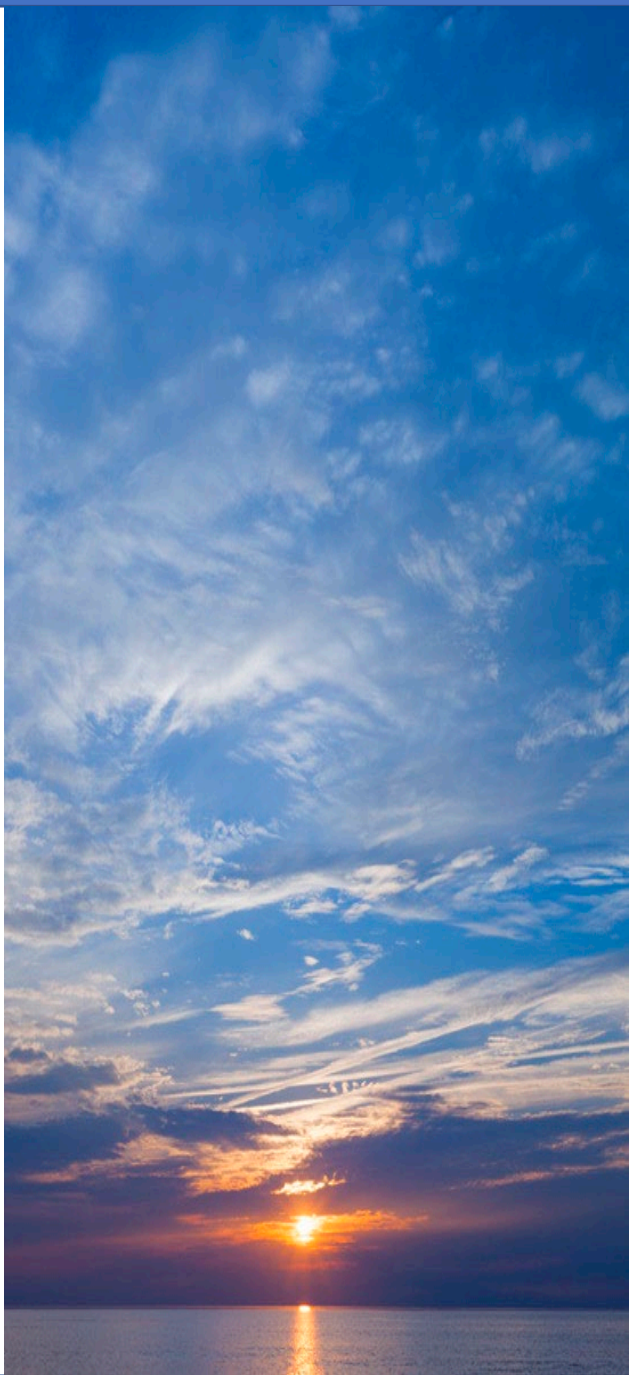




EAFM Risk Assessment Review: *Process Overview and Risk Element Recommendations*

October 3-5, 2023 Council Meeting

New York, NY



EAFM Guidance Document



MID-ATLANTIC
FISHERY MANAGEMENT COUNCIL

Ecosystem Approach to
Fisheries Management
Guidance Document

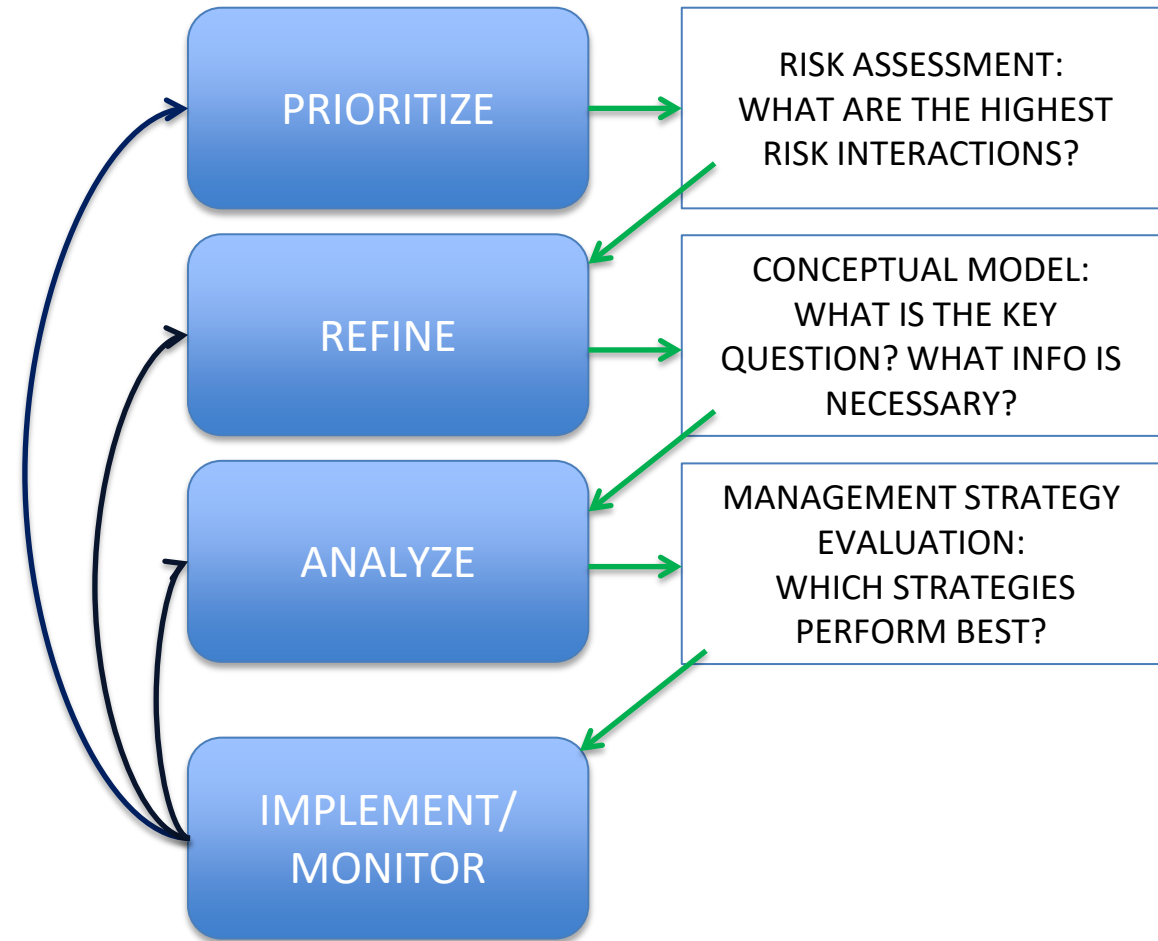
Approved by Council August 8, 2016
Revised February 8, 2019

The image shows the cover of a document. At the top is the logo for the Mid-Atlantic Fishery Management Council, which consists of a stylized fish in blue and green. Below the logo is the title "Ecosystem Approach to Fisheries Management Guidance Document" in blue text. At the bottom, it says "Approved by Council August 8, 2016" and "Revised February 8, 2019".

Areas of Focus: Habitat, Forage, Climate Change, Interactions, and Socioeconomics

Council's EAFM Decision Framework

- Developed a strategic, deliberative and structured process
 - Goal of incorporating species, fleet, habitat and climate interactions into management
 - Planning tool to help Council transition and incorporate EAFM approaches
 - Not an end to itself



Source: Sarah Gaichas,
http://www.mafmc.org/s/3_Habitat_in_IEAs_Gaiches.pdf

Risk Assessment - A Quick Refresher

Key Definitions

Risk Elements: *what are we measuring?*

Risk Definition: *why are we measuring it?*

Indicator: *how are we measuring it?*

Risk Ranking Criteria: *what is the risk?*

Risk assessment currently framed around risks to meeting Council management objectives, generally aligned with MSA:

Optimum yield (OY)

