From Theory to Practice: Supporting Decision-Makers to Lead the Implementation of an Ecosystem Approach to Fisheries Management

11-13 March 2025
Symposium on applying EAFM in ABNJ
FAO, Rome

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Pew's work in international fisheries management

Aim: protect marine biodiversity and provide food and livelihoods for a growing population worldwide by addressing inadequate management and control of large-scale fishing activities.

Work to:

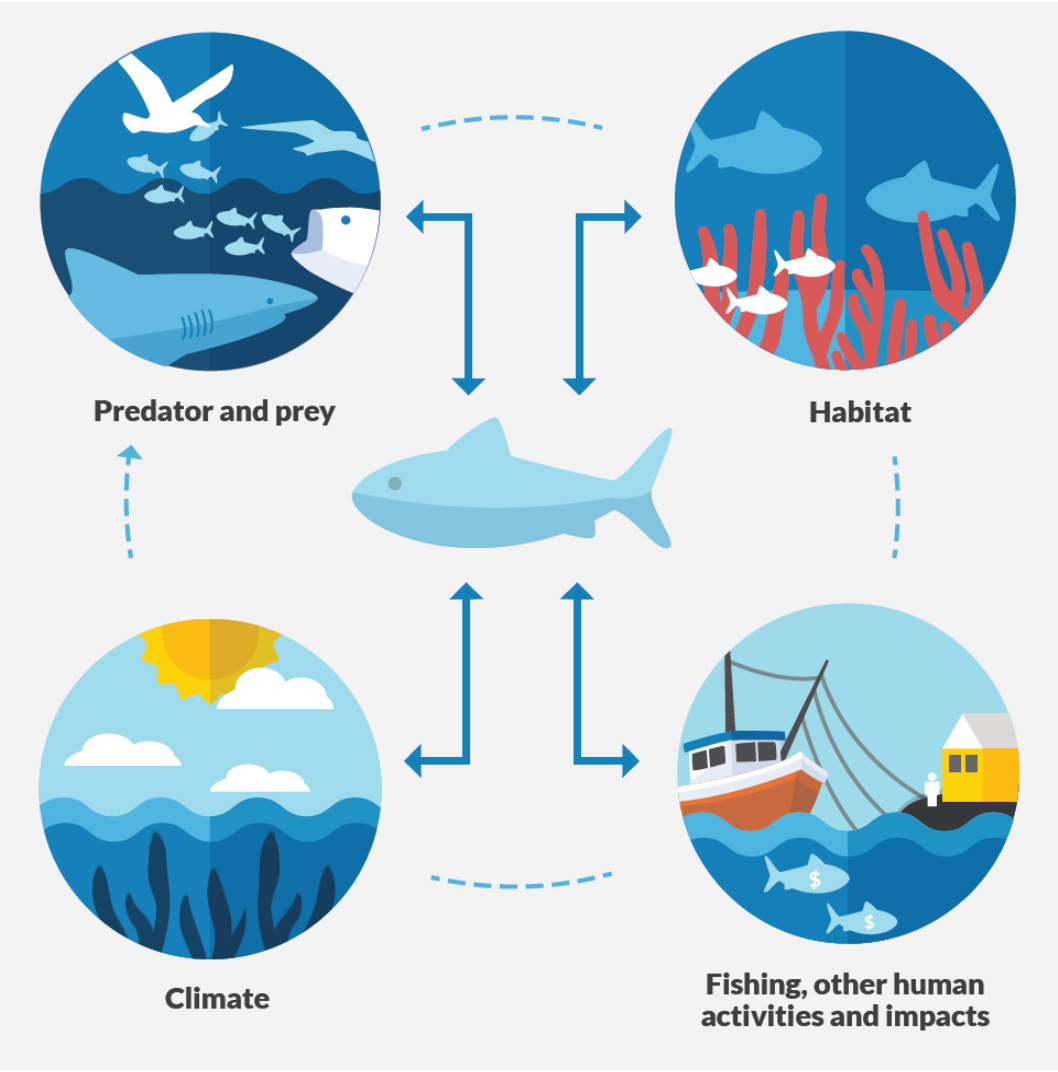
- Advance precautionary harvest strategies (management plans) and effective compliance regimes for international fisheries.
- Embed ecosystem considerations and biodiversity protections in the management of fisheries, through EAFM/EBFM
- Improve policies and actions aimed at ending IUU fishing.

Pew's EAFM work

- **"Big picture" EAFM/EBFM:**

Setting rules that account for how climate, habitats, human activities, fish populations and other species interact.

- **Focus on shared stocks and RFMOs.**



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Building the EAFM case with European & Nordic fisheries managers

Meeting with Iceland's Fisheries Minister (L) and EBFM event (R) in Reykjavik, 2023

NEAFC biodiversity side event in London, 2024

Social media tile from #MakeEBFM work campaign, 2023

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The context

- **Evidence to support EAFM has advanced**: on ecosystem functioning, on the impact of fisheries; on environmental drivers that impact fisheries (climate change).

