

NOAA
FISHERIES
NEFSC

Background and Overview

Ecosystem Based Fishery Management Strategy Review

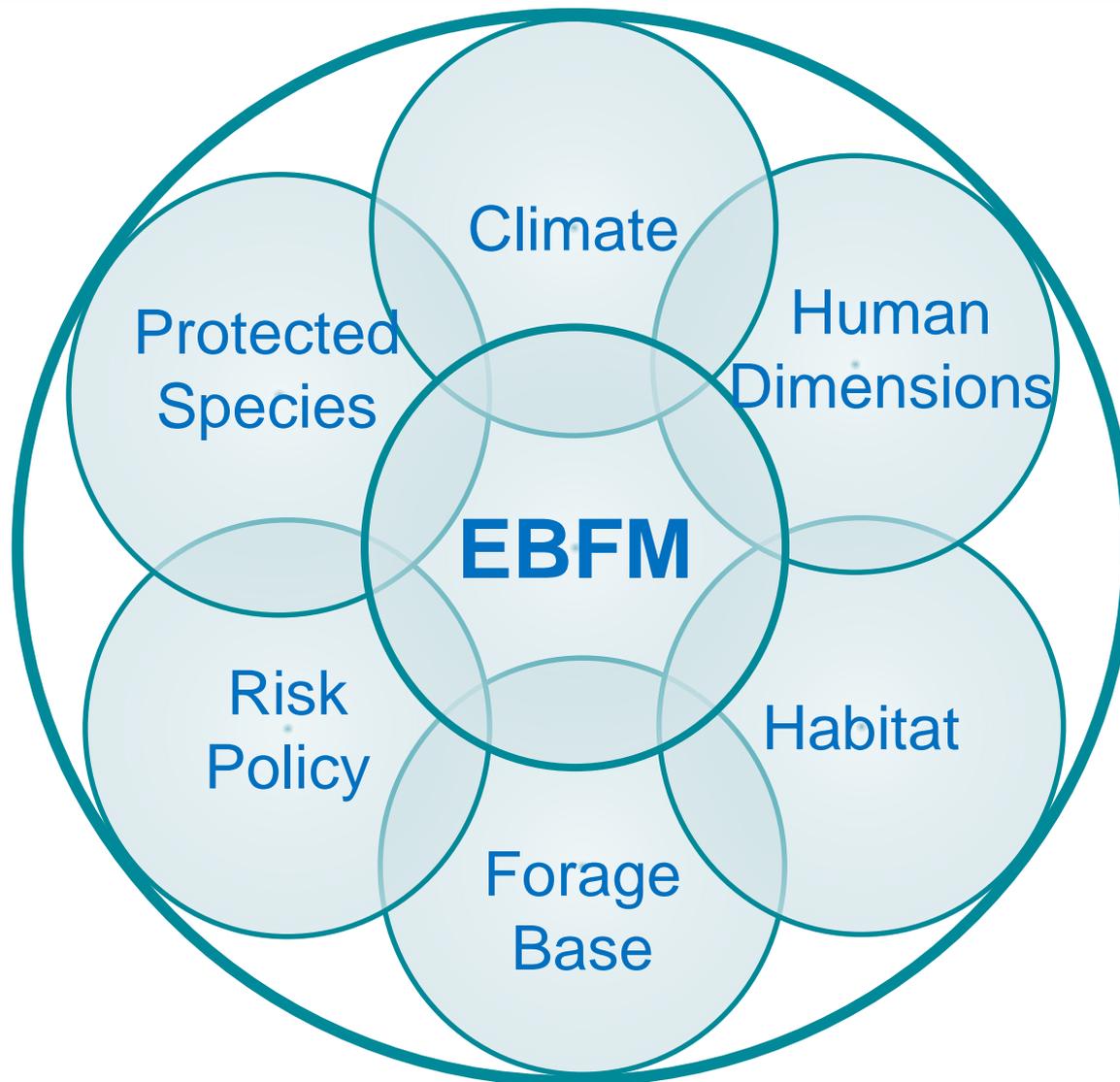
April 30-May 2 ,2018

Woods Hole MA

EBFM Defined

“[EBFM is]...a systematic approach to fisheries management in a geographically specified area that contributes to the resilience and sustainability of the ecosystem; recognizes the physical, biological, economic, and social interactions among the affected fishery-related components of the ecosystem, including humans; and seeks to optimize benefits among a diverse set of societal goals”.

