

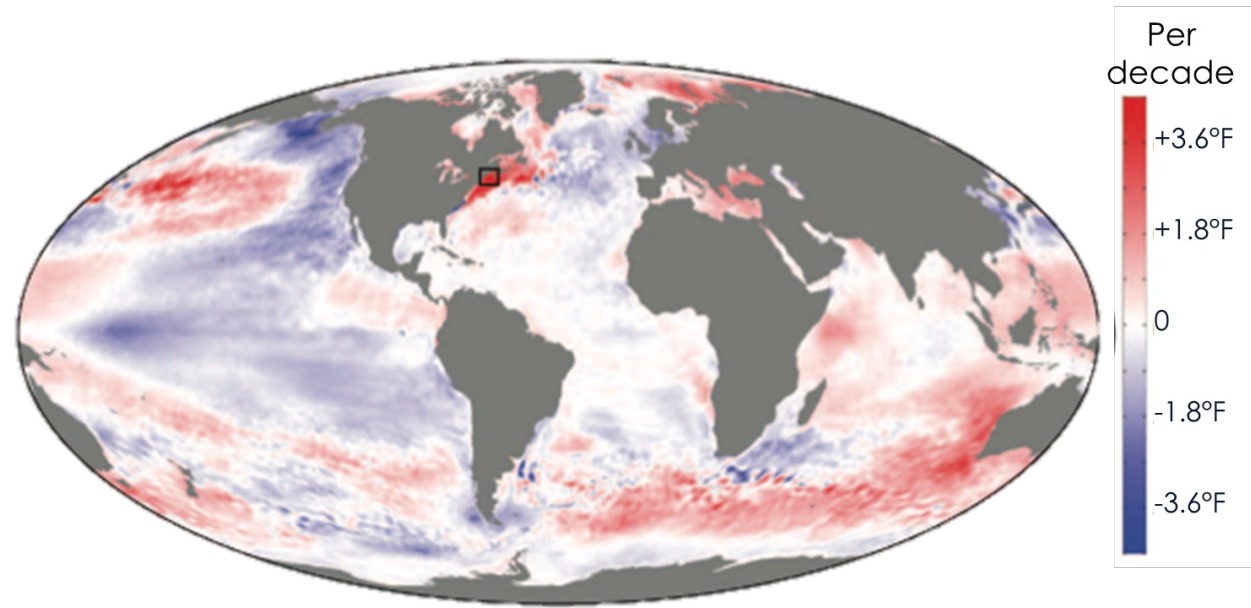
# EAST COAST CLIMATE CHANGE SCENARIO PLANNING