- **Renewed momentum**: global agreements like CBD GBF include EAFM as a tool to achieve GBF targets that focus on sustainable use.

- **Missing component**: how to transpose this knowledge into concrete management measures?

Adoption of GBF, Dec, 2022

Steps towards EAFM

- Set ecological objectives for the fishery
- Commission ecosystem-level scientific advice
- Develop ecosystem-based harvest strategies

=> development of guidance for managers via briefs


Brief THE PEW CHARITABLE TRUSTS Oct 2022

Ecosystem-Based Fisheries Management Needed to Help Marine Life Thrive in Northeast Atlantic Ocean

Decision makers should build on successes to meet both sustainability and environmental commitments

Overview

Historically, fisheries management has largely focused on maximizing catch of a target species. Attempts by fisheries managers around the world to reduce overfishing in recent decades have yielded mixed progress. Positive results have come largely in well-monitored, large-scale fisheries where science-based management has been applied. In such cases, success has been defined in terms of groups of individual fish stocks in specific ocean regions—for example, Northeast Pacific groundfish or North Atlantic swordfish—gradually recovering from overexploitation.[1] However, even in such success stories, managers have often failed to account for the impact of fishing on ecosystems, such as the depletion of non-target species caught as bycatch or the imbalance created when too many of an important predator or prey species are removed.

Recent science shows that commercial fishing has had the largest footprint of any human activity on the marine environment over the past 50 years,[2] specifically by causing declines in target and non-target species and degrading their habitats.

Reversing some of this damage and minimizing the disruption that commercial fishing can cause to complex, interconnected ocean ecosystems will require a major shift in how fisheries are governed.

A brief from Pew February 2025

How to Put Ecosystem-Based Fisheries Management Into Practice

Clear objectives can improve ocean health, ensure resilient fish populations and support biodiversity

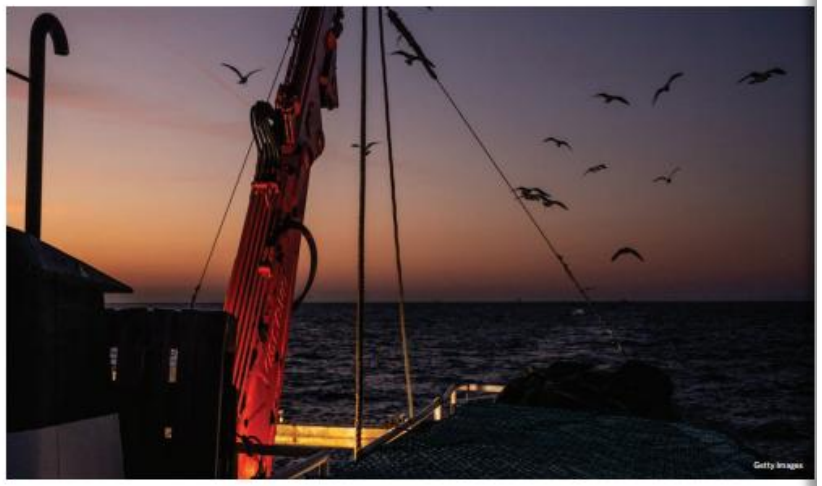
Overview

Over decades of international negotiation, the nations of the world have committed to the sustainable management of fisheries and protection of marine ecosystems. Multiple treaties and conventions require fishery managers to account for the impact of fishing activity on the health of the entire ecosystem, not just targeted fish stocks.

To effectively translate these obligations into practice, managers have begun to implement an approach known as ecosystem-based fisheries management (EBFM), which accounts for interactions among species, fishing activities, habitats and wider environmental concerns such as climate change. A critical step in the process of adopting EBFM is the development of "ecological objectives" – targets that are more comprehensive and dynamic than the objectives used in traditional, single-species management.

This brief provides guidance for fishery managers and environmental authorities on how to design effective ecological objectives and offers case studies from jurisdictions that have successfully incorporated these objectives into management practice.[1]

A brief from Pew February 2024



To Improve Fisheries Management and Protect Ecosystems, Decision Makers Must Ask Better Questions

A checklist to help managers request scientific advice

Overview

Good scientific advice is the fuel that drives the engine of fisheries management. When managers want to develop comprehensive, long-term policies for measures such as catch limits or gear restrictions, they pose questions related to their policy goals, which scientists then do their best to answer. And the more ambitious the question, the more far-reaching the advice.

Yet, managers have traditionally asked narrow questions that direct scientists to produce evidence focused only on individual fish populations and catches. And because scientific advice sets policy in motion, myopic questions tend to produce limited management that does not sufficiently address long-term ocean health and is out of step with the growing suite of international treaties, frameworks and other obligations.

