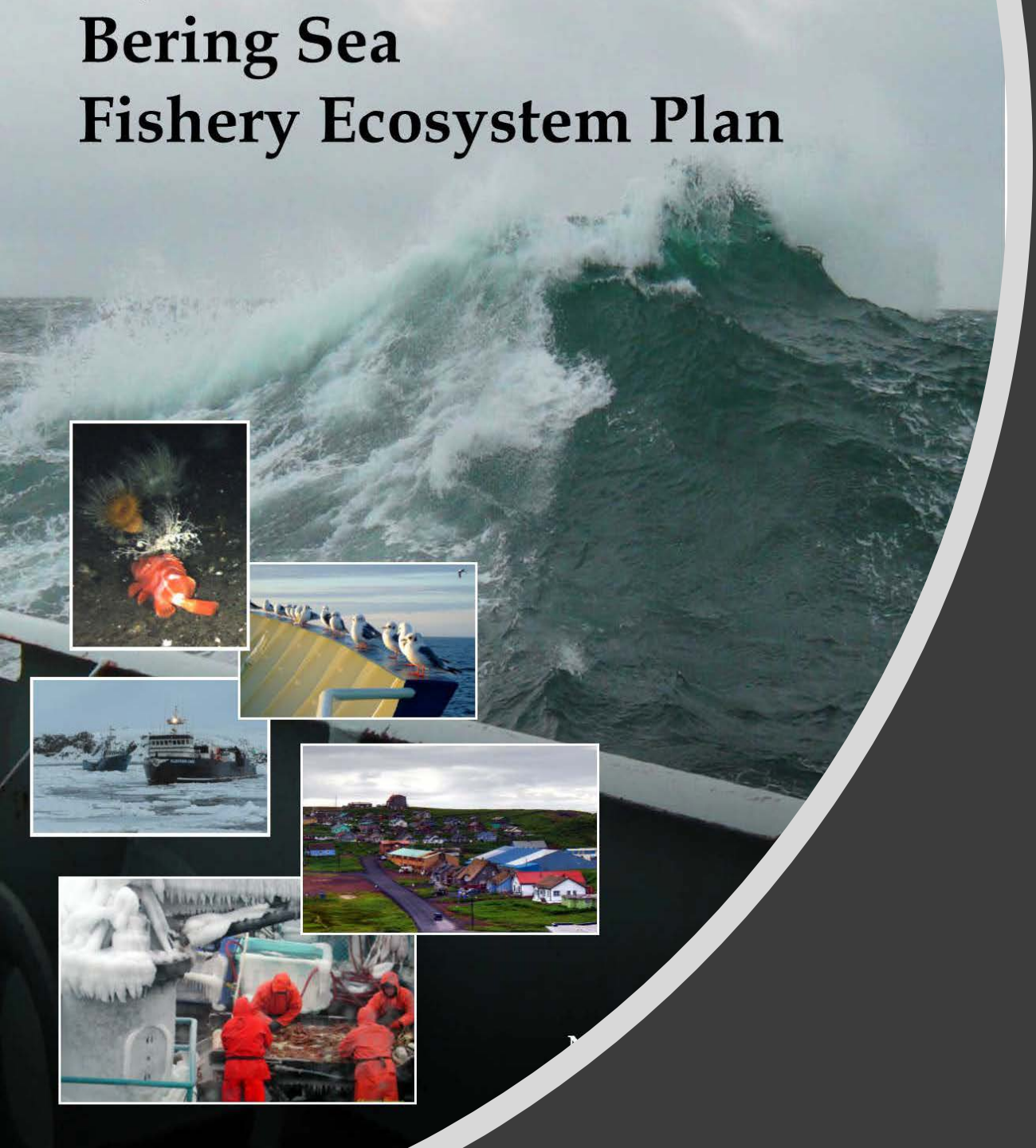



*REVISED DRAFT*

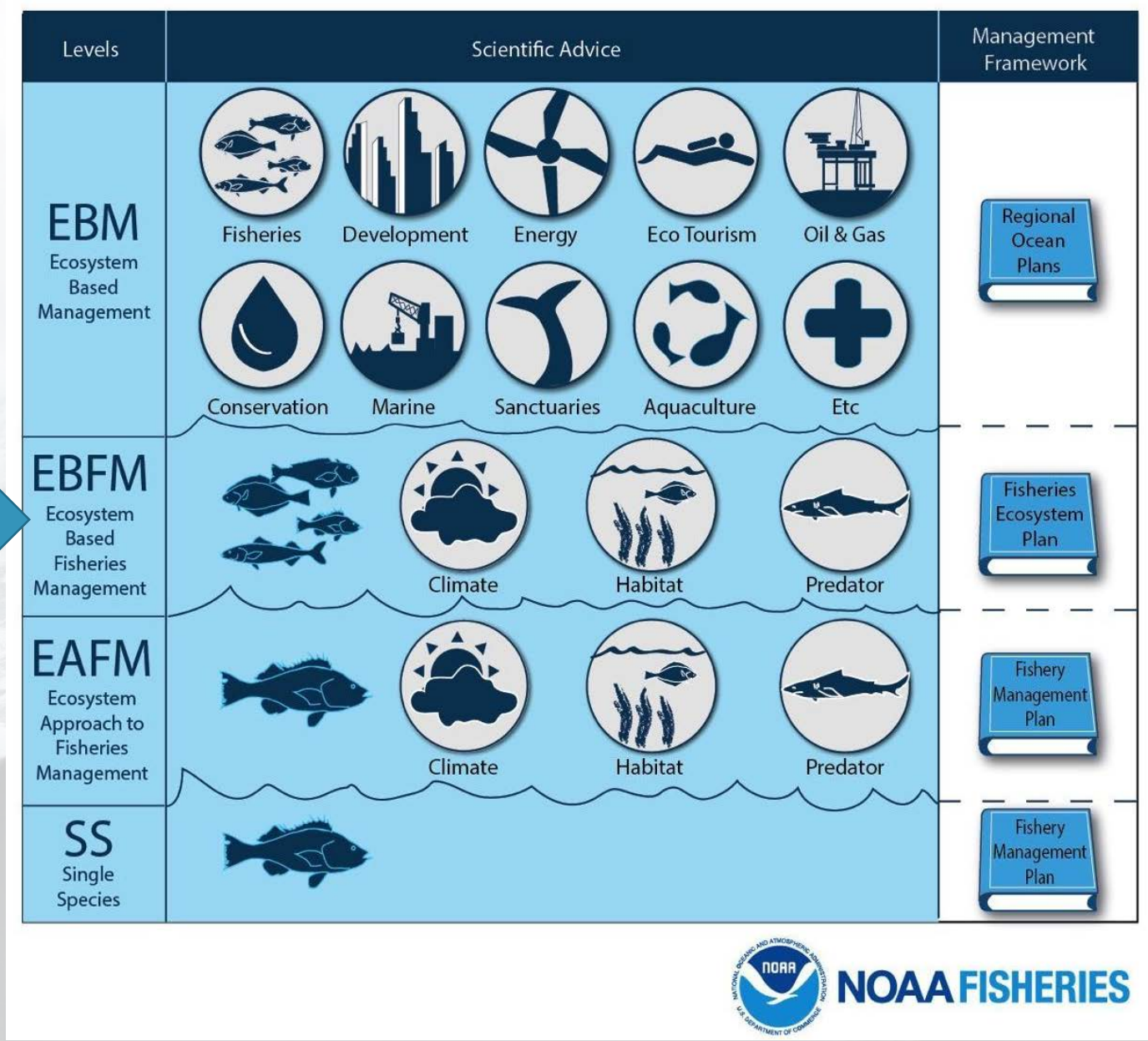
# Bering Sea Fishery Ecosystem Plan

December 2018

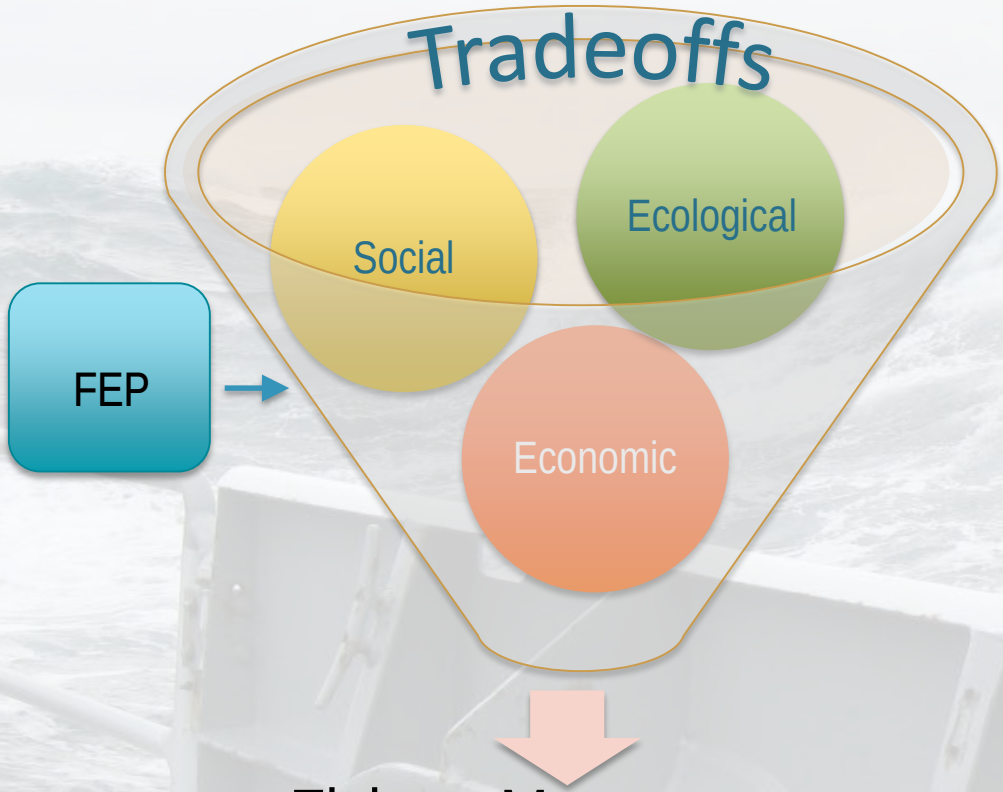