Council Member Ongoing Development  
November 16, 2022

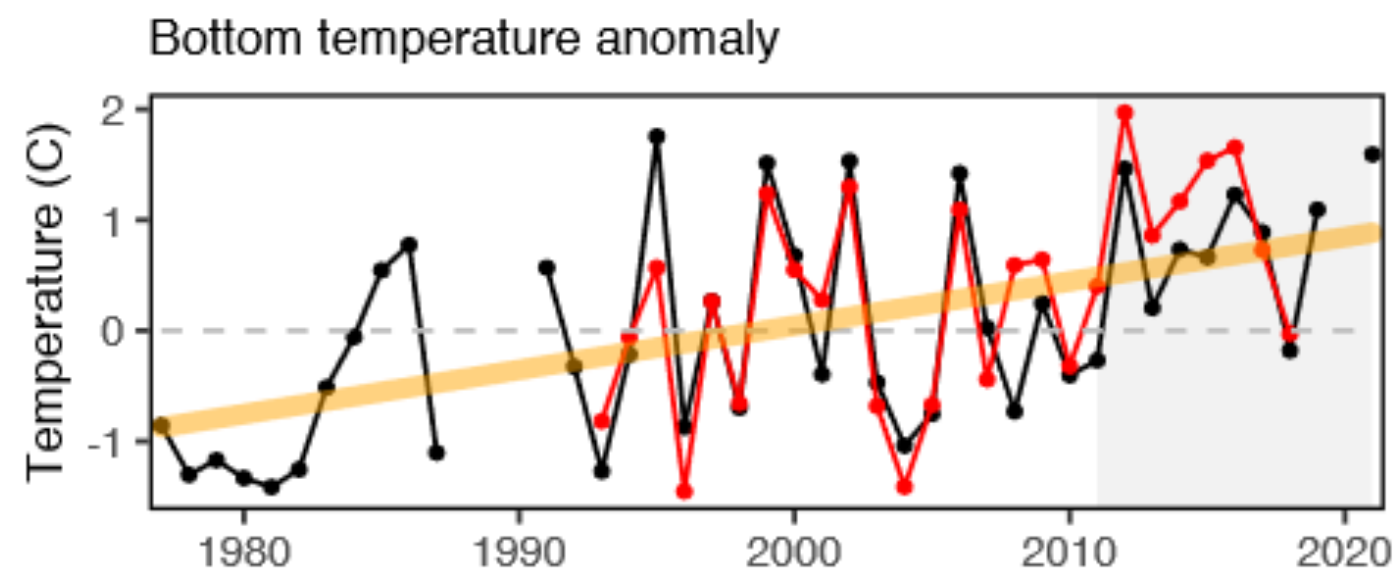


# So, what's the issue?

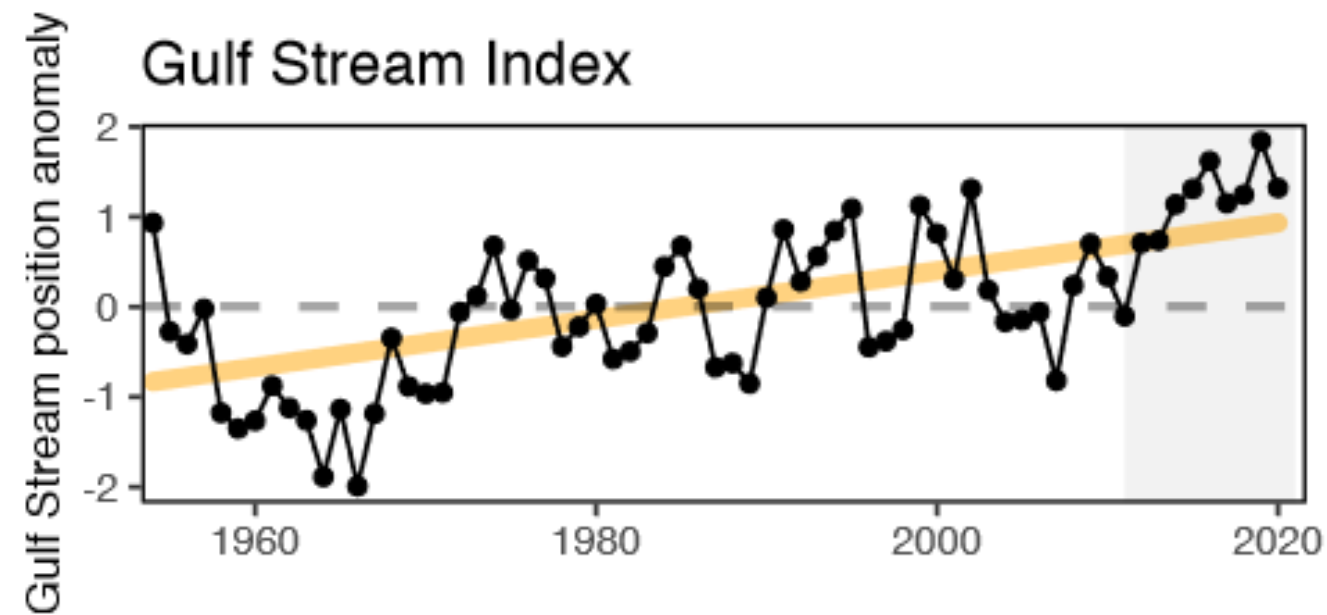
## Climate Change and Variability



Source: Pershing et al. 2015 *Science*