A brief from Pew September 2023

Two Tools Can Help Make Ecosystem-Based Fisheries Management a Global Reality

Harvest strategies and management strategy evaluation offer a pathway to incorporating ecosystem considerations into fishery governance

Overview

Around the globe, fisheries managers tasked with overseeing high-value fisheries have, for decades, considered individual species in isolation, implementing management measures that fail to account for the needs of the broader ocean ecosystem or the emerging threats of climate change. But this siloed approach does not need to persist; a better model is available. Ecosystem-based fisheries management (EBFM) harnesses advances in scientific knowledge to comprehensively consider how the interactions among species, fisheries and a changing ocean should affect how much fishing is allowed and how it is done.

However, the transition to EBFM has been slow. Despite numerous international and domestic mandates to implement EBFM dating back to the 1990s, managers have faced several challenges, including inadequate governance structures and processes; a lack of data, especially on habitats and lower-value species; and insufficient scientific tools and models.[1] And although scientists and managers in some regions have developed benchmarks for evaluating progress towards EBFM, precise objectives have not been widely defined.

Fortunately, two related tools already in use—harvest strategies and management strategy evaluation—can be adopted in domestic waters or for shared stocks, including on the high seas, where decisions are made by regional fisheries management organizations (RFMOs), to help managers worldwide integrate EBFM into their practices. This brief looks at these tools and how they could ease the transition to EBFM.

Set ecological objectives for the fishery

With corresponding indicators and rules

EAFM relies on broader objectives

- Multiple treaties/ conventions require managers to account for the impact of fishing on the health of the entire ecosystem,

- Key step: adopt objectives that are more comprehensive and dynamic, to account for:
    - interactions among species,
    - Types fishing activities,
    - Habitats
    - wider environmental concerns (climate change)

- Needed: collaboration between fisheries managers and environmental authorities.

