Department of Commerce · National Oceanic & Atmospheric Administration · National Marine Fisheries Service

NATIONAL MARINE FISHERIES SERVICE POLICY DIRECTIVE 01-120
MAY 23, 2016

Fisheries Management

ECOSYSTEM-BASED FISHERIES MANAGEMENT POLICY

NOTICE: This publication is available at: http://www.nmfs.noaa.gov/op/pds/index.html

OPR: F (J. Link) **Certified by:** F (J. Link)
Type of Issuance: Initial

SUMMARY OF REVISIONS:

Ecosystem-Based Fisheries Management Policy

of the

National Marine Fisheries Service

National Oceanic and Atmospheric Administration

POLICY STATEMENT

NOAA's National Marine Fisheries Service (NOAA Fisheries) strongly supports implementation of Ecosystem-Based Fisheries Management (EBFM) to better inform and enable better decisions regarding trade-offs among and between fisheries (commercial, recreational, and subsistence), aquaculture, protected species, biodiversity, and habitats. Recognizing the interconnectedness of these ecosystem components will help maintain resilient and productive ecosystems (including the human communities on which they depend), even as they respond to climate, habitat, ecological, and other environmental changes.

PURPOSE

NOAA asserts that ecosystem-based management (EBM[1]) will assist the agency in better meeting its mandates to sustainably manage the nation's trust[2] living marine resources (LMR). In this context, NOAA Fisheries has taken several steps to advance the ecosystem-based fisheries management (EBFM) portion of this strategic EBM goal[3]. Coordinated implementation of EBFM across mandates will lead to greater efficiency and will enable NOAA Fisheries to

[1] EBM is defined as "geographically specified, adaptive, takes account of ecosystem knowledge and uncertainties, considers multiple external influences, and strives to balance diverse societal objectives." NOAA 2004. New Priorities for the 21st Century- NOAA's Strategic Plan: Updated for FY 2005-FY 2010, 28 pp. This is understood to cover all ocean-use sectors, beyond just fishery-oriented interests.
[2] Trust species are those which NOAA Fisheries are required to manage under salient authorities and mandates.
[3] NOAA 2004. New Priorities for the 21st Century- NOAA's Strategic Plan: Updated for FY 2005-FY 2010, 28 pp.

explicitly consider trade-offs between fisheries, fishery species, and other ecosystem components (e.g., other species, habitats, and humans) and processes that affect, or are affected by, fisheries.

The purpose of this policy is to:

- Define EBFM;
- Describe the benefits of EBFM;
- Discuss how EBFM relates to existing LMR management legal authorities and requirements;
- Establish a framework of guiding principles to enhance and accelerate the implementation of EBFM within NOAA Fisheries, and in cooperation with NOAA Fisheries partners, when EBFM would further improve fisheries decision-making, provide social or economic benefits, and/or provide desired ecological outcomes; and
- Build on the agency's (and its partners') past progress and clarify the agency's commitment to integrating its management programs for living marine resources and their habitats under changing climate, ecological, and ocean conditions.

DEFINITION OF ECOSYSTEM-BASED FISHERIES MANAGEMENT

NOAA Fisheries defines EBFM as *a systematic approach to fisheries management in a geographically specified area that contributes to the resilience[4] and sustainability of the ecosystem[5] ; 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.*

For the purposes of this policy, EBFM includes considerations of interactions among fisheries, protected species, aquaculture, habitats, and other ecosystem components, including the human communities that depend upon them and their associated ecosystem services. EBFM examines not only the broader suite of factors that impact fisheries, but also considers the potential impacts of fisheries and fished stocks on other parts of the ecosystem (e.g. on other fish species, marine mammals). "Societal goals" should consider and include any relevant economic, social, and ecological factors in the context of relating to fisheries and fishery resources. EBFM is cognizant of both human and ecological considerations.

CONTEXT OF ECOSYSTEM-BASED FISHERIES MANAGEMENT

Within NOAA Fisheries, managers and scientists frequently describe EBFM as one level along a continuum of ecosystem approaches to management: 1) ecosystem approach to fisheries management (EAFM), 2) EBFM, and 3) ecosystem-based management (EBM). NOAA Fisheries

[4] Here we define resilience as the capacity of a(n) (eco)system to persist or maintain function in the face of exogenous disturbances. That is, the capacity of an ecosystem to tolerate disturbance without collapsing into a different state that is controlled by a different set of processes. This is primarily encapsulated by two elements, resistance to and recovery from pressure.