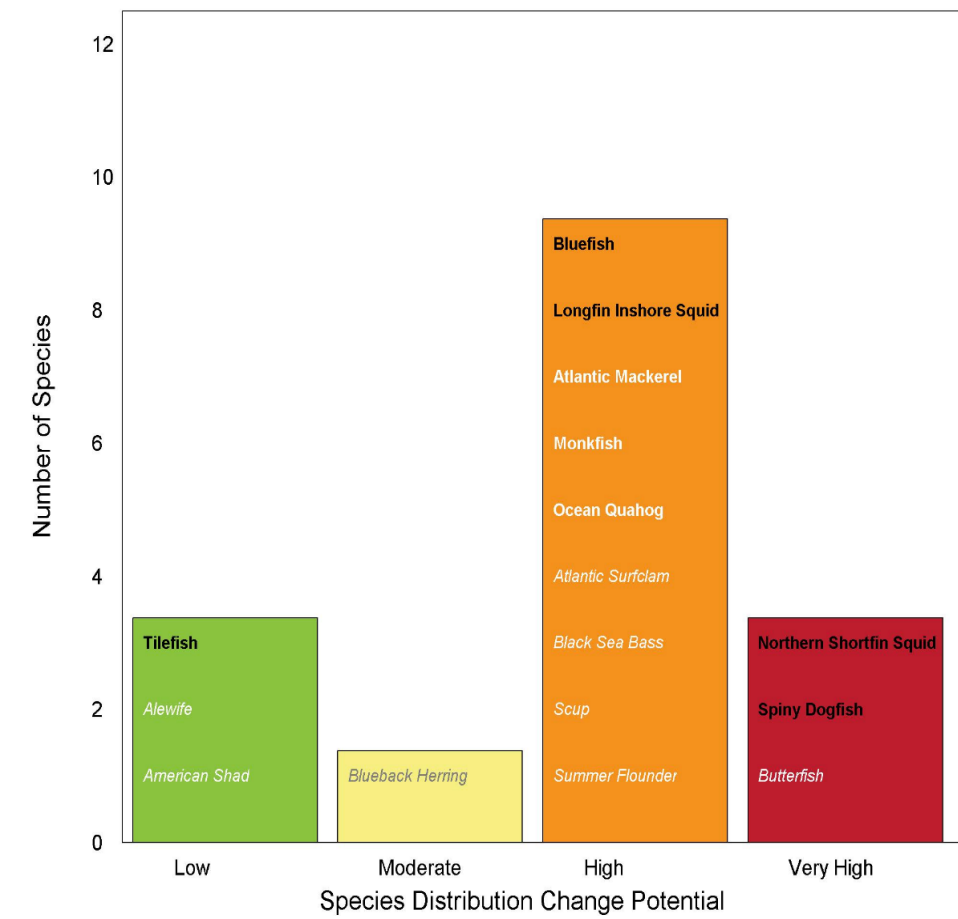


Source: 2022 NEFSC Mid-Atlantic State of the Ecosystem Report

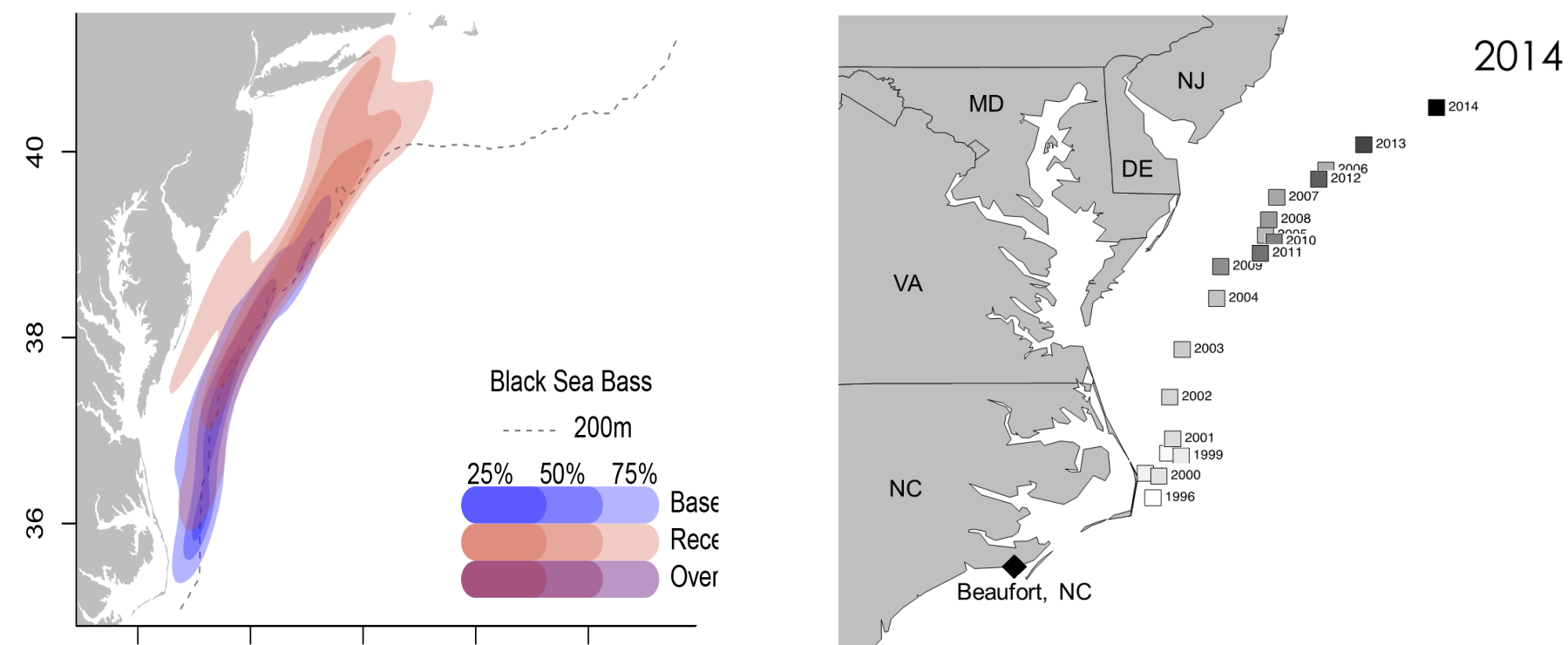


Source: 2022 NEFSC Mid-Atlantic State of the Ecosystem Report

## Changes in Species & Fishery Distribution