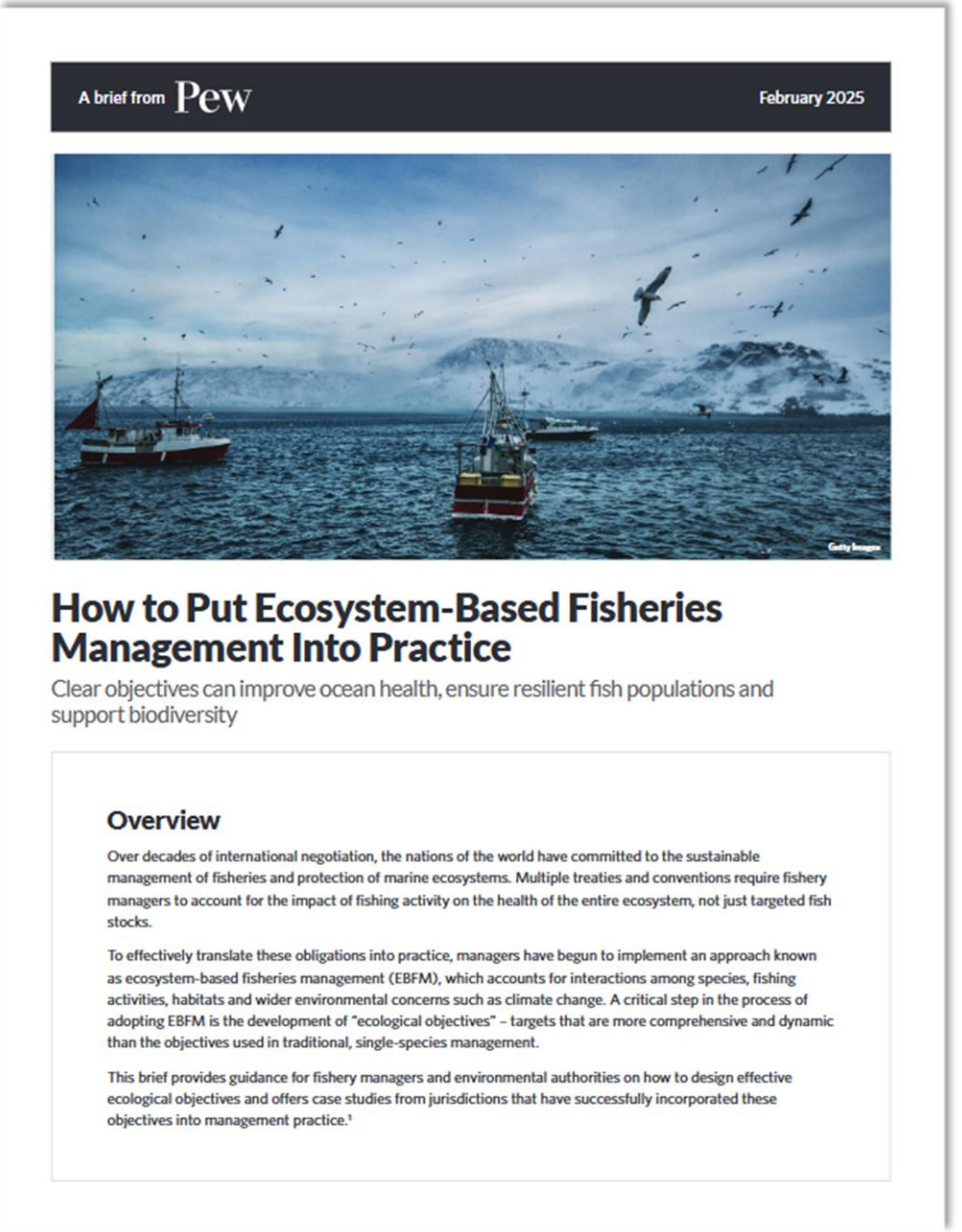


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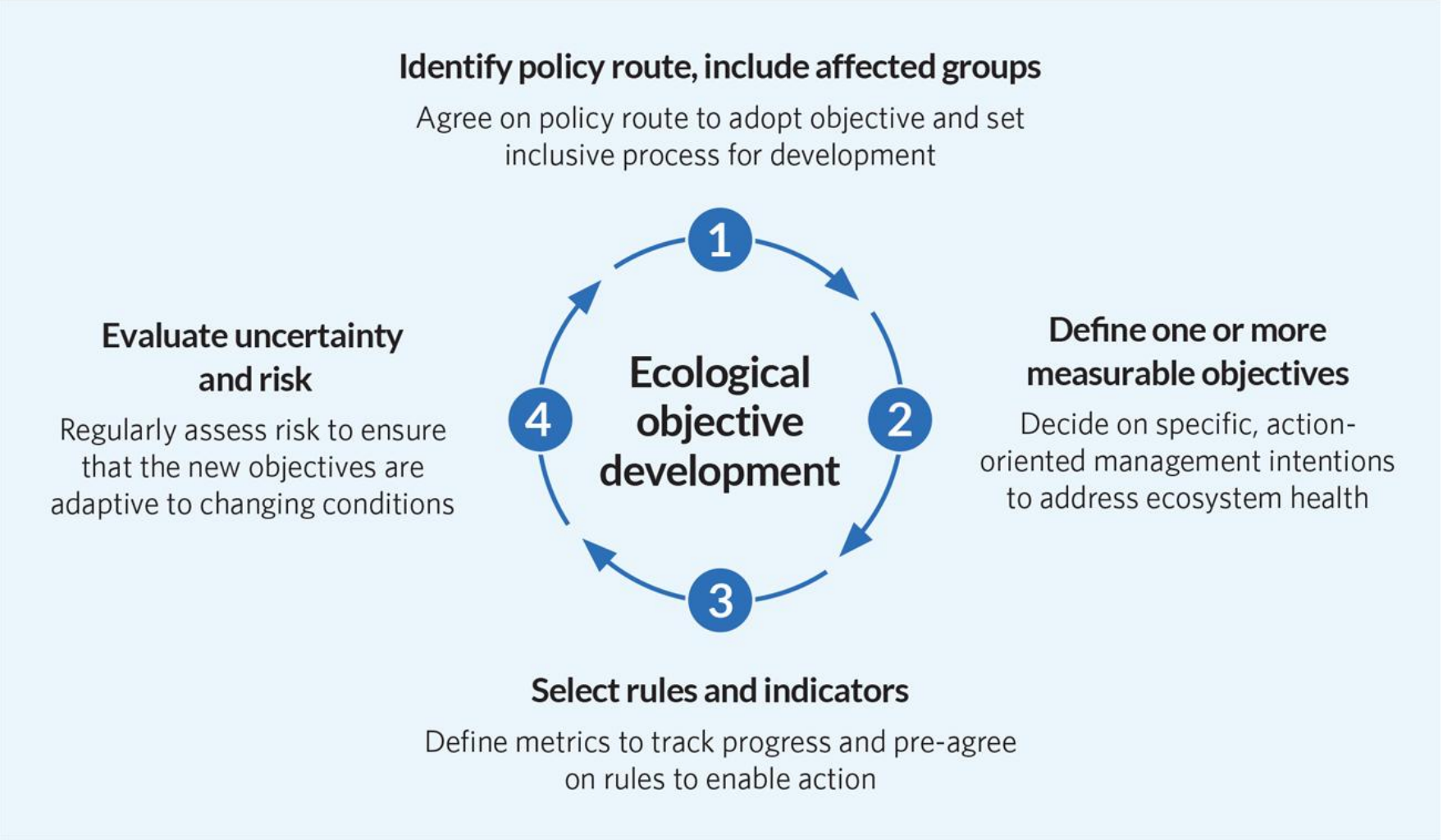
Figure 1