# What is a FEP?

- FEPs are a method for putting ecosystem-based fishery management (EBFM) into action

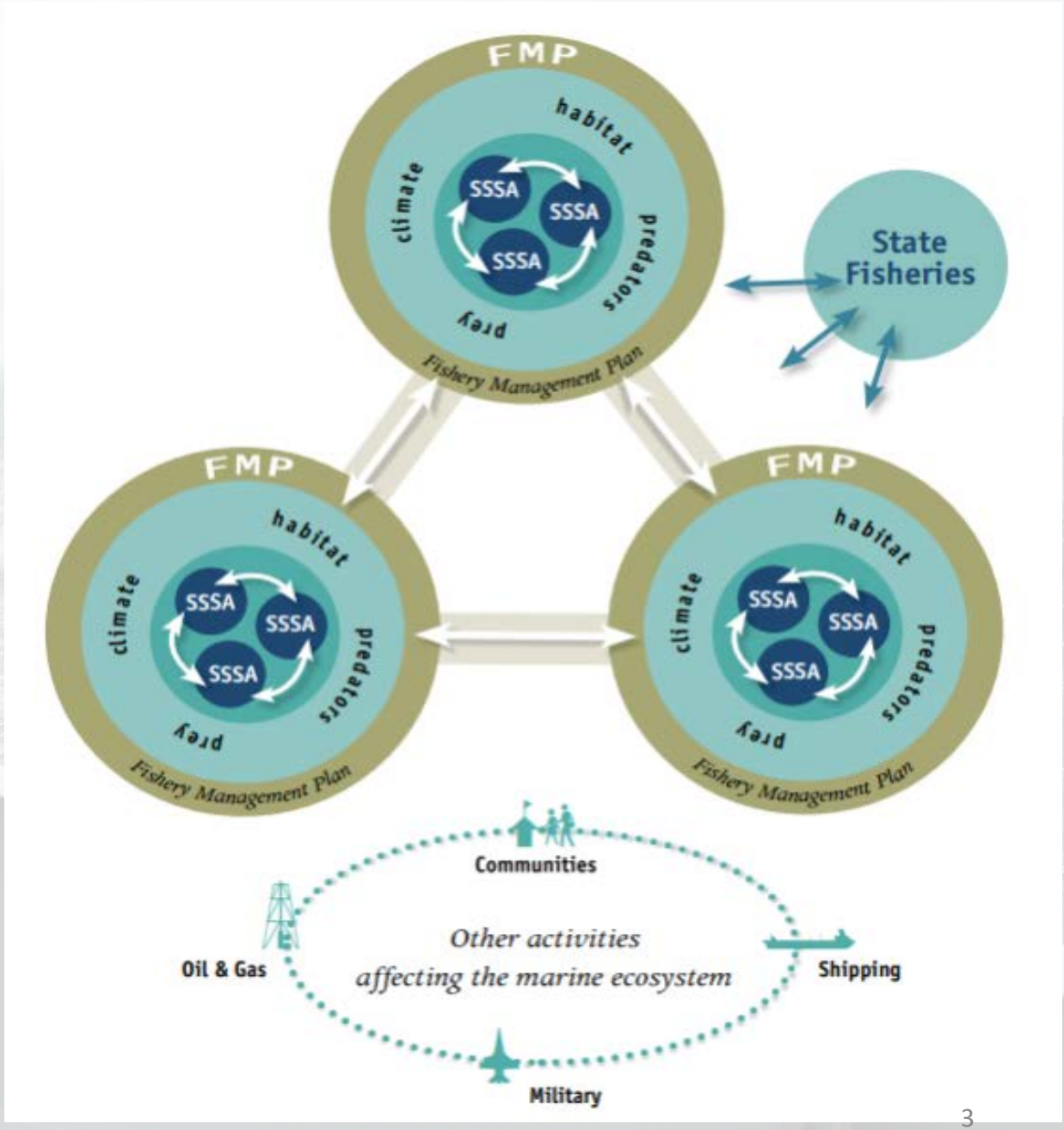
- EBFM considers interactions among ecological, economic, social and cultural components of a system