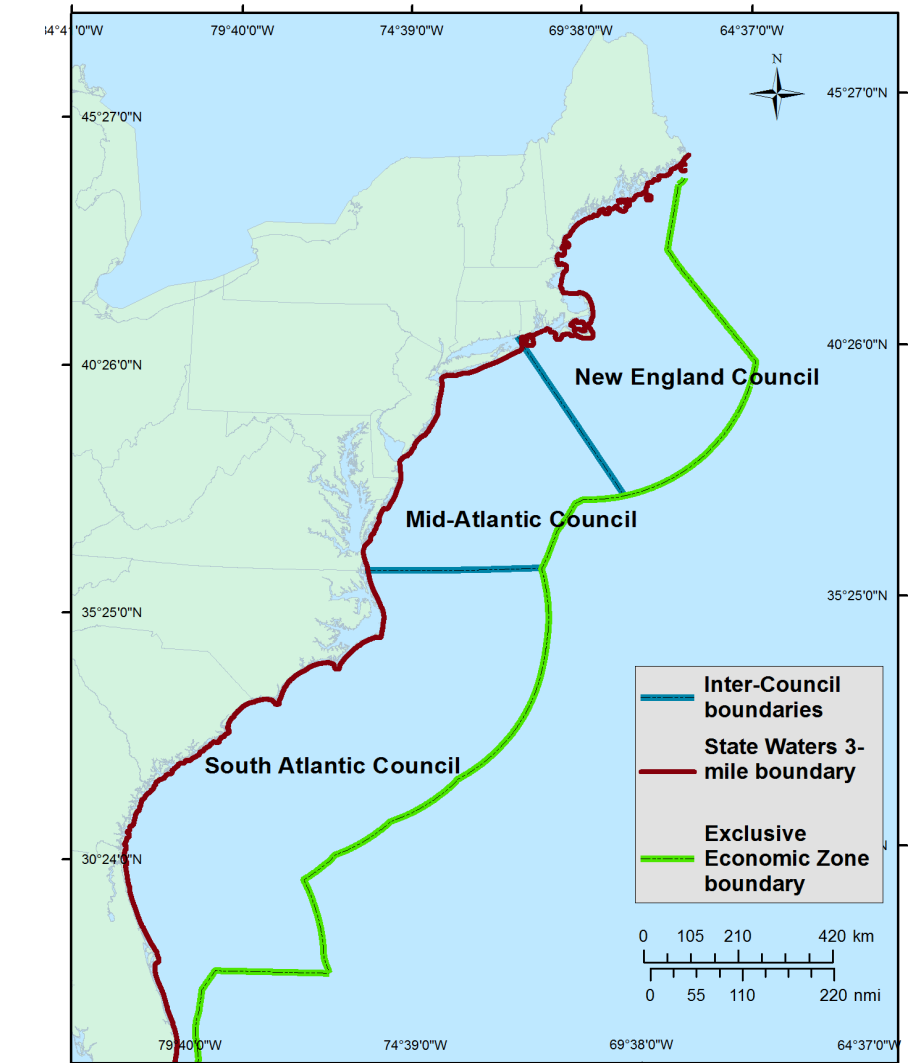


Source: Northeast Fisheries Climate Vulnerability Assessment (adapted from Hare et al. 2016)



Source: Malin Pinsky, [http://www.mafmc.org/s/06\\_Pinsky.pdf](http://www.mafmc.org/s/06_Pinsky.pdf)

