Bering Sea Fishery Ecosystem Plan

May 24-25, 2021

BS FEP Team, report to Council: June 2021

Overview of FEP team annual meeting May 25 2021

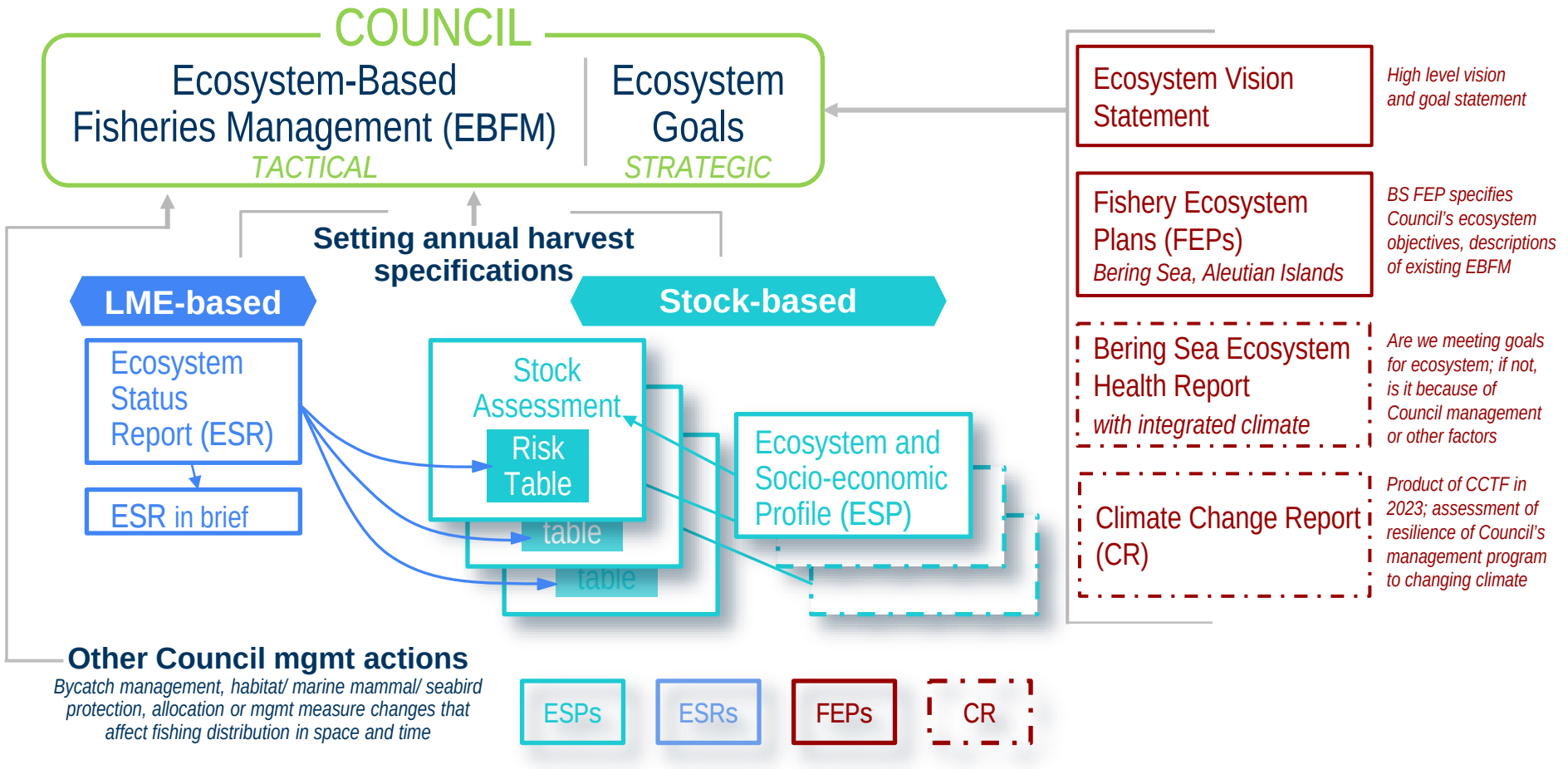
- Report organized around four FEP team tasks
  - outreach and communication
    - Clarity about various ecosystem reports
  - managing FEP action modules
    - Updates from LKTKS and CCTF
  - providing strategic guidance for monitoring Bering Sea ecosystem status
    - Bering Sea Ecosystem Health Report
  - maintaining the core FEP
    - Next steps