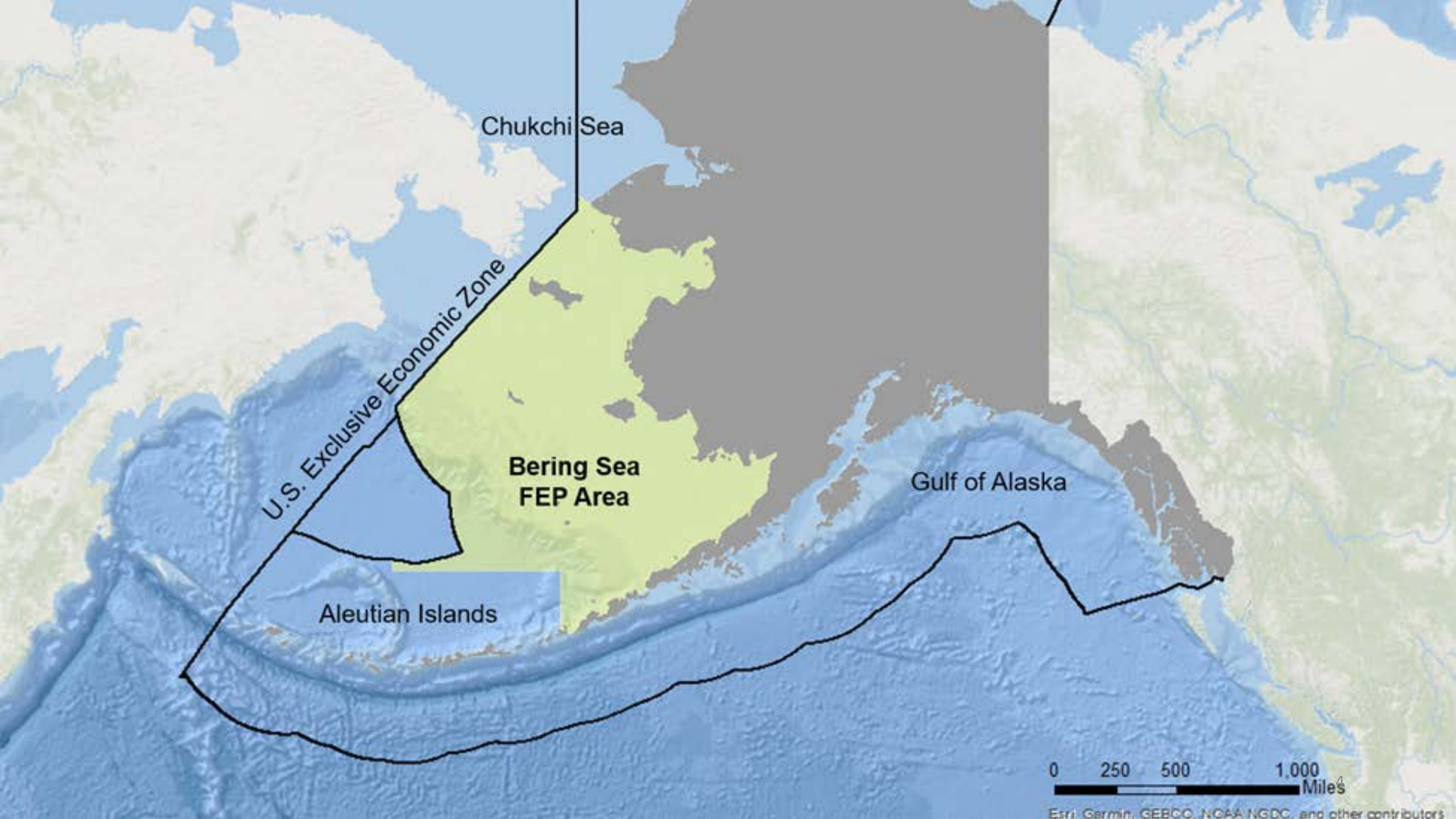


# What is a FEP?



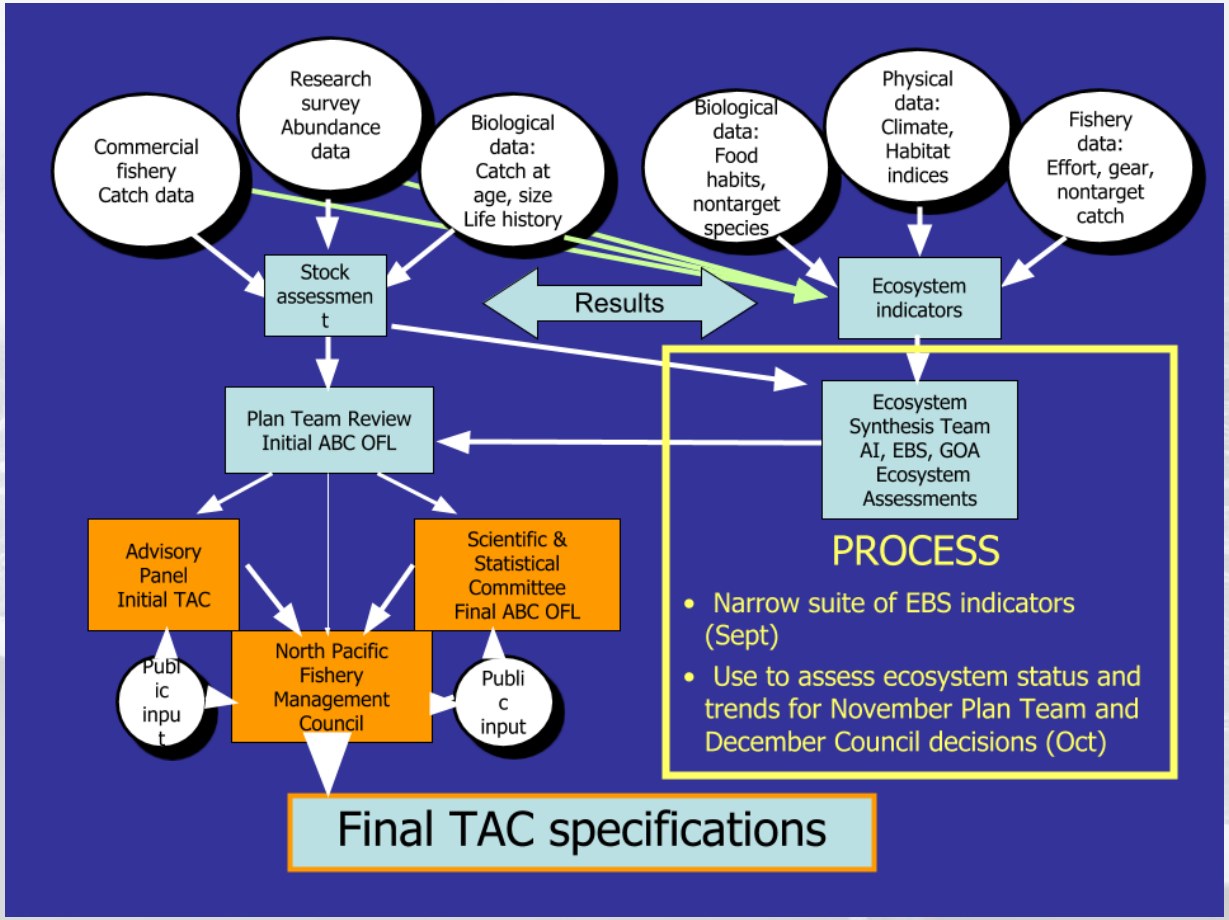

Fishery Management Decisions




Chukchi Sea
U.S. Exclusive Economic Zone
Bering Sea
FEP Area
Gulf of Alaska
Aleutian Islands
0 250 500 1,000
Miles
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

# Why did the Council develop a FEP for the Bering Sea?

- NPFMC has a 30+ year history of EBFM implementation and EBFM management measures
  - Ecosystem OY, forage fish ban, Ecosystem Committee, Ecosystem Status Reports, Ecosystem Considerations for individual stocks
- "Organically-developed" best practices and procedures that evolve over time
  - e.g. the request for an October briefing from the ESR team when unusual environmental signals are evident).
- What would an FEP add?