Fisheries Managers, Environmental Authorities Should Jointly Set Ecological Objectives

Sample development pathway



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Management body and target species	Ecological objective	Associated indicator(s)	Associated rule(s)
Domestic			
United States' Atlantic States Marine Fisheries Commission – Atlantic menhaden	"Maintain the Atlantic menhaden stock at levels which sustain viable fisheries and support predators which depend on the forage base."	• Fishing rate on Atlantic menhaden, forage species. • Fishing rate on striped bass, predator species. • Biomass (i.e. population size) of Atlantic menhaden. • Biomass of striped bass.	• Set the Atlantic menhaden fishing rate at (or below) the level needed to sustain its population size and to provide enough menhaden to feed and support the target population size for striped bass.
International			
Convention for the Conservation of Antarctic Marine Living Resources – krill	"Any harvesting ... shall be conducted in accordance ... with the following principles of conservation ... maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources."	• Fishing rate on krill. • Biomass of krill. • Level of spatial overlap between krill and its predator.	• Set the krill fishing rate at (or below) the level needed to sustain its target population size and to leave 75% of its biomass in the ocean for predators. • Reduce fishing rates and associated catch limits in areas of high krill-predator overlap.

Commission ecosystem-level scientific advice

Moving beyond narrow science advice questions

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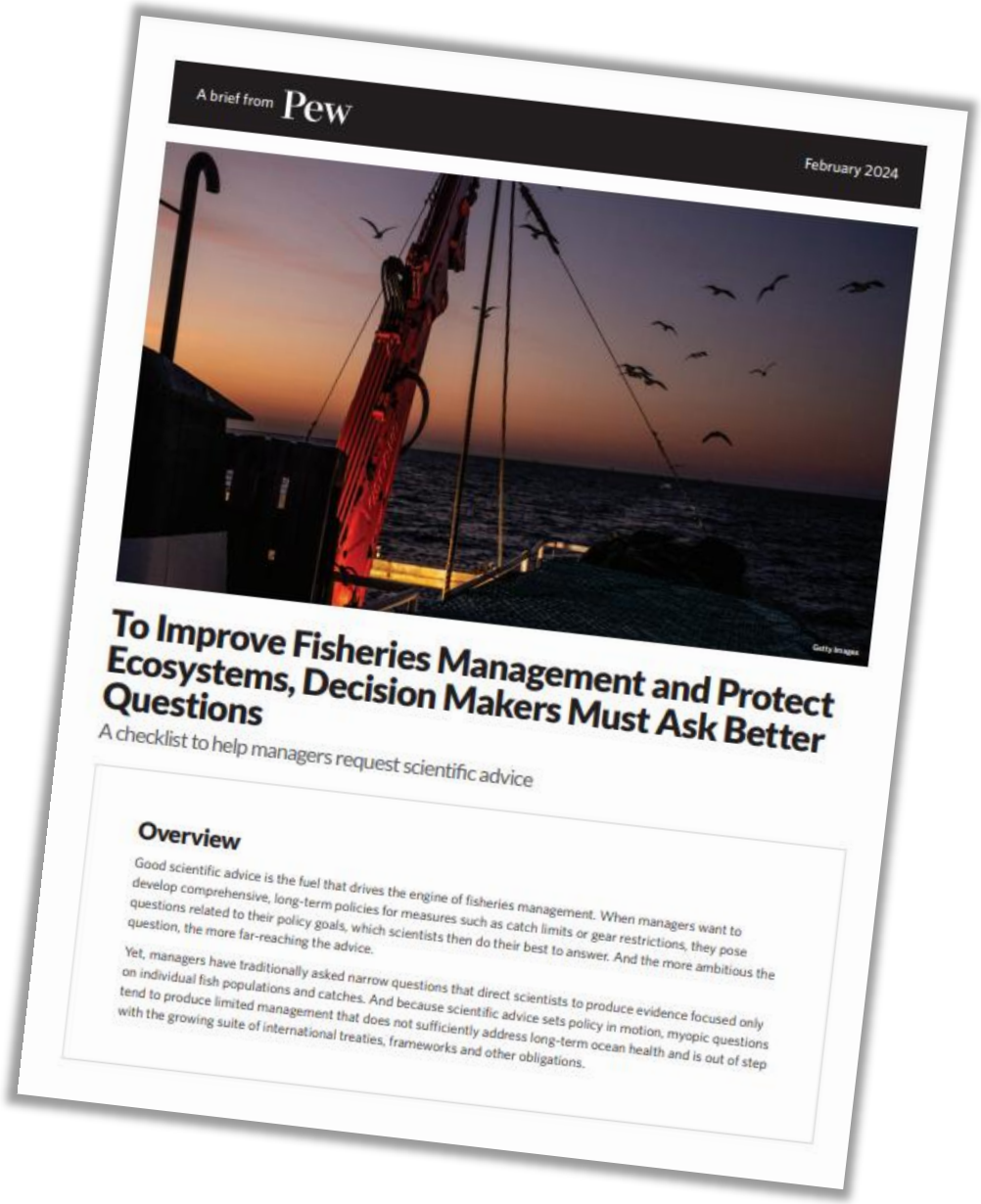
New obligations mean new advice

