

# Discussion Document 7

---

## Jurisdictional authority, cooperation and coordination

Under existing governance and management authorities, any ecosystem production unit (EPU)- or place-based fishery ecosystem plan (FEP) will require a considerable amount of cooperation and coordination to be effective. Species and stocks managed by the NEFMC, the MAFMC, the ASMFC, NMFS (highly migratory species, lobsters, and striped bass in federal waters), coastal states, and Canada often have overlapping distributions and ecological interactions. The ecological interactions include predation and competition for resources (food, habitat, etc.), which must be taken into account and managed by the FEP.

Besides species-based management by a Council (or Commission, etc.), separate and often uncoordinated management of energetically-related species and stocks by different management authorities is at the heart of the issue supporting the need for ecosystem-based fishery management (EBFM).

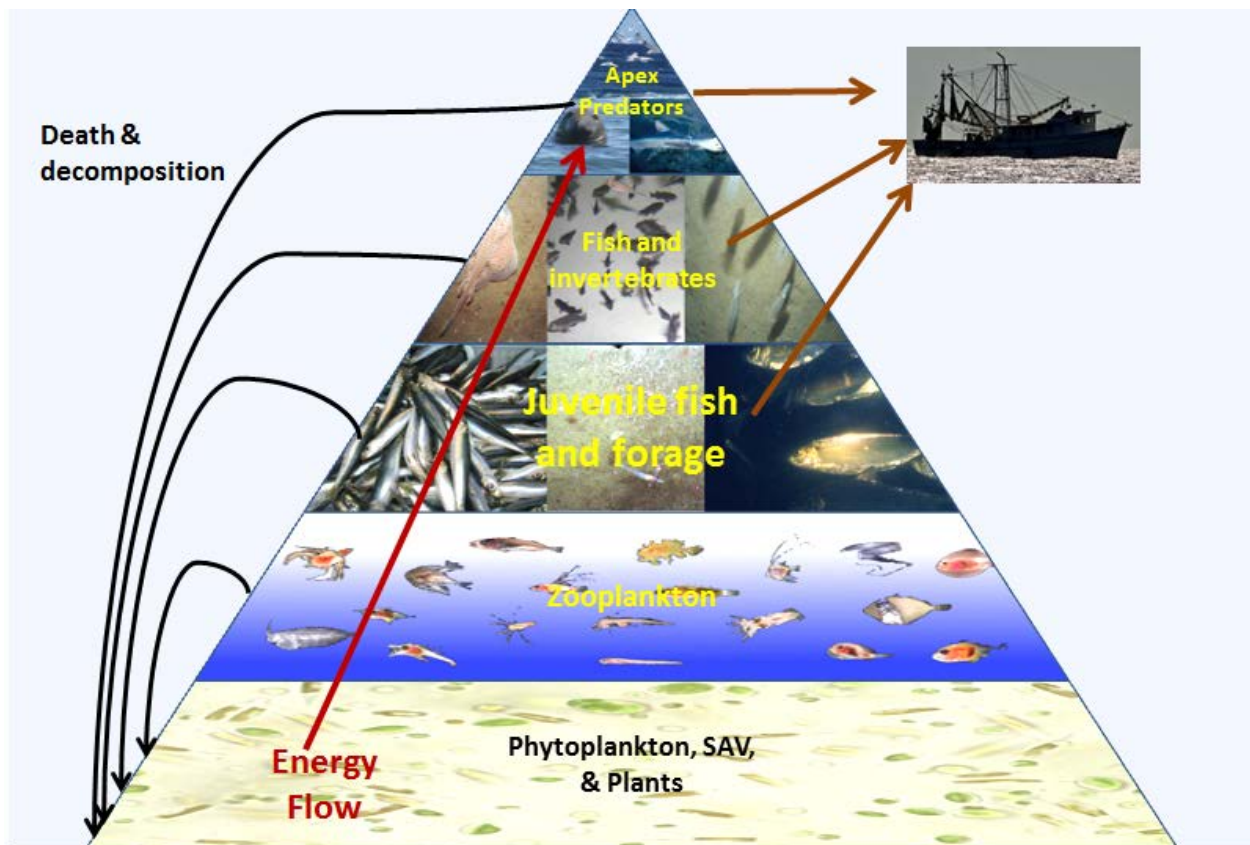
Ideally, all authorities that manage interrelated fishery stocks need to collectively agree to common ecosystem constraints and the major FEP goals, else achievement of FEP goals would be severely compromised. This document discusses how the existing management authorities (NEFMC, MAFMC, ASMFC, NMFS-HMS, NMFS-PS, Canada, and coastal states) could cooperatively manage place-based fisheries, defined by EPU catch control rules.

A preferred approach is one that is loosely modelled after the US-Canada sharing agreement for Eastern Georges Bank fish stocks, a process that is familiar to many NEFMC members. To ensure consistent management of shared fishery resources, Congress passed the International Fisheries Clarification Act in 2010 (PL 111-348). For Eastern Georges Bank, the US and Canada appoint members to a Transboundary Management Guidance Committee (TMGC; see <http://www.bio.gc.ca/info/intercol/tmgc-cogst/index-en.php>) “to develop guidance in the form of harvest strategies, resource sharing and management processes for Canadian and US management authorities for the cod, haddock and yellowtail flounder transboundary resources on Georges Bank.” The parties agreed to core goals and objectives, as well as non-binding guidance on US and Canada harvest levels for Eastern Georges Bank cod, haddock, and yellowtail flounder. Sub-limits for each management area were approved through implementation of a resource sharing strategy and each country establishes technical measures that regulate fishing in the respective management areas. The resource sharing strategy relied on a combination of survey and historic catches to determine in each year the appropriate share to be allocated to each management authority. In recent years, the resource sharing agreement gradually shifted to reliance on relative biomass distributions measured by the two country’s bottom trawl surveys.

