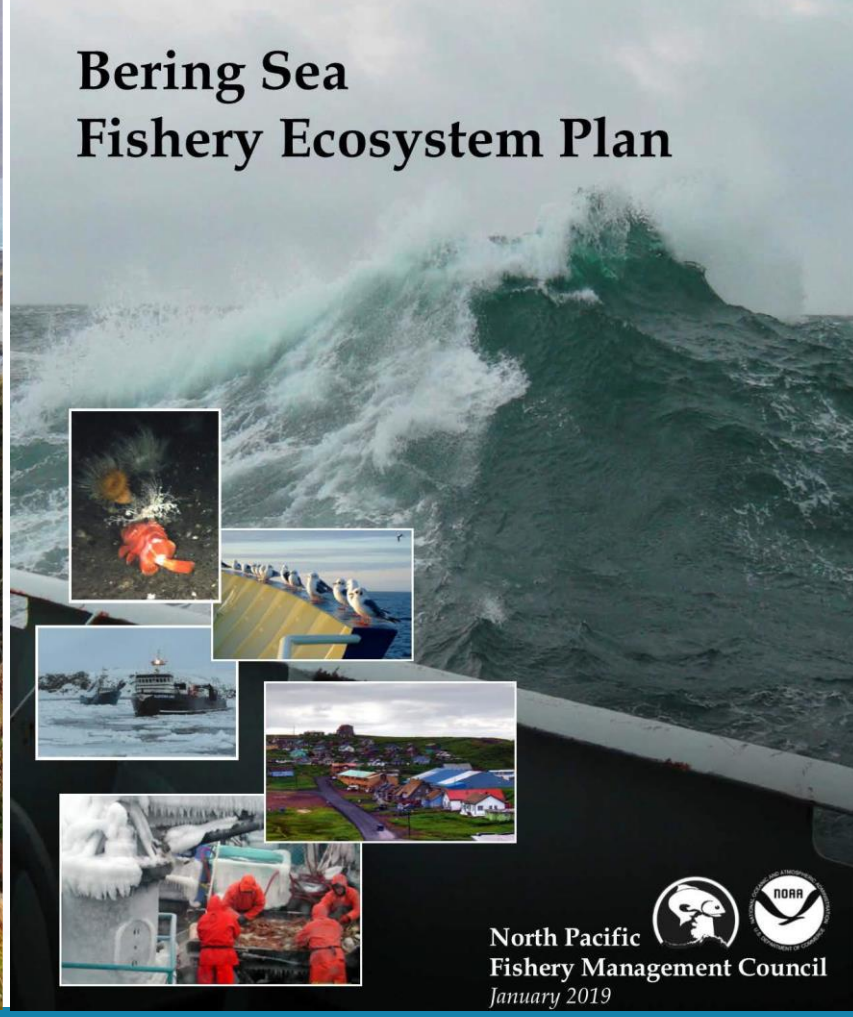
