Ecosystem – Based Fishery Management for the New England Fishery Management Council

Scientific and Statistical Committee
with
Significant contribution from
Northeast Fisheries Science Center
Woods Hole, Mass.

Background

- 2008: Council initiated process for EBFM plan
  - To be developed over next three – five years

- SSC drafted White Paper outlining:
  - Need for EBFM
  - Strategy for implementation
  - Fisheries management under EBFM
  - Consequences for Council institutions
  - Next steps

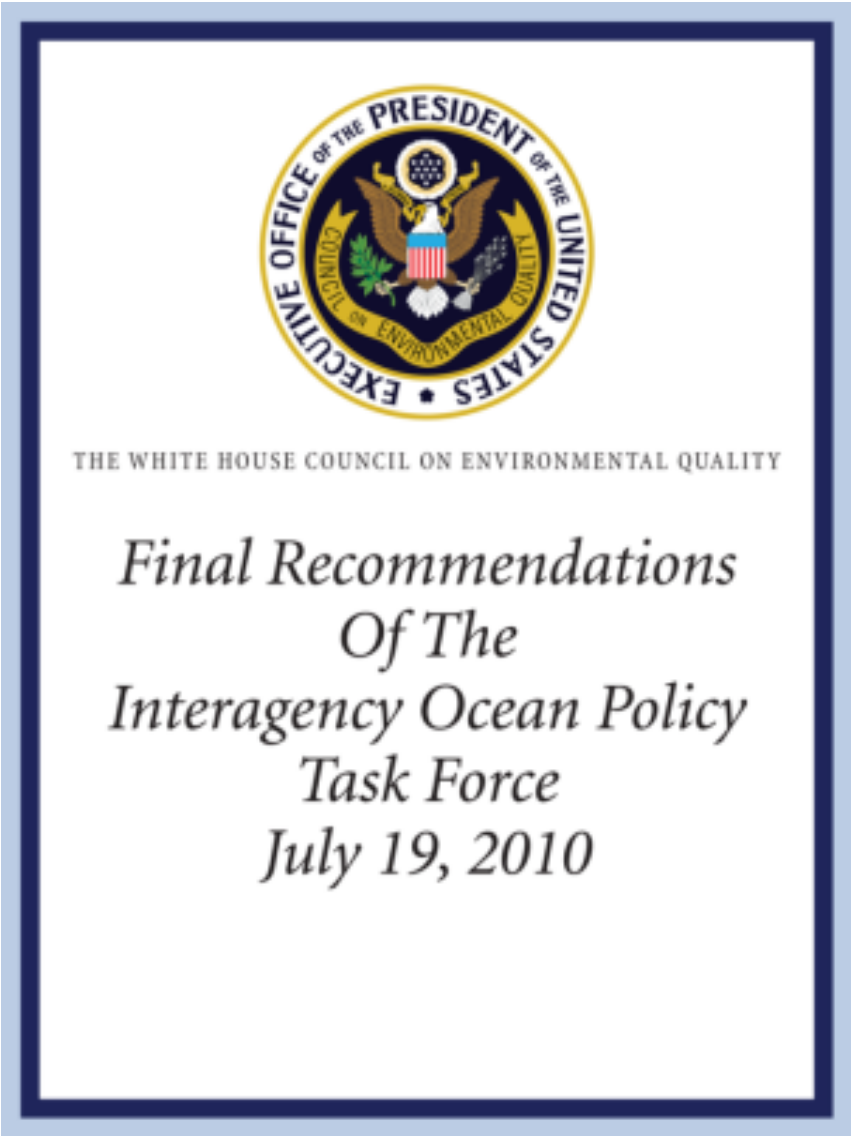
Short Hand Version Brochure

- Based upon
  - August 2009 stakeholder workshop
  - SSC dialogue
  - Feedback from Council & staff

- Presentation to Council
  - Over three meetings
  - Today's overview
  - Feedback in January & April

June 2011 Council Decision

New Developments



On 19 July 2010, President signed Executive Order implementing new National Ocean Policy

Policy establishes Ecosystem-Based Management as guiding principle & marine spatial planning as primary tool for ocean resource management

What is Ecosystem-Based Management?

- Adaptive
- Specified geographically
- takes into account uncertainties
- considers multiple external influences
- strives to balance diverse social objectives (NOAA Strategic Plan 2005-2015)

Ecosystem-Based Fishery Management is part of broader Ecosystem-Based Management

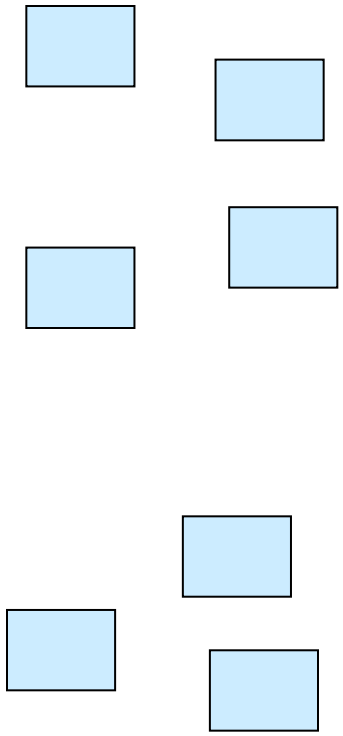
Benefits to Council of Adopting EBFM

- Simplification of management structures
- Coordination of management actions for stocks, protected species, biodiversity & habitat
- Comprehensive consideration of fishery & biological interactions
- Accounts for ecosystem constraints on rebuilding
- Consideration of climate change
- Coordination with State EBM efforts & Northeast Regional Ocean Council

Enhanced stewardship from broader participation

How Do We Get There From Here?