Supporting Seafood Production

Recreational Opportunities

Community & Fishery Resilience

Minimizing Bycatch

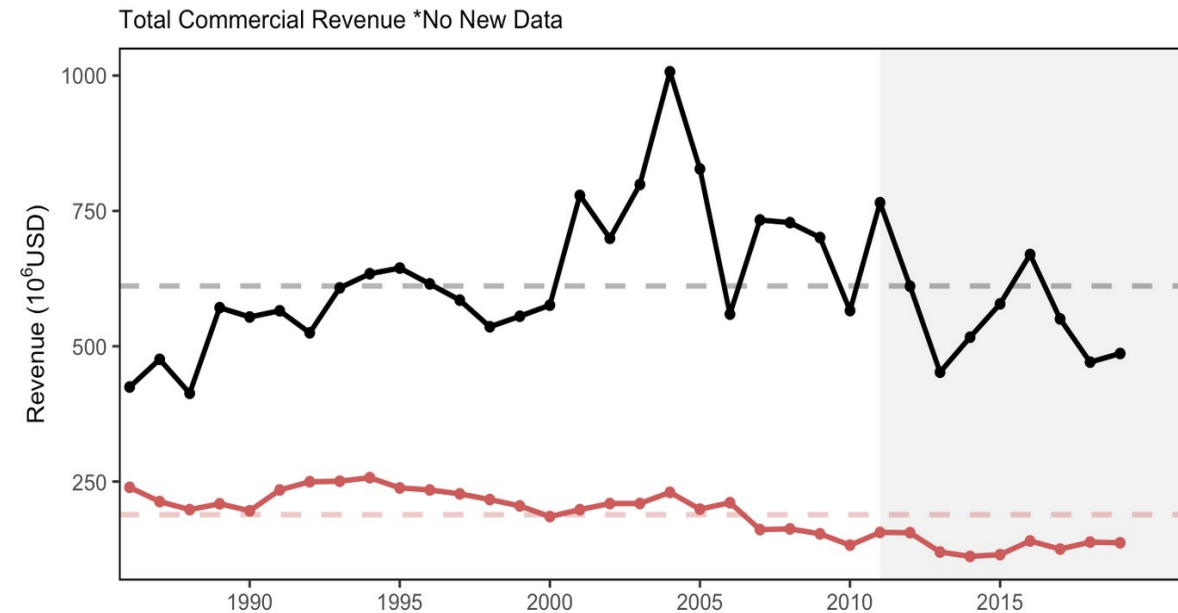
Protected Species Interactions

Risk Element Example – Commercial Revenue

This element is applied at the ecosystem level. Revenue serves as a proxy for commercial profits.

Risk Level	Definition
Low	No trend and low variability in revenue
Low-Moderate	Increasing or high variability in revenue
Moderate-High	Significant long term revenue decrease
High	Significant recent decrease in revenue

Ranked moderate-high risk due to the significant long term revenue decrease for Mid-Atlantic managed species (red points in top plot)



Key: Black = Revenue of all species combined;

Red = Revenue of MAFMC managed species

EAFM Risk Assessment Output – 2022 Update

Species level risk elements

Species	Assess	Fstatus	Bstatus	FW1Pred	FW1Prey	FW2Prey	Climate	DistShift	EstHabitat
Ocean Quahog	lowest	lowest	lowest	lowest	lowest	lowest	highest	modhigh	lowest
Surfclam	lowest	lowest	lowest	lowest	lowest	lowest	modhigh	modhigh	lowest
Summer flounder	lowest	lowest	lowmod	lowest	lowest	lowest	lowmod	modhigh	highest
Scup	lowest	lowest	lowest	lowest	lowest	lowest	lowmod	modhigh	highest
Black sea bass	lowest	lowest	lowest	lowest	lowest	lowest	modhigh	modhigh	highest
Atl. mackerel	lowest	highest	highest	lowest	lowest	lowest	lowmod	modhigh	lowest
Chub mackerel	highest	lowmod	lowmod	lowest	lowest	lowest	na	na	lowest
Butterfish	lowest	lowest	lowmod	lowest	lowest	lowest	lowest	highest	lowest
Longfin squid	lowmod	lowmod	lowmod	lowest	lowest	lowmod	lowest	modhigh	lowest
Shortfin squid	lowmod	lowmod	lowmod	lowest	lowest	lowmod	lowest	highest	lowest
Golden tilefish	lowest	lowest	lowmod	lowest	lowest	lowest	modhigh	lowest	lowest
Blueline tilefish	highest	highest	modhigh	lowest	lowest	lowest	modhigh	lowest	lowest
Bluefish	lowest	lowest	highest	lowest	lowest	lowest	lowest	modhigh	highest
Spiny dogfish	lowmod	lowest	lowmod	lowest	lowest	lowest	lowest	highest	lowest
Monkfish	highest	lowmod	lowmod	lowest	lowest	lowest	lowest	modhigh	lowest
Unmanaged forage	na	na	na	lowest	lowmod	lowmod	na	na	na
Deepsea corals	na	na	na	lowest	lowest	lowest	na	na	na

- Chub mackerel were added to the table

Ecosystem level risk elements

System	EcoProd	CommRev	RecVal	FishRes1	FishRes4	FleetDiv	Social	ComFood	RecFood
Mid-Atlantic	lowmod	modhigh	lowmod	lowest	modhigh	lowest	lowmod	highest	modhigh