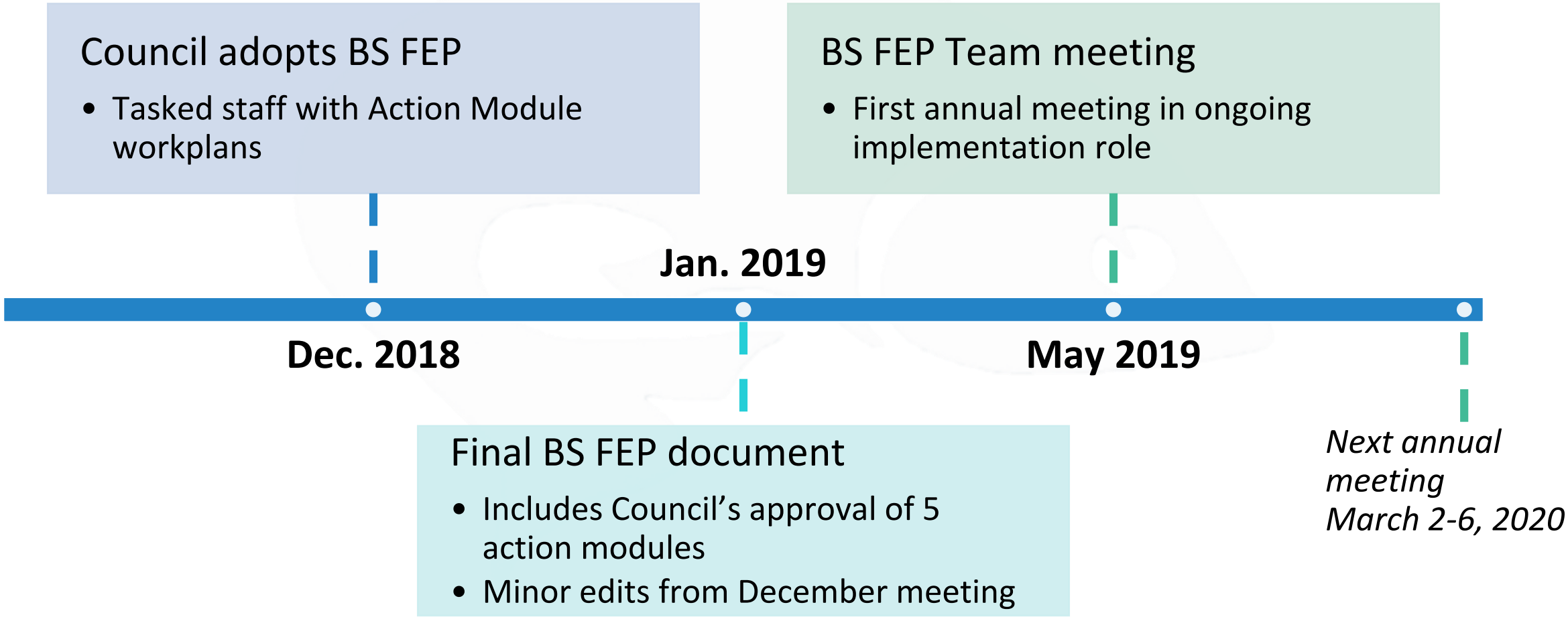