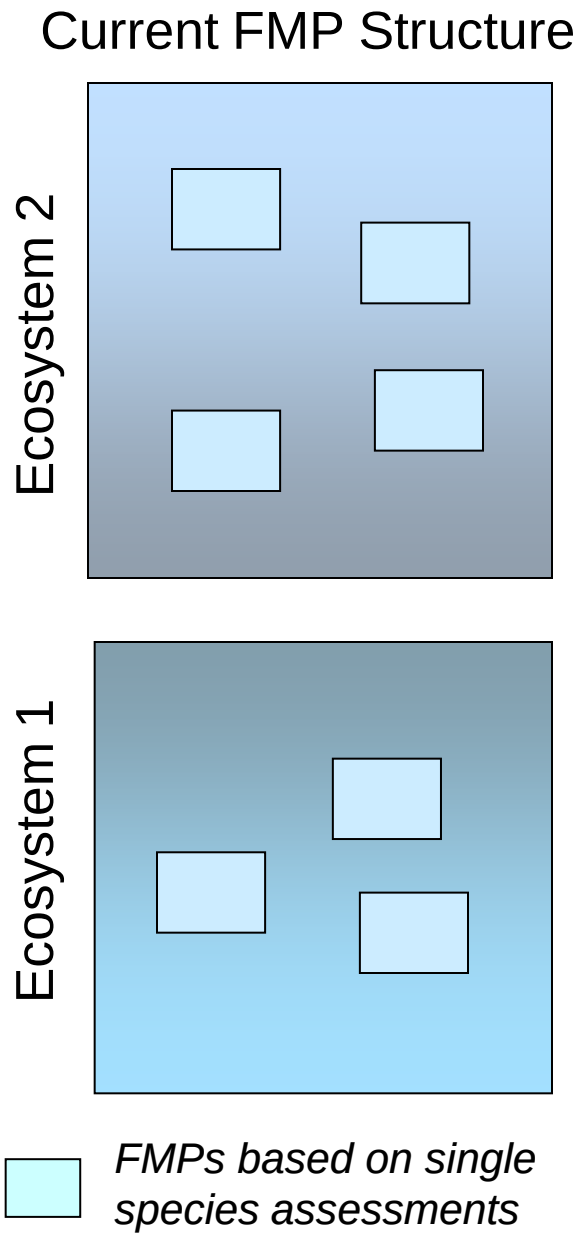
Current FMP Structure



FMPs based on single species assessments

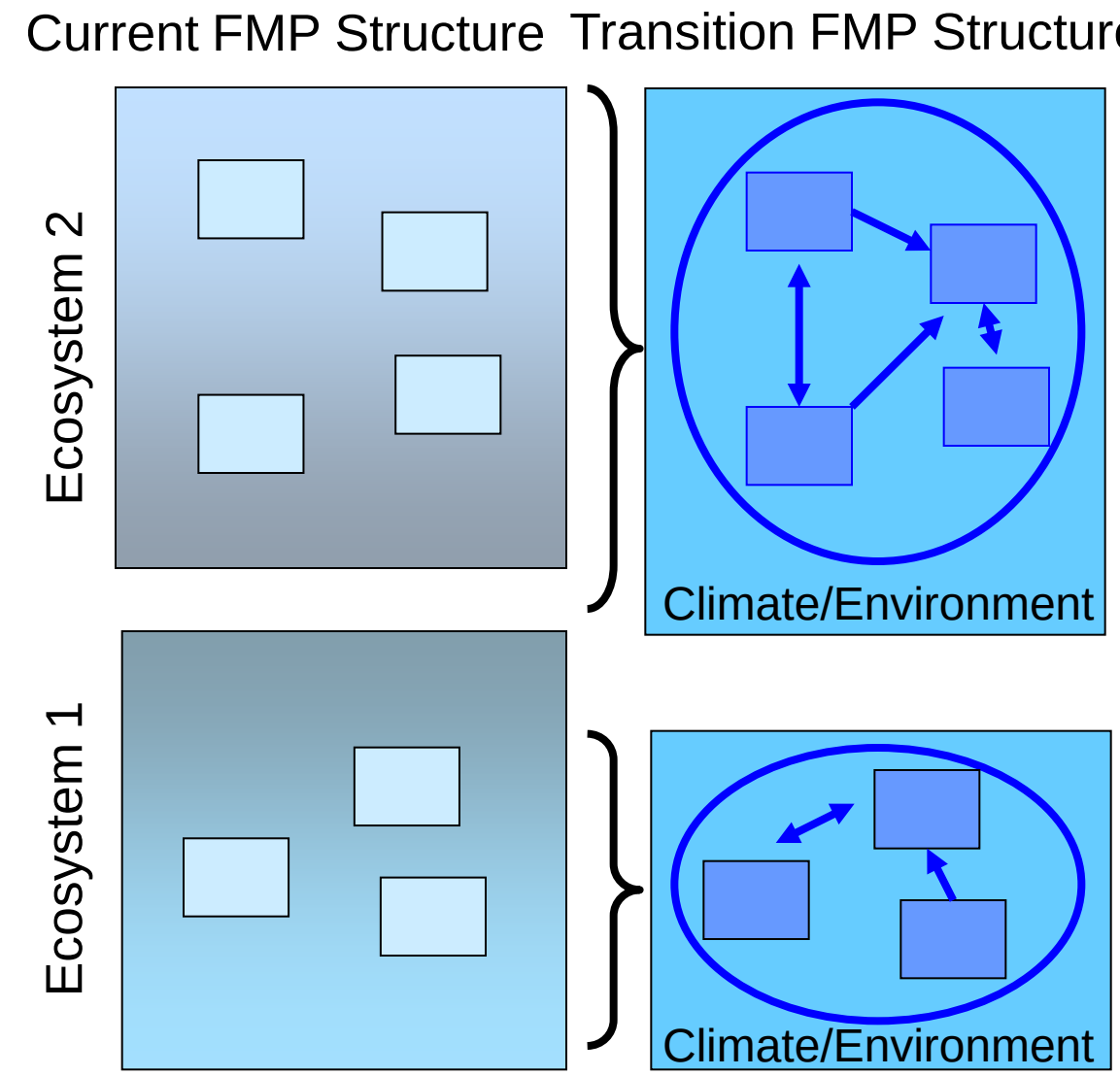
- FMPs treated separately
- No consistent approach to considering fishery & biological interactions among species & plans
- No direct consideration of ecosystems in which species/stocks occur

How Do We Get There From Here?



- Consider existing species plans in relation to ecosystems in which they occur
- Begin to consider how species & fisheries covered by different plans interact through by-catch, predation, etc

How Do We Get There From Here?



- Formal process to take interactions among species & fisheries into account
- Ecosystem Committee?
- Account of climate & environmental effects

Current Situation
NEFMC & MAFMC FMPs

Cod
Haddock
White Hake
Pollock
Yellowtail
Flounder
Winter Flounder
Witch Flounder
Windowpane
American Plaice
Halibut
Redfish
Ocean Pout

Spiny Dogfish

Silver Hake
Red Hake
Offshore Hake

Sea
Herring

Winter Skate
Little Skate
Smooth Skate
Thorny Skate
Barndoor Skate
Clearnose Skate
Rosette Skate