NEFMC Initiatives and Mandates

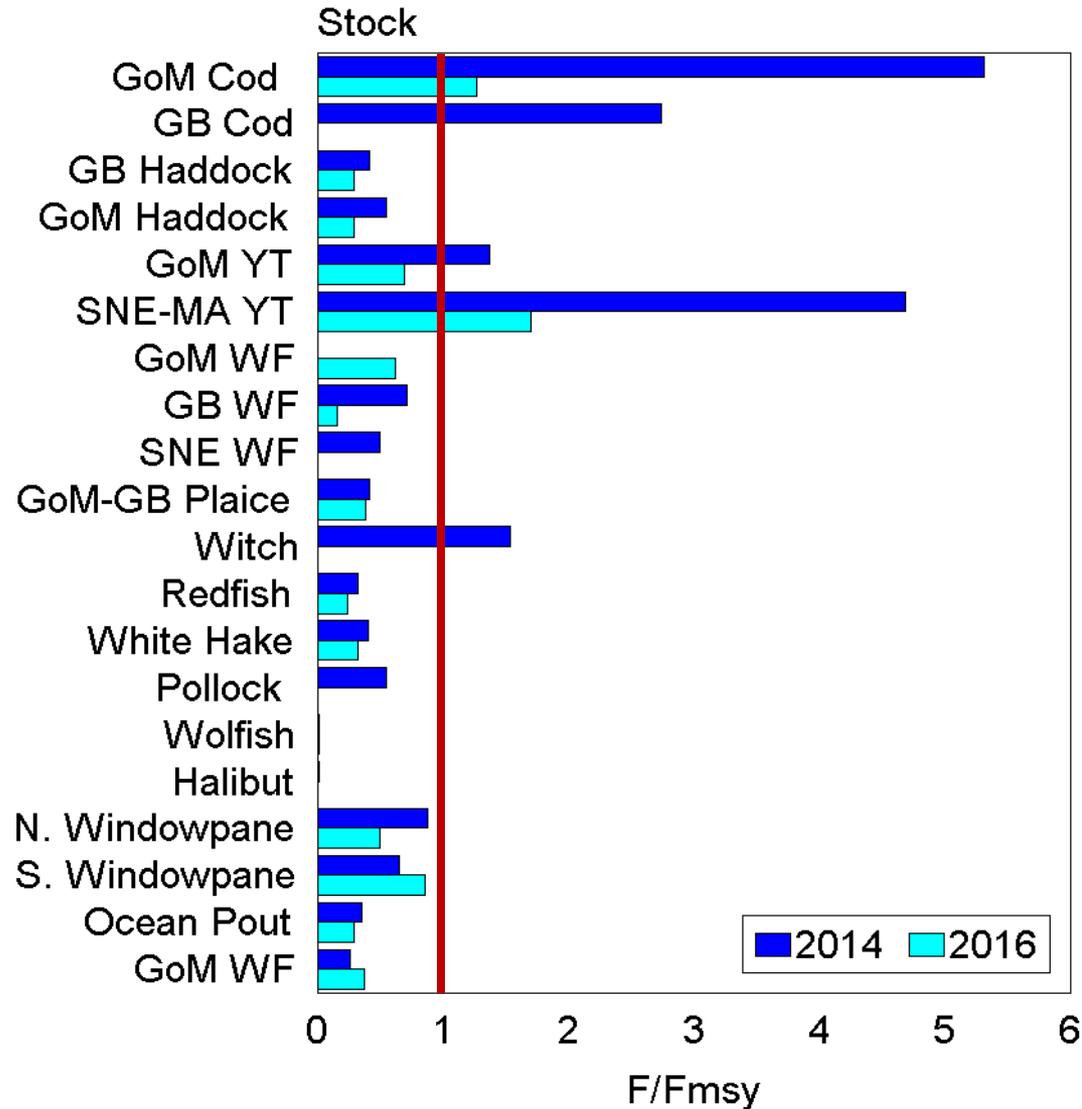


Accounting for Technical and Biological Interactions

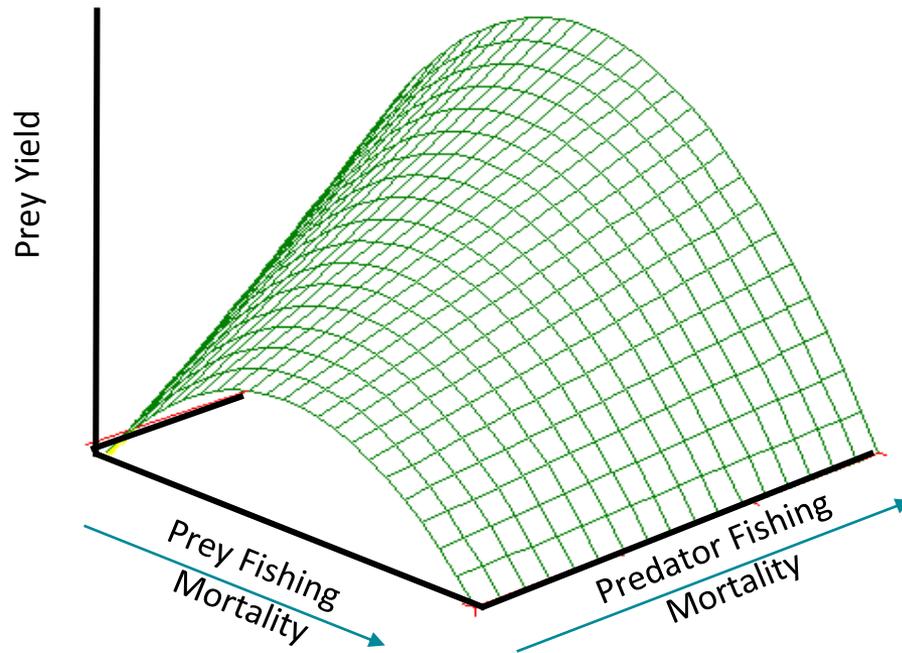
“In any fishery, and especially in a mixed-fishery where there are technical and multispecies interactions...it is challenging or impossible to fish all populations at their individual F_{msy} at the same time”. Thorpe et al. (2017)