Bering Sea Fishery Ecosystem Plan

Diana Evans and Kerim Aydin

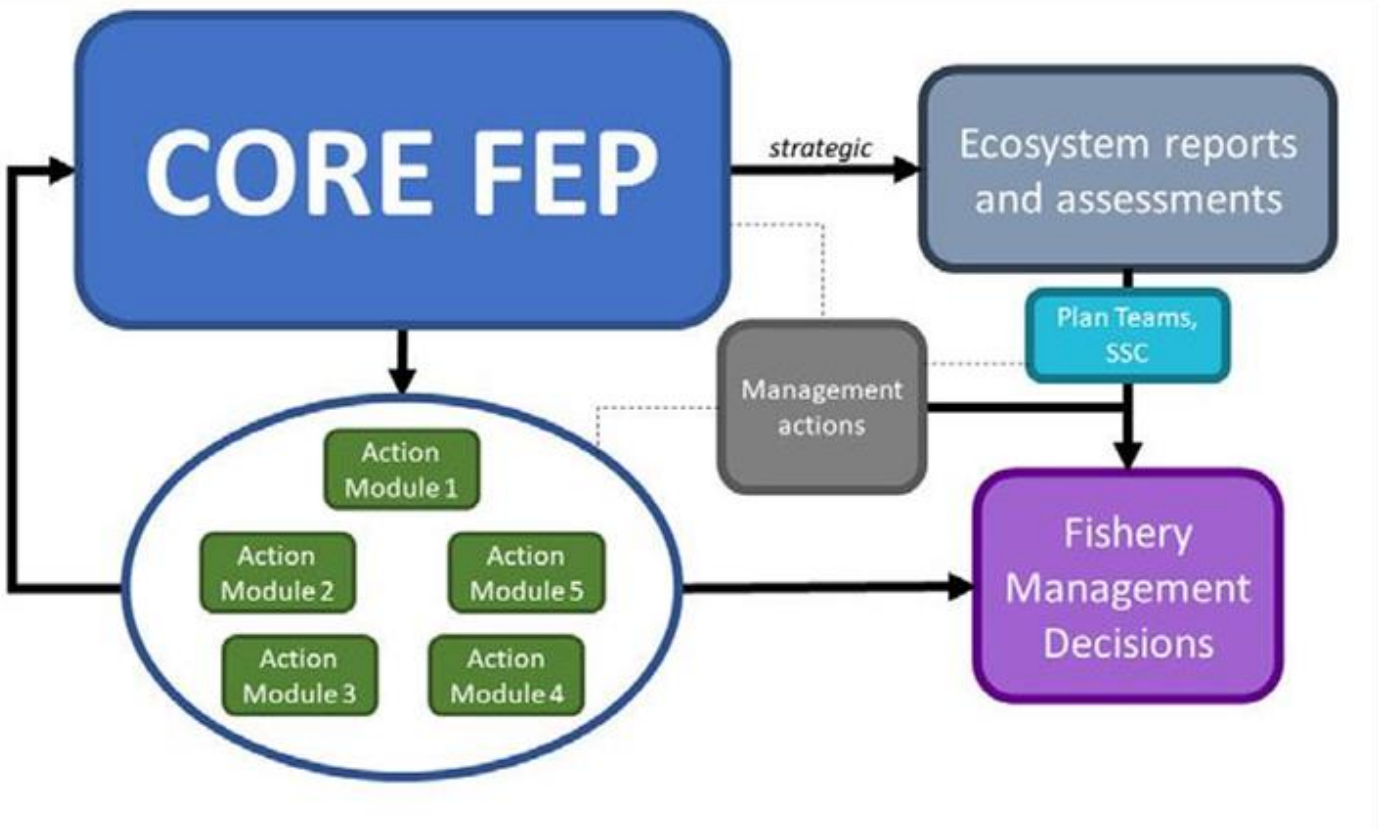
September 2019

Bering Sea Fishery Ecosystem Plan



Structure of the Bering Sea Fishery Ecosystem Plan

- Strategic planning document
- Action informing but not action forcing
  - Management action continues to occur through the FMPs



Bering Sea FEP Team

- Transitioned from developing the FEP to ongoing FEP implementation role
- First meeting in new role May 6-7, 2019, at AFSC
- Agenda structured around tasks identified in the BS FEP

Members

- *Kerim Aydin, co-Chair (AFSC REEM)*
- *Mike Dalton (AFSC ESSR)*
- *Benjamin Daly (ADFG)*
- *Anne Marie Eich (NMFS AKR)*
- *Diana Evans, co-Chair (NPFMC)*
- **Brad Harris (APU)*
- *Jim Ianelli (AFSC SSMA)*
- *Jo-Ann Mellish (NPRB)*
- **Heather Renner (USFWS)*
- *Elizabeth Siddon (AFSC ABL)*
- **Phyllis Stabeno (NOAA PMEL)*
- **Ian Stewart (IPHC)*
- *Stephani Zador (AFSC REFM)*
- *Davin Holen (Sea Grant)*

**unable to attend*

Bering Sea FEP team: Four tasks

Strategic guidance for monitoring Bering Sea ecosystem status	• *Develop and track ecosystem indicators appropriate to BS FEP ecosystem objectives* • *Strategic review of ecosystem products*
BS FEP Action Modules	• *Track progress of ongoing Action Modules* • *Recommendations on identifying new Action Modules*
Maintain the Core BS FEP	• *Consider how completed Action Modules inform the Core FEP, update core FEP as appropriate* • *Track how ecosystem information used in Council process*
Outreach and communication	• *Provide Council with periodic overviews of ecosystem products and research, including LK and TK progress* • *Work collaboratively with Plan Teams and other partners*

Next annual meeting: Week of March 2-6, 2020

Strategic guidance for monitoring Bering Sea ecosystem status

INFORM but don’t _OVERWHELM*_

*Stephanie Madsen

Increase in products without “overwhelming”?