Bluefish

Monkfish

Salmon

Scup
Black Sea Bass
Summer Flounder

Squid
Mackerel
Butterfish

Tilefish

Red Crab

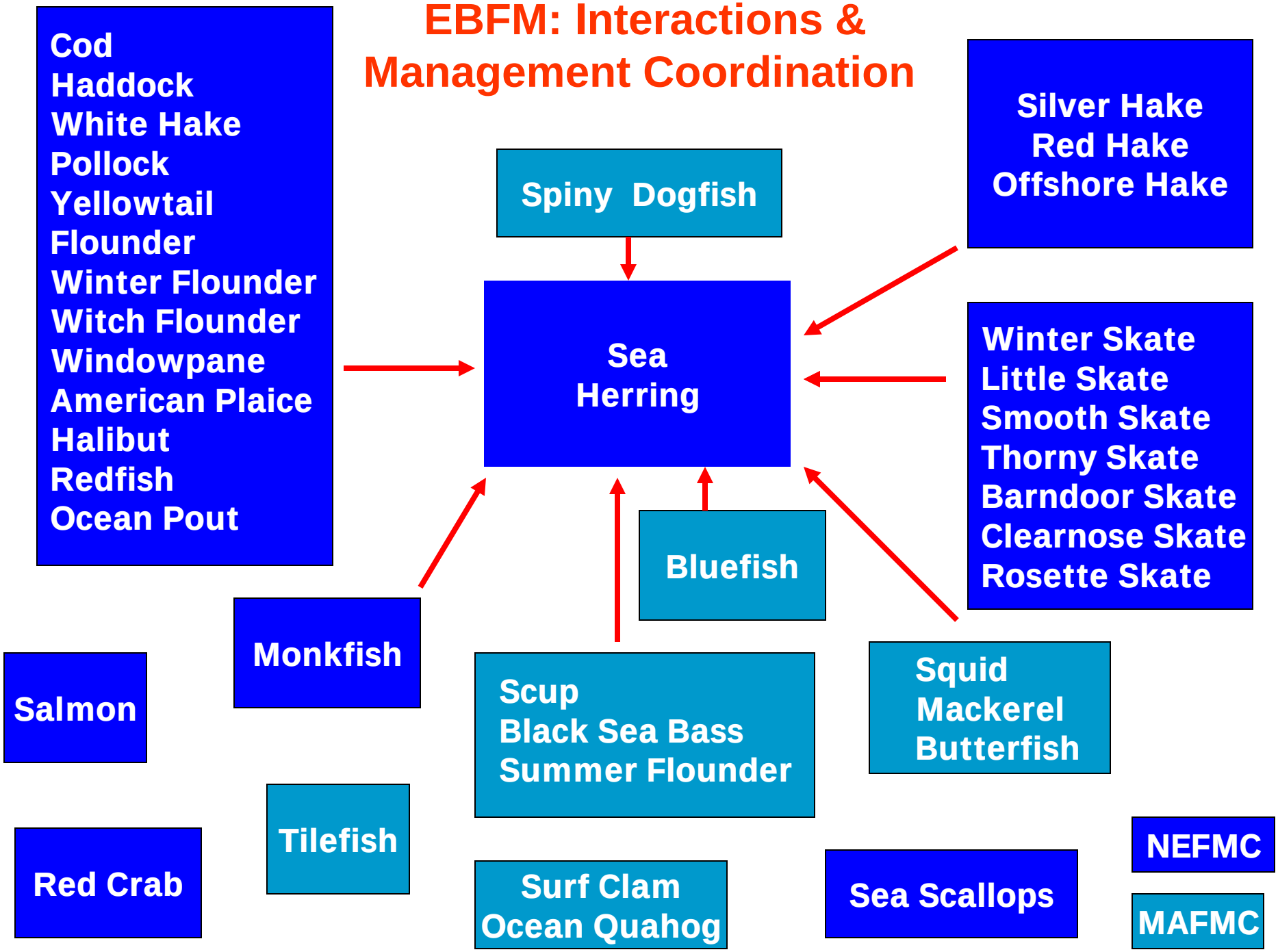
Surf Clam
Ocean Quahog

Sea Scallops

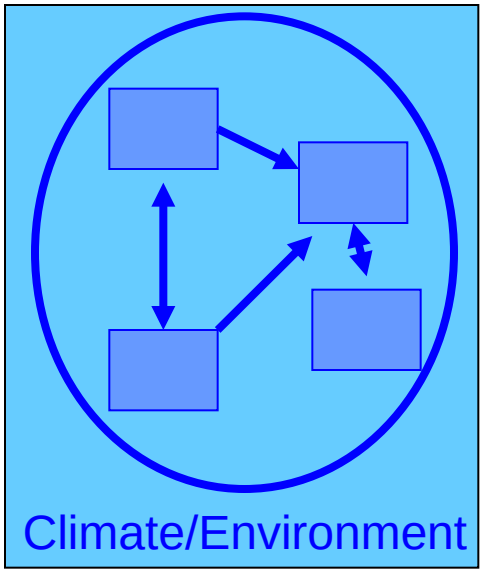
NEFMC

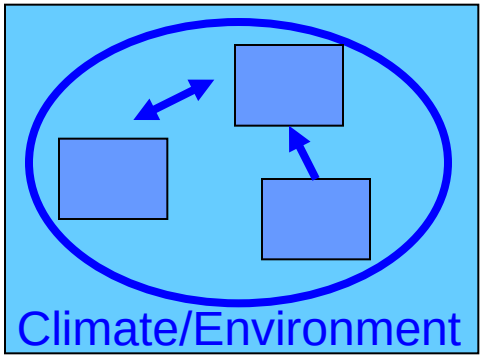
MAFMC

EBFM: Interactions & Management Coordination