- Recreational value risk decreased from high to low-moderate

Species and Sector level risk elements

Species	MgtControl	TecInteract	OceanUse	RegComplex	Discards	Allocation
Ocean Quahog-C	lowest	lowest	lowmod	lowest	modhigh	lowest
Surfclam-C	lowest	lowest	lowmod	lowest	modhigh	lowest
Summer flounder-R	modhigh	lowest	lowmod	modhigh	highest	highest
Summer flounder-C	lowmod	modhigh	lowmod	modhigh	modhigh	lowest
Scup-R	lowmod	lowest	lowmod	modhigh	modhigh	highest
Scup-C	lowest	lowmod	modhigh	modhigh	modhigh	lowest
Black sea bass-R	highest	lowest	modhigh	modhigh	highest	highest
Black sea bass-C	highest	lowmod	highest	modhigh	highest	lowest
Atl. mackerel-R	lowmod	lowest	lowest	lowmod	lowest	lowest
Atl. mackerel-C	lowest	lowmod	modhigh	highest	lowmod	highest
Butterfish-C	lowest	lowmod	modhigh	modhigh	modhigh	lowest
Longfin squid-C	lowest	modhigh	highest	modhigh	highest	lowest
Shortfin squid-C	lowmod	lowmod	lowmod	modhigh	lowest	highest
Golden tilefish-R	na	lowest	lowest	lowest	lowest	lowest
Golden tilefish-C	lowest	lowest	lowest	lowest	lowest	lowest
Blueline tilefish-R	lowmod	lowest	lowest	lowmod	lowest	lowest
Blueline tilefish-C	lowmod	lowest	lowest	lowmod	lowest	lowest
Bluefish-R	lowmod	lowest	lowest	lowmod	modhigh	highest
Bluefish-C	lowest	lowest	lowmod	lowmod	lowmod	lowest
Spiny dogfish-R	lowest	lowest	lowest	lowest	lowest	lowest
Spiny dogfish-C	lowest	modhigh	modhigh	modhigh	lowmod	lowest
Chub mackerel-C	lowest	lowmod	lowmod	lowmod	lowest	lowest
Unmanaged forage	lowest	lowest	modhigh	lowest	lowest	lowest
Deepsea corals	na	na	modhigh	na	na	na

- 4 Allocation risks decreased from high to low
- 4 Regulatory complexity risks decreased, 2 increased
- Management control risk increased for blueline tilefish fisheries to low-moderate

Annual Updates to the Risk Assessment

- Snapshot of current risks to Council managed species and fisheries
 - “Cheat sheet” to use throughout the year
- Look to trends or changes in risk over time across species

Ecosystem Level Risks

	EcoProd	Comm Rev	RecVal	FishRes I	FishRes4	Fleet Div	Social	ComFood	RecFood
2017	lm	mh	h	l	mh	mh	lm	h	mh
2022	lm	mh	lm	l	mh	l	lm	h	mh

Species/Fleet Level Risks – Commercial Black Sea Bass ex.

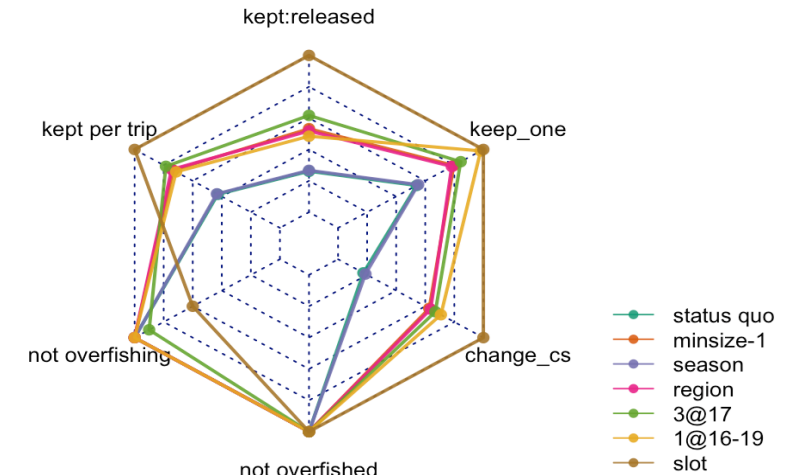
	MgtControl	TecInteract	OceanUse	RegComplex	Discards	Allocation
2017	lm	lm	h	mh	lm	h
2022	h	lm	h	mh	h	l

Implementing the Decision Framework

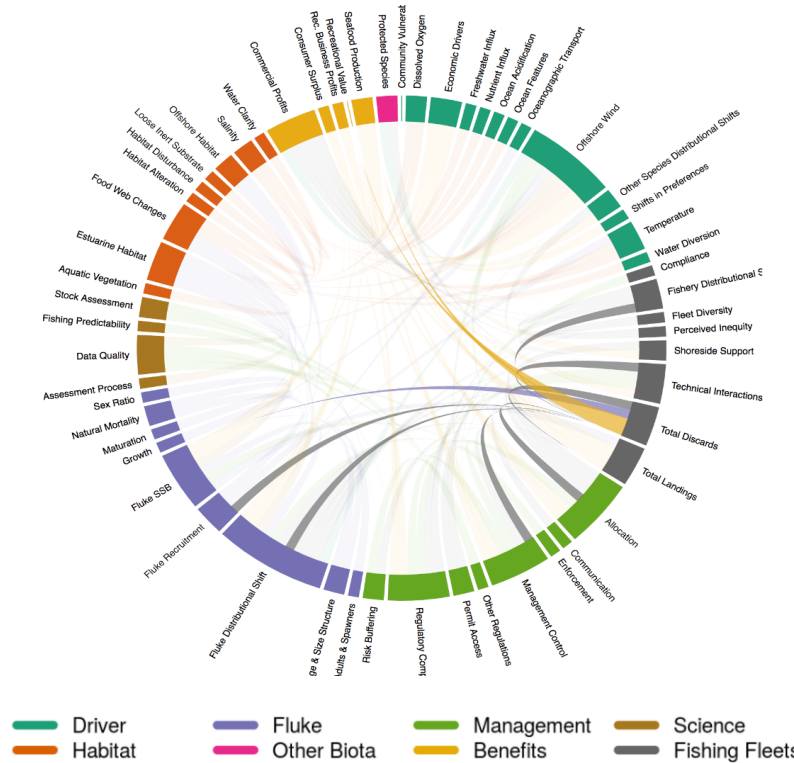
Step 1 – Prioritize with risk assessment (2017)