Council motion in Feb 2021

- Council request: clarity regarding multiple existing and proposed products to assess the ecosystem / impacts of climate change
  - Developed simplified graphic and description of reports
  - Table distinguishes among three ecosystem reports
    - ESR
    - ESP
    - FEP Team's proposed Bering Sea Ecosystem Health Report

Various EBFM reports/products for the Council

Dotted box = under development



Description of reports/ products

ESR - Ecosystem Status Report; annual report of LME-level ecosystem data relevant for setting harvest specifications. *CCTF aims to include climate data as relevant.*

ESR in brief – 4-page summary of the ESR and how ecosystem info was used in specifications process.

ESP - Ecosystem and Socio-economic Profiles; pulls ecosystem (and other) data of particular relevance to an individual species or species complex. Scheduled expansion to new stocks over time; annually updated with new data, redesigned periodically. *CCTF aims to include climate data as relevant.*

Risk tables within the SAFE reports – captures summary of risk within each stock assessment; one column dedicated to ecosystem information summarized from ESR and ESP

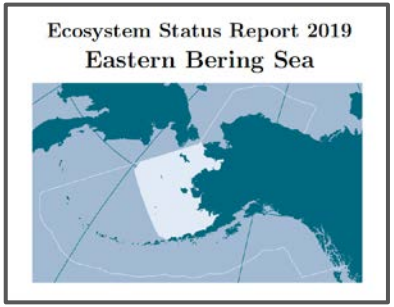
FEP – Fishery Ecosystem Plans for the Aleutian Islands and the Bering Sea; for the AI, describes ecosystem interactions and a risk assessment; for the BS, specifies ecosystem goals and objectives, and describes current EBFM practices

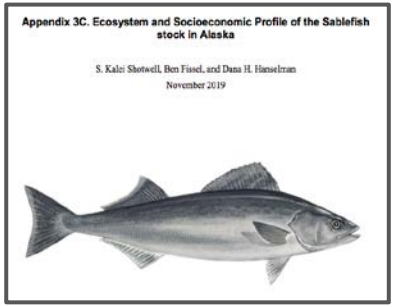
BSEHR / Health report - Under development. Strategic report to evaluate how Council is succeeding at ecosystem goals and objectives identified in the BS FEP. Updated every 2-3 yrs. *CCTF aims to include climate data as relevant.*

Climate Change Report – product of the CCTF; assessment of resilience of Council management with respect to changing climate, including current state of climate readiness, key risks, gaps, tipping points, and limits to adaptation.

PEEC – activity to Preview Ecosystem and Economic Conditions; preliminary information to inform ESRs, ESPs

Distinguishing ESR, ESP, BSEHR





	Ecosystem Status Report	Ecosystem and Socio-economic Profile	Bering Sea Ecosystem Health Report
Purpose	Tactical - harvest specs* ** in past, this was the single catch-all report for all ecosystem considerations data*	Tactical - harvest specs	Strategic – is Council achieving ecosystem goals
When issued	Oct-Dec	Oct-Dec (partial or full)	April (bi- or triennially)
Scope	Aggregated - Indicators that pertain to many stocks at once	Species/Stock-specific – indicators that have an impact on this specific stock	Aggregated - Synthesizing across ecosystem area /activities
Spatial	Large Marine Ecosystem (EBS, GOA, AI)	Large Marine Ecosystem/ FMP (EBS, GOA, AI)	LME -- Basin-scale
Temporal	Annual trend updates	Mixed	Longer term trends

Action Modules / Taskforce updates

- Team supports ongoing efforts from both taskforces to begin progress on their workplans
    - LKTKS *(briefing provided to Council in February)*
    - Climate change *(briefing provided to Council at this mtg)*
- Team will continue to liaise with Taskforces with respect to input and review for Bering Sea Ecosystem Health Report
- Intent to enhance ongoing communication and coordination between Team and Taskforces in future as work continues

"Ecosystem Health" Report May 3 workshop

- FEP Process Objective #9:
  - Maintain and enhance systematic status and trend monitoring of Bering Sea ecosystem processes and status relative to ecosystem objectives, to detect change
- Also Process Objective #10:
  - Create and track performance metrics to evaluate the ecosystem effects of specific management actions
- FEP Team tasked with providing strategic guidance for monitoring BS ecosystem status
  - *develop and keep current an appropriate suite of ecosystem indicators specific to the FEP's Ecosystem Objectives* (FEP Team Terms of Reference)
  - Originally intended to be tracked in the ESR, but thinking has evolved

Fisheries effects on the ecosystem??