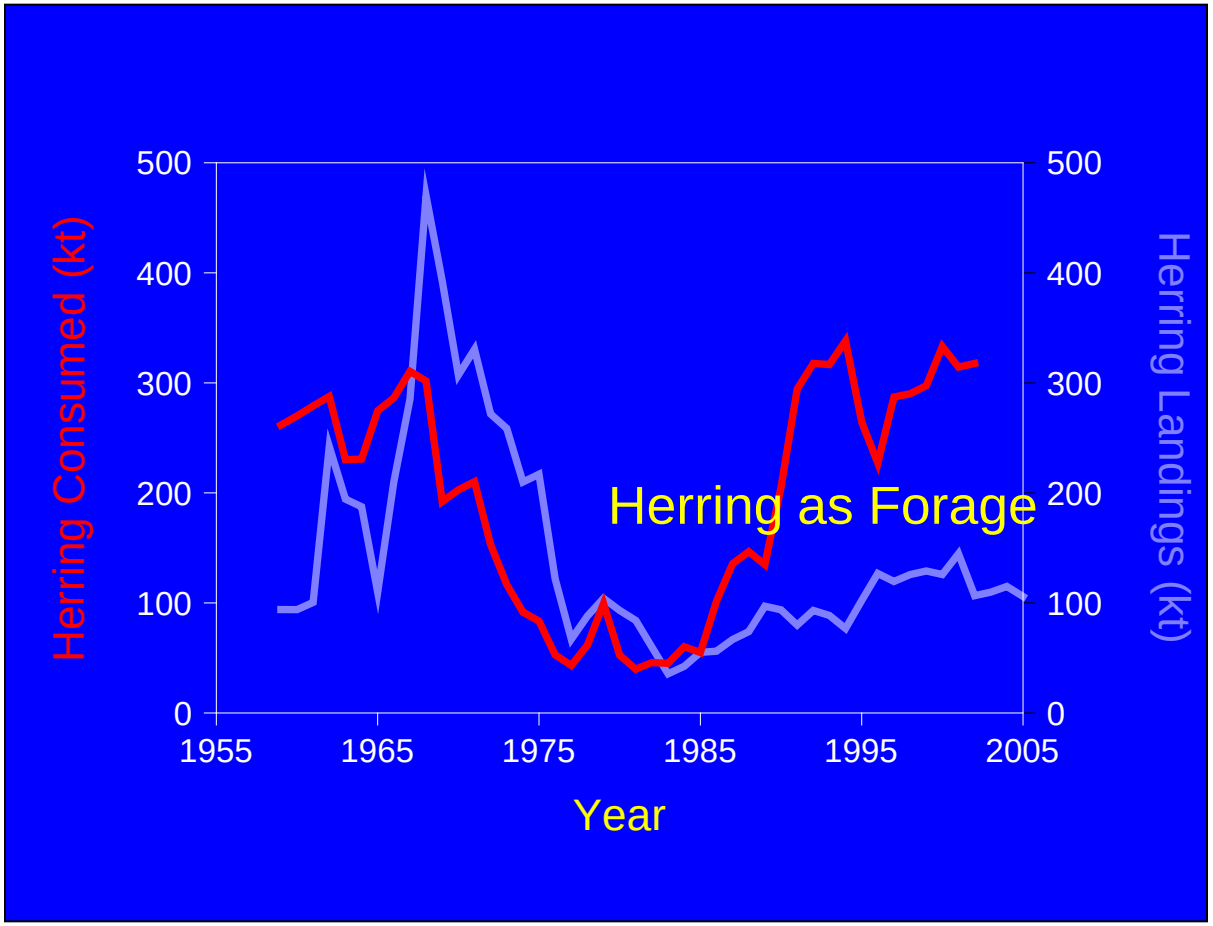


Transition Phase Example





Herring as both
fishery resource & forage species

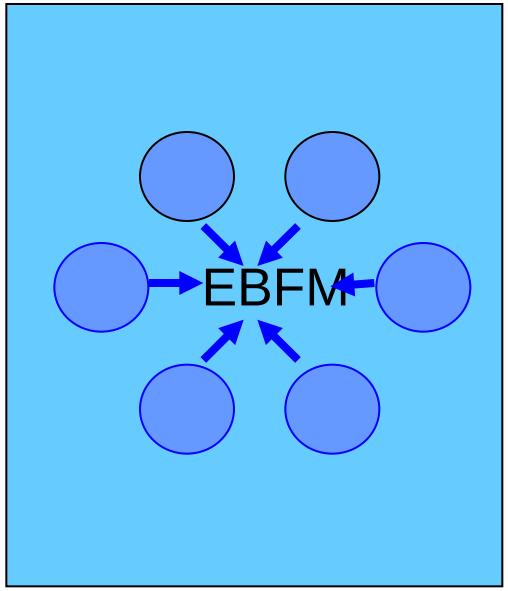


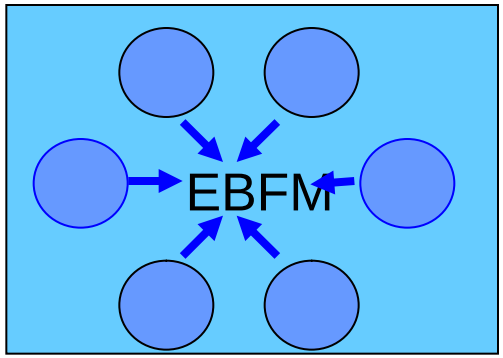
Courtesy W.J. Overholtz

FMPs based on extended single species assessments

Transition to Full EBFM

Ecosystem-Based FMP

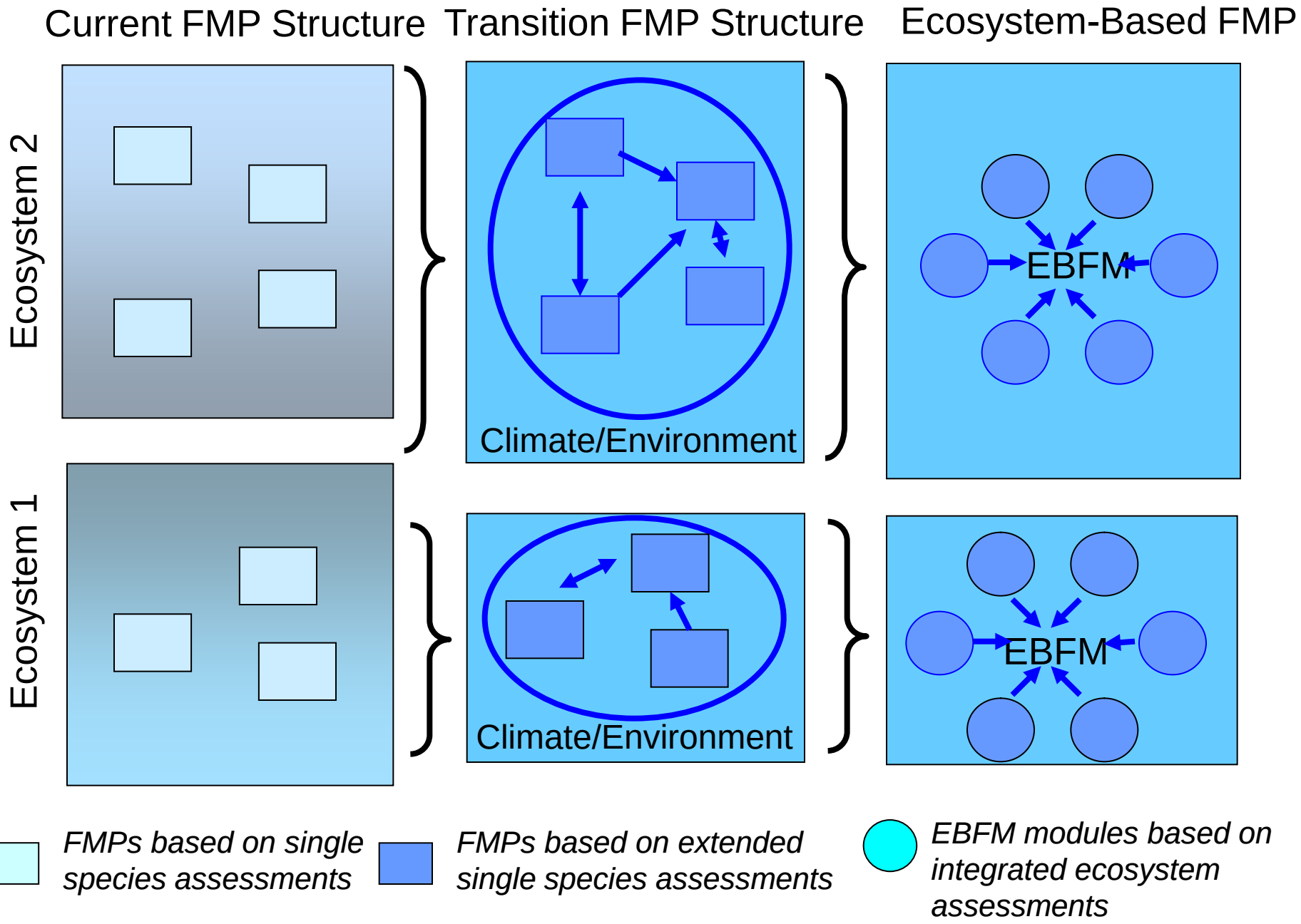