Species	Assess	Fstatus	Bstatus	FW1Pred	FW1Prey	FW2Prey	Climate	DistShift	EstHabitat
Ocean Quahog	h	h	h	h	h	h	h	h	h
Surfclam	h	h	h	h	h	h	h	h	h
Summer flounder	h	h	lm	h	h	h	h	h	h
Scup	h	h	h	h	h	h	h	h	h
Black sea bass	h	h	h	h	h	h	h	h	h
Atl. mackerel	h	h	h	h	h	h	h	h	h
Butterfish	h	h	h	h	h	h	h	h	h
Longfin squid	lm	lm	lm	lm	lm	lm	lm	lm	lm
Shortfin squid	lm	lm	lm	lm	lm	lm	lm	lm	lm
Golden tilefish	h	h	h	h	h	h	h	h	h
Blueline tilefish	h	h	h	h	h	h	h	h	h
Bluefish	h	h	h	h	h	h	h	h	h
Spiny dogfish	lm	lm	lm	lm	lm	lm	lm	lm	lm
Monkfish	h	h	lm	h	h	h	h	h	h
Unmanaged forage	na	na	na	lm	lm	na	na	na	na
Deepsea corals	na	na	na	lm	lm	na	na	na	na

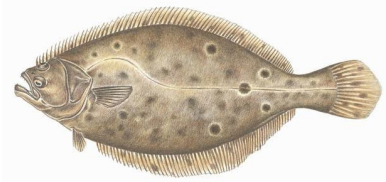
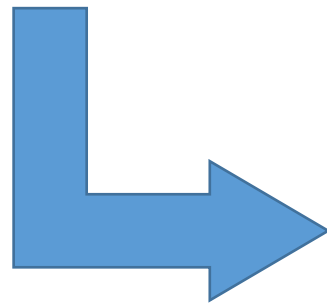
Step 3 – Analyze with MSE (2022)



Step 2 – Refine with conceptual model development (2019)



Summer flounder Identified as most high-risk fishery



Identify and evaluate management Procedures to reduce recreational discards and convert to landings

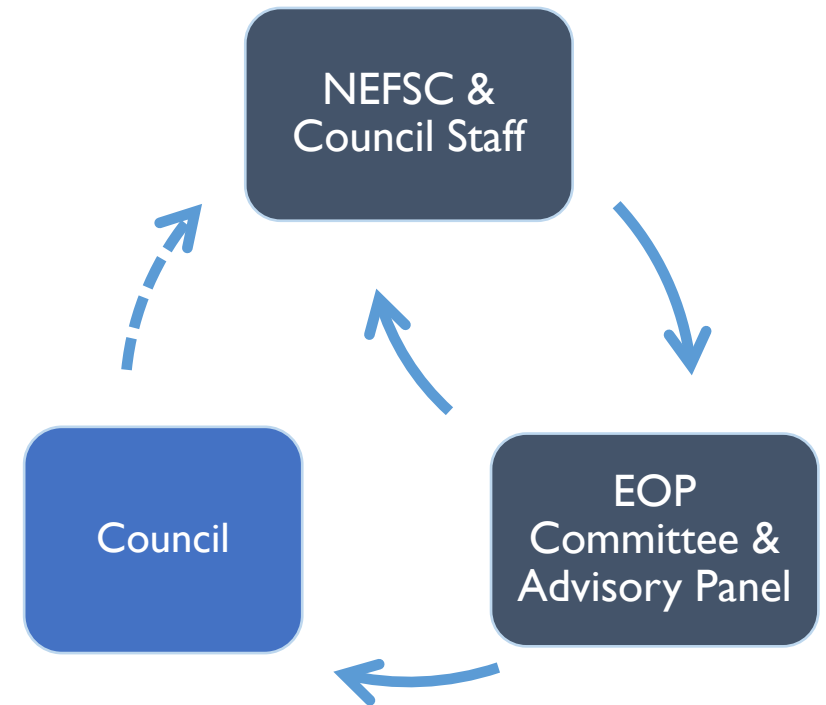


EOP Committee and AP Review

- Goals of EAFM risk assessment review
 1. Reflect the Council's current priority risks
 2. Incorporate the latest scientific information
 3. Be adaptive and responsive to new and changing conditions and Council needs
 4. Opportunity to potentially expand use of risk assessment/ecosystem information in Council process
- Looking back at last 5 years – what risk are still relevant
- Looking into future – anticipated/upcoming risks