- Data - indicator contributions - (ESR bulk text, moving towards online).
- ESR Ecosystem Assessment and Report Cards - contextual synthesis.
  - ESR Report cards - top line trackers of “through the ecosystem” but not necessarily “holistic”. Intent to revisit “every 5 years” (ripe for Bering Sea).
  - No “grading” in current report cards.
  - 4-pagers (synopsys + management uptake)
- ESPs - (Ecosystem and Socio-economic Profiles)
  - Per-species, grades indicators “per species” based on conceptual model for those species
  - Initial versions developed (sablefish), AFSC workshop May 30-31 for other species.
- Targeted at decision points (e.g. groundfish specs)
- **New** Spring PEEC - (Preview of eco and econ conditions - June)
- **New** Risk Tables
- **Proposed new** - Success Report Card (“graded”) tied to **objectives**

Ecosystem Goals

FEP also identifies ecosystem objectives under each of these ecosystem goals

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

Indicator and objective mapping

Table 2.1 in FEP

Ecosystem Objective	Indicators to track
1. Maintain target biomass levels for target species, consistent with optimum yield, using available tools.	Fish Stock Sustainability Index (FSSI); Groundfish distribution and abundance; Groundfish recruitment predictions (P. cod and pollock); Commercial crab biomass indices; Stability of Groundfish Biomass
2. Maintain healthy populations and function of non-target and forage species.	Jellyfish; Forage fish and juvenile salmon distribution and abundance; Groundfish condition metric; Miscellaneous species; Non-target species catch
3. Adjust fishing-related mortality from the system to be commensurate with total productivity and continue to limit optimum yield to 2 million metric tons for the BSAI groundfish fisheries.	Aggregated CPUE
4. Maintain key predator/prey relationships.	RZA zooplankton indicator
5. Conserve structure and function of ecosystem components.	CEATTLE? Species richness and diversity
6. Minimize adverse impacts to essential fish habitat, to the extent practicable.	Winter spawning flatfish recruitment and wind forcing; Area Disturbed by Trawl Gear
7. Minimize and/or avoid impacts to ecologically-sensitive habitat, including habitat areas of particular concern (HAPCs).	Structural epifauna (EBS shelf)
8. Minimize and/or avoid impacts to seabirds, marine mammals, and protected species.	Coccolithophores; Seabird monitoring; Northern fur seal pup production; Seabird bycatch
9. Support benefits in the Bering Sea fishery and fishery-related industries.	Trends in unemployment; Human population; School enrollment
10. Provide opportunities for new entrants in Federal fisheries.	
11. Promote economic and community stability to all commercial harvesting and processing sectors.	Landings; Value and unit value
12. Promote sustainable opportunities and community resilience for subsistence users and Alaska Native communities.	Halibut and salmon subsistence trends
13. Provide for directed fisheries including subsistence fisheries by minimizing bycatch mortality.	Juvenile Chinook index; Groundfish Discards
14. Preserve the ability for stakeholders to derive non-consumptive and cultural value from the Bering Sea ecosystem.	Recreational fishing participation
15. Establish appropriate thresholds to minimize risk of crossing ecosystem tipping points caused by fishery or other human activity.	Mean lifespan, Length of fish community
16. Encourage responsible parties to minimize adverse impacts to fish and other wildlife associated with changes in shipping activity, tourism, energy, and other types of development.	
17. Ensure that fishery management is sufficiently adaptive to account for the effects of climate change or other ecosystem changes, including loss of sea ice and ocean acidification.	North Pacific Climate Overview; Climate indices; Eastern Bering Sea climate; Spatial distribution of groundfish stocks