## Governance Issues & Challenges



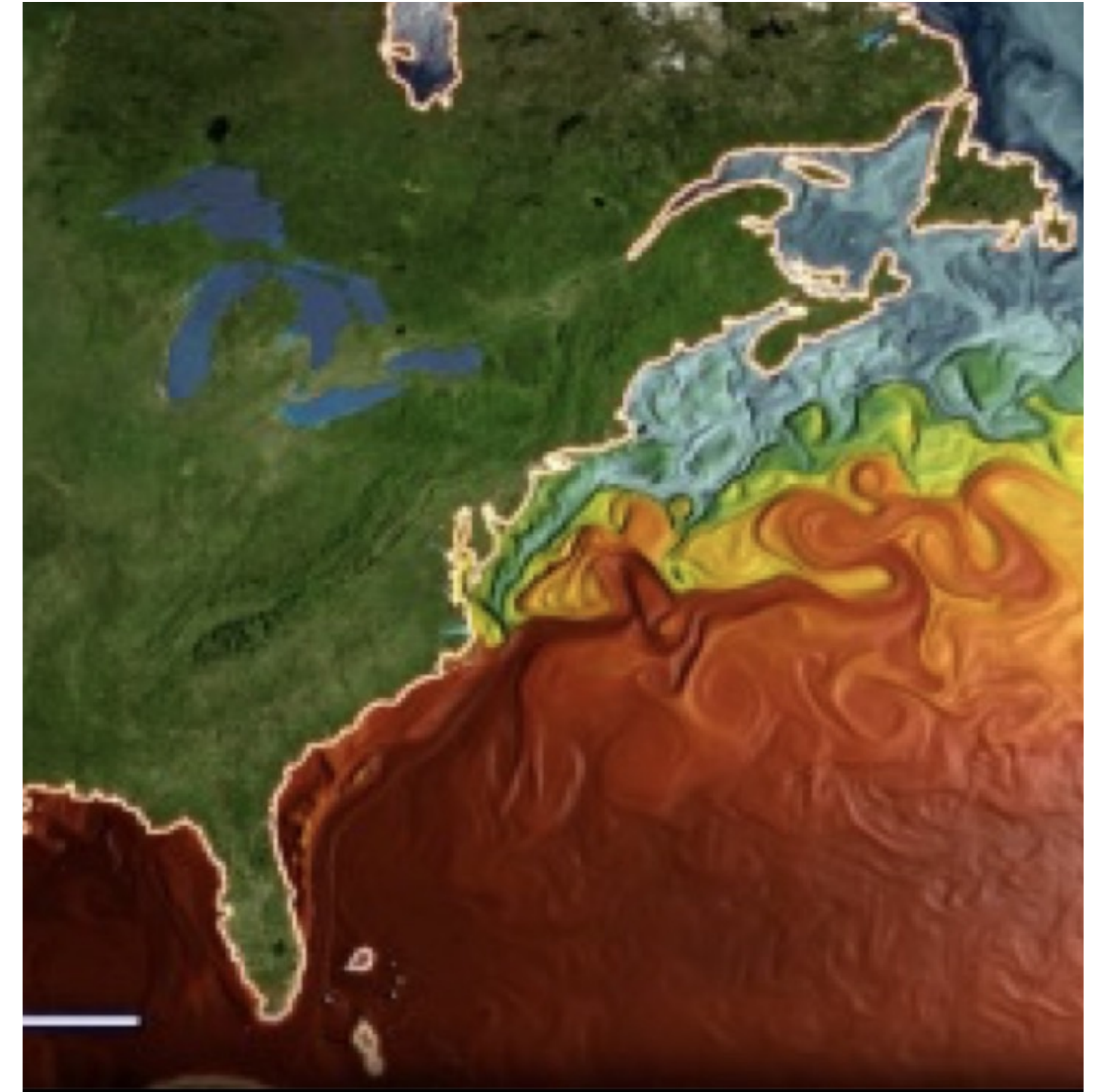
# Participating Management Organizations

- Atlantic States Marine Fisheries Commission
  - New England Fishery Management Council
  - Mid-Atlantic Fishery Management Council
  - South Atlantic Fishery Management Council
  - NOAA Fisheries
- 
- “Core team” of representatives from each organization working with contracted facilitator
  - Oversight from Northeast Region Coordinating Council + South Atlantic Council



# Initiative Objectives

1. Explore how East Coast fishery governance and management issues will be affected by climate driven change in fisheries, particularly changing stock availability and distributions.
2. Advance a set of tools and processes that provide flexible and robust fishery management strategies, which continue to promote fishery conservation and resilient fishing communities, and address uncertainty in an era of climate change.



# Why Scenario Planning?

- Under different assumptions of future conditions:
  - Which management actions and governance strategies are **likely to be beneficial** under a range of future conditions?
  - Which management actions and governance strategies **should be avoided** due to reduced flexibility or increased difficulty of adapting to future conditions?



## Steps in this Multi-Year Initiative



# Scoping Highlights (Summer-Fall 2021)

- Scoping activities :
  - Introductory materials (website, brochures, videos)
  - 3 introductory webinars (over 250 attendees)
  - Online questionnaire (383 responses)

**EAST COAST CLIMATE CHANGE SCENARIO PLANNING**

An initiative designed to prepare fishing communities and fishery managers for an era of climate change

Starting in 2021, the management bodies shown on the right are collaborating on a multi-year scenario planning initiative along the entire US Atlantic seaboard.

**Fishing communities and managers have always faced a world of uncertainty.** Ocean conditions change frequently and often unpredictably. Adapting to fierce storms, fish showing up in new places or disappearing from accustomed ones, unusually warm (or cold) water, and other changes have always been a part of life for those on or around the ocean.

The coming decades promise to be more challenging than the past. Climate change is a growing threat to marine fisheries worldwide. On the East Coast of the United States, some species have already experienced climate-related shifts in distribution, abundance, and productivity. A continuation – or acceleration – of these changes has the potential to strain existing fisheries management and governance systems.

In an era of climate change, we cannot be exactly sure of the conditions we might face in 20 years' time. But one thing is certain: all those involved in fisheries need to prepare for different, unexpected futures.

**HOW YOU CAN GET INVOLVED**

- Attend a kick-off webinar
- Complete a questionnaire
- Keep informed

See Page 4 for more details.

