The Lenfest fishery ecosystem task force: operationalizing ecosystem-based fisheries management

Timothy Essington (1), Phil Levin (2), Kristin Marshall (1), Laura Koehn (1)
(1) School of Aquatic and Fishery Sciences, University of Washington, Seattle, WA USA; (2) NOAA Fisheries Northwest Fisheries Science Center, Seattle, WA USA. Presenter contact details: essing@uw.edu, Phone +1 (206) 616-3698

Summary
Ecosystem based fisheries management (EBFM) is a coordinated management process that considers outcomes and risks from management decisions over a wide range of ecological, economic and social objectives. Despite its recognized importance, implementation of EBFM in fisheries has lagged. Fishery Ecosystem Planning (FEP) is a tool to better ensure that the promises of EBFM can be met. FEPs can allow for improved coordination of decisions across fishery sectors, ensure that cumulative ecosystem impacts are considered, identify externalities that threaten or augment fisheries productivity, and provide guidance and recommended procedures for how the ecosystem considerations are included in decision-making. Critically, an FEP should make EBFM actionable. For that reason, it should clearly specify the rules, processes, and considerations that govern fisheries management decisions. We have convened a panel with broad expertise to provide a blueprint for fisheries ecosystem planning with the goal of fostering the adoption of ecosystem principles into fisheries management. The task force is relying on collective experiences – both successes and failures – around the world to highlight the science tools, policy instruments, and governance structures that can be used for EBFM, and to provide a framework for choosing among them.

Introduction
The ecosystem approach to fisheries management is broadly defined, but is generally considered as a place-based (as opposed to sector-based) perspective on decision making that considers direct and indirect effects management decisions on both the marine environment and on humans. The goal is to sustain the delivery of valued benefits from the ocean to people, and to do so in a way that directly addresses trade-offs among management measures that are introduced through linkages in fishery systems. It is interdisciplinary, drawing on fields such as decision science, ecology, oceanography, economics, anthropology, and political science.

In comparison to the rapid rate of tool development, and the burgeoning literature in support of the approach, adoption of these principles in most regional fisheries organizations has been relatively slow and limited to a small range of topics. There is therefore a need to synthesize the state of science and policy making to both identify barriers to the adoption of ecosystem-based fisheries management, and to provide a framework that regional fisheries management bodies can use to foster the incorporation of these principles. Here, we seek to develop a framework - fishery ecosystem plans - as a tool to make ecosystem-based fisheries management actionable. By providing clear objectives, strategies, decision rules, and a transparent process for how information about fishery systems are used in decision making, a fishery ecosystem plan has the potential to foster the adoption of ecosystem principles into fisheries management.

Materials and Methods
We have convened a task force consisting of fourteen experts with diverse expertise ranging from ecological modeling, fisheries ecology, fisheries management, economics, and anthropology. The task force includes members from Australia, Canada, Germany and the United States, so that we can draw on a wide range of experiences with fisheries management and the ecosystem approach. The task force is working in concert with advisory body that consists of individuals engaged directly in regional fisheries management (with a particularly strong representation of past- or present members of U.S. regional fisheries management councils). The task force has convened three meetings to date, each in a distinct region of the U.S, where we have engaged in discussions with local scientists, managers, members of fishing industry and environmental groups to hear their experiences and perspectives on ecosystem based fisheries management.

Results and Discussion
The task force has identified at least seven main areas of activity. We list these in turn below.
There are multiple barriers to implementation, but the availability of scientific information, tools, or policy frameworks are not among them. Instead, we find that the barriers are of ones of perception. Most regional fisheries managers are engaged in what is already a difficult and time-consuming process, so the perception that ecosystem based fisheries management needs to be done in addition to the status quo masks the benefits that an ecosystem approach might provide. The task force needs to develop a framework for fishery ecosystem plans that provide efficiencies to the management process, either by streamlining process and decision making, or by fostering decision making that makes conflicts more manageable by defining management procedures in advance of crisis situations. Importantly, because we view the ecosystem approach as one in which natural and social systems are considered simultaneously, the fishery ecosystem plan might be the most effective vehicle to achieve the “triple bottom line” of ecological, social, and economic sustainability.

The goals and principles of ecosystem based fisheries management have been developed by a number of authors and advisory panels, yet many of these emphasize the natural component of fishery systems. These goal and principles need to be broadened to more fully capture all of the goals of fishery management.

The scope of fishery ecosystem plans needs to be defined. Our goal is not to be prescriptive, but a blueprint for the sort of questions a manager should ask in developing a fishery ecosystem plan is needed.

The structure of a fishery management plan should follow contemporary decision theory and adaptive management. That is, it needs to specify the purpose or vision, goals and objectives, activities that will be done to meet goals and objectives, resources required to conduct activities, prioritization of goals and objectives, evaluation (monitoring, indicators, and benchmarks), and final review and plan updating.

Tools and approaches for ecosystem based fisheries management are diverse and each are best suited for distinct sets of problems. Some tools have not been adopted in decision-making, suggesting there are some scientific or other barriers to their use. We will explore these for ecological, social, and economic tools, while also summarizing the broad categories of tools that can be brought to bear for specific types of questions.

Traditionally, a somewhat limited set of policy instruments has been suggested to meet ecosystem-based management (especially ecological) goals in fisheries. We are reviewing policies that have been enacted either directly to reach these goals, or policies that have been shown to provide benefits indirectly so that decision makers can be aware of a full range policy instruments that might be effective in achieving ecosystem goals.

Broad guidance is needed on all steps for the fishery ecosystem plan. For instance, how can fishery ecosystem plans articulate what constitutes “information” that is suitable for decision-making? How should scientists present information to decision maker so that trade-offs can be more easily understood? How can management strategies be developed and tested to determine the likelihood of successfully achieving a wide range of management goals? We are using case studies, discussions with stakeholders, and expertise of the advisory board and task force to generate this guidance.