Ecosystem Approach to Fisheries Management Risk Assessment
Wednesday, October 11th 10:30 a.m. – 12:30 p.m.

Council Objective:

1. October Meeting: Agree on table of risk elements.
2. December Meeting: Agree on initial qualitative ranking of risk elements
3. During 2018, integrate Risk Assessment into 5-year strategic plan (2019-2023) potential actions needed to develop science and management responses to the prioritized risk elements.

Background:

On August 8, 2016, the Council approved the "Ecosystem Approach to Fisheries Management Guidance Document." An integral part of this document was the initial steps toward the development of a matrix of Risk Elements. The risk elements presented were primarily biological (e.g., fishing mortality) and notably absent were elements related to socio-economic impacts to the fisheries. At the August, 2017 meeting, Council Members offered suggestions for additional Risk Elements to consider in the analysis.

Activities Since August Council Meeting

On September 12, 2017 the Ecosystems and Ocean Planning Committee and Advisors convened to review all elements, provide definitions and criteria for those elements not yet fully defined, and initiate the ranking exercise. All elements that had been proposed in the "Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management Guidance Document" were reaffirmed during this meeting. Considerable progress was made at consolidating and defining additional elements but extensive discussion and attrition of members toward the end of the day precluded finalizing the elements. Following this meeting, Council staff and contractors have worked with NOAA Northeast Fisheries Science Center staff to reorganize and better define the material. A webinar will be held October 6th with the EOP Committee and advisors to review the revised material. The outcome of this webinar will be used as presentation material at the October Council meeting with the expectation that a core set of Risk Elements can be agreed upon that will allow continuing work toward defining them before the December meeting.

Important Notes

It is important to note that Risk Assessment will be a continuing and evolving process that will need to be revisited and updated frequently in future years. A "Risk Element" is an aspect that may threaten achieving the biological, economic, or social objectives that the Council desires from a fishery. By that definition, some risk elements may move up or down in priority as conditions change or new information becomes available. For example, "Fishing Mortality" may change in a given year; if F is above MSY than it will be ranked as "high risk" but if it falls below MSY it might be ranked as low risk. Thus, the current exercise only provides an *initial* template from which the Council can proceed with the implementation of EAFM.

Process:

"Risk" is the potential, *magnitude*, and *consequence* of negative events occurring due to a broad set of factors (Risk Elements) considered under the Ecosystem Approach to Fisheries Management (EAFM). A "Risk Element" is an aspect that may threaten achieving the biological, economic, or social objectives that the Council desires from a fishery. The Council, meeting as a whole, will discuss Risk Elements coming from the EOP and Advisors that should initially be

included for consideration. A *draft* table of these elements is included in these briefing documents but may change prior to the Council meeting based on the October 6th webinar. IMPORTANT: Ranking of these elements will not occur until the December Council Meeting**. Council Members will review, deliberate, and decide on this table of elements.**

Pre-Meeting Preparation:

1. Review the materials in this packet and, time allowing, those noted under the "Resources" heading below. **Council Members are encouraged to review the *draft* table of Risk Elements attached and pages 37-39 of the EAFM Guidance Document** for an example of identifying risk elements (link to the full report below).

Resources:

1. "Mid-Atlantic Fishery Management Council Ecosystem Approach to Fisheries Management Guidance Document " (particularly pages 33-44). Available at: http://www.mafmc.org/s/EAFM_Guidance-Doc_2017-02-07.pdf .

2: April 2017 presentation to MAFMC "State of the Ecosystem report-Mid Atlantic" by Sarah Gaichas;full presentation available at: http://www.mafmc.org/s/02_StateoftheEcosystem_MAFMC_AprilCouncil2.pdf

Outcome:

Agreement of Risk Elements to consider. Staff will use these elements to work with the NEFSC, EOP Committee, and possibly the Species Committees to develop an initial ranking of Risk Elements for Council discussion/decision at the December Council meeting.

DRAFT Mid-Atlantic EAFM Risk Assessment Elements

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The purpose of this document is to define Risk Elements considered Mid-Atlantic Council's Ecosystem Approach to Fisheries Management (EAFM) initial risk assessment.