- To deliver policy goals, fisheries managers need advice. Advice starts with a question.
- Traditionally, questions have focused on limited objectives with narrow scope
- Policy frameworks now have broader aims than yield maximization (e.g: healthy foodweb structures)
- Foundations for ambitious management only possible with ambitious questions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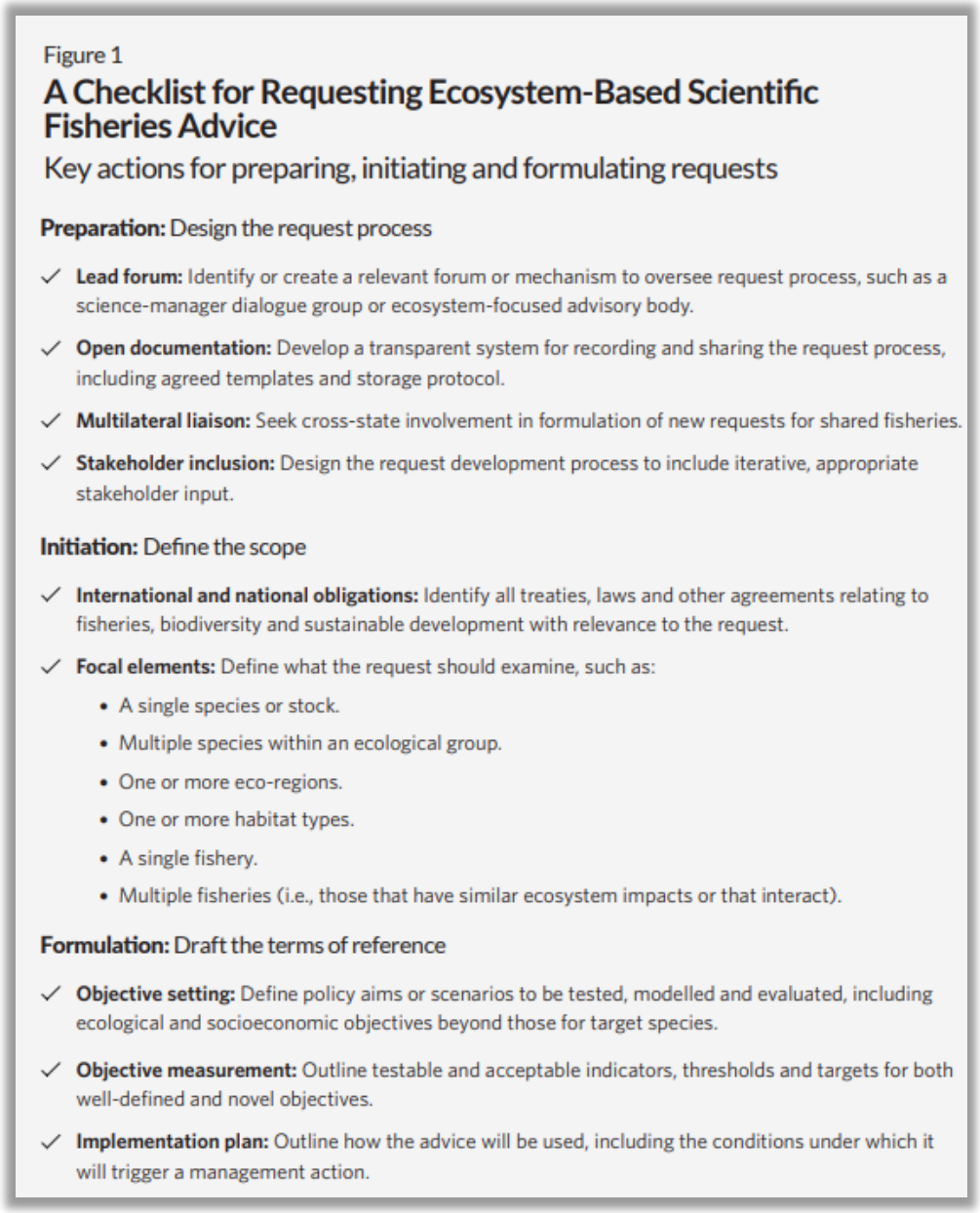

Figure 1

A Checklist for Requesting Ecosystem-Based Scientific Fisheries Advice

Key actions for preparing, initiating and formulating requests

Preparation: Design the request process

- ✓ **Lead forum:** Identify or create a relevant forum or mechanism to oversee request process, such as a science-manager dialogue group or ecosystem-focused advisory body.
- ✓ **Open documentation:** Develop a transparent system for recording and sharing the request process, including agreed templates and storage protocol.
- ✓ **Multilateral liaison:** Seek cross-state involvement in formulation of new requests for shared fisheries.
- ✓ **Stakeholder inclusion:** Design the request development process to include iterative, appropriate stakeholder input.