[5] In the NOAA Fisheries context, the term "ecosystem" means a geographically specified system of fishery resources, the persons that participate in that system, the environment, and the environmental processes that control that ecosystem's dynamics. (c.f. Murawski and Matlock, 2006, NMFS-F/SPO-74). To be clear, fishermen and fishing communities are understood to be included in the definition.

and its partners (such as the Regional Fishery Management Councils, Interstate Fishery Commissions, Tribes, and others) are already making progress in implementing EAFM through Magnuson-Stevens Fishery Conservation and Management Act (MSA) Fishery Management Plans (FMP). We are also making progress towards implementing EBFM through MSA Fisheries Ecosystem Plans (FEP) and fishery related factors in Marine Mammal Protection Act (MMPA) Take Reduction Plans and Endangered Species Act (ESA) Recovery Plans. These efforts include incorporating ecosystem and environmental factors into single-species management actions or stock assessments, enhancing understanding of living marine resource and coastal community dynamics, protecting key ecosystem components, adapting or developing new management approaches, and better informing management decisions for a particular stock. Implementing EBFM supports NOAA's broader goals for EBM across multiple sectors and mandates to wisely manage multiple ecosystem goods and services and, with other agencies, to maintain productive and resilient ecosystems.

BENEFITS

Implementing EBFM can help NOAA Fisheries and its partners optimize benefits among a diverse set of societal goals. These benefits are realized across its multiple federal mandates by considering salient environmental and ecological factors that affect trust resources and by identifying trade-offs among its trust resources, including fisheries, protected species, and their habitats. Through EBFM, NOAA Fisheries and its partners can have a better understanding of the cumulative impact of a management action beyond just a single species. Additionally, EBFM can help communicate risks, uncertainties, and implications of management decisions across marine fisheries and a range of affected species. Better understanding, articulation, and consideration of the risks, benefits and effectiveness of management alternatives, as well as the interconnectedness and trade-offs between and among management objectives, will ensure more transparent decision processes, outcomes, and more efficient resource use by NOAA Fisheries and partners.

Management advice from EBFM will be more comprehensive and accurate, and will likely help reduce uncertainty by taking into consideration interacting elements in the ecosystem. EBFM can maintain ecosystem function and fishery sustainability, which support economic and social stability and fishing community well-being. EBFM applies the best available scientific information to improve decision-making via consideration of the holistic impact of management decisions. EBFM can also use forecasts of future ecosystem conditions and services, incorporating natural variability, anthropogenic forcing, and change in climate and ocean conditions to predict and evaluate outcomes from a range of alternative management strategies. Combined, stability and efficiency outcomes for business and regulatory planning result from adopting EBFM.

GUIDING PRINCIPLES

Implementation of EBFM is not a single large action but rather a series of ongoing and cumulative actions leading to comprehensive management of LMRs. The implementation of EBFM should reflect the following six guiding principles. These principles flow from the foundational basis of science, through strategic planning, prioritization, and trade-off analyses, and into management advice, all with the ultimate aim of maintaining productive and resilient ecosystems (Figure 1).