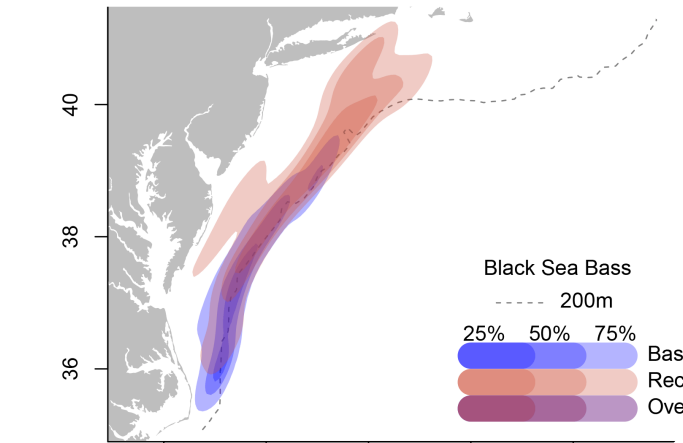
Logos: New England Fishery Management Council, MD-ATLANTIC, NOAA FISHERIES, and the US Department of Commerce.

# Scoping Highlights (Summer-Fall 2021)

- Some insights:
  - High level of interest in these issues
  - Stakeholders **already seeing effects of climate change**
  - Identified range of oceanographic, biological, social & economic **drivers of change** over next 20 years



Florida species shifting north



Some species moving North/East



Changes in productivity and fish size



Shifts in timing or frequency of spawning



Estuarine habitat loss



New food web dynamics



Realigning businesses to adapt to new species



Sea level rise impacting boat access



# Exploration Phase: Drivers of Change Webinars

## Oceanographic Drivers of Change

February 14, 2022

1. Ocean temperature
2. Currents
3. Long term cycles
4. Cold pool
5. Water chemistry
6. Primary production
7. Extreme weather
8. Sea level rise

## Biological Drivers of Change

February 23, 2022

7. Distribution changes
8. Productivity changes
9. Seasonal timing
10. Habitat vulnerability
11. Disease & Harmful Algal Blooms

## Social & Economic Drivers of Change

March 2, 2022

12. Population growth & demographics
13. External cost factors
14. Infrastructure and working waterfronts
15. Consumer demand and market dynamics
16. Technological change
17. Competing ocean uses
18. Social vulnerability & environmental justice

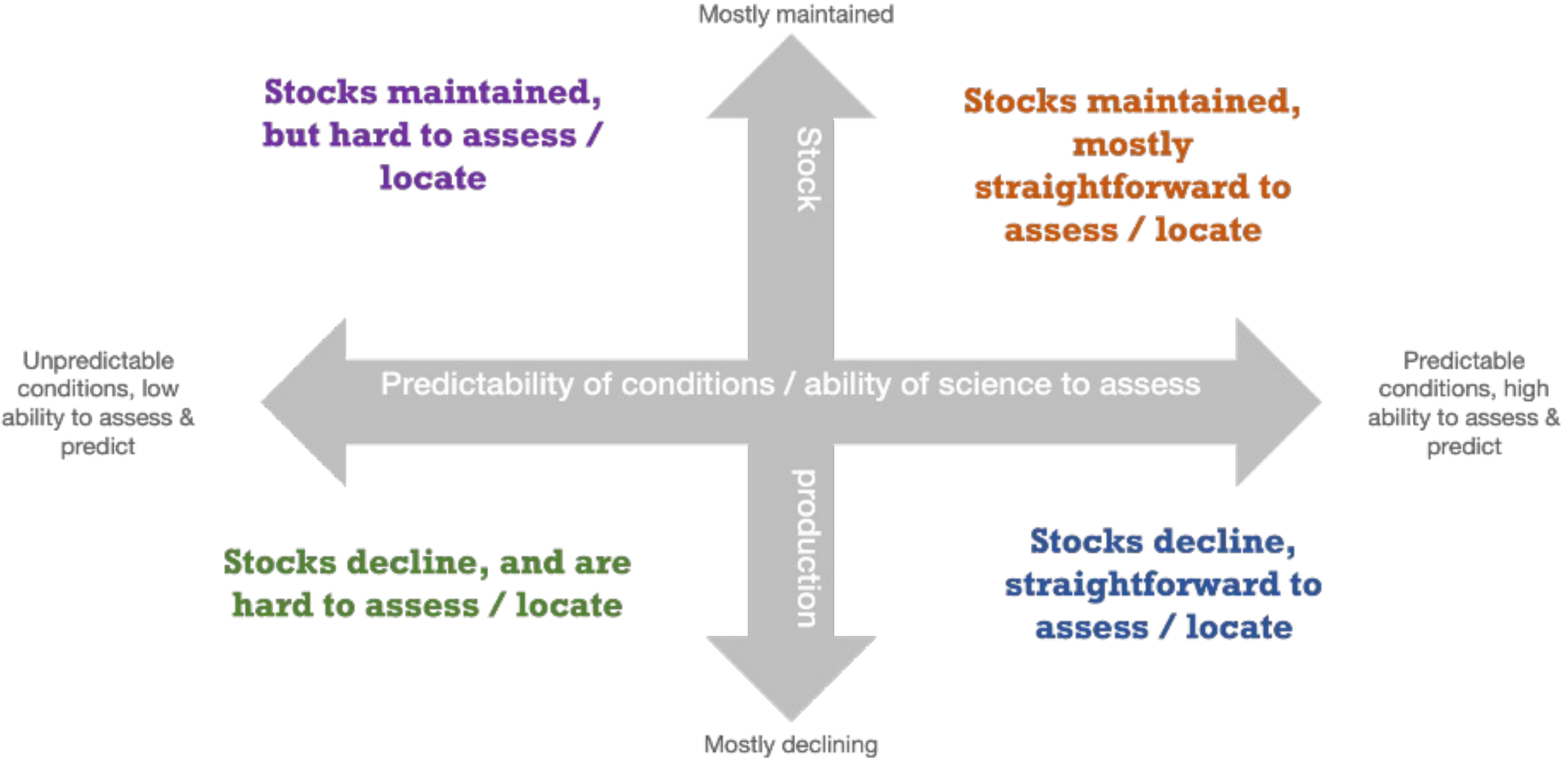
# Creation Phase: Scenario Creation Workshop