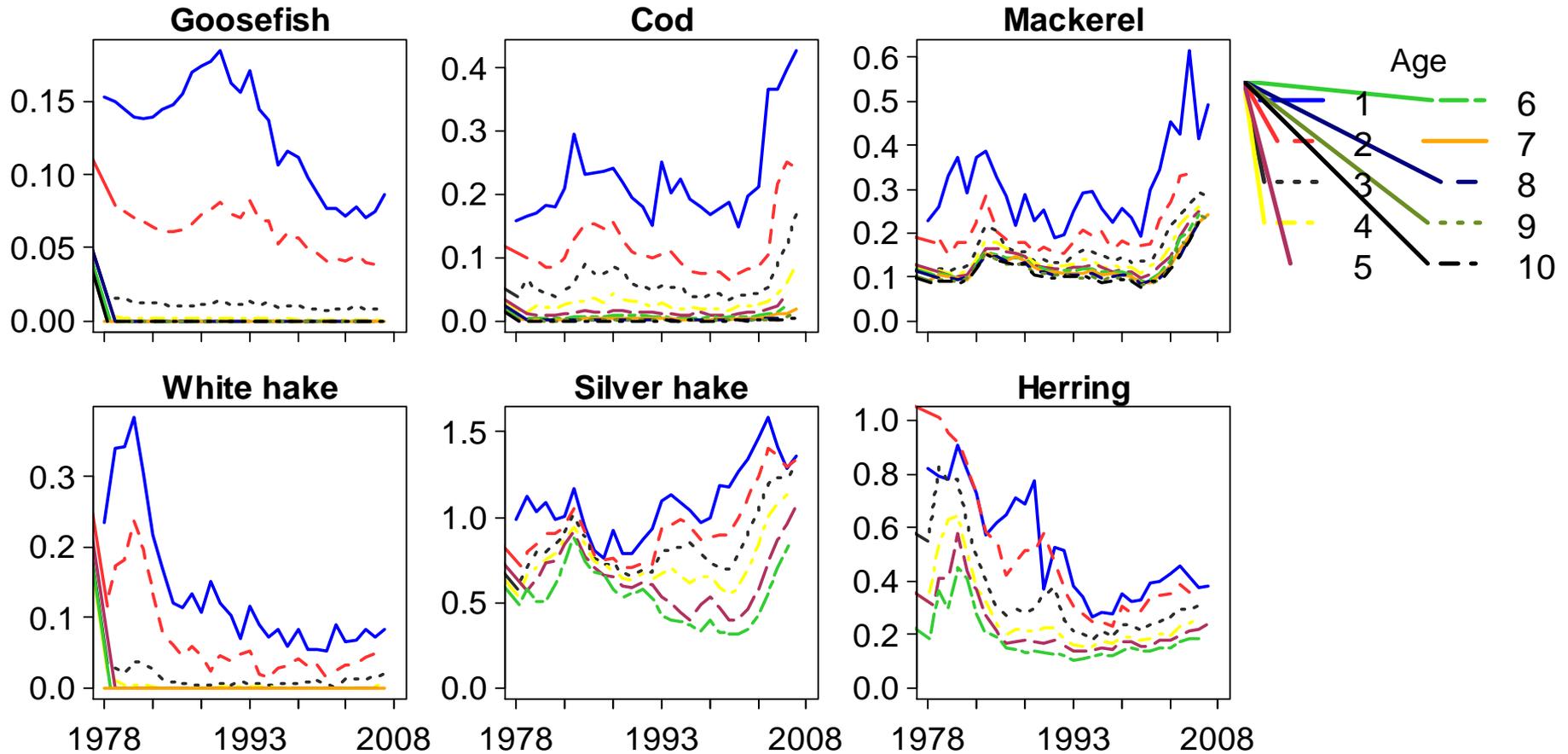
Estimated F/F_{msy} for Groundfish Stocks