EOP Committee and AP Review

- Collaborative and iterative process
- 5 meetings from Nov '22 – Sept '23
 - Between meeting homework/feedback
- **43** risk elements considered
 - **24** existing and **19** new
- Developed and refined: descriptions, definitions, and indicators for all 43
 - Criteria developed for sub-set
- September meeting – focus on elements needing feedback and developed recommendations for Council consideration



EOP Committee and AP Recommendations

- Of the 43 elements considered:
 - 28 elements recommended be included in updated assessment
 - 24 existing and 4 new
 - 6 elements recommended be placed in “parking lot” to consider later
 - All 6 are new
 - 9 elements recommended to be removed as stand-alone element – potentially used as an indicator for another element
 - All 9 were new

EOP Committee and AP Recommendations

Ecological Risk Elements

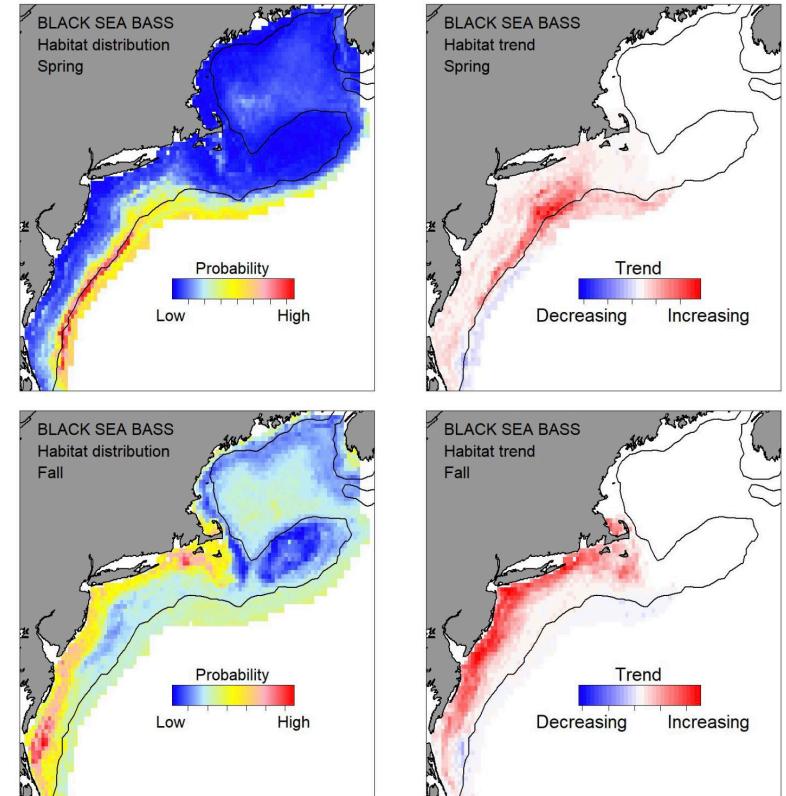
- Stock Assessment Performance
- Fishing Mortality Status
- Stock Biomass Status
- Food Web – Prey Availability
- Food Web – Pred Pressure
- Food Web – Protected Species
- Food Web (n) – Other (HMS, birds)
- Ecosystem Productivity
- Forage Base (n)
- Population Diversity (n)
- Ecological Diversity (n)
- Climate
- Distribution Shift
- Estuarine/Coastal Habitat
- Offshore Habitat (n)
- Invasive Species (n)

