Document 3c: Hierarchical structure: Overarching Goal, Strategic Objectives, Operational Objectives, & Desirable Management Components

Overarching Goal

To protect the ecological integrity of US marine resources as a sustainable source of wealth and well-being for current and future generations (Goal A)

Strategic Goals (Derived from Magnuson definition of OY as in Risk Policy Document):

I. Optimize Food Provision
II. Optimize Employment
III. Optimize Recreational Opportunity
IV. Optimize Intrinsic (Existence) values
V. Optimize Profitability (Objectives 5,7
VI. Encourage stability in both the biological and social systems (Objectives 2, 3,4,5,7)

Strategic Objectives for the ecosystem supporting the above

1. Maintain/restore functional production levels (ecosystem, community scale emphasis) (Objectives 1,4,5, 12?
2. Maintain/restore functional biomass levels (community/species scale emphasis) (Objectives 1,4,5, 17
3. Maintain/restore functional trophic structure (Objectives 2,4,5, 17)
4. Maintain/restore functional habitat (Objectives 5?, 12?, 20?

Operational Objectives (SMART: Specific, Measurable, Achievable, Relevant, Time-bound):

******illustrative examples for strategic ecosystem objectives only*****

1. Ecosystem and community/aggregate fishing mortality and or total catch is below established dynamic threshold
    a. Phrased as probability according to risk policy
    b. Specified for each spatial scale and time unit
    c. Dynamic to account for environmental/climate shifts
    d. "GB EPU total catch has less than 40% probability of exceeding the total catch limit between 2016-2018"
2. Fishing-related mortality for threatened/endangered/protected species is minimized (could establish caps if desired)

3. Managed and protected species biomass is above established minimum threshold
    a. Phrased as probability according to risk policy
    b. Specified for each spatial scale and time unit
    c. Dynamic to account for environmental/climate shifts
    d. "GB haddock biomass has less than 40% probability of dropping below minimum B threshold between 2016-2018"

4. Maintain ecosystem structure within historical variation, recognizing inherent dynamic properties of the system; Ecosystem structure includes size structure, trophic structure, and functional group structure.
    a. Maintain size structure within acceptable limits; e.g.
        i. *The large fish indicator within defined limits
    b. Maintain trophic structure within acceptable limits; e.g.
        i. *Mean trophic level of the catch within defined limits
        ii. *Marine trophic index of the community (MTI) within defined limits
        iii. *Mean trophic level of the community within defined limits
        iv. *Mean trophic level of the modelled community within defined limits
    c. Maintain functional group/guild structure within acceptable limits; e.g.
        i. *Functional Group/Guild-level biomass across ecosystem components within defined limits
5. Maintain habitat productivity and diversity
6. Habitat structure and function are maintained for exploited species
7. Minimize the risk of permanent (>20 years) impacts; e.g.
    a. Corals and sponges
    b. Other vulnerable biogenic habitats
    c. Coastal habitats vulnerable to Aquatic Invasive Species (AIS)
    d. Vulnerable physical habitats (e.g. relict glacial gravel banks)

Management Components:

I. Create adaptive processes and structures (Objective 8) that:
    a. Aligns fishermen's incentives with management goals and provide fishermen flexibility in how they fish (Objectives 1, 7)
        i. Facilitate ongoing adaptation of ecosystems and fishing fleets to a changing climate.
        ii. Allocate and manage catches in a spatial dimension rather than by species
        iii. Management Tools
            1. catch shares
            2. points
            3. other
    b. Simplifies regulations and slow the pace of regulatory change (Objective 9)
    c. Provides mechanisms for addressing tradeoffs (Objective 10)
    d. Generates robust and accurate management advice
        i. Estimate uncertainty in ecosystem and multispecies assessments

1. Develop, test, and verify ecosystem trophic models and management strategy evaluation models to provide strategic and tactical management advice
2. Calculate total removals – including incidental mortality and relate removals to standing biomass, production, optimum yields, natural mortality and trophic structure
3. Define and implement appropriate buffers against uncertainty

ii. Ensure climate change risk adequately incorporated
iii. Establish ecosystem indicators, reference points (targets) and performance thresholds in a manner that links to executing management tools
iv. Apply co-management procedures
v. Assess the ecological, human and institutional elements of the ecosystem which most significantly affect fisheries, and are outside Council/NMFS jurisdiction and define a strategy to address those influences
vi. Improve data availability and usability
1. Generate indicators at multiple levels of ecological complexity, operating space, and time scales
2. Develop, test, and verify spatial analysis tools for guiding and supporting management decisions at various spatial scales, including the EPU and management sub-units

e. Prioritizes ecosystem research with highest returns
i. Develop conceptual model of EPU food web
ii. Describe habitat needs of different life history stages of animals and plants in the "significant foodweb" and manage appropriately

II. Define an EPU and management units that are consistent with species occurrence and human activity based on statistical patterns of similarity.
III. Evaluate ecosystem sampling and monitoring programs
a. Implement broad ecosystem monitoring programs
b. Assess role of MPAs in preserving productivity and population structure for a wide range of species
i. Investigate link between marine resource productivity and habitat quality and
ii. identify most valuable/vulnerable habitats
c. Ensure adequate prey availability in times and areas needed to support abundant megafauna