MSY-based Reference Points Depend on the Interactions Among Species



Predation Mortality Varies with Age and Time

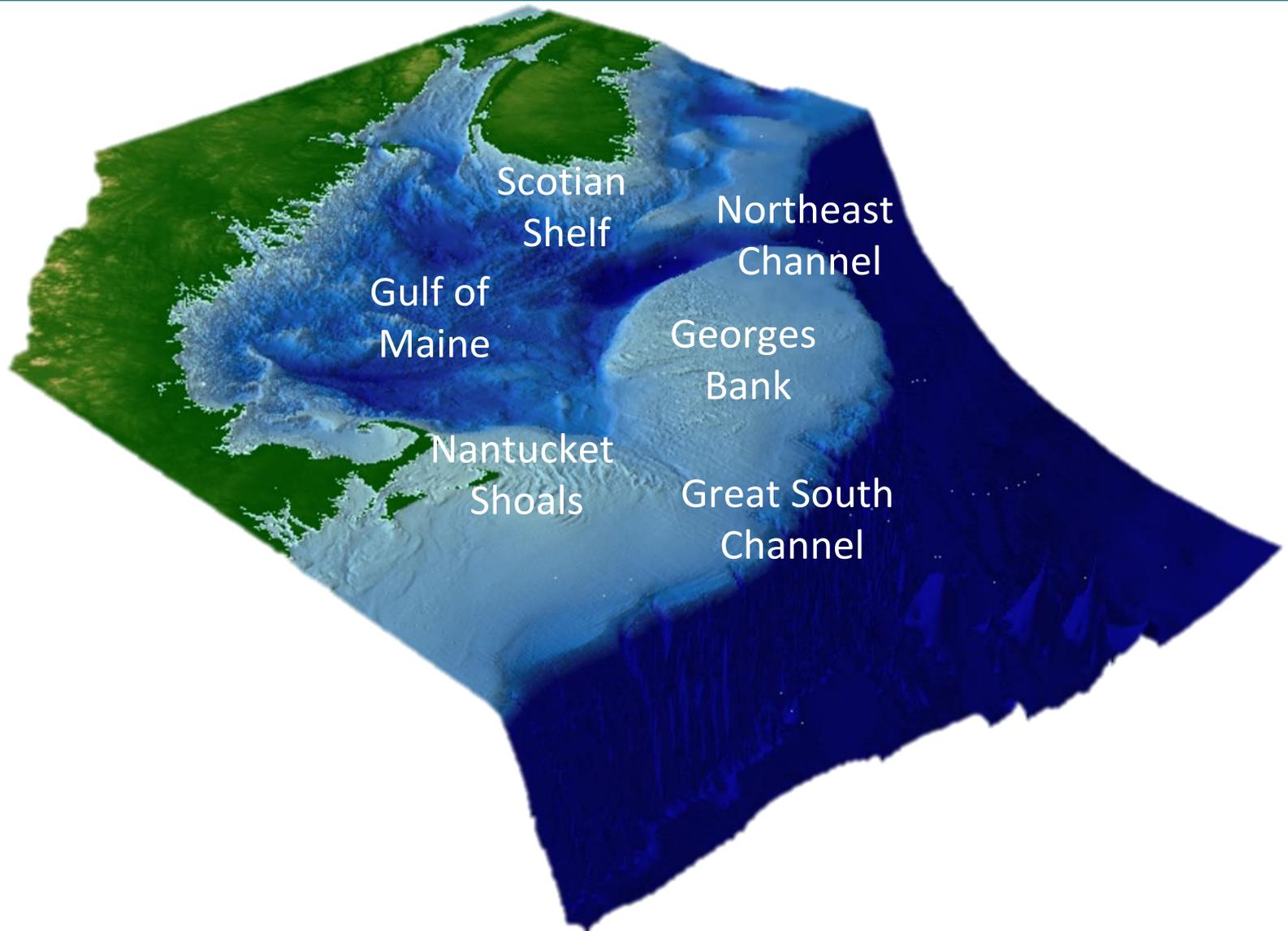


Functional Groups as Ecological Units

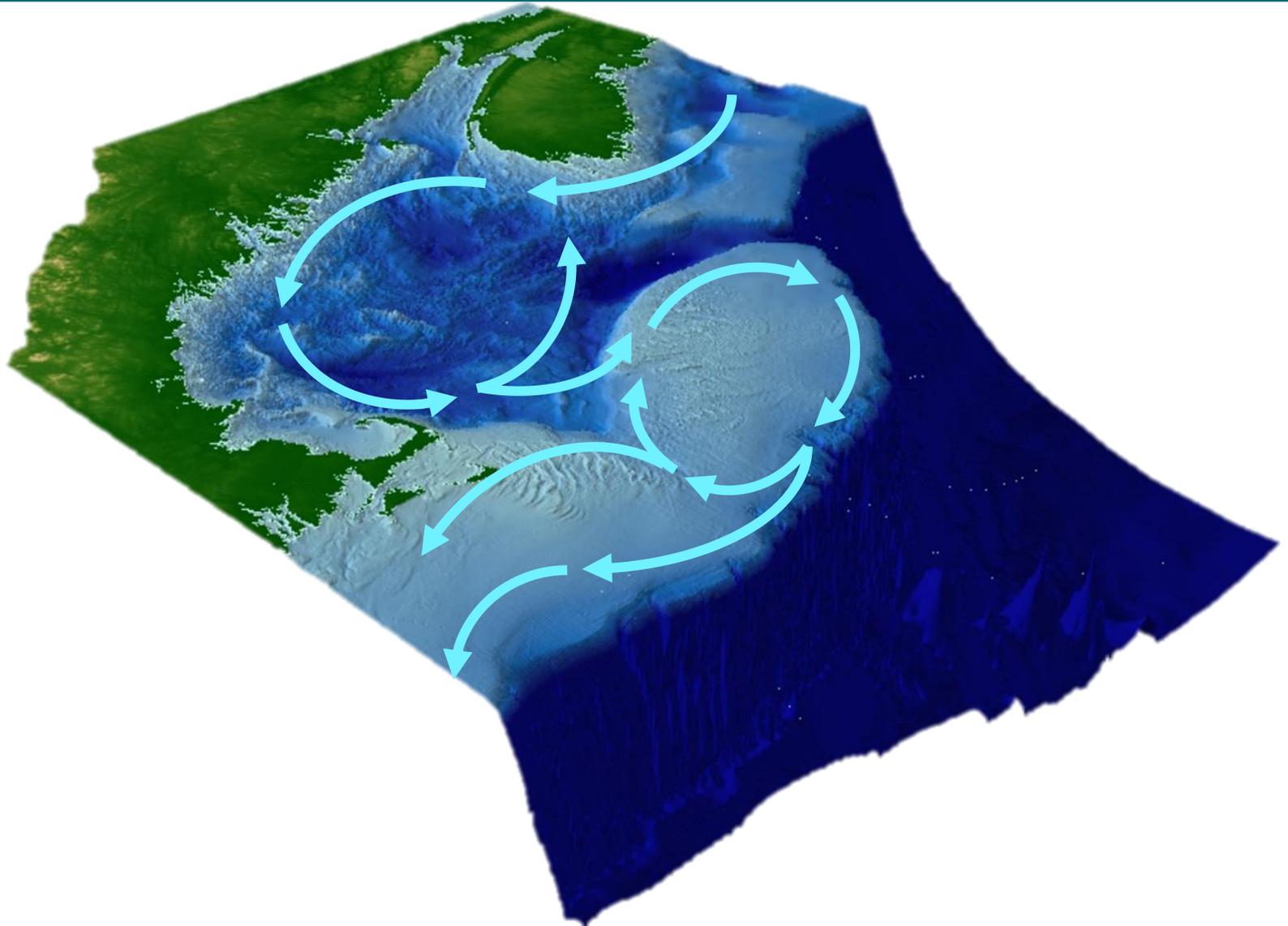
“...functional groups are not just an empirical convenience