- Cumulative, multi -species effects (synthesis needed)
- Informs management strategy, not tactical management decisions
- Diversity of audiences
- Monitors success of EBFM management actions (progress towards goals and objectives)
- *Without* overwhelming

GULF of MEXICO Coral Reef

PRELIMINARY REPORT CARD

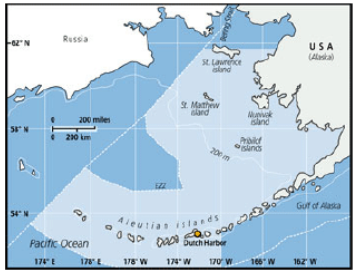
Scale Description

MEETS EXPECTATIONS | BELOW EXPECTATIONS | NO DATA

To describe the perceived condition of the reefs in the Gulf of Mexico, we used a spectrum of colors that ranges from green to red.

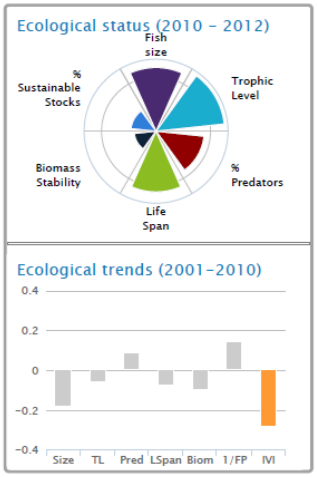
coris.noaa.gov/activities/gulf-of-mexico-coral-reef/welcome.html

Bering Sea, Aleutian Islands

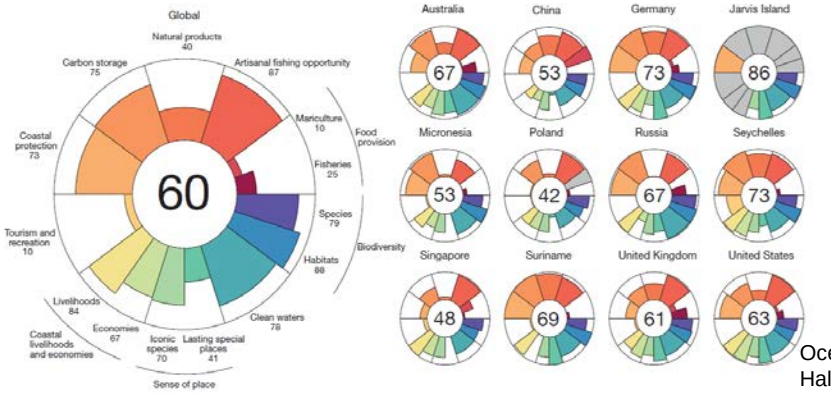


The 1960s-70s was a period of high exploitation, particularly for yellowfin sole, Pacific ocean perch, walleye pollock. Since the 80s, the total allowable catch has been capped at 2 MT, which has been consistently lower than the sum of species quotas; so catch has been very stable and, while some species are considered fully exploited, the ecosystem has not shown patterns of overfishing. Over half of the total catch has been pollock, a mid-trophic level species. It also dominates the surveyed biomass, so the indicators tend to follow the variable recruitment of pollock, possibly explaining non-significant trends for 1996-2005. Longer-term positive trends in fish size and lifespan were due in part to longer-lived flatfish, which experienced strong recruitment in the 80s possibly due to beneficial climate conditions.