Keep, Parking Lot, Delete; (n) – new element

EOP Committee and AP Recommendations

Ecological Risk Elements – recommended to **keep** or **park**

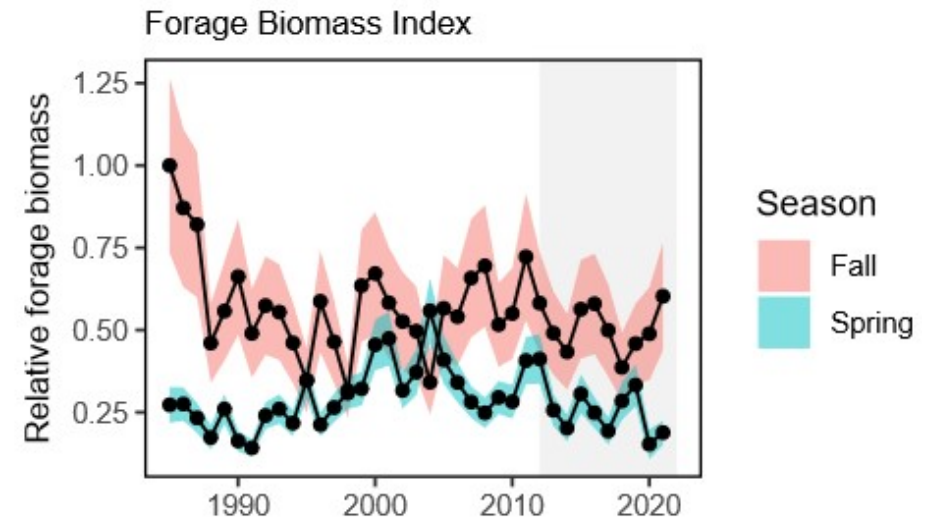
- **Offshore Habitat:** risks of not achieving OY due to changing offshore habitat quality and quantity. Identified indicators and potential criteria.
- **Population Diversity:** risks associated with declining or changing diversity (size, sex, reproductive). Work needed to develop indicators. Pilot the development with a couple of species with data (SF, S, BSB).
- **Ecological Diversity:** risk due to declining/changing species diversity and ecosystem structure and function. Have potential indicators (from SOE) but more work to interpret.



EOP Committee and AP Recommendations

Ecological Risk Elements – recommended for **removal**

- **Food Web – Other (HMS, birds):** consider interactions within remaining Food Web risk elements
- **Forage Base:** use as an indicator (in SOE) in Food Web – Prey Availability and Ecosystem Productivity risk elements
- **Invasive Species:** track issue and if an invasive species becomes an issue for Council-managed species, potentially add as an indicator under Estuarine/Coastal or Offshore habitat risk elements



EOP Committee and AP Recommendations

Socio-Economic Risk Elements

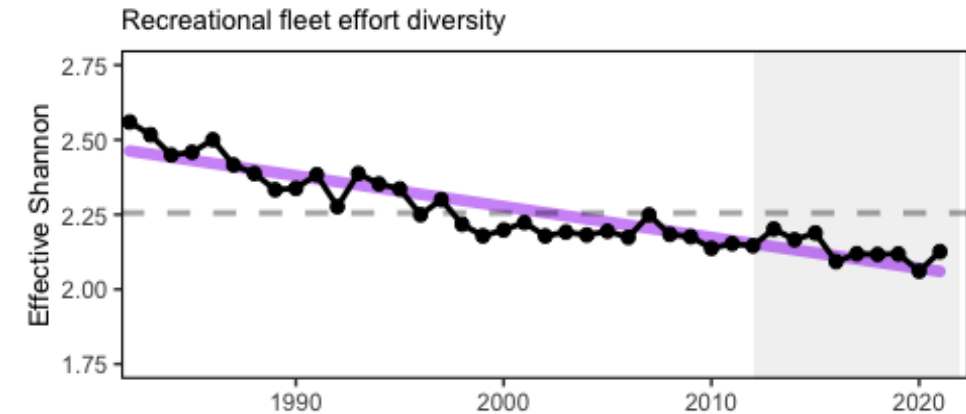
- Commercial Value
- Marine Recreational Angler Trips/Days
- Commercial Resilience – Revenue Diversity
- Commercial Resilience – Shoreside Support
- Recreational Resilience – Shoreside Support (n)
- Commercial Resilience – Capital (n)
- Commercial Resilience – Insurance Availability (n)
- Commercial Resilience – Emerging Markets/Opportunities (n)
- Seafood Safety (n)
- Commercial Resilience – Fleet Diversity
- Recreational Resilience – Fleet Diversity (n)
- Community Vulnerability
- Commercial Fishing Production
- Recreational/Subsistence Seafood Production
- Commercial Fishery Employment (n)
- Recreational Fishery Employment (n)

EOP Committee and AP Recommendations

Socio-Economic Risk Elements – recommended to **keep** or **park**

■ **Recreational Resilience – Fleet Diversity:**

risk of reduced resilience due to declining diversity of rec effort by mode. One indicator (from SOE) and one to evaluate changes in fishing behavior/preferences



- **Recreational Resilience – Shoreside Support:** risks of reduced resilience due to shoreside support infrastructure (marinas, B&T etc.). High interest but unsure of existing data for indicators
- **Commercial & Recreational Fishery Employment:** risks to not optimizing or maintaining employment. Identified possible data and indicators for development

EOP Committee and AP Recommendations

Socio-Economic Risk Elements – recommended to **delete**

- **Commercial Resilience – Capital, Insurance Availability, Emerging Markets/Opportunities:** trying to account for different business and economic pressures.
 - However, lack and highly variable data made application uncertain – potential indicators in future.
 - Aspects of risks captured under other economic elements
- **Seafood Safety:** never really fully developed element or focus (was not on human health risks). Dropped or to be considered in future under other fishery resilience elements