Initiation: Define the scope

- ✓ **International and national obligations:** Identify all treaties, laws and other agreements relating to fisheries, biodiversity and sustainable development with relevance to the request.
- ✓ **Focal elements:** Define what the request should examine, such as:
  - A single species or stock.
  - Multiple species within an ecological group.
  - One or more eco-regions.
  - One or more habitat types.
  - A single fishery.
  - Multiple fisheries (i.e., those that have similar ecosystem impacts or that interact).

Formulation: Draft the terms of reference

- ✓ **Objective setting:** Define policy aims or scenarios to be tested, modelled and evaluated, including ecological and socioeconomic objectives beyond those for target species.
- ✓ **Objective measurement:** Outline testable and acceptable indicators, thresholds and targets for both well-defined and novel objectives.
- ✓ **Implementation plan:** Outline how the advice will be used, including the conditions under which it will trigger a management action.

A "checklist" for advice requesters

- Checklist aims to guide managers to better request process through three stages:
  - *Preparation: Designing the request process*
  - *Initiation: Defining the scope*
  - *Formulation: Drafting the terms of reference*

	Checklist stage	Preparation				Initiation		Formulation		
		Lead forum	*Open documentation*	*Multilateral liaison*	*Stakeholder inclusion*	*Int/national obligations*	*Focal elements*	*Objective setting*	*Objective measurement*	*Implementation plan*
Request	EU demersal fisheries/ habitats	/	✓	/	✓	~	✓	✓	✓	~
	EU-UK-NO NSAS herring LTMS	~	~	✓	X	X	~	~	~	~
	NAFO roadmap for EAFM/ TCI	✓	✓	✓	~	✓	✓	✓	✓	✓

✓ *Step completed* ~ *Step partly completed* X *Step not included* / *Step not relevant to reque*

Develop ecosystem-based harvest strategies

Through management strategy evaluations (MSE)

Harvest Strategies and Management Strategy Evaluation

- **Harvest strategies (HS):** pre-agreed, formulaic approach to setting fishing limits based on the status of a given fish population.
- HS include:
  - management objectives that outline a vision for the fishery;
  - reference points to define sustainability;
  - harvest control rules (HCR) that set fishing opportunities

- Each of these elements can be structured to account for ecosystem considerations.
- **Management strategy evaluation (MSE):** science-based decision-making framework, to assess the performance of potential harvest strategies under a range of scenarios.

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Select management objectives

Include ecosystem objectives, such as a bycatch cap, forage/prey fish set aside for predators or habitat protection.

Adopt most robust harvest strategy

Adopt multi-species harvest strategy to simultaneously manage target and bycatch species.

