

Bering Sea Fishery Ecosystem Plan

North Pacific
Fishery Management Council
January 2019

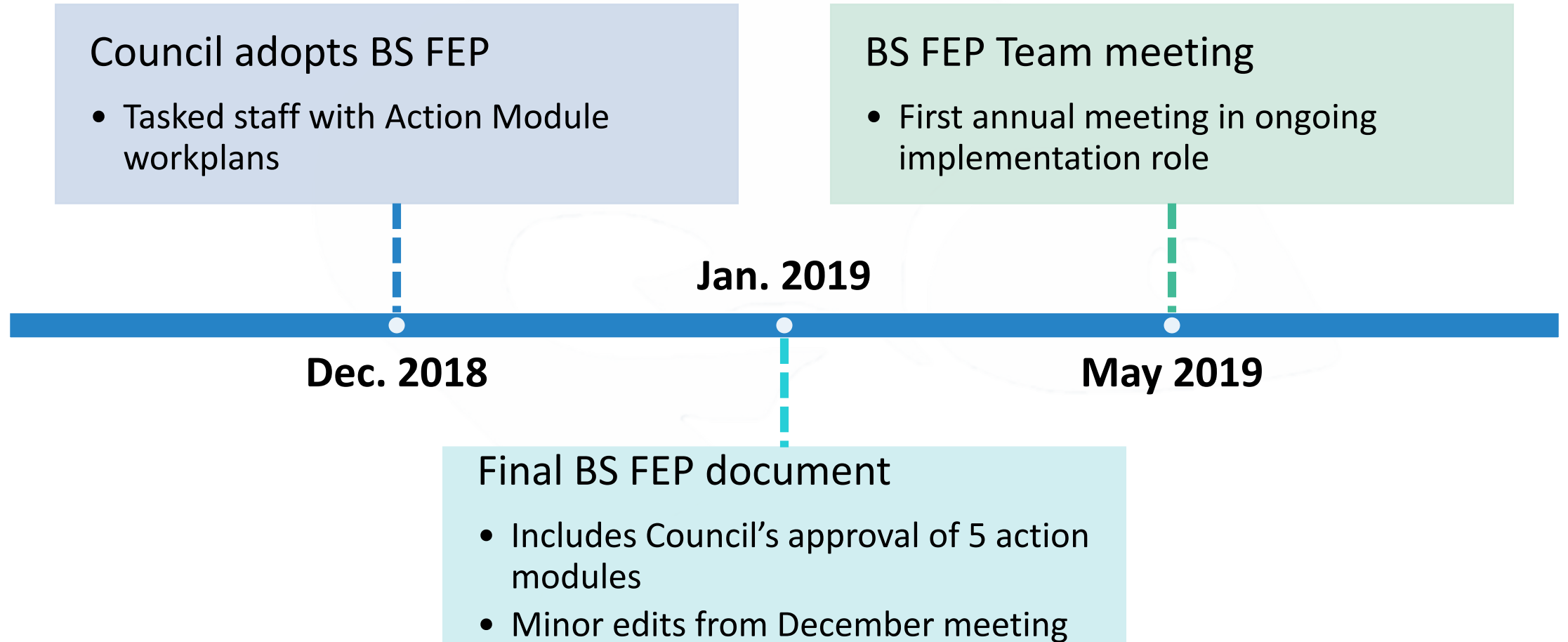


Bering Sea Fishery Ecosystem Plan

Diana Evans and Kerim Aydin

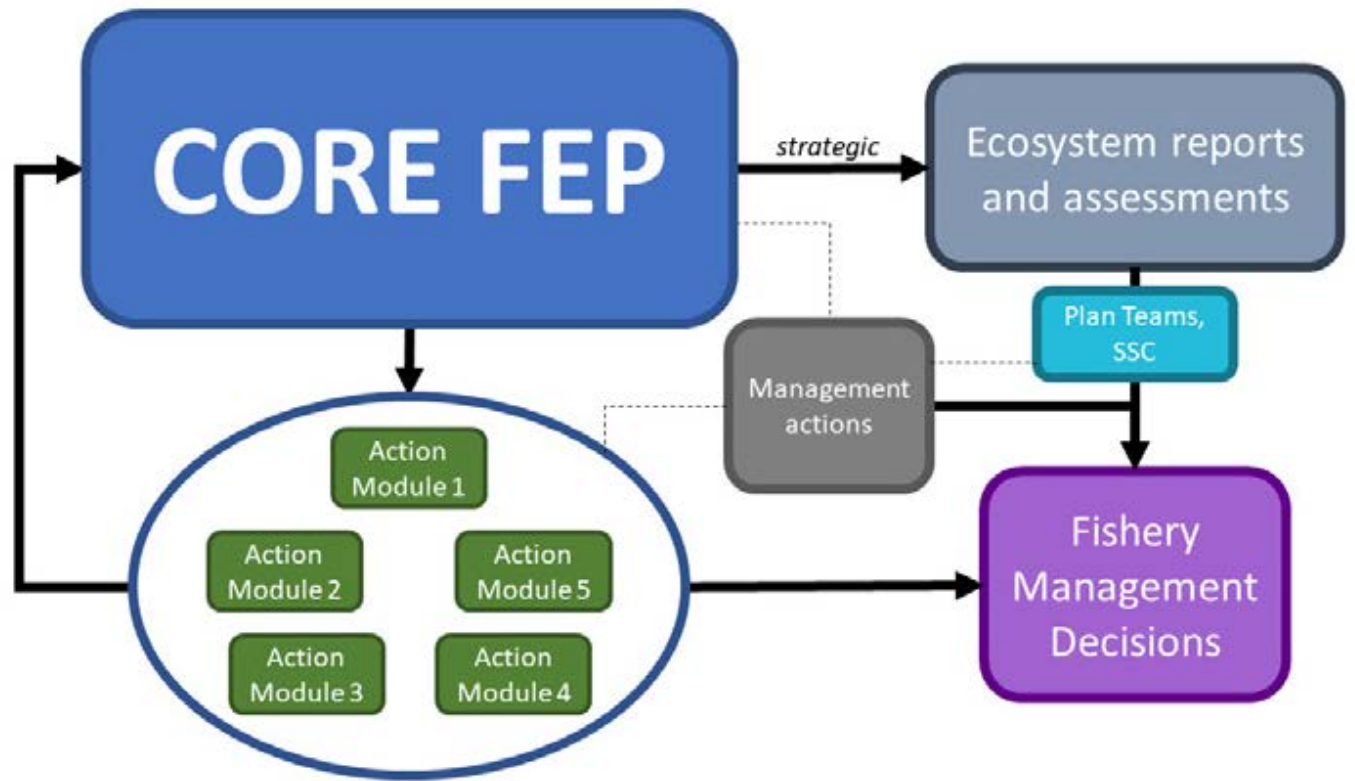
Presentation to the North Pacific Fishery Management Council, June 2019

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



Core FEP and Action modules

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 initiates 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

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

- 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
- **Identify connected Bering Sea ecosystem components**, and their importance for specific management questions
- 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
- Provide a **framework for considering policy options** and associated opportunities, **risks, and tradeoffs** affecting FMP species and the broader Bering Sea ecosystem
- **Build resiliency of Council management strategies**, and options for responding to **changing circumstances**

FEP explicitly includes the human dimension

- Core FEP defines LK and TK distinctly, with the intent to work towards formalizing their use and review alongside natural and social science

Local Knowledge	Traditional Knowledge
<ul style="list-style-type: none">• Close environmental observations• Place-based• Empirical• Pragmatic• Often inter-generational	<ul style="list-style-type: none">• A living body of knowledge• Acquired through long-term sociocultural, spiritual, and environmental engagement• Defines human – animal reciprocal relationships• Defines human – human kinship and reciprocity• Embodies rules about right conduct that intertwine the pragmatic and spiritual• Transmitted inter-generationally through oral history and ritual• Rooted in time and place, while having wide applicability• Rooted in tradition, while adaptable and dynamic

Role of the Bering Sea FEP team

- Provide strategic support for the Council's goals and objectives for ecosystem-based fishery management (EBFM), as described in the BS FEP

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

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*

Maintaining the Core FEP

Team discussion and recommendations

Ongoing Core FEP work

- Identifying ecosystem indicators that match to the FEP's ecosystem objectives
- Continued work on physical/biological synthesis of Bering Sea ecosystem (*will also be informed by an FEP action module*)