A **Risk Element** is an aspect that may threaten achieving the biological, economic, or social objectives that the Council desires from a fishery. By that definition, some risk elements may move up or down in priority as conditions change or new information becomes available. Thus, it is important to note that EAFM Risk Assessment will be a dynamic and evolving process that will need to be revisited and updated in future years.

The Council selected a range of risk elements to be evaluated at either the managed species level (most), the fleet level (some), or the ecosystem level (few). An overview of the risk elements with definitions and associated indicators as discussed by the Council's Ecosystem and Ocean Planning (EOP) Committee and Advisors is presented below.

These elements and definitions are currently in draft form, pending EOP Committee review. The primary goal of presenting this informaiton is to clearly define and reach agreement about risks of concern to the Council.

Risk Element	Definition: Risk to what?	Indicators used
Ecological		
F status	Risk of not achieving OY due to overfishing	Current F relative to reference F from assessment
B status	Risk of not achieving OY due to depleted stock	Current B relative to reference B from assessment
Assessment type	Risk of not achieving OY due to analytical limitations	Current assessment method/data quality
Food web (1)	Risk of not achieving OY due to MAFMC managed species interactions	Food web model outputs, management measures
Food web (2)	Risk of not achieving protected species objectives due to species interactions	Food web model outputs, management measures
Ecosystem productivity	Risk of not achieving OY due to changing system productivity	Four indicators, see text
Population diversity	Risk of not achieving OY due to reduced diversity	Size composition, sex ratio, genetic diversity
Ecological diversity	Risk of not achieving OY due to reduced diversity	Fishery independent species diversity
Climate	Risk of not achieving OY due to climate vulnerability	Northeast Climate Vulnerability Assessment
Distribution shifts	Risk of not achieving OY due to climate-driven distribution shifts	Northeast Climate Vulnerability Assessment + 2 indicators (see text)
Estuarine habitat	Risk of not achieving OY due to threats to estuarine/nursery habitat	Enumerated threats + estuarine dependence

Risk Element	Definition: Risk to what?	Indicators used
Offshore habitat	Risk of not achieving OY due to threats to offshore habitat	Enumerated threats + thermal habitat trends + Friedland's index
Economic		
Commercial Profits	Risk of not maximizing fishery value	Revenue by fleet
Recreational Value	Risk of not maximizing fishery value	Revenue by fleet, Numbers of anglers and trips in aggregate
Fishery Resilience (1)	Risk of reduced fishery business resilience	Species diversity of revenue
Fishery Resilience (2)	Risk of reduced fishery business resilience due to access to capital	No current indicator avilable
Fishery Resilience (3)	Risk of reduced fishery business resilience due to insurance availabilty	No current indicator available
Fishery Resilience (4)	Risk of reduced fishery business resilience due to shoreside support infrastructure	Number of shoreside support businesses
Fishery Resilience (5)	Risk of reduced fishery business resilience due to access to emerging markets/opportunities	Needs clarification
Commercial Employment	Risk of not optimizing employment opportunities	Fisheries of US employment in aggregate
Recreational Employment	Risk of not optimizing employment opportunities	Fisheries of US employment in aggregate
Social		
Social-Cultural	Risk of reduced community resilience	Community vulnerability, fishery engagement and reliance
Food Production		
Commercial	Risk of not optimizing seafood production	Seafood landings in aggregate
Recreational	Risk of not maintaining personal food security	Recreational landings in aggregate
Seafood safety	Risk of not maintaining market access, human health	Number of public advisories by species
Management		
Control	Risk of not achieving OY due to inadequate control	Catch compared to allocation
Interactions	Risk of not achieving OY due to interactions with species managed by other entities	Number and type of interactions with protected or non-MAFMC managed species, co-management
Other ocean uses	Risk of not achieving OY due to other human uses	Fishery overlap with energy/mining areas
Regulatory complexity	Risk of not achieving compliance due to complexity	Number of regulations by species
Discards	Risk of not minimizing bycatch to extent practicable	Standardized Bycatch Reporting
Allocation	Risk of not achieving OY due to spatial mismatch of stocks and management	Distribution shifts + number of interests