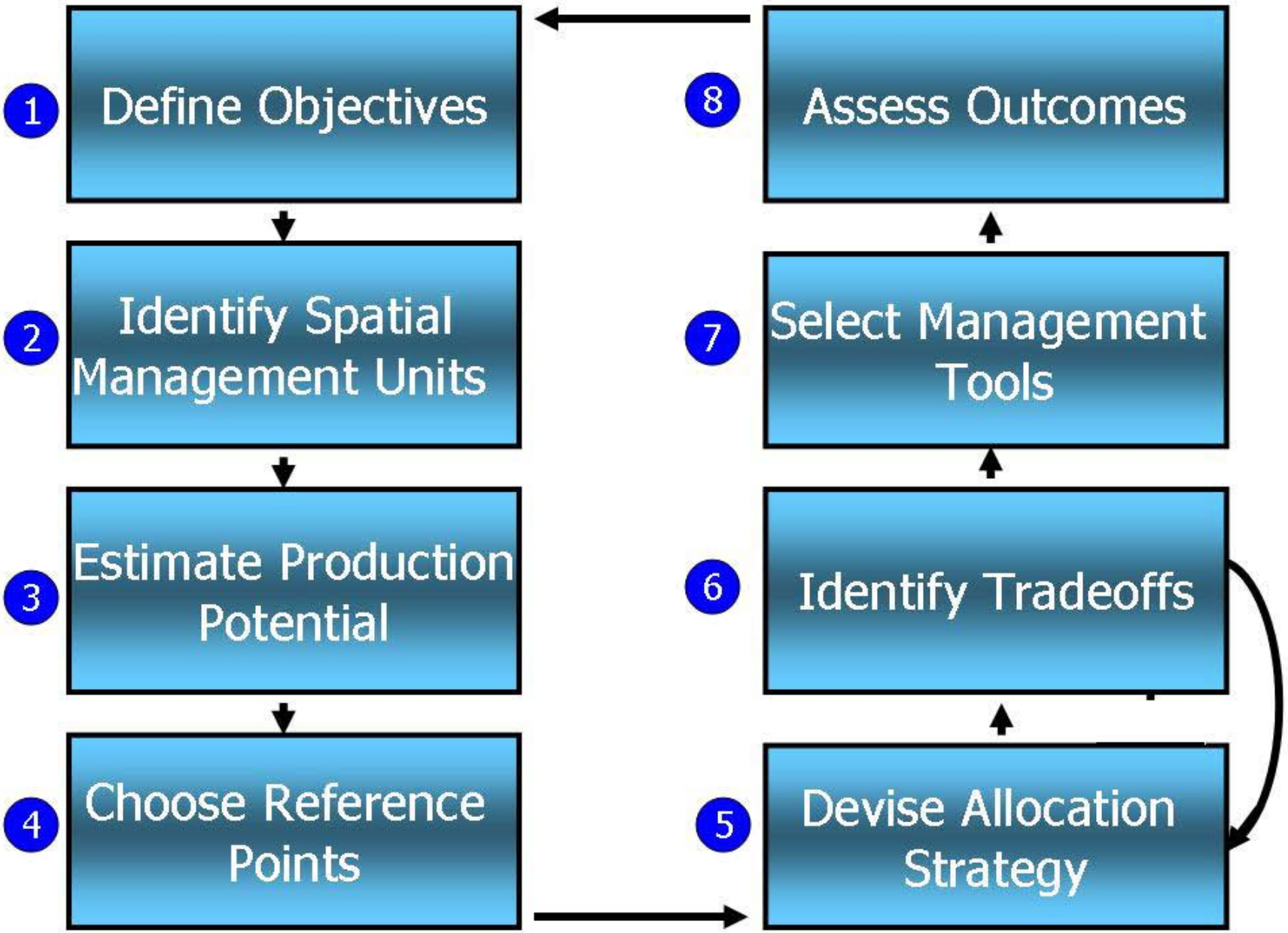
EBFM modules based on integrated ecosystem assessments

- Final step to replace extended single species FMPs with smaller number of integrated management plans for ecological regions on Northeast Shelf
- Ecosystem-Based Fishery Management Plans will directly or indirectly cover all species in ecosystem