# Why did the Council develop a FEP for the Bering Sea?

- Assess Council management with respect to ecosystem-based fishery management best practices, and **identify areas of success and gaps** indicating areas for improvement on a regular basis
- **Identify connected Bering Sea ecosystem components**, and their importance for specific management questions
- Serve as a **communication tool** for ecosystem science and Council policy
- Create a **transparent public process** for the Council to identify ecosystem values and management responses
- Provide a **framework for strategic planning** that would guide and prioritize research, modeling, and survey needs
- Provide a **framework for considering policy options** and associated opportunities, **risks, and tradeoffs** affecting FMP species and the broader Bering Sea ecosystem (e.g., evaluation of management tradeoffs among FMPs, fisheries, or with other activities)
- **Build resiliency of Council management strategies**, and options for responding to **changing circumstances** (e.g., climate change-driven changes to fish distribution and abundance, changes in shipping patterns, etc.)

# FEP explicitly includes the human dimension

- Core FEP aims to define LK and TK clearly, and work towards formalizing their use and review alongside natural and social science

| Local Knowledge | Traditional Knowledge |
|---|---|
| • Close environmental observations<br>• Place-based<br>• Empirical<br>• Pragmatic<br>• Often inter-generational | • A living body of knowledge<br>• Acquired through long-term sociocultural, spiritual, and environmental engagement<br>• Defines human – animal reciprocal relationships<br>• Defines human – human kinship and reciprocity<br>• Embodies rules about right conduct that intertwine the pragmatic and spiritual<br>• Transmitted inter-generationally through oral history and ritual<br>• Rooted in time and place, while having wide applicability<br>• Rooted in tradition, while adaptable and dynamic |

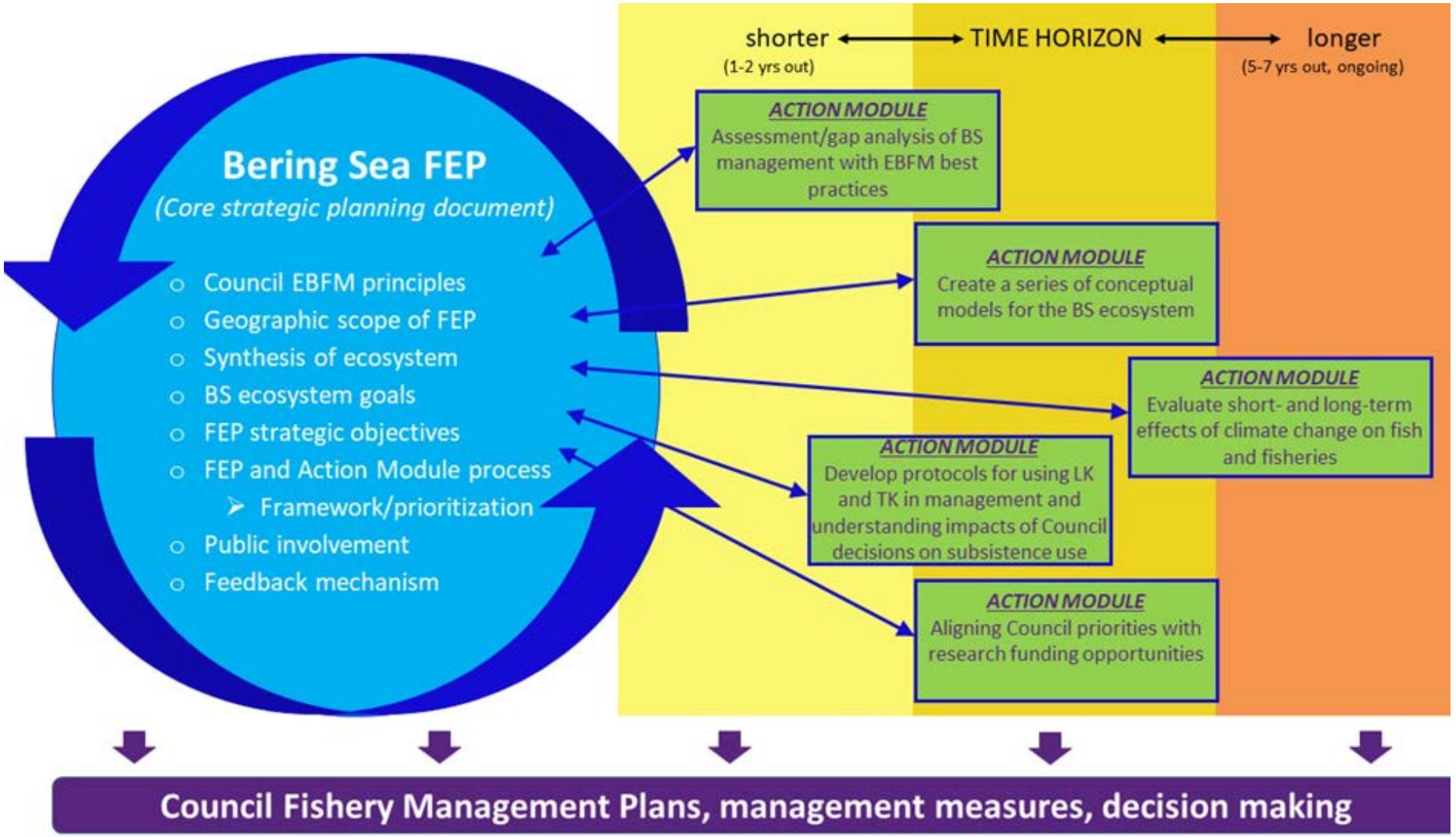
# Ecosystem Goals

1. Maintain, rebuild, and restore fish stocks at levels sufficient to protect, maintain, and restore food web structure and function;
2. Protect, restore, and maintain the ecological processes, trophic levels, diversity, and overall productive capacity of the system;
3. Conserve habitats for fish and other wildlife;
4. Provide for subsistence, commercial, recreational, and non-consumptive uses of the marine environment;
5. Avoid irreversible or long-term adverse effects on fishery resources and the marine environment;
6. Provide a legacy of healthy ecosystems for future generations.

# Three types of objectives

| | | |
|---|---|---|
| Process objectives | Council actions to improve EBFM in the Bering Sea | p 21 |
| Research objectives | Ideas of how to fulfill the process objectives; link directly to Action Modules | p 21-22 |
| Ecosystem objectives | Bridge between ecosystem goals and ecosystem indicators for monitoring | p 22-23 |