but the basic operational units to describe how ecosystems work. But this approach has not got into the practice of EBFM.” John Steele (pers. comm. 9/13/2013)



Georges Bank-Gulf of Maine Topography



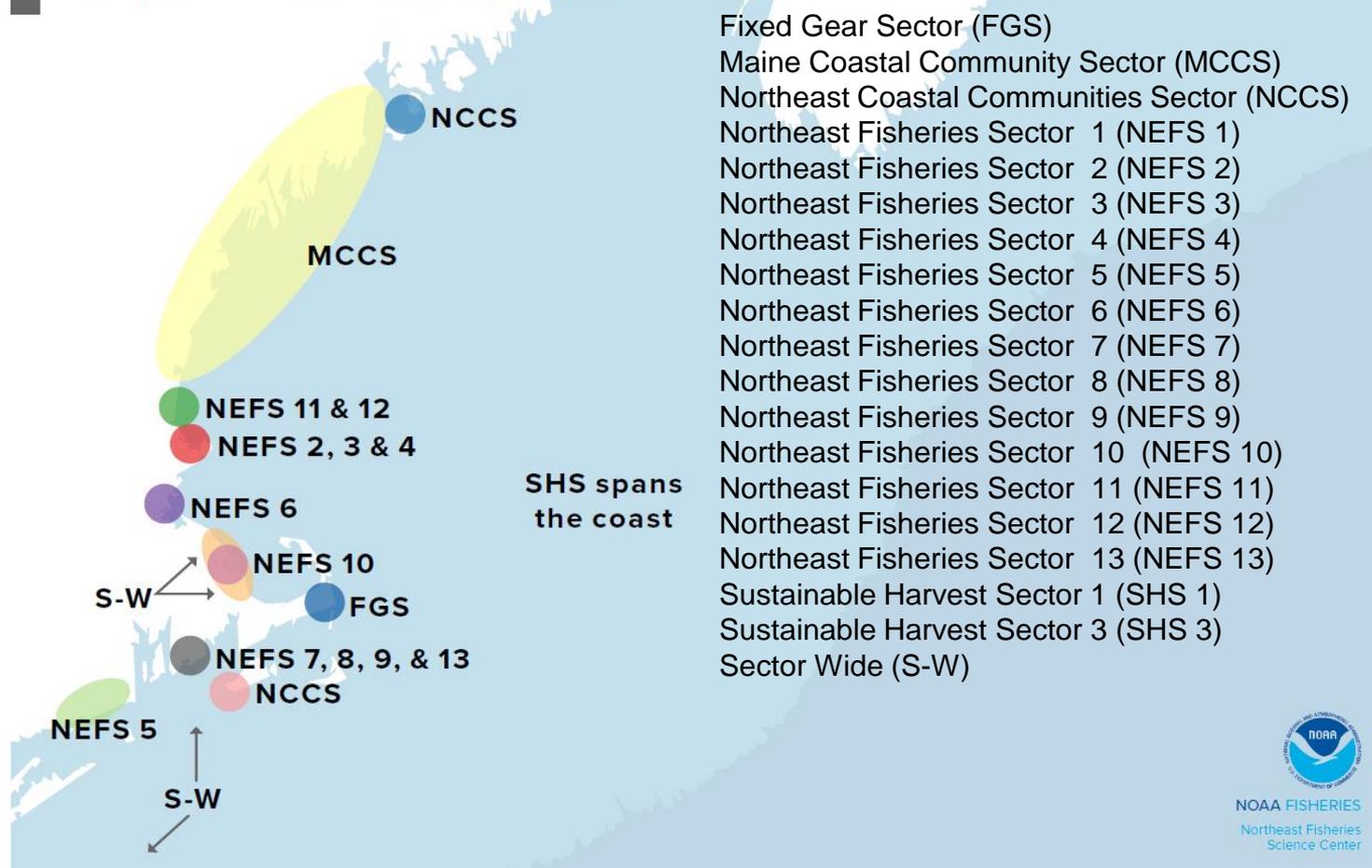
Georges Bank-Gulf of Maine Surface Circulation