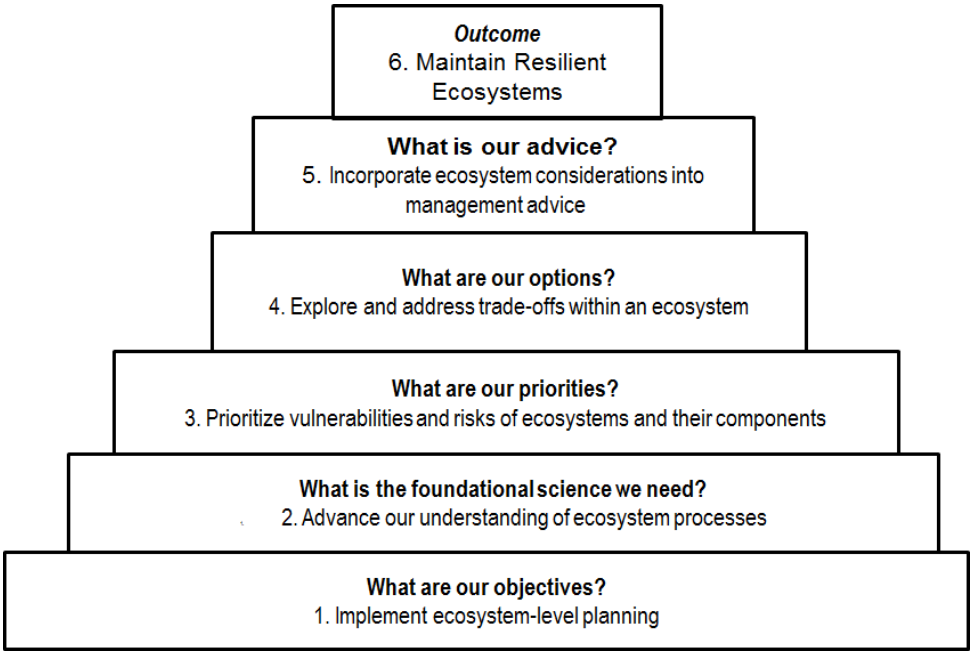


Figure 1. Illustration of the interconnected and interdependent nature of the major EBFM guiding principles.

To successfully implement its policy supporting increased implementation of EBFM, NOAA Fisheries will, to the extent practical:

1) Implement ecosystem-level planning

NOAA Fisheries supports the use of Fishery Ecosystem Plans (FEPs) or similar documents to describe and integrate ecosystem goals, objectives, and priorities for fisheries and ecosystem research, conservation, and management across multiple fisheries within an ecosystem. This includes:

- Facilitate continued participation of external federal, state (including territories), council, commission, tribal, industry, and other non-governmental partners in the EBFM process
- Support and provide guidance or assistance to execute FEPs that are used as umbrella strategic planning documents to guide coordination and trade-off evaluation among FMPs, related documents, and other ecosystem components.

2) Advance our understanding of ecosystem processes

NOAA Fisheries shall work to better understand the broader suite of ecosystem processes, drivers, threats, status and trends of the nation's marine ecosystems to inform all levels of management advice, including:

- Conduct science to understand ecosystems
- Provide Ecosystem Status Reports for each Large Marine Ecosystem

3) Prioritize vulnerabilities and risks to ecosystems and their components

NOAA Fisheries should evaluate and address the individual and cumulative drivers for the physical, chemical, biological, social, and economic components of marine ecosystems. This

should take into account the comprehensive and systematic risk, vulnerability, and susceptibility of LMRs and ecosystems, including:

- Identify the ecosystem-level, cumulative risk (across living marine resources, habitats, ecosystem functions and associated fisheries communities) in each region and the relative vulnerability to human and natural pressures
- Identify the individual and cumulative pressures that pose the most risk to those vulnerable resources and dependent communities

4) Explore and address trade-offs with-in an ecosystem

In close cooperation with its partners, NOAA Fisheries supports the consideration of and efforts to take into account various trade-offs when considering the cumulative effects of decision-making processes on the ecosystem, including:

- Analyze trade-offs to optimize total benefits from all fisheries within each ecosystem or jurisdiction; by taking into account regional socio-economic considerations and ecosystem-specific policy goals and objectives (e.g., MSA, MMPA, ESA, National Aquaculture Act, etc.) that may apply
- Develop management strategy evaluation capabilities to better conduct ecosystem-level analyses that provide ecosystem-wide management advice

5) Incorporate ecosystem considerations into management advice

NOAA Fisheries recognizes the value of placing its resource management efforts into a broader ecosystem context. LMR management should consider best available ecosystem science in decision-making processes (within our legal and policy frameworks), including:

- Develop and Monitor Ecosystem-Level Reference Points
- Incorporate Ecosystem Considerations (as determined from the risk analysis under item 3 above and as feasible, inclusive of those factors noted under item 2) into Appropriate LMR Assessments, Control Rules, and Management Decisions
- Provide Integrated Advice for other Management Considerations, particularly Applied Across Multiple Species within an Ecosystem