# Structure of the Bering Sea Fishery Ecosystem Plan *p 25*



# Core FEP and Action modules *p 25-30*

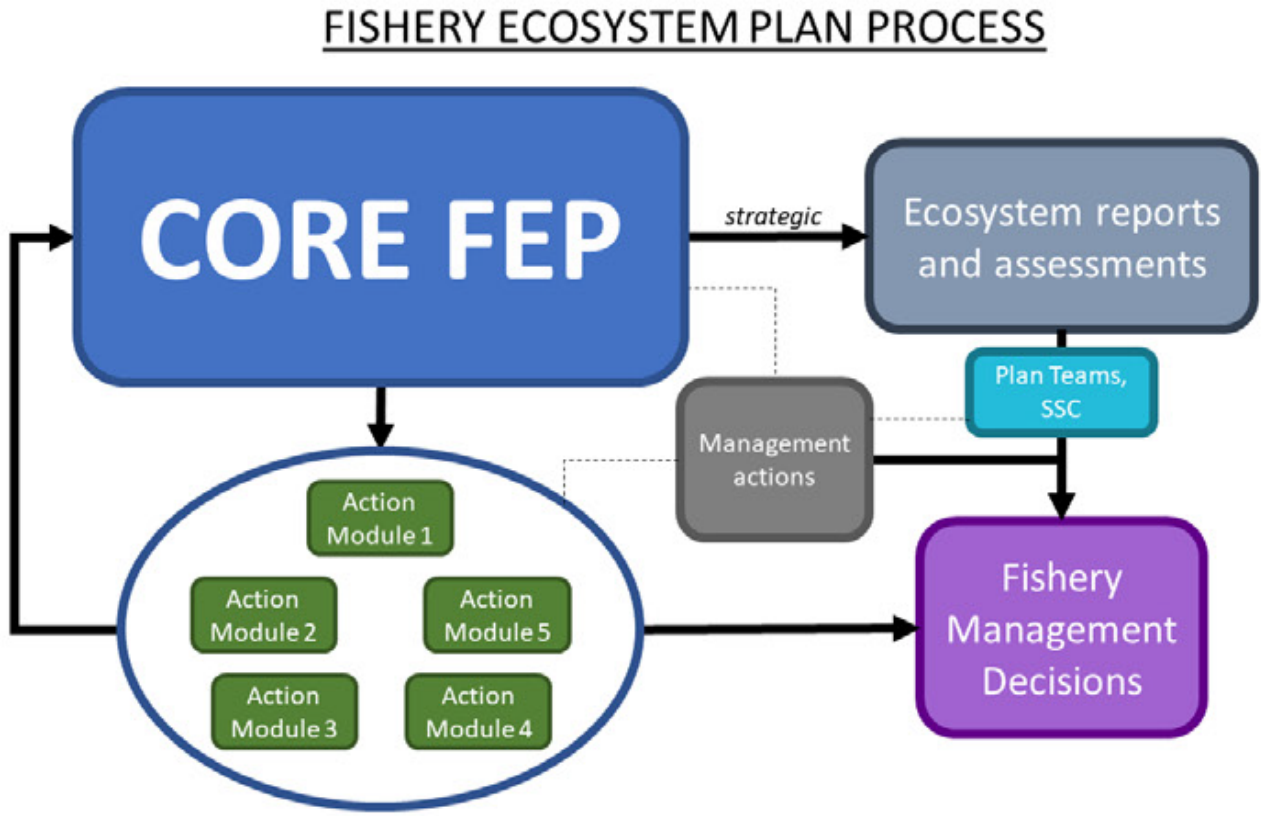
- Core FEP
  - Contains strategic components of FEP
  - Identifies goals and objectives
  - Describes how FEP works as a framework process
- Action modules
  - Specific analyses or research efforts approved by the Council as valuable
  - Council will initiate individual modules when resources allow
  - Each has its own scope, tasking, timeline
  - Directly linked to FEP objectives
  - Designed so that outcomes will be useful to the Council decision process

# Changes since the September 2018 draft

- Chapter 3: clarifications to text and figures to emphasize BS FEP is a strategic planning document, and team will work collaboratively with existing processes
  - description of the Core BS FEP (section 3.1)
  - Action Modules (section 3.2)
  - role of the BS FEP Team (section 3.3)
- Chapter 6: revisions and clarifications
  - description of ecological and oceanographic characteristics (section 6.2)
  - communities (section 6.3.1)
  - additional information on cooperative management (section 6.3.2)
- Subsistence maps removed (core document and appendix)
- Minor clarifications to Action Module descriptions (Chapter 4 and Appendix A)
- Additional suggestions from public comment for specific ways to engage with the public (Appendix B)
- Minor edits throughout for clarity.

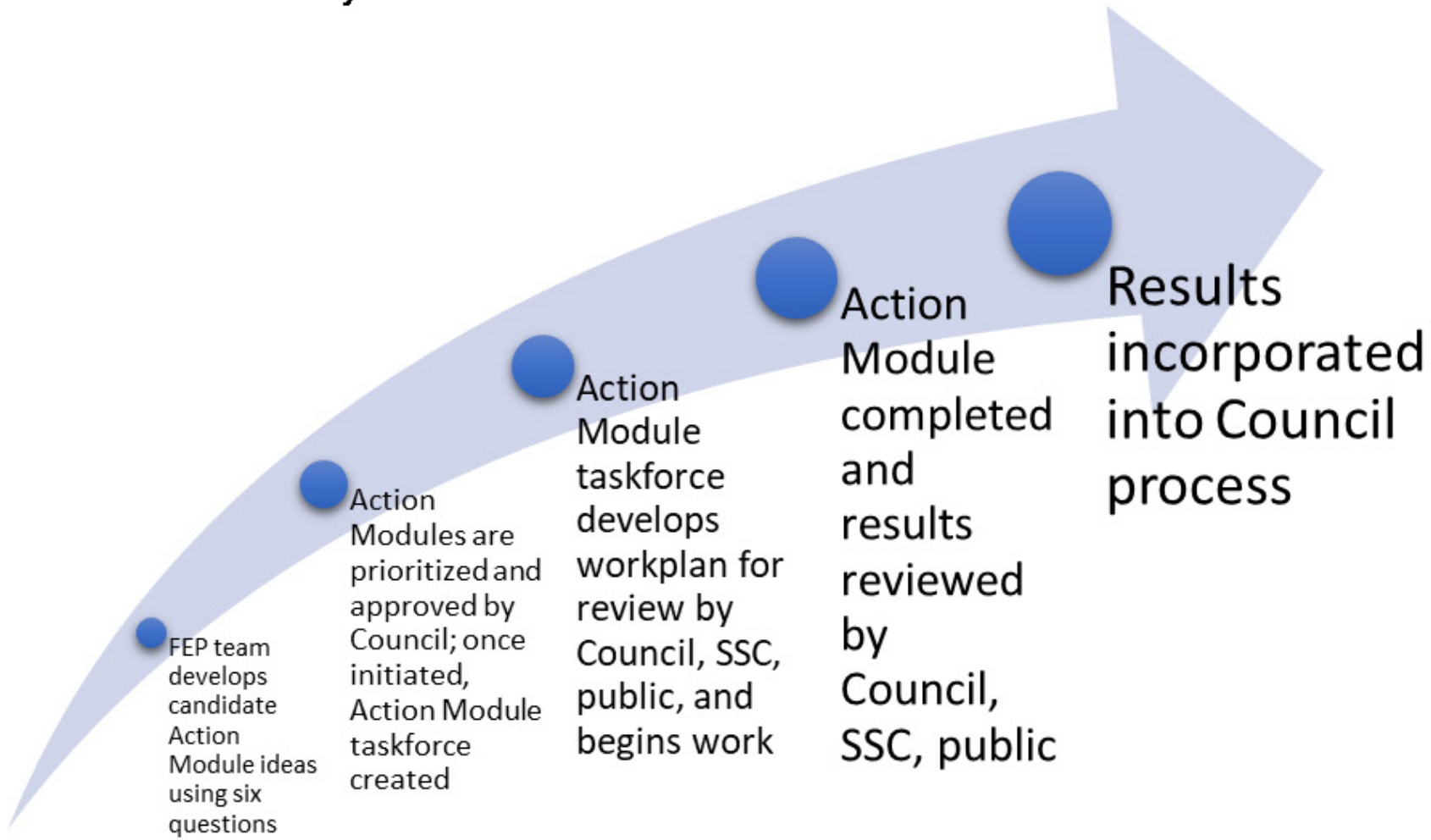
# Clarifications to figures – e.g., p. 28

**Figure 3-2 Feedback among the Core BS FEP, individual Action Modules, and the management process**



# Clarifications to figures – e.g., p. 29

**Figure 3-3 Action Module cycle**



# Role of the Bering Sea FEP team – p.32

- Strategic guidance for monitoring BS ecosystem status
  - Strategic input to ESR, tracking appropriate suite of ecosystem indicators
- BS FEP Action Modules
  - Track progress of ongoing Action Modules
  - Recommendations on identifying Action Modules
- Maintain the Core BS FEP
  - Consider how completed Action Modules inform the Core FEP
  - Summary of how ecosystem information used in Council process
- Outreach and communication
  - Provide Council with periodic overviews of AFSC ecosystem products and research, including LK and TK progress