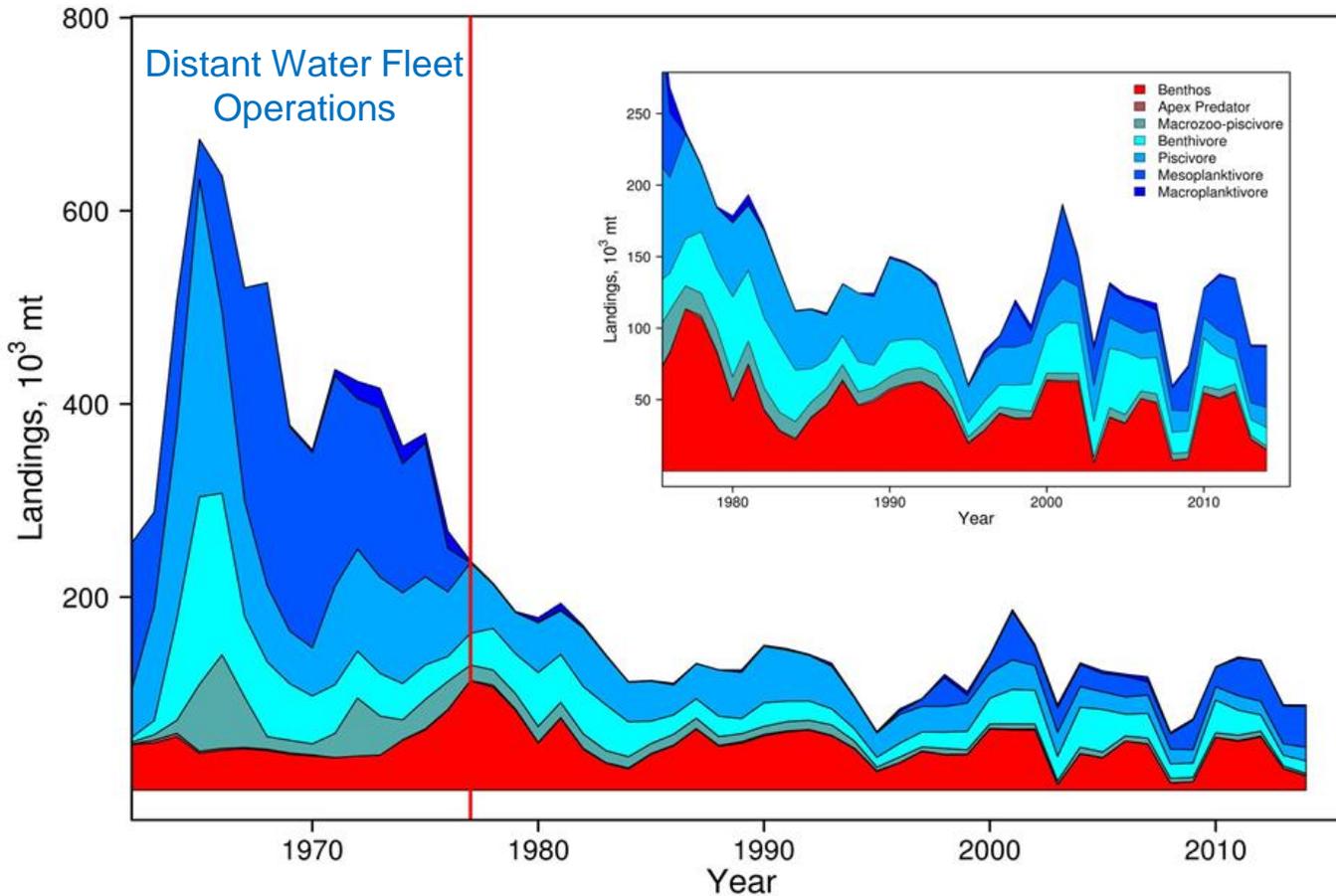
Groundfish Sector Management

New England Groundfish Sectors

GEORGES BANK & GULF OF MAINE



Georges Bank Landings History



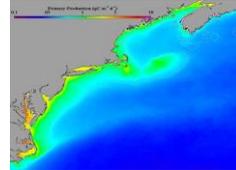
Roadmap for the Review

Define Spatial Units



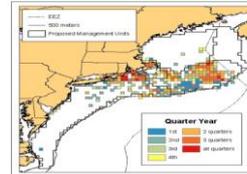
Delineate Ecological Production Units on the Northeast U.S. Shelf