- June 21-23 in Arlington VA
- Attended by approximately 75 stakeholders & staff
- Productive 2.5-day workshop with highly engaged participants



# Scenario Framework: East Coast Fisheries in 2040

Combining the uncertainties results in a matrix that creates four different stories of the future



# Scenario Framework: East Coast Fisheries in 2040

**Ocean Pioneers:** a 'wild west' of new ocean users, risk-taking fishery operators taking advantage of confusing, unpredictable but ultimately positive conditions

Unpredictable changes & conditions, low ability to assess

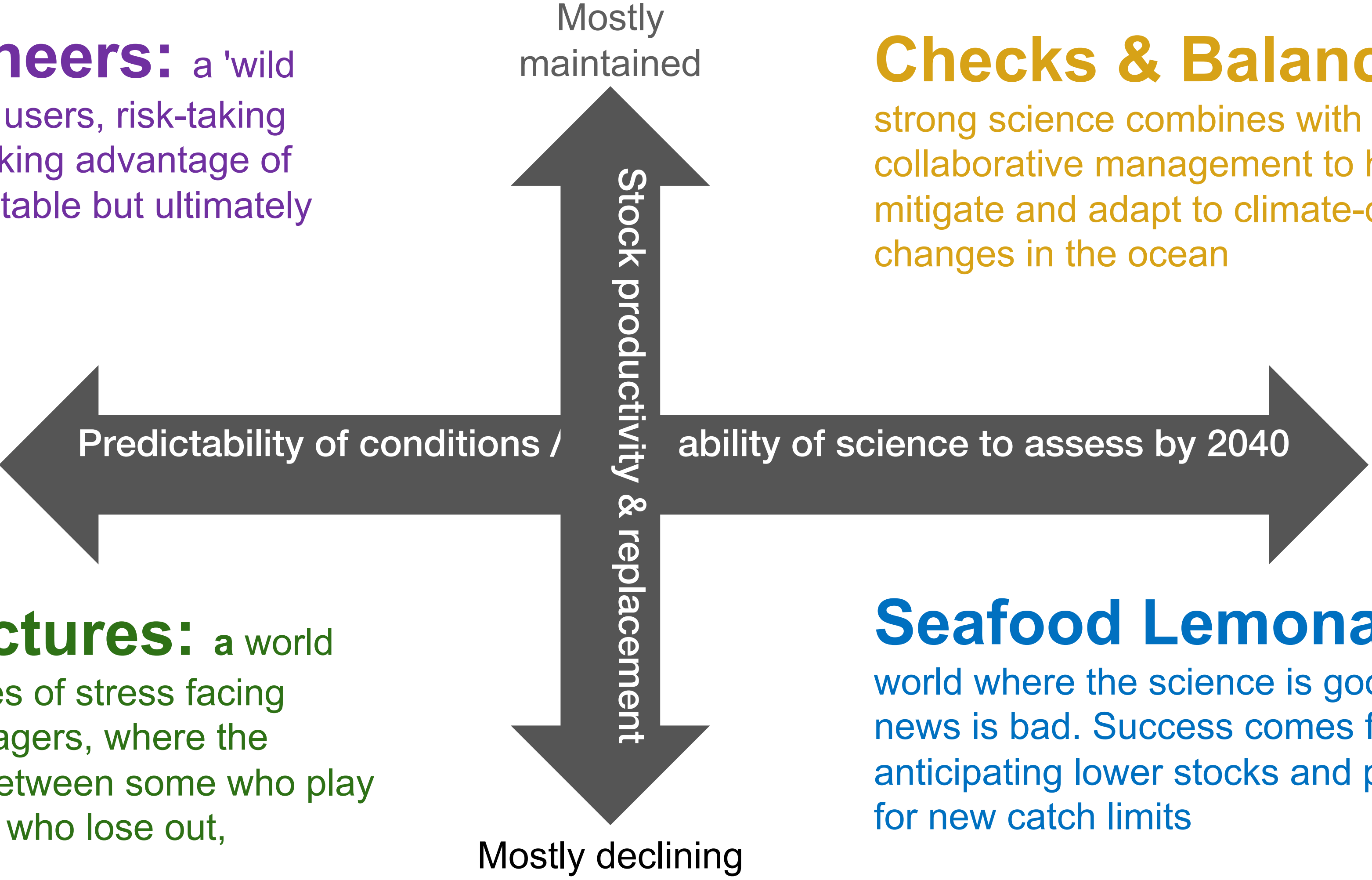
**Stress Fractures:** a world with multiple sources of stress facing operators and managers, where the industry fractures between some who play it smart, and others who lose out,