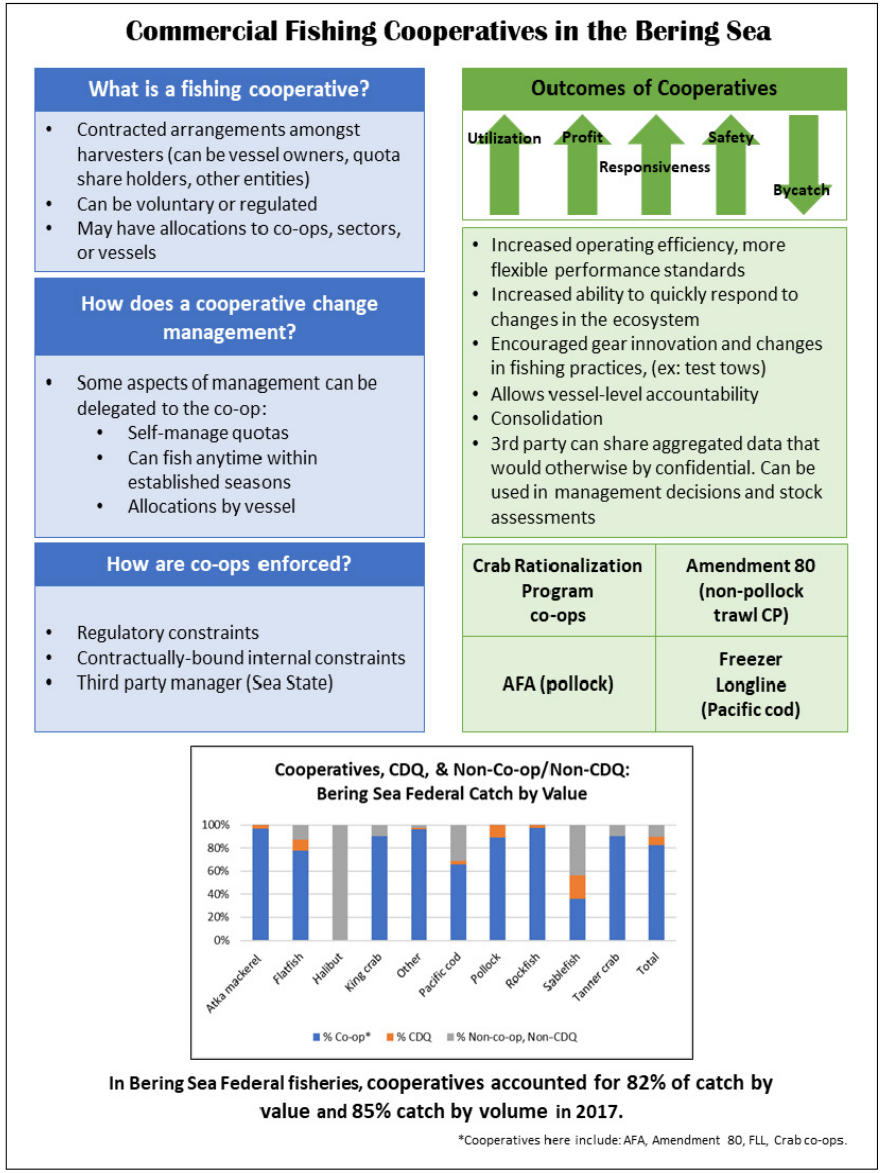
Chapter 6 –

clarification to bio/ecol writeup in Section 6.2 (pp 60-63)

Communities section reorganized (pp 64-70)

cooperative information, p77

Figure 6-16 Commercial Fishing Cooperatives in the Bering Sea



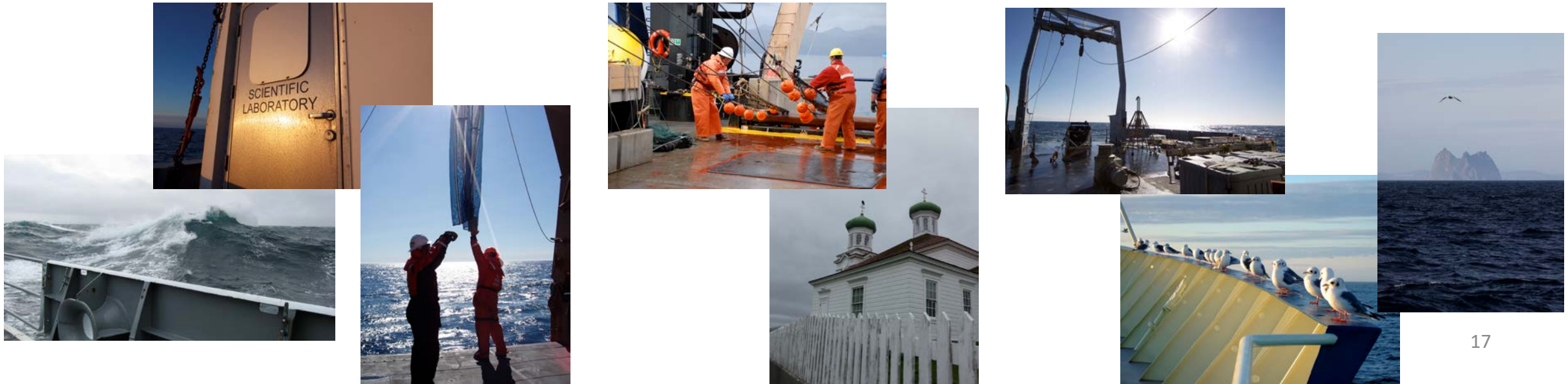
# What is the Council's action in December?

**Adopt the FEP**

- FEP is Council policy document – no regulations, living document, can be updated whenever Council chooses
- Begins the process of using the FEP framework
- FEP team transitions to ongoing role

**Decide on Action Modules**

- Approve all or some of existing 5 action modules
- Prioritize among selected modules
- Decide whether to initiate work on some or all – staff will bring back workplans