Estimate Fishery Production Potential



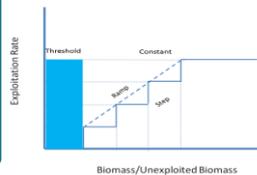
Develop Bottom-up Estimates of Food Web Production

Define Fishery Functional Groups



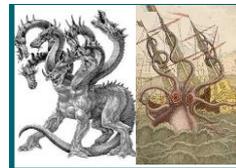
Integrate Information on Technical and Biological Interactions to Define Functional Groups

Specify Management Procedures



Identify Simple Decision Rules incorporating Protections at System and Species Levels

Develop Operating Models



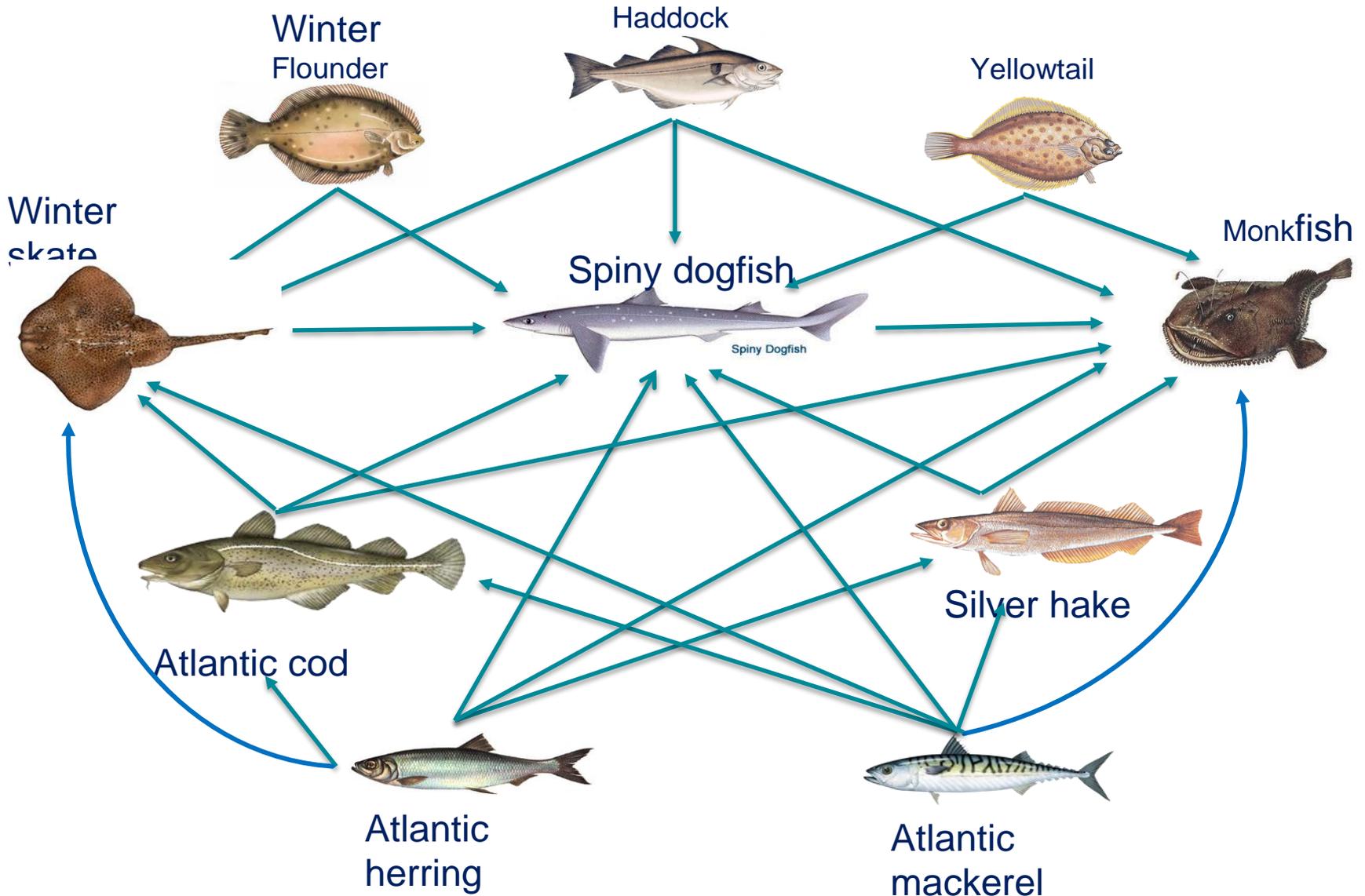
Develop Length-Structured Multispecies-Multifleet Operating Model and Simpler Multispecies Productions Model