Tracking FEP uptake

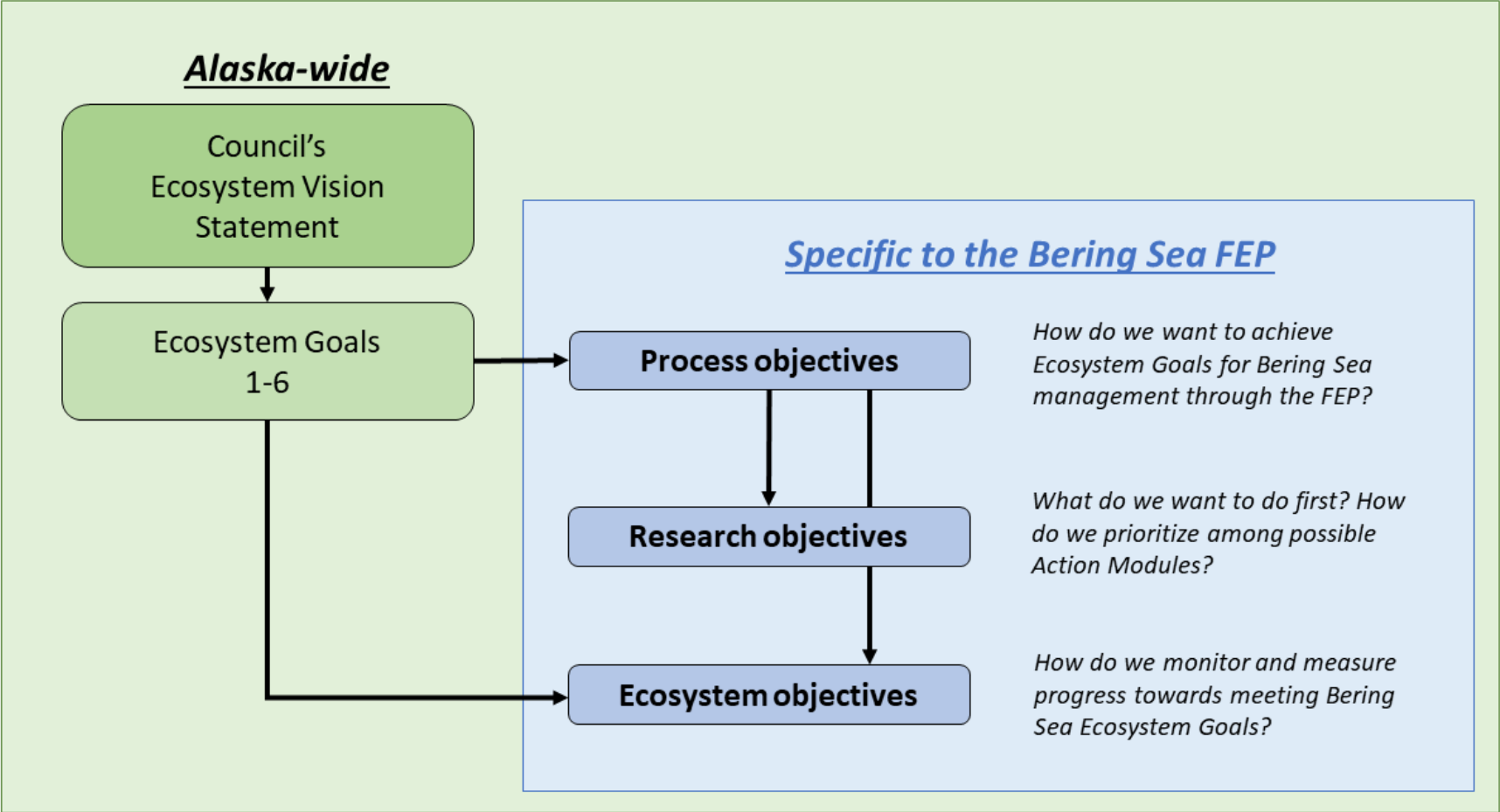
- Diverse participatory process – esp through FEP Team and Ecosystem Committee
- Discussions of engagement/ 2-way communication
- LK and TK inputs (and not LTK)
- Explaining Council process and Council's EBFM approach (esp graphics)

Team discussion and recommendations

- Team has proposed Terms of Reference for approval by Council
- Modeled on other Plan Team TORs
- Includes:
 - FEP Team objectives and tasking (from FEP)
 - Membership requirements, co-Chairs
 - How meeting will be organized (public participation, rules of order)
 - Process for reporting recommendations
 - Meeting schedule for FEP Team
 - Annual meeting in March, reporting to Council in April
 - Provision for interim meeting in fall, likely via teleconference

Strategic guidance for monitoring Bering Sea ecosystem status

Objectives



Ecosystem Goals

FEP also identifies ecosystem objectives under each of these 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.