Transition to Full EBFM

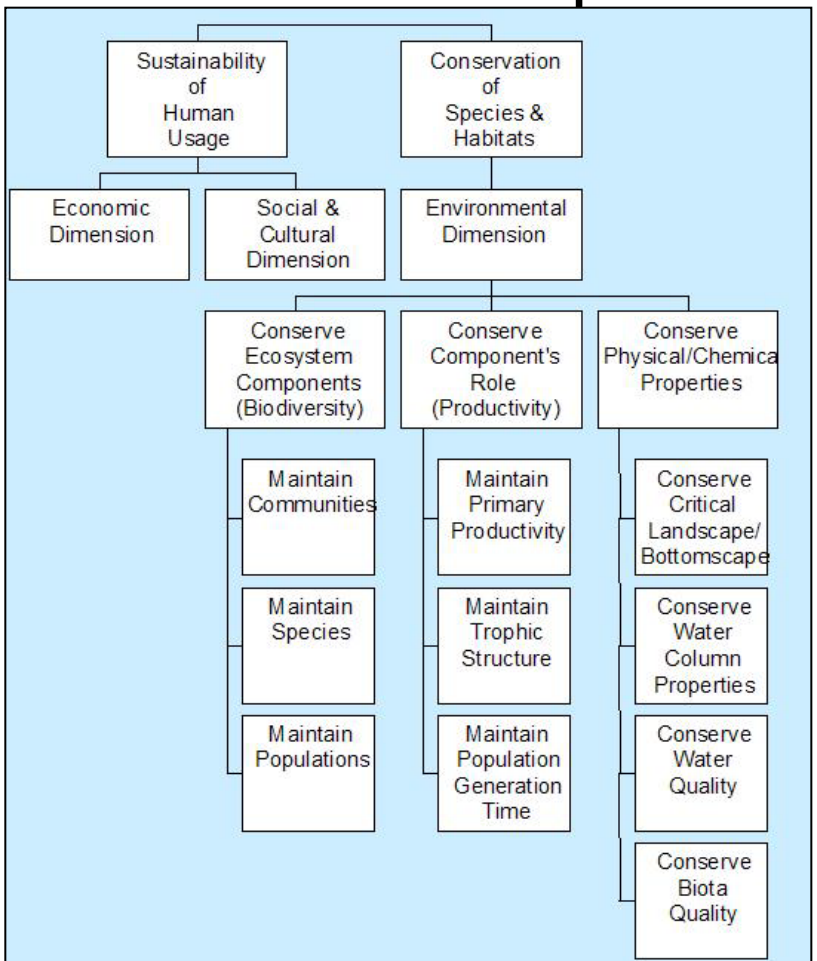


Roadmap to Full EBFM



1 Define Objectives

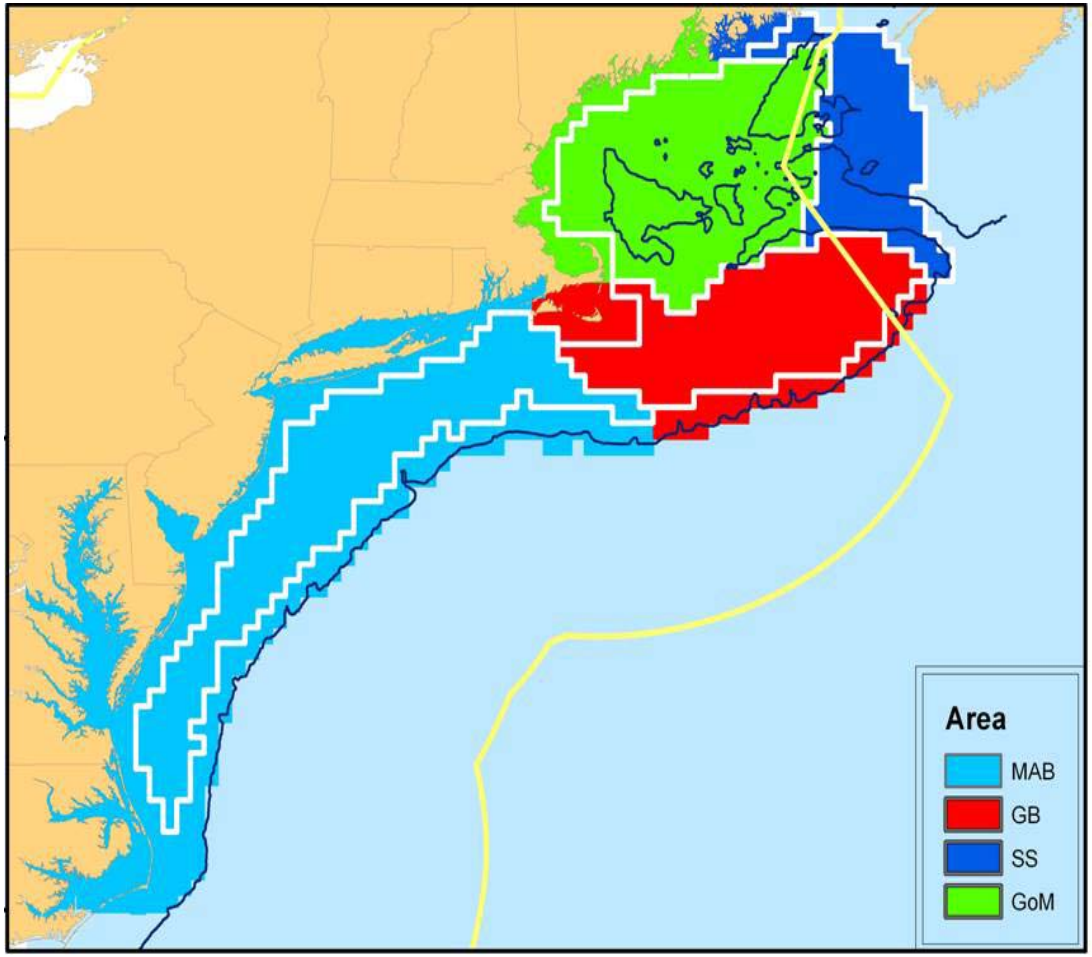
- Objectives essential
  - High level conceptual
  - Low level operational (indicators + RPs)



high level ecosystem conceptual objectives could involve biodiversity, productivity & habitat

Need for Socio – economic Objectives

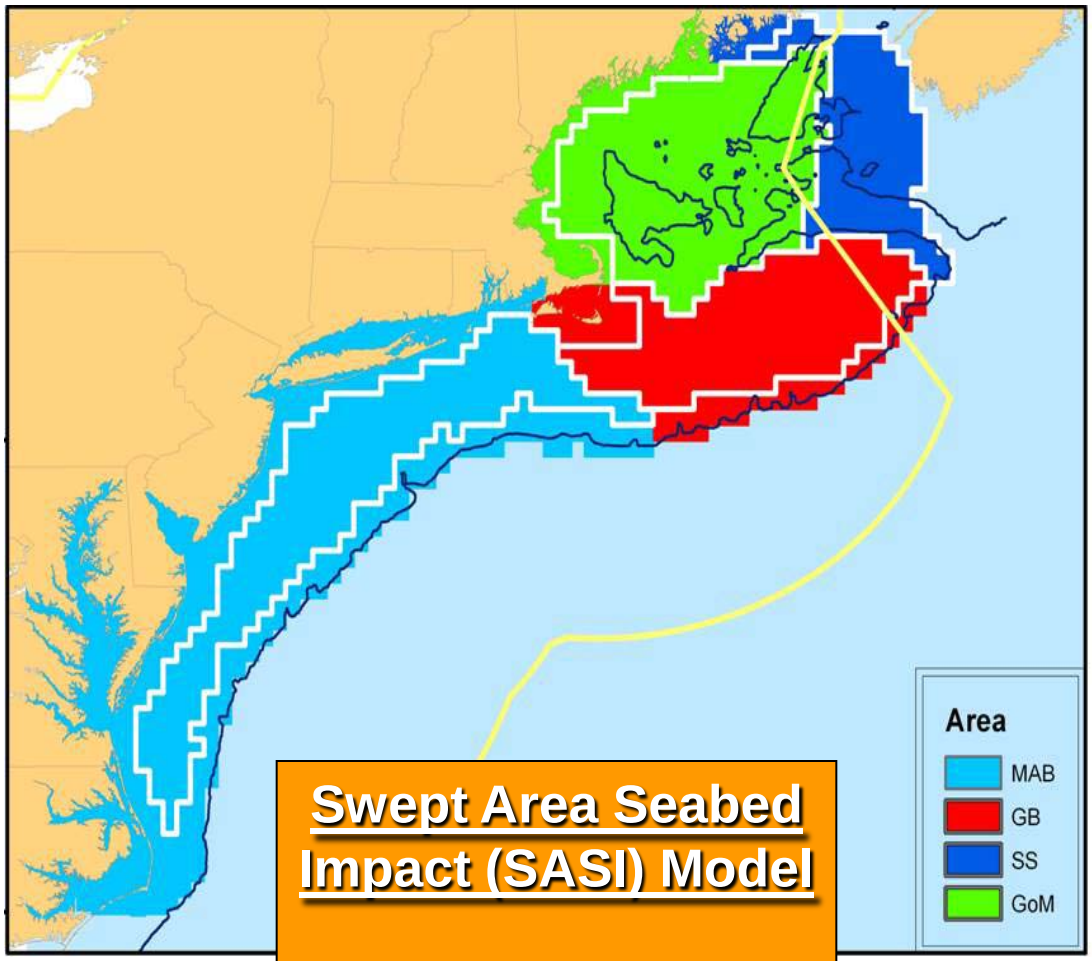
2 Identify Spatial Management Units



- Based on depth, bottom type, oceanography & food at base of food web
- Boundaries dynamic & open with oceanographic exchange & species movements

Nested structure to include special considerations for coastal / estuarine & continental slope regions embedded within adjacent shelf units