Test Management Procedures

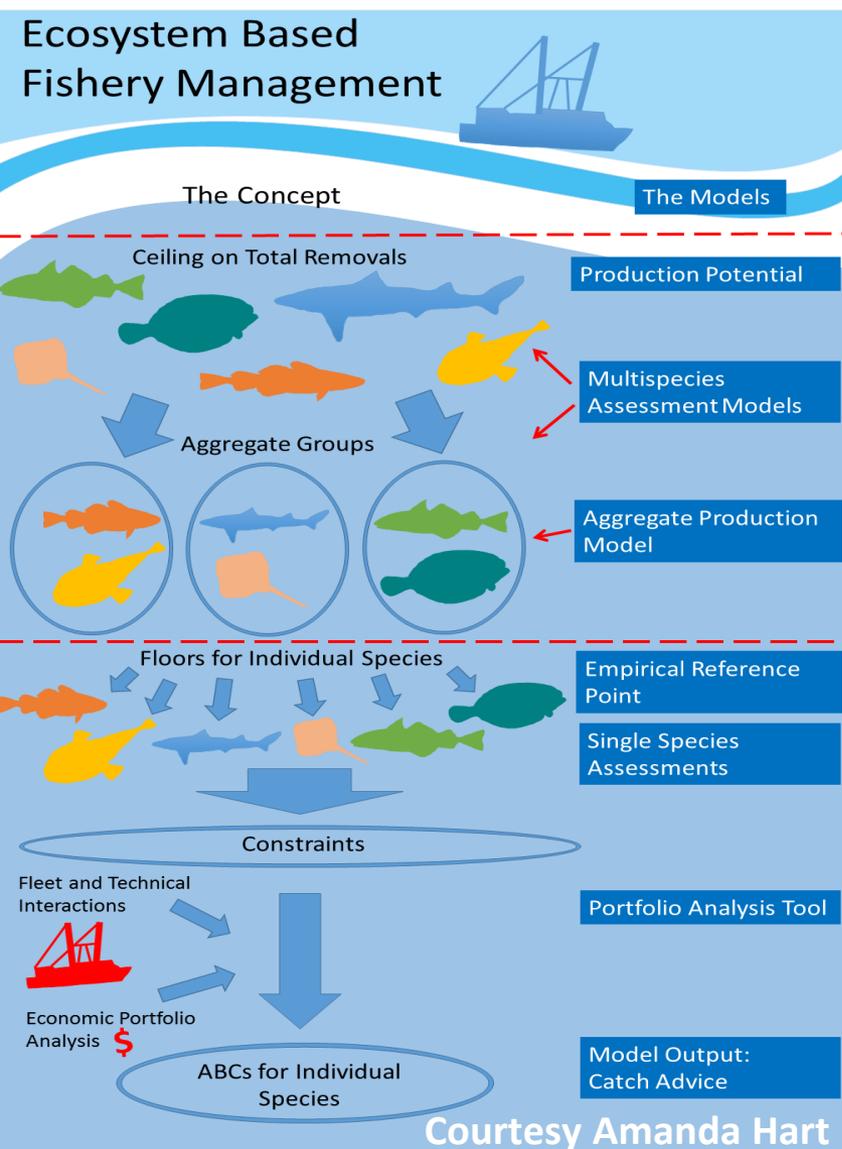


Conduct Simulation Studies of Performance of Management Procedure

The Tangled Web



Elements of the Management Procedure



- Identify Fishery Functional Groups: species that are caught together and have similar biological & ecological characteristics
- Set overall ceiling (cap) on catches on the basis of target exploitation rate and biomass levels
- Define minimum biomass levels (floors) below which a species is considered overfished
- If biomass drops below a trigger level, implement reductions in exploitation on the species complex as a whole before floor is reached
- Simulate MP performance

Schedule

Monday 30 April

0900 Welcome & Logistics
0930 NEFMC EBFM PDT
1000 Background and Overview
1030 Break
1100 **TOR 1** Ecological
Production Units
1130 **TOR 2** Ecosystem
Production Potential
1200 Lunch
1330 **TOR 3** Fishery Functional
Groups
1400 **TOR 4** Management
Objectives and
Performance Metrics
1430 **TOR 5** Reference Points
1500 Break
1530 Question and Discussion
Period
1630 Public Comment Period

Tuesday 1 May

0900 **TOR 6** Harvest Control
Rules
0930 **TOR 7** Structure of
Operating Models
(Hydra)
1030 Break
1100 **TOR 7** Structure of
Operating Models
(Kraken)
1200 Lunch
1330 **TOR 8** Structure of
Assessment Models
1400 **TOR 9** Simulation Tests of
Management
Procedure (Hydra)
1500 Break
1530 Question and Discussion
Period
1630 Public Comment Period

Wednesday 2 May

0900 **TOR 9** Hydra (Continued)
1000 **TOR 9** Simulation Tests of
Management
Procedure (Kraken)
1030 Break
1100 **TOR** Kraken (Continued)
1200 Lunch
1330 Question and Discussion
Period
1500 Break
1530 Public Comment
1600 Adjourn