DRAFT 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**
 - 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:**
 - present outline to Groundfish Plan Teams and SSC in Sep/Oct
 - Draft Ecosystem Health Report Card available for March 2020 FEP Team meeting
 - SSC/Council feedback in April 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

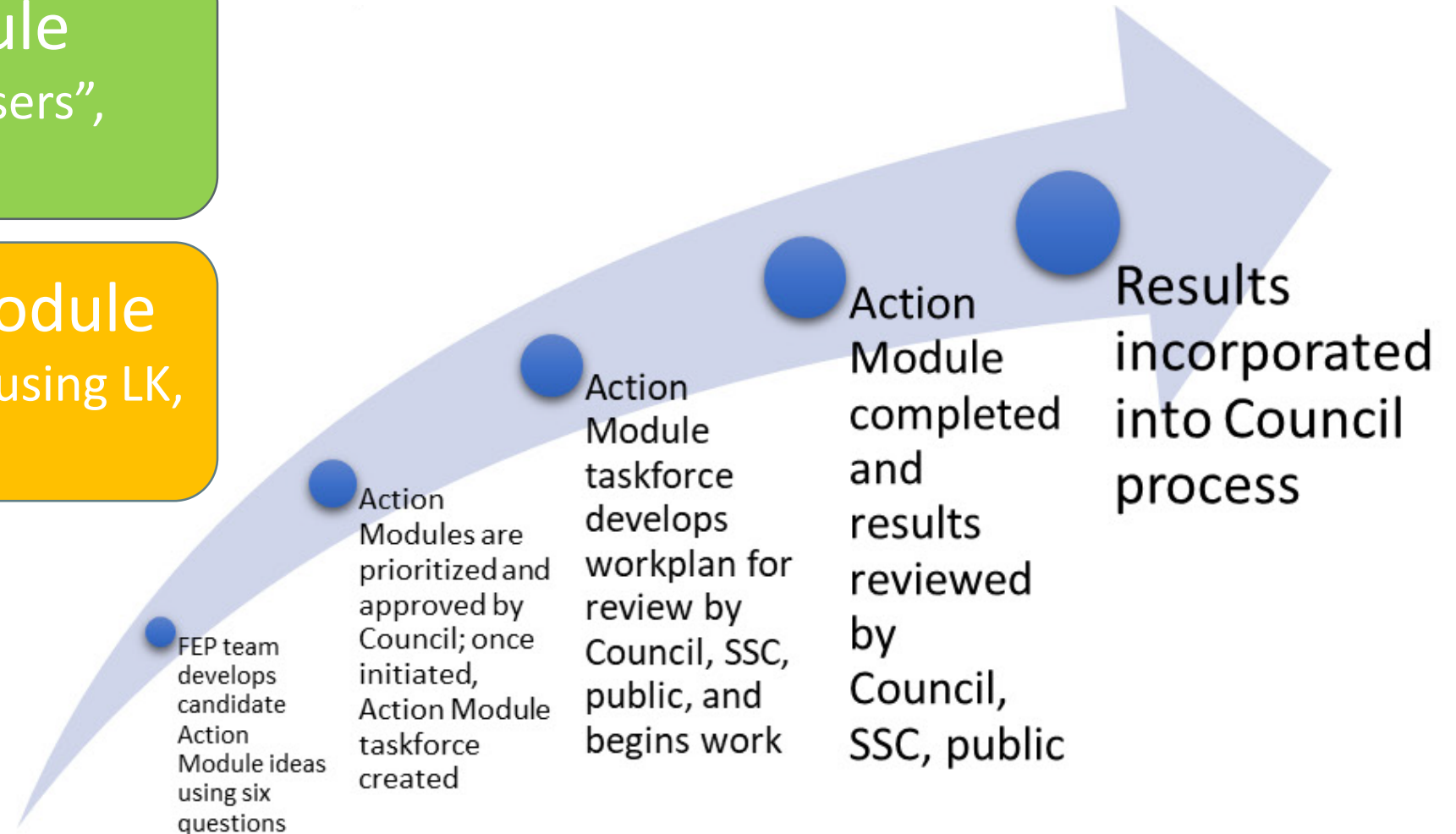
Action module cycle and first modules

Climate change module

Identify “winners and losers”,
Council action options

Subsistence, LK TK module