2 Identify Spatial Management Units

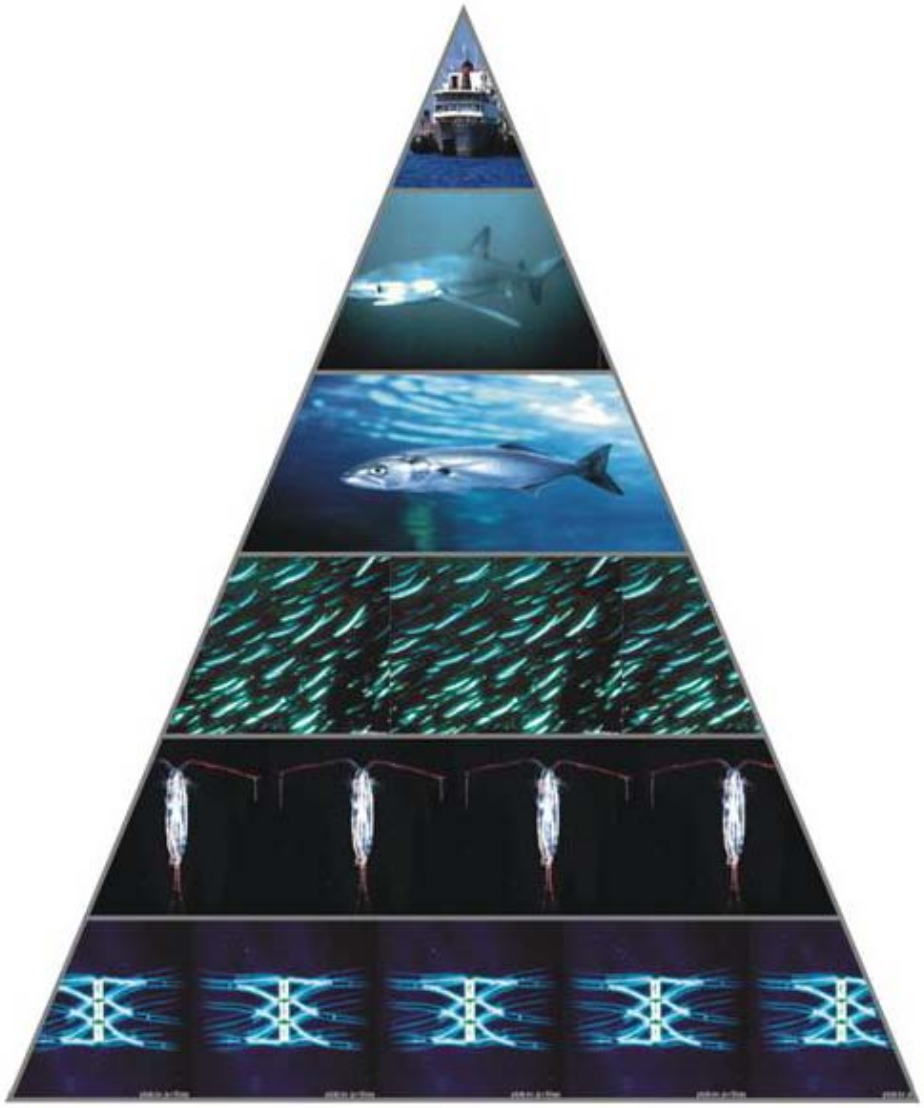


Swept Area Seabed Impact (SASI) Model

Tool to assess cumulative impacts on habitat

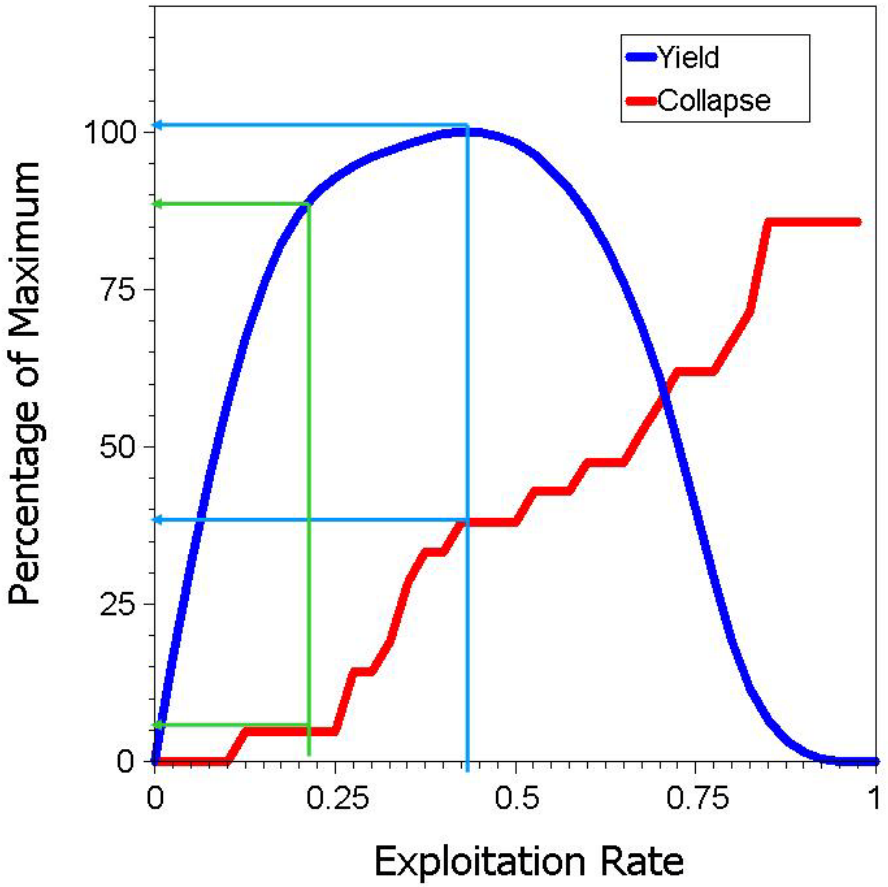
Focus of management & monitoring of cumulative ecosystem impacts of fisheries

3 Estimate Fishery Production Potential



- Determine how much fish & shellfish ecological region can produce
- Based on how much food at base of food web & how energy transferred from one level to next
- Varies with environmental/climate conditions

4 Choose Ecological Reference Points



- Use alternative & familiar models (e.g.multi-species production model) to estimate fishery production & RPs of species complexes
- Reducing exploitation can give high yield while reducing chances of stock collapse

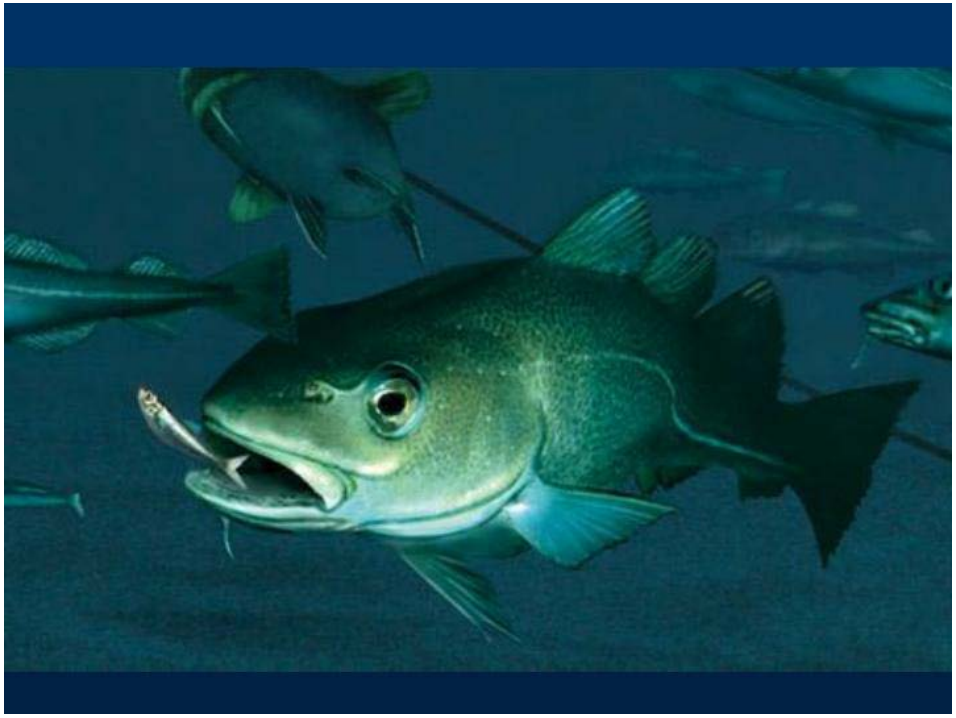
Courtesy J. Collie, URI

5 Devise Species Allocation Strategy

- Knowing sustainable total production, allocate total catch according to species & fishery