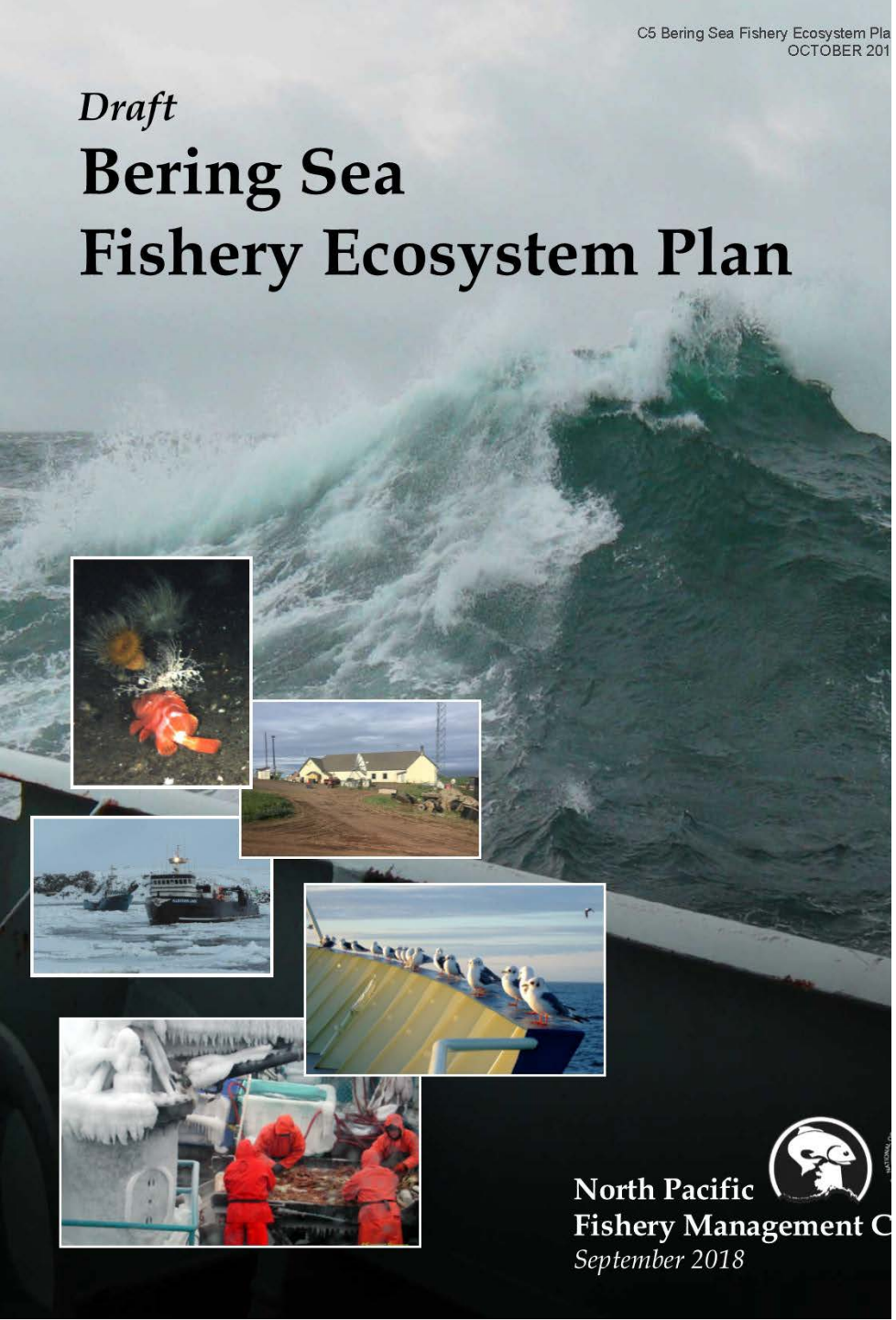


# Draft Action Modules in the FEP

*recommended by the Ecosystem Committee*

Chapter 4, pp 44-49
Study plans, Appendix B

- EBFM gap analysis
- Interdisciplinary conceptual models
- Climate change
- Local, Traditional Knowledge/Subsistence
- Research




# Action Module 1.

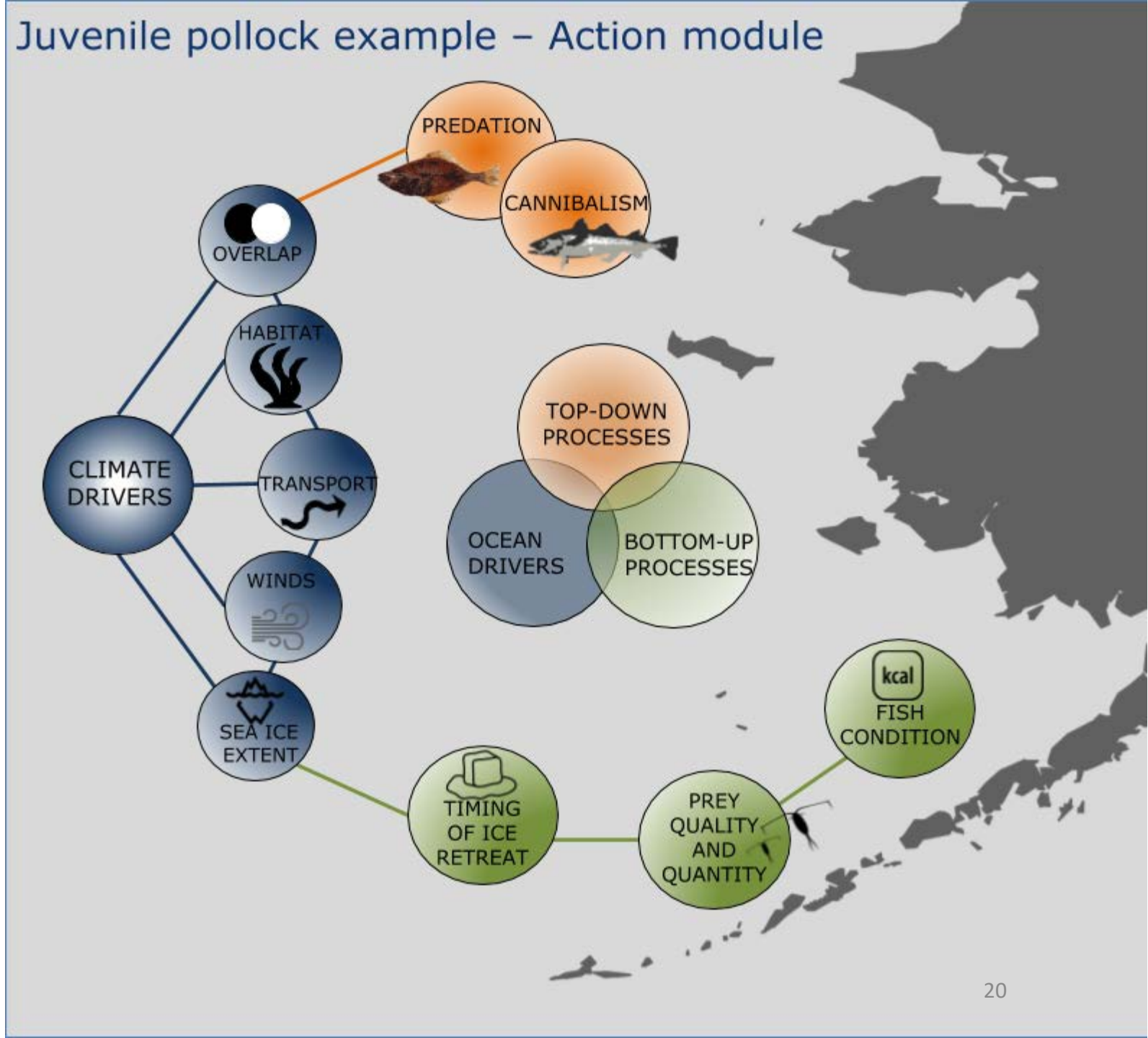
## Assessment/gap analysis of Bering Sea management with EBFM best practices

- Evaluate Council management across Council-managed fisheries
  - *In Core FEP*
- Identify areas of success, gaps indicating opportunities for improvement
- Report findings to communicate with a diverse audience of stakeholders

# Action Module 2.

## Create a series of interdisciplinary conceptual models for the Bering Sea ecosystem

- Models will help the Council in assessing tradeoffs of management actions on different components of the ecosystem, leading to more informed decision making.
- Interdisciplinary models may be integrated in annual SAFE reports, FMP updates, and may inform setting TACs.
- Development of models will require interdisciplinary and interagency team of scientists and a graphic designer or scientist with exceptional graphic design skills.