by Kerim Aydin, Sheila JJ Heymans



indiseas.org



Ocean Health Index
Halpern et al. 2012. Nature

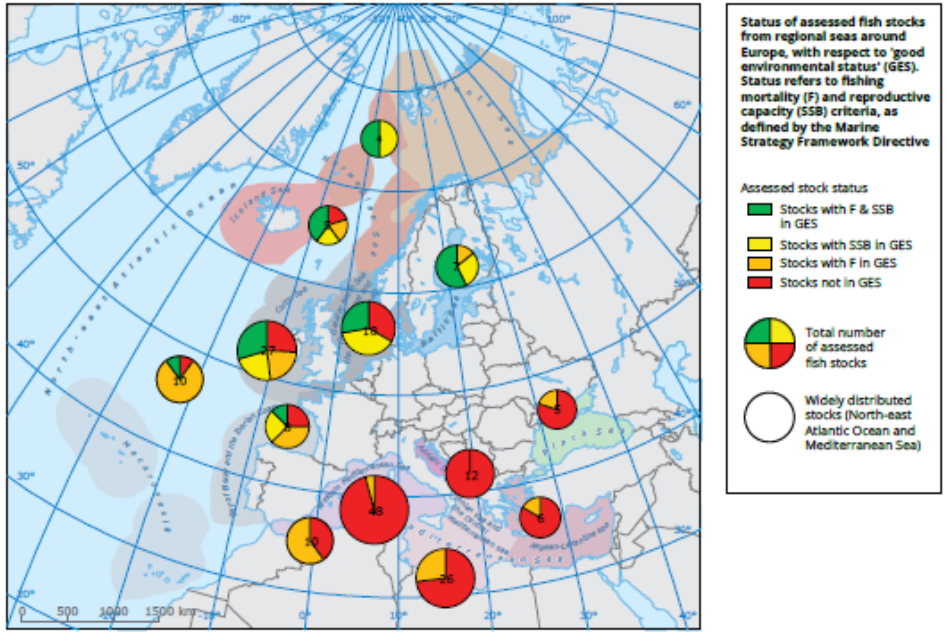
Table ES.1 Indicative assessment of key status and outlook for healthy, clean, and productive seas, plus supporting information

Healthy seas?	Status: ecosystem characteristics	5–10 year outlook	Information availability and quality	Read more in Section
Seabed habitats				3.2
Water column habitats				3.3
Marine invertebrates				3.4
Marine fish				3.5
Turtles				3.6
Seabirds and waterbirds				3.7
Marine mammals				3.8
Ecosystem processes and functions				3.9, 3.10
Clean and undisturbed seas?	**Status: pressure**	**5–10 year outlook**	**Information availability and quality**	**Read more in Section**
Physical disturbance of seafloor				4.2
Extraction of fish and shellfish				4.3
Non-indigenous species				4.4
Eutrophication				4.5
Contamination				4.6
Marine litter				4.7
Underwater noise and other forms of energy input				4.8
Climate change				4.9
Productive seas?	**Direct dependency on healthy seas**	**Activity 5–10 year outlook**	**Information availability and quality**	**Read more in Section**
Land-based activities	X	-		5.2
Extraction of living resources	√	↗		5.3
Production of living resources	√	↗		5.4
Extraction of non-living resources and disposal of waste	X	↗		5.5
Transport and shipbuilding	X	↗		5.6
Tourism and recreation	√	↗		5.7
Man-made structures	X	↗		5.8
Energy production	X	↗		5.9, 5.10
Research and survey	X	↗		5.11
Military	X	↘		5.12

Legend: Indicative assessment of:

Status and trends of ecosystem and pressures		Information availability and quality	
	Status not good/deteriorating trends dominate		Limited information
	Status or trends show mixed picture		Sufficient information
	Status good/improving trends dominate		Good information
Note	The indicative assessment builds on the information analysed in the relevant sections and expert judgement. The sources of information include EU reporting obligations, EEA indicators, EU and regional reports, and peer-reviewed papers.	Note	The indicative assessment builds on the availability and quality of the information to make comparable and coherent evaluations at EU level and between regional seas.

Figure 3.6 Proportion of assessed fish stocks in 'good environmental status'



Source: EEA, 2015b.

Status of Europe's Seas (2015)
https://www.eea.europa.eu/publications/state-of-europes-seas

Suggested Path

Develop over **next year** a pilot report containing:

- Recommendations for what to monitor for EBFM "success" in the Bering Sea (what data or information, quantitative or qualitative) to use.
- Recommendations for how to monitor.
  - Annually? 3-year cycle? 3 year cycle with annual data updates?
    - Iterative: will depend on metrics chosen - both expected rate of change of indicators and difficulty/resources in obtaining data.
  - Report format (also iterative).
  - Recommendations to consider new products (for AK indicators community of practice: including AFSC, but also funding bodies, other agencies, groups, etc).
- Extra credit: indicator levels for raising red, yellow flags
  - "Informing" flags, not "action forcing" flags!
- Pilot report on current state of the Bering Sea

Suggested Path

- Pilot report on current state of the Bering Sea
  - Data, and synthesized "state and past trends" of the ecosystem.
  - Initial synthesis is an FEP team product (not ESR or other).
  - Initial "flag" assessment.
  - In a sense, similar to the "Ecosystem overview" that was part of base AI FEP, but dropped from Bering FEP to do as a "living" (updated) report rather than part of the base FEP.
- Pilot report will recommend timing of tracking updates, in part based on timescale of indicators chosen, but full report would be ~3 year strategic document.