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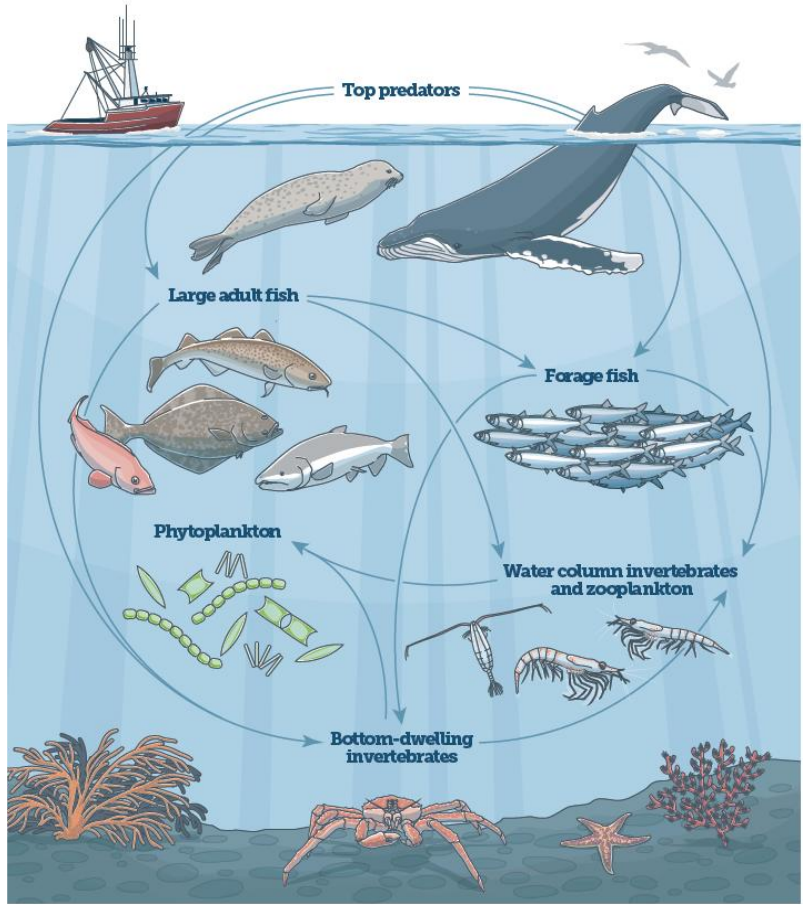
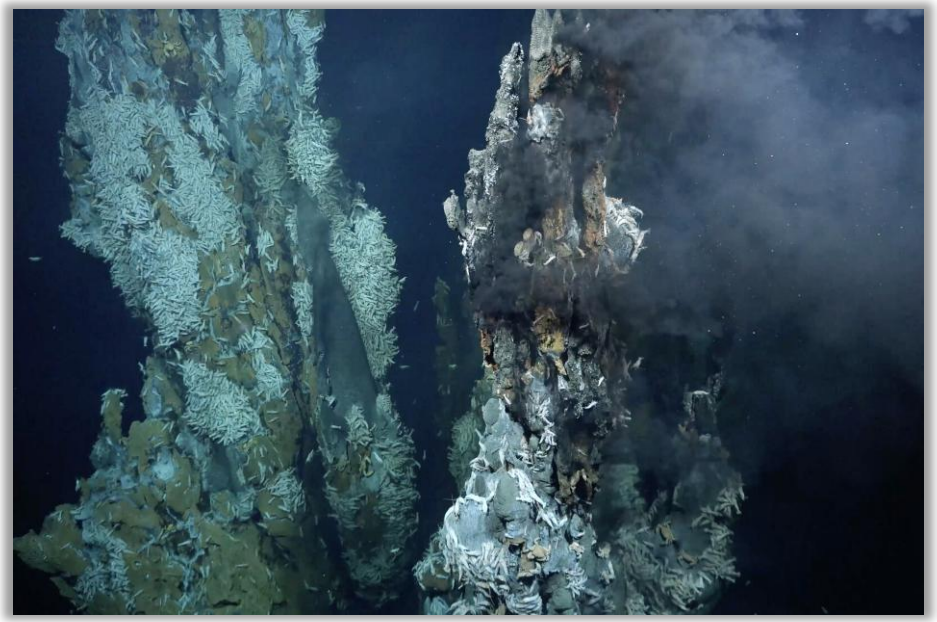
Conclusions

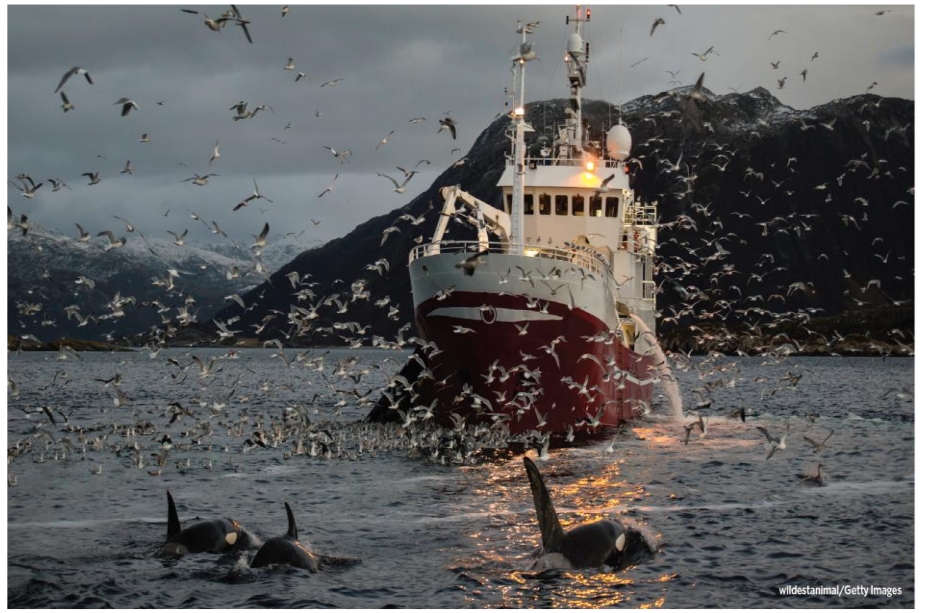
- Missing step for EAFM: translate knowledge into management measures

- Key actions:
  - Set ecological objectives, indicators and fishing rules
  - request better advice
  - Use harvest strategies and MSE

- Tools to help implementation are there to be used.







Thank you!

https://www.pewtrusts.org/en/projects/international-fisheries