6) Maintain resilient ecosystems

NOAA Fisheries recognizes that its mandates are intended to sustain resilient and productive LMR populations and habitats, to maintain overall ecosystem structure and function, and to support the contributions that fisheries make to the socio-economic resiliency of coastal human communities. EBFM needs to develop operating protocols to maintain resilient ecosystems. Actions in support of these mandates include:

- Evaluate ecosystem-level measures of resilience to maintain core ecosystem structure, biodiversity, production, energy flow, and functioning
- Evaluate coastal fishing community well-being

LEGAL AUTHORITIES AND MANDATES

Multiple laws, executive orders, and policies authorize NOAA Fisheries to implement EBFM. This policy summarizes a subset of the authorities used by NOAA Fisheries and our partners to take actions that directly affect fisheries-associated ecosystems' structure and function. This policy also recognizes other NOAA Fisheries authorities and responsibilities and those of other federal natural resource management agencies, Regional Fishery Management Councils,

interstate marine fisheries commissions, states, tribes, and advisory bodies. A systematic and coordinated approach must be taken to fully execute our authorities within and across all authorities to effectively implement EBFM.

The **Magnuson-Stevens Fishery Conservation and Management Act** (MSA), 16 U.S.C. §§ 1801 *et seq.*) authorizes federal fishery management within the U.S. exclusive economic zone by Regional Fishery Management Councils (Councils) and NOAA Fisheries. As described below, the MSA has provisions related to: 1) integrating ecosystem considerations into fishery conservation and management actions, 2) minimizing the impacts of fishing on ecosystem components, and 3) conserving important ecosystem components from non-fishing threats. The MSA also authorizes NOAA Fisheries to provide technical advice and assistance to the Councils to develop and design regional EBFM programs (16 U.S.C. § 1882). The MSA's National Standards (16 U.S.C. § 1851) provide overarching requirements for conservation and management measures, including EBFM-supporting measures that shall prevent overfishing, while achieving optimum yield; be based on the best scientific information available; to the extent practicable, manage interrelated stocks as a unit or in close coordination; take into account the importance of fishery resources to fishing communities; and to the extent practicable, minimize bycatch and bycatch mortality. The MSA also stipulates that FMPs must identify and describe EFH, minimize to the extent practicable adverse effects from fishing on EFH and its ability to support fishery ecosystems, and identify other actions to encourage conservation and enhancement of EFH (16 U.S.C. § 1853(a)(7)). In addition, the Act requires rebuilding of overfished fish stocks (16 U.S.C. § 1854) and, as noted above, requires that FMPs be consistent with the National Standards. The Act provides authority for FMPs to include measures to protect deep sea corals and to conserve target and non-target species and habitats (16 U.S.C. § 1853(b)(2), (12)).

The **Marine Mammal Protection Act** (MMPA) protects all marine mammals. NOAA Fisheries manages cetaceans (whales, porpoises, and dolphins) and pinnipeds (seals and sea lions) under the Act, while the U.S. Fish and Wildlife Service (USFWS) manages walruses, polar bears, manatees, sea otters, and dugongs, with support from NOAA Fisheries. The primary objective of the MMPA specifies that marine mammals should not be allowed to diminish beyond the point at which they cease to be a significant functioning element in the ecosystem of which they are a part (16 U.S.C. § 1361). The MMPA further notes that marine mammals are resources of great international aesthetic, recreational, and economic significance. As such, the primary objective of their management should be to maintain the health and stability of the marine ecosystem and to obtain an optimum sustainable population, commensurate with the carrying capacity of the habitat. In furtherance of this objective, the MMPA prohibits the "taking" or importing of marine mammals except in certain limited circumstances (16 U.S.C. § 1371). Among other provisions, the MMPA requires NOAA Fisheries to prepare assessments of marine mammal populations (16 U.S.C. § 1386) and includes a framework for reducing the incidental mortality and serious injury of marine mammals during the course of commercial fishing operations (16 U.S.C. § 1387). The MMPA allows for intentional lethal taking of individually identifiable pinnipeds that are having a significant negative impact on the decline or recovery of salmonid stocks, including those listed as threatened or endangered under the Endangered Species Act (16 U.S.C. § 1389).