So where is our report starting point?

- Focus of FEP is strategic
  - Strategic versus Tactical advice led to development of this new product to deliver longer-term strategic advice rather than the near-term tactical advice contained in the ESRs.
  - Purpose in FEP: to allow fishery management to more explicitly take into account and be responsive to changes in the ecosystem
- Six ecosystem goals are overarching; FEP associates them with one or more strategic Ecosystem Objectives
- FEP Team recommendation:
  - Organize report by six goals, and objectives under those goals.
  - Subteams at May 3rd workshop brainstormed initial data sources/resources.

Council's 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

FEP Ecosystem Objectives

Ecosystem Goal 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.
2. Maintain healthy populations and function of non-target and forage species.
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.

FEP Ecosystem Objectives

Ecosystem Goal 2: Protect, restore, and maintain the ecological processes, trophic levels, diversity, and overall productive capacity of the system

4. Maintain key predator/prey relationships.
5. Conserve structure and function of ecosystem components.

FEP Ecosystem Objectives

Ecosystem Goal 3: Conserve habitats for fish and other wildlife

6. Minimize adverse impacts to essential fish habitat, to the extent practicable.
7. Minimize and/or avoid impacts to ecologically-sensitive habitat, including habitat areas of particular concern.
8. Minimize and/or avoid impacts to seabirds, marine mammals, and protected species.

FEP Ecosystem Objectives

Ecosystem Goal 4: Provide for subsistence, commercial, recreational, and non-consumptive uses of the marine environment

9. Support benefits in the Bering Sea fishery and fishery-related industries.
10. Provide opportunities for new entrants in federal fisheries.
11. Promote economic and community stability to all commercial harvesting and processing sectors.
12. Promote sustainable opportunities and community resilience for subsistence users and Alaska Native communities.
13. Provide for directed fisheries including subsistence fisheries by minimizing bycatch mortality, to the extent practicable.
14. Preserve the ability for stakeholders to derive non-consumptive and cultural value from the Bering Sea ecosystem.

FEP Ecosystem Objectives

Ecosystem Goal 5: **Avoid irreversible or long-term adverse effects on fishery resources and the marine environment**

Ecosystem Goal 6: **Provide a legacy of healthy ecosystems for future generations**

15. Establish appropriate thresholds to minimize risk of crossing ecosystem tipping points caused by fishery or other human activity.
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.

Timeline

- June 2021 - report to Council, Ecosystem Committee, SSC
- June 2021 - Feb 2022
    - Subteams coordinate (monthly progress reports) Potential data support from NOAA IEA/other programs - Kerim point of contact.
    - Sept 2021 Initial data pass - what's available, what will we have, what do we need. Progress report on data sources with Council committees in October, if requested.
    - *Also schedule opportunities for check-ins with Groundfish PT, Crab PT, SSPT, Taskforces*
- March 2022 - FEP Team meeting, first iteration draft
- April 2022 - Council, Ecosystem Committee, SSC, public review

Feedback from June meeting

- Report name
  - Dropped "Report Card" in favor of "Evaluation" or just "Report"
  - "Health"? Intuitive understanding
  - **Bering Sea Ecosystem Health Report**

- Any red flags with the process/approach?
- Check-in in October?

Future Steps for BS FEP - looking ahead

- Remaining three action modules proposed in initial FEP (LK/TK-inclusive conceptual models, gap analysis, research priorities alignment) remain of interest but not ripe for action model - work ongoing outside FEP.
- No specific recommendations for new Bering Sea action modules.
- Discussed future format for other ecosystems (in particular GOA)
  - Report from Martin Dorn on GOA ecosystem/climate projects (GOA Climate RAP, GOA-CLIM)
  - Suggested Council effort in other ecosystems most ripe under limited staff and resources.
  - Discussed pros/cons of an overarching AK FEP team versus ecosystem-specific teams.