- Do this in way that doesn’t exceed total safe catch from system as a whole

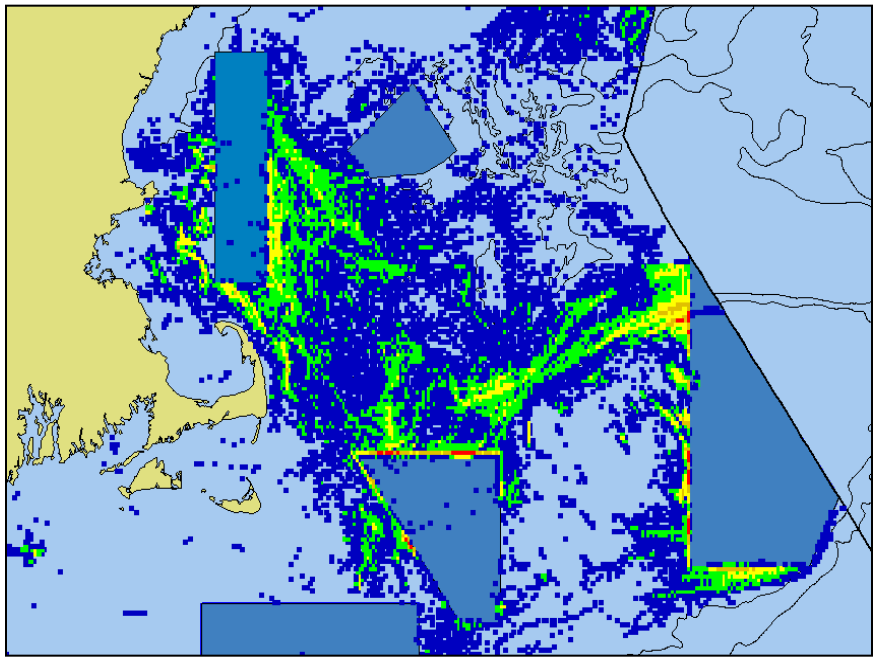
6 Identify Tradeoffs



- Under EBFM, need to confront tradeoffs that arise among species & fisheries that interact
- If species interact through predation for example, actions that affect prey will also affect predator
- Occurs now but not directly acknowledged in current management

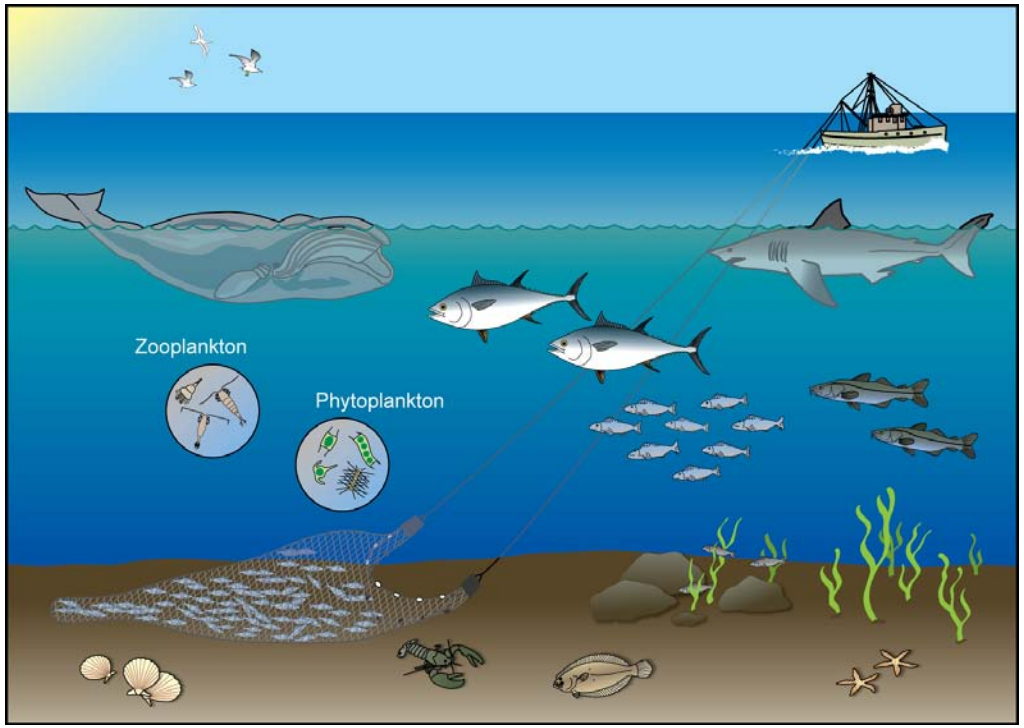
7 Select Management Tools

- Same basic tools as conventional management but with different objectives



-Effort limitation
-Gear modification
-Time / area closures
-Output controls (TACs)

8 Evaluate Outcomes



- Objectives being achieved?
- Mid-course corrections
- Continued monitoring & analysis to detect problem areas

Human Dimension

- Shift from single to multi-species approach
  - necessitate change in how human dimensions to fishing approached
- Greater need for analyses
  - human resource use, projecting future needs / changes, vulnerability & resilience of human communities
- Greater participation in decision – making
  - fisheries trade-offs
  - co-management

Current Council Institutions

- Fishery Oversight Committees
  - species committees
- Advisory Panels
- Plan Development Teams (PDTs)
- SSC
- Stock Assessment Workshops (SAW) or other assessment groups

Council Institutions under EBFM

- PDTs
  - Focus of planning would be ecological regions
  - PDT for each?
  - During transition, existing groups to handle
  - Need to cross-walk current PDT activities with new ecological region-based PDTs
  - Need to cross-walk FMPs with EBFM priorities
- SSC
  - Greater consideration of socio-economic consequences
- SAW
  - Need for peer-reviewed analysis on overall state & productivity of each ecological region

Evolution during transition

Next Steps

- Define new ecological regions
- Identify priority issues & services associated with each region
- Define EBFM objectives & identify risks of not achieving these
- Develop management strategies to achieve EBFM objectives
- Design status & productivity reporting requirements & associated assessment tools required to monitor progress towards EBFM objectives

Next Steps

- Council
  - Design consultative processes
  - Dialogue with MAFMC, ASMFC & New England states on harmonization of EBFM efforts
- PDTs
  - Outline EBFM plan requirements
  - dialogue with current PDTs to develop transition
  - Design PDT structures under EBFM
- SSC
  - Prepare white paper on socio-economic analyses required by EBFM
  - Dialogue with NMFS & Council staff on stock assessment, EBFM species, socio-cultural & economic assessment needs

Thank You!

Example Objectives for EBFM

- Conceptual (aspirational) Objective
  - Protect ecosystem structure & function to allow sustainable harvest & meet needs of future generations
- Operational (strategic) Objective
  - Maximize yield/economic returns subject to constraints designed to protect ecosystem, social & economic structures