Mostly maintained

**Checks & Balance:** where strong science combines with collaborative management to help mitigate and adapt to climate-driven changes in the ocean

Predictable changes & conditions, high ability to assess

**Seafood Lemonade:** a world where the science is good, but the news is bad. Success comes from anticipating lower stocks and preparing for new catch limits



## Scenario Deepening Webinars: August 2022

- Two 2-hour webinars held to allow any interested stakeholders to review, comment on, help refine scenario narratives

Tuesday,  
August 17  
3-5pm

Wednesday,  
August 23  
10am-12pm

- Attended by over 150 unique participants
- Core team further revised draft scenarios to incorporate feedback received at these webinars

# Current Phase: Applications

## Managers' Meetings

September 19  
September 20  
October 3

**Generate ideas**

## Council & Commission Meetings

ASMFC: November 7-10  
NEFMC: December 5-9  
SAFMC: December 5-9  
MAMFC: December 12-15

**Review & generate ideas**

## Summit Meeting

February 2023  
In person, ~50  
participants

**Review & prioritize  
recommendations**

# Managers' Brainstorming Sessions: Discussion Areas

## For Each Scenario...

### Adaptability

What does successful adaptability / nimbleness look like for managers? For industry?  
What are the main barriers to effective adaptability?  
If you knew that this scenario was going to play out, what actions would you take now so that operators, communities and managers could better adapt to cope with these conditions?

### Data & Science

What are the biggest data & science challenges/opportunities facing fishery managers?  
If you knew this scenario was going to play out, what actions should fisher managers take to ensure that data & science contributed to fisheries' success?

### New Ocean Uses

What are the most significant challenges/opportunities for fishery managers posed by new ocean uses?  
If you knew this scenario was going to play out, what would you do now to ensure that alternative ocean uses resulted in a positive or minimal impact on fisheries?

### Cross-jurisdictional Governance & Management

What major stresses would be placed on existing cross-jurisdictional governance arrangements?  
Would current approaches for updating management authority work well? What new ways should be considered?  
What management challenges are present for species that move across jurisdictional boundaries?  
What actions / changes are needed to better manage species that move across boundaries?

# Project Outputs

- ❑ A set of scenarios a few stories that describe – in qualitative terms – different ways in which a changing climate might affect the future of East Coast fisheries
- ❑ A better understanding of the challenges and opportunities facing fishery management in the future
- ❑ A set of near-term and long-term management priorities that help achieve fishery management objectives under a range of different future conditions
- ❑ Policy recommendations for broader governance changes that improve our ability to adapt to future scenarios
- ❑ A list of data gaps, research needs, and monitoring needs for changing conditions
- ❑ A framework for ongoing conversation and idea generation for all stakeholders to use



# Early Reflections and Lessons Learned

## ■ “Positives”

- In depth public scoping up front was helpful
- Bringing on a facilitator with expertise in scenario planning was critical
- Core group and NRCC process worked well
  - Small group(s) with right expertise and needed direction
- Flexible and need appropriate meeting structure
  - Proving a mixture of broad open webinars to small focused management meetings

## ■ “Challenges”

- Time and resources
  - More time, work, and funds needed than initially thought or planned
- Broad scope – both the issue/question being addressed and geographic scope and range of entities impacted by project
  - Made certain aspects more difficult and to keep focus

# For Additional Information

- <https://www.mafmc.org/climate-change-scenario-planning>
- Core Team:

Organization	Representative
MAFMC	Kiley Dancy
ASMFC	Toni Kerns
NMFS GARFO	Moira Kelly/Travis Ford
NEFMC	Deirdre Boelke/Michelle Bachman
NMFS NEFSC	Sean Lucey
SAFMC	Roger Pugliese
NMFS SERO	Karla Gore
NMFS HQ	Wendy Morrison
Process Facilitator	Jonathan Star, Scenario Insight