (from the South Atlantic) and species likely to expand or shift distribution into waters under the jurisdiction of New England and Canada; evaluate current monitoring program relative to these species and consider potential management responses to developing fisheries.
- 4. Develop and evaluate approaches for MAFMC fisheries and their management to become more adaptive to change.
- 5. Incorporate temperature into all Council-managed species stock assessment models; consider incorporation of other environmental factors where appropriate; use models to develop short-term forecasts and medium-term projections.
- 6. Evaluate changing interactions of Council-managed fisheries with protected species including marine mammals, sea turtles, and fish species.
- 7. Conduct industry, management, and scientist workshops before benchmark assessments are scheduled. Workshops should build off the butterfish and Atlantic mackerel workshops.
- 8. Continue to engage industry and identify other platforms of opportunity (academia, state sampling programs, etc.) in the oceanographic and fisheries monitoring and research in the Mid-Atlantic region.
- 9. Continue to advocate for, collaborate on, and support historical field and laboratory research to understand the effects of climate change on Council-managed species.
- 10. Repeat the Northeast Fisheries Climate Vulnerability Assessment in conjunction with the International Panel on Climate Change Assessment Report 6 (recently updated CO2 emission and climate change scenarios).
- 11. Provide input to the NEFSC on elements of the Annual State of the Ecosystem report to meet Council needs.
- 12. Develop MSE capacity to support EAFM activities of the Council. The MSE framework should explicitly evaluate management strategies to meet Council goals in response to climate change (as well as habitat, species, social, and economic interactions).