## General FEP framework

The hierarchical FEP framework being developed by the Council and EBFM PDT for the Georges Bank EPU has a core constraint that total removals from fishing should not exceed a threshold percent of total productivity of the EPU. This constraint would reserve a proportion of the system productivity for other purposes within the ecosystem, such as supporting populations of higher trophic level species that are not captured by fishing (e.g. marine mammals, turtles, seabirds, etc.). Of course the calculation of the productivity must also include recycling of this energy through death and decomposition of these top level predators (Figure 1).

Figure 1. Schematic energy flow in a marine ecosystem, showing removals due to fishing. Other energy pathways such as emigration and losses to land from consumption in estuaries and guano are not shown.



Subordinate to ecosystem constraints on total removal, the composition of total removals will require management using catch limits specified by guild<sup>1</sup> or functional groups of species. The catch composition specified by guild could allow flexibility and resilience to variability and

<sup>1</sup> Within this document and other FEP documents, a “guild” is used in its classical definition as “a group of species that exploit the same class of environmental resources in a similar way” (Simberloff and Dayan 1991). Thus, fishery catches from a suite of species comprising a guild would have similar ecosystem effects..

change while achieving adequate forage availability, species diversity, spawning, and age structure.

Some species and stocks may need some additional limits to prevent a species or stock from becoming depleted or overfished, i.e. current biomass falling below a pre-specified limit which reduces ecosystem risk. Other technical measures (such as gear configurations and mesh, area closures, etc.) or special catch limits will be needed to improve yield (subject to the guild ecosystem constraints), enhance the opportunity for fish to spawn, maximize yield per recruit, build optimal age structure, and conserve essential fish habitat.

Any or all of these technical measures could be used to keep catch below ecosystem limits and/or address localized concerns (such as sensitive habitat, spawning activity, or localized depletion of forage fish). As with total ecosystem removals, all fishery management authorities should strive to build a general consensus about what the optimal mix of results should be and abide by the catch limits for the guilds in the EPU.

On the US portion of Georges Bank, most stocks and total fishery removals are managed by the NEFMC. Monkfish and spiny dogfish are jointly managed with the MAFMC, while ASMFC-managed lobster has a significant economic contribution and MAFMC-managed summer flounder, loligo squid, black sea bass, and scup are notable components of Georges Bank EPU catches. A full list of species, management authority, trophic category, and guild assignment is given in Section 2.1.2.1 of the eFEP for the Georges Bank EPU.

Within the FEP, specific management units (MU) could be identified based on a region having common fishery characteristics. Catch limits for ecosystem guilds would be allocated to MUs (and vessels authorized to fish in them) based on (relatively) recent catch histories. One possible configuration would create separate MUs for the Great South Channel (where there are more tuna and recreational anglers, and higher whale and marine mammal densities), for Eastern Georges Bank (where groundfish, lobster, and scallop commercial fishing is more important) and the Georges Bank southern shelf (where silver hake, squid, and red crab fishing are more important).

### **Resource Sharing Among Management Units in an EPU**

The NEFMC would serve as lead management authority for the Georges Bank EPU and management units within it. The Georges Bank EPU is entirely within the region that Congress identified as being managed by the NEFMC (See §600.105; [http://www.ecfr.gov/cgi-bin/text-idx?SID=26405a30bb459dd8f241d50c77f40d8e&mc=true&node=se50.12.600\\_1105&rgn=div8](http://www.ecfr.gov/cgi-bin/text-idx?SID=26405a30bb459dd8f241d50c77f40d8e&mc=true&node=se50.12.600_1105&rgn=div8)) and the majority of species that the fishery catches on Georges Bank are managed by the NEFMC.

Similar to the TMGC framework, a management board or advisory panel could develop a Georges Bank EPU resource sharing agreement as well as technical measures that would apply to MU fishing activities. The resource sharing could be based on a combination of survey and fishery data for each guild or functional group of Georges Bank EPU species. The NEFMC would review and approve of these recommendations under its Georges Bank EPU FEP.

Allocations and measures that pertain to Georges Bank EPU species not managed by the NEFMC would also require review and approval by the appropriate management body (i.e. MAFMC, ASMFC, NMFS-HMS). Although the role of the TMGC would continue to focus on the allocations of cod, haddock, and yellowtail flounder on Eastern Georges Bank, its role could also be expanded to include other ecosystem components of joint interest to both countries.

## **References**

D Simberloff, and T Dayan. 1991. The Guild Concept and the Structure of Ecological Communities. *Annual Review of Ecology and Systematics*. Vol. 22: 115-143. DOI: 10.1146/annurev.es.22.110191.000555.  
<http://www.annualreviews.org/doi/abs/10.1146/annurev.es.22.110191.000555>.