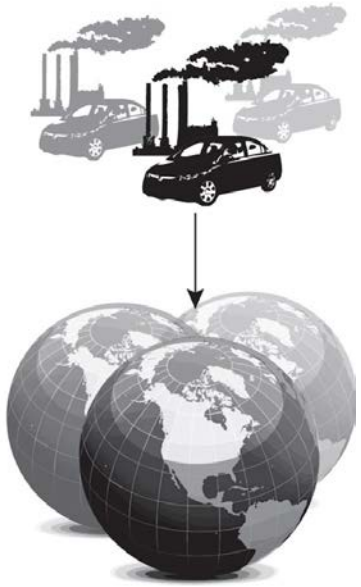


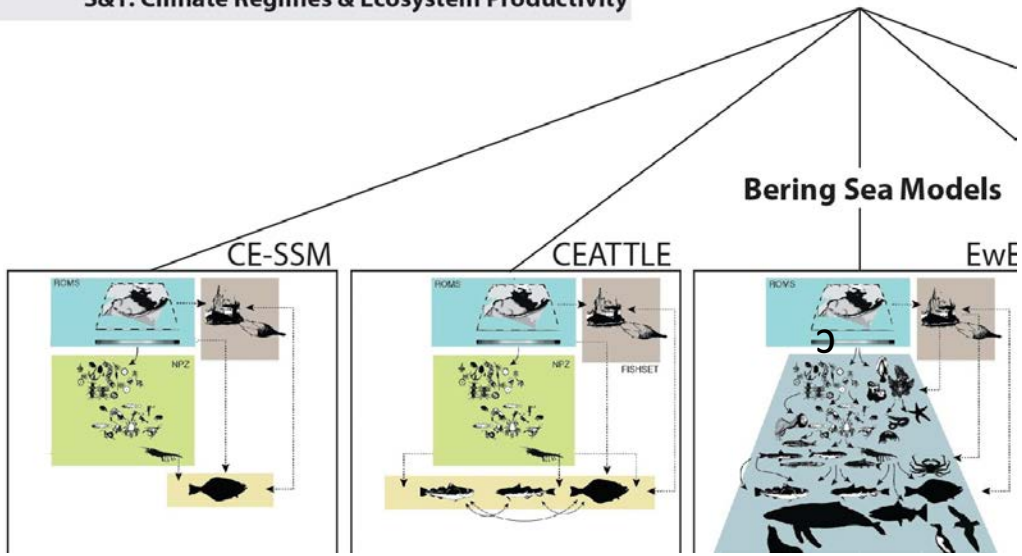
NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

**Alaska CLIMate Project**

Anne Hollowed (AFSC, SSMA/REFM)
Kirstin Holsman (AFSC, REEM/REFM)
Alan Haynie (AFSC ESSR/REFM)
Stephen Kasperski (AFSC ESSR/REFM)
Jim Ianelli (AFSC, SSMA/REFM)
Kerim Aydin (AFSC, REEM/REFM)
Trond Kristiansen (IMR, Norway)
Al Hermann (UW JISAO/PMEL)
Wei Cheng (UW JISAO/PMEL)
André Punt (UW SAFS)

**FATE: Fisheries & the Environment**
**SAAM: Stock Assessment Analytical Methods**
**S&T: Climate Regimes & Ecosystem Productivity**






# Action Module 3.

## Evaluate the short- and long-term effects of climate change on fish and fisheries

Evaluate the vulnerability of key species and fisheries to climate change, to strengthen resilience in regional fisheries management.

Methods will leverage projects at the Alaska Fisheries Science Center to:

- coordinate to synthesize results of various ongoing and completed climate change research projects;
- evaluate the scope of impacts on priority species identified in initial studies; and
- strategically revaluate management strategies every 5-7 years.

Example work under this project includes the Council Ecosystem Workshop in Feb 2018.

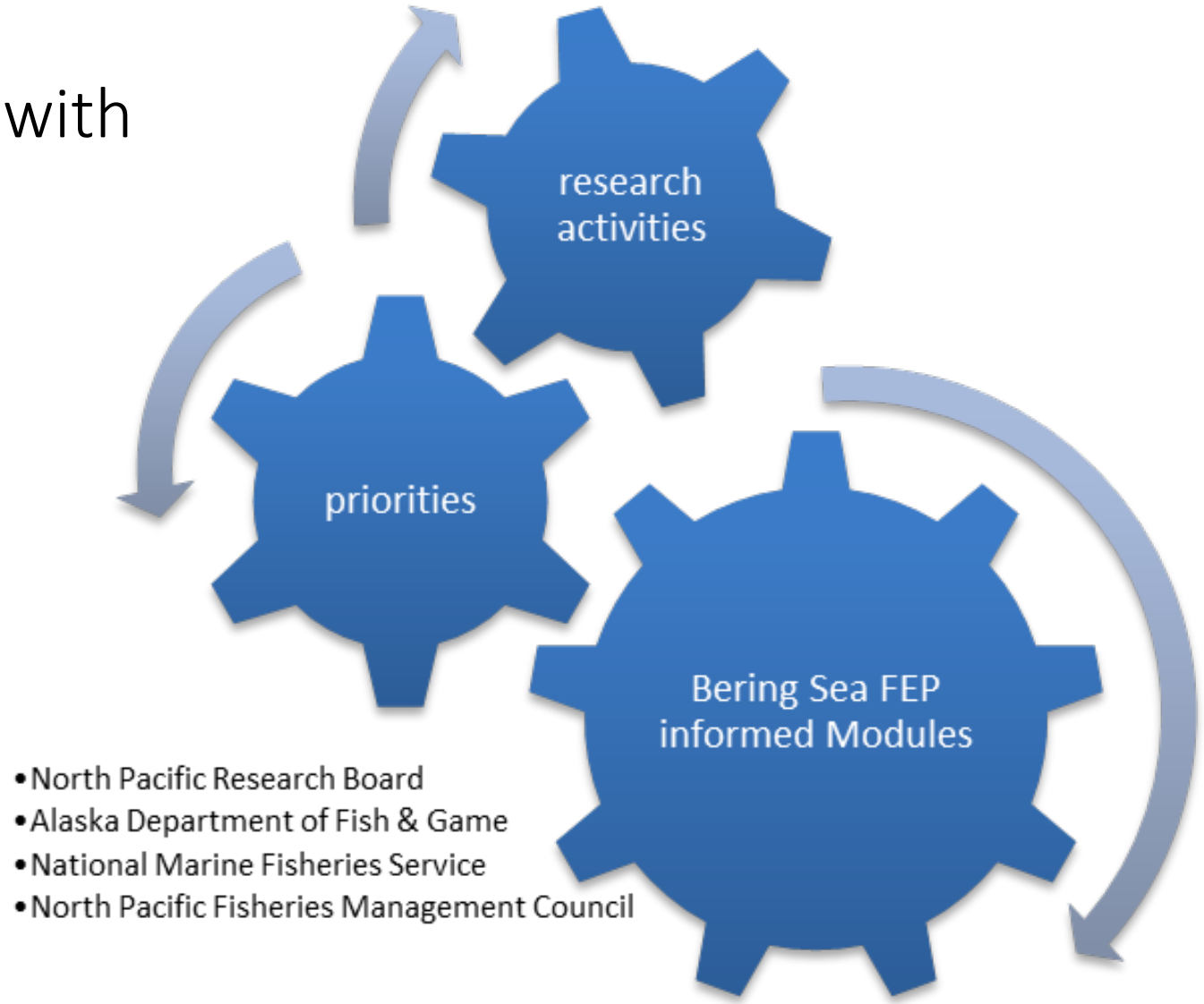
## Action Module 4.

Develop protocols for using Local Knowledge and Traditional Knowledge in management and understanding impacts of Council decisions on subsistence use

- **Part A.** Methods for integrating/incorporating LK and TK into Council processes in the short- to long-term
- **Part B.** Methods for the Council to consider potential impacts to subsistence species, habitats that support those species, and access to subsistence resources

## Action Module 5.
Aligning Council priorities with research funding opportunities

- Track research relevant to FEP Action Modules
- Track how prioritized research projects are used in Council management



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