EOP Committee and AP Recommendations

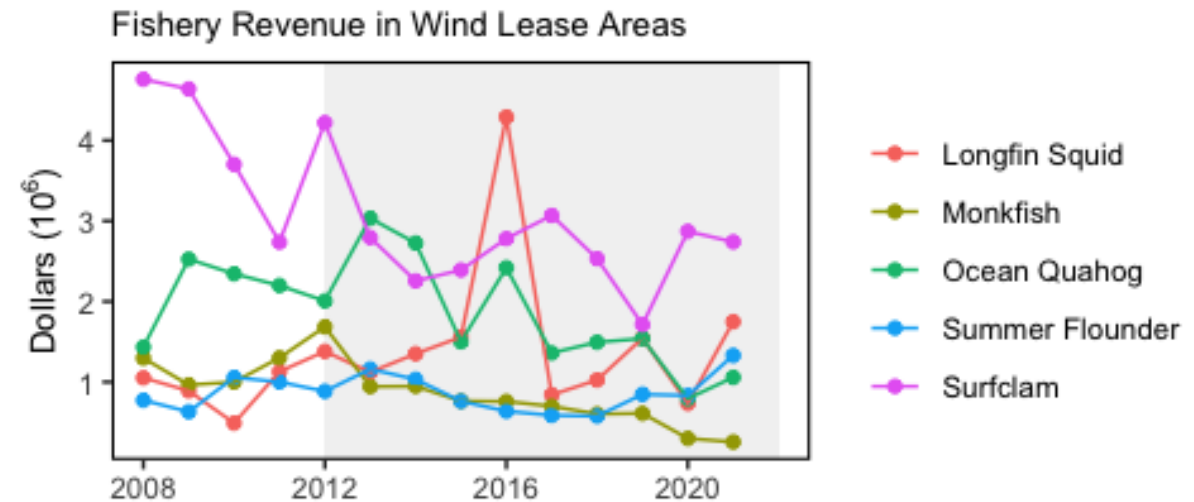
Management Risk Elements

- Fishing Mortality Control
- Technical Interactions
- Offshore Wind – Biological/Ecosystem (n)
- Offshore Wind – Fishery Science and Access (n)
- Offshore Energy Exclusive of Wind (n)
- Aquaculture (n)
- Other Ocean Activities
- Regulatory Complexity and Stability
- Allocation
- Discards
- Essential Fish Habitat (n)

EOP Committee and AP Recommendations

Management Risk Elements – recommended to **keep** or **park**

- **Offshore Wind – Biological/Ecosystem:** risks from offshore wind to not achieving OY due to biological impacts to stock productivity, distribution, and ecosystem structure and function. Indicators identified, need development.
- **Offshore Wind – Fishery Science and Access:** risk of not achieving OY due to fishery impacts due to access and scientific uncertainty. Have indicators (from SOE), need to develop criteria
- **Essential Fish Habitat:** risks to not identifying and/or protecting EFH.
Park and use outcomes of amendment



EOP Committee and AP Recommendations

Management Risk Elements – recommended to **delete**

- **Offshore Energy Exclusive of Wind:** risks to fishery access from non-wind related energy development. Limited activity in Mid-Atlantic. Track and consider as an indicator under Other Ocean Activities in future
- **Aquaculture:** risks to fishery access due to federal water aquaculture development. Limited activity in Mid-Atlantic. Track and consider under Other Ocean Activities in future

Anticipated Next Steps

- **Today** - Council to determine risk elements to initially be included in updated risk assessment
- **Winter/Spring** – SOE development and staff work on indicators and criteria rankings
- **March 2024** – present draft updated EAFM risk assessment (and SOE report) to EOP Comm and AP for feedback and recommendations
- **April 2024** – Council reviews recommendations and updated risk assessment. Approve for use.
 - Process to update and modify risk assessment going forward
 - Recommendations to expand use of risk assessment and ecosystem information into other Council products and decisions

Continued/Future Application

- Continue with:
 - Identifying priorities and implementation of decision framework – conceptual model and MSE
 - Annual updates and report card/cheat sheet
 - Inform potential research priorities
- Incorporate information into other Council products
 - Fishery Information Documents
 - AP Fishery Performance Reports
- Integration with other products and activities
 - Ecosystem and Socioeconomic Profiles (ESP)
 - SSC Ecosystem Work Group analyses



Outcomes for today

- Decide which risk elements should initially be included in updated EAFM risk assessment
 - Support/modify EOP recommendations
 - Final review/decisions in April 2024
- Provide any other feedback and direction on other components of risk elements
 - Definitions, data, indicators, criteria
 - Future updates and areas of applications

Questions??