The **Endangered Species Act** (ESA, 16 U.S.C. §§ 1531-1543) provides for the conservation of threatened and endangered species and their ecosystems. The listing of a species as endangered

makes it illegal to "take" (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to do these things) that species. Similar prohibitions usually also extend to threatened species. It is meant to provide "a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved…" and directs NOAA Fisheries and the USFWS to designate "critical habitat," for instance, by identifying areas that contain physical or biological features essential for the conservation of the species. Federal agencies are directed under ESA section 7 to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Federal agencies must also consult with NOAA Fisheries on activities that may affect a listed species (e.g., federal commercial fisheries).

Under the **National Aquaculture Act** (NAA; 16 U.S.C. §§ 2801-2810), NOAA Fisheries is directed to support the development of the U.S. marine aquaculture industry, an increasingly important economic component of marine ecosystems, and use of aquaculture to enhance and restore species for commercial, recreational and restoration purposes. In addition, aquaculture in federal waters is regulated under MSA in the Gulf of Mexico, and is under consideration by other Councils. The **Fish and Wildlife Coordination Act** (16 U.S.C. 661-667e) authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game animals.

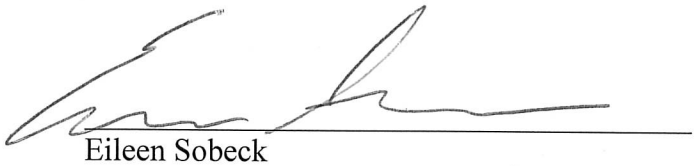
Under the **Coral Reef Conservation Act** (CRCA; 16 U.S.C. §6401), NOAA Fisheries maps, monitors, assesses, restores, and conducts scientific research to benefit the understanding, sustainable use, and long-term conservation of coral reef ecosystems and cooperatively conserves and manages coral reef ecosystems with local, regional, and international programs and partners. Under the **Federal Power Act** (FPA; 16 U.S.C § 811), NOAA Fisheries has the authority to prescribe safe, timely, and effective fish passage at federal hydropower projects to ensure access to upstream and downstream spawning grounds and other habitats. Several sections in the NAA, CRCA, and FPA address ecosystem issues, including sections 2803 of the NAA; sections 203, 204, and 207 of the CRCA; and sections 10j, 18, and 30 of the FPA (16 U.S.C. §§ 803(j), 811, 823a).

The **National Environmental Policy Act** (NEPA) of 1969 (42 U.S.C. §§ 4321 *et seq*.) is a procedural statute that seeks to encourage productive and enjoyable harmony between man and his environment, promote efforts to prevent or eliminate damage to the environment, and enrich understanding of ecological systems and natural resources important to the Nation (42 U.S.C. § 4321). Pursuant to NEPA and its implementing regulations (40 C.F.R. §§ 1501 *et seq*.), NOAA Fisheries prepares environmental impact statements (EIS) for major federal actions significantly affecting the quality of the human environment (42 U.S.C. § 4332), and in other instances, prepares environmental assessments (EA). Through an EIS or EA, NOAA Fisheries analyzes the ecological, economic, and social effects of proposed actions and alternatives to the proposed actions, and emphasizes cumulative impacts of actions on LMRs and their habitats, connections, and ecosystems. NOAA Fisheries also evaluates the environmental effects of federal actions on fishery resources through the MSA, ESA, and **Fish and Wildlife Coordination Act** (FWCA; 16 U.S.C §661 *et seq.*). Under the FWCA, NOAA Fisheries evaluates impacts of proposed activities to fish species and their habitats that fall outside the scope of the MSA (including many forage species that serve as prey for federally managed fisheries), and provides comments to other federal agencies to reduce environmental impacts.

NOAA FISHERIES RESPONSIBILITIES

NOAA Fisheries' Leadership Council is, including the Assistant Administrator for Fisheries, the Deputy Assistant Administrators for Regulatory and Scientific Programs, the Regional Administrators and Science Directors, HQ Office Directors, and the Agency ST level Senior Scientists, are responsible for agency-wide implementation of this policy. NOAA Fisheries will work with its stakeholders and partners, including the Regional Fishery Management Councils, to achieve effective implementation of the EBFM policy.

This policy is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents or any other person.



5/23/14

Eileen Sobeck
Assistant Administrator
National Marine Fisheries Service

Date