Indicator and objective mapping

Council Ecosystem Goals	Ecosystem Objective	Ecosystem Health Indicator(s)	IDEAL Ecosystem Health indicator(s)	Ecosystem Status Report Indicator(s)	IDEAL Ecosystem Status Report indicator(s)
1. Maintain, rebuild, and restore fish stocks at levels sufficient to protect, maintain, and restore food web structure and function	1. Maintain target biomass levels for target species, consistent with optimum yield, using available tools.	Fish Stock Sustainability Index (FSSI); Stability of Groundfish Biomass		Groundfish distribution and abundance; Commercial crab biomass indices	
	2. Maintain healthy populations and function of non-target and forage species.			Jellyfish, Forage fish, juvenile salmon distribution and abundance; Miscellaneous species; Non-Target Species Catch; Groundfish condition	
	3. Adjust fishing-related mortality from the system to be commensurate with total productivity and continue to limit optimum yield to 2 million metric tons for the BSAI groundfish fisheries.	Aggregated CPUE			

Team discussion and recommendations

- Team recommends development of an Ecosystem Health Report Card
  - Organized around the Council's 6 ecosystem goals and the 17 ecosystem objectives
  - Should be developed in partnership between the FEP Team and other Plan Teams, the ESR team, the SSC, the Council process generally
  - FEP Team workgroup (led by Ebett Siddon) to work on an initial framework proposal
  - Timeline:
    - Draft Ecosystem Health Report Card available for March 2020 FEP Team meeting
    - SSC/Council feedback in April 2020, PTs feedback in Sept 2020
    - Complementary revisions to ESR in Nov/Dec 2020

Managing Action Modules

Five Action Modules approved in the FEP

first two initiated by the Council in December 2018

Climate change

Local, Traditional Knowledge / Subsistence

EBFM gap analysis

Interdisciplinary conceptual models

Research

Action Module Workplan: Evaluate effects of climate change and develop management considerations

GOAL

To support equitable climate change adaptation pathways and long-term resilience for the coupled social-ecological system of the Eastern Bering Sea.

METHOD

This Action Module will:

- **synthesize** current climate change knowledge;
- **identify** potential management measures; and,
- **evaluate** risks, timescale, and probability of success.

RESULTS

Results will help the Council track climate change impacts on the Bering Sea ecosystem and **ensure** that **fisheries management in the region is flexible** enough **to adapt to** rapid **shifts in species** distributions or abundance **under future conditions.**

MEMBERSHIP

The Taskforce will be composed of a diverse group of individuals with interdisciplinary expertise. Members will include AFSC researchers, Traditional Knowledge holders, and representatives of indigenous organizations and NGOs.

Action Module Workplan: Develop protocols for Local Knowledge, Traditional Knowledge, and Subsistence

GOAL

To develop protocols for using local knowledge (LK), traditional knowledge (TK) in management and understanding impacts of Council decisions on subsistence resources, users, and practices.

3 PARTS

Part 1: Processes for incorporating LK

Part 2: Processes for incorporating TK

Part 3: Processes for assessing impacts of Council actions on subsistence

MEMBERSHIP

Stakeholders have recommended the Taskforce be composed of a diverse group of individuals geographically representative of the entire BS FEP area, including local residents and people from multiple age groups.

Team discussion and recommendations

- Climate change – approx. 10 person taskforce
  - Balanced mix of interdisciplinary and specialist members
  - Includes those familiar with the Council process
  - Leverages people with connections to other partnerships

- LK/TK/Subs – max 15 person taskforce
  - 7-10 appointed, 2/3 TK and subsistence, 1/3 LK
  - Up to 5 agency staff

- Nominations submitted, final team formation:

Outreach and Communication

Team discussion and recommendations

- Council staff have developed story maps for BS FEP website
  - https://www.npfmc.org/bsfep/
- Useful visualizations for outreach about what BS FEP is, what action modules the Council has prioritized
- Team members will try to connect educators to FEP website information, as appropriate, as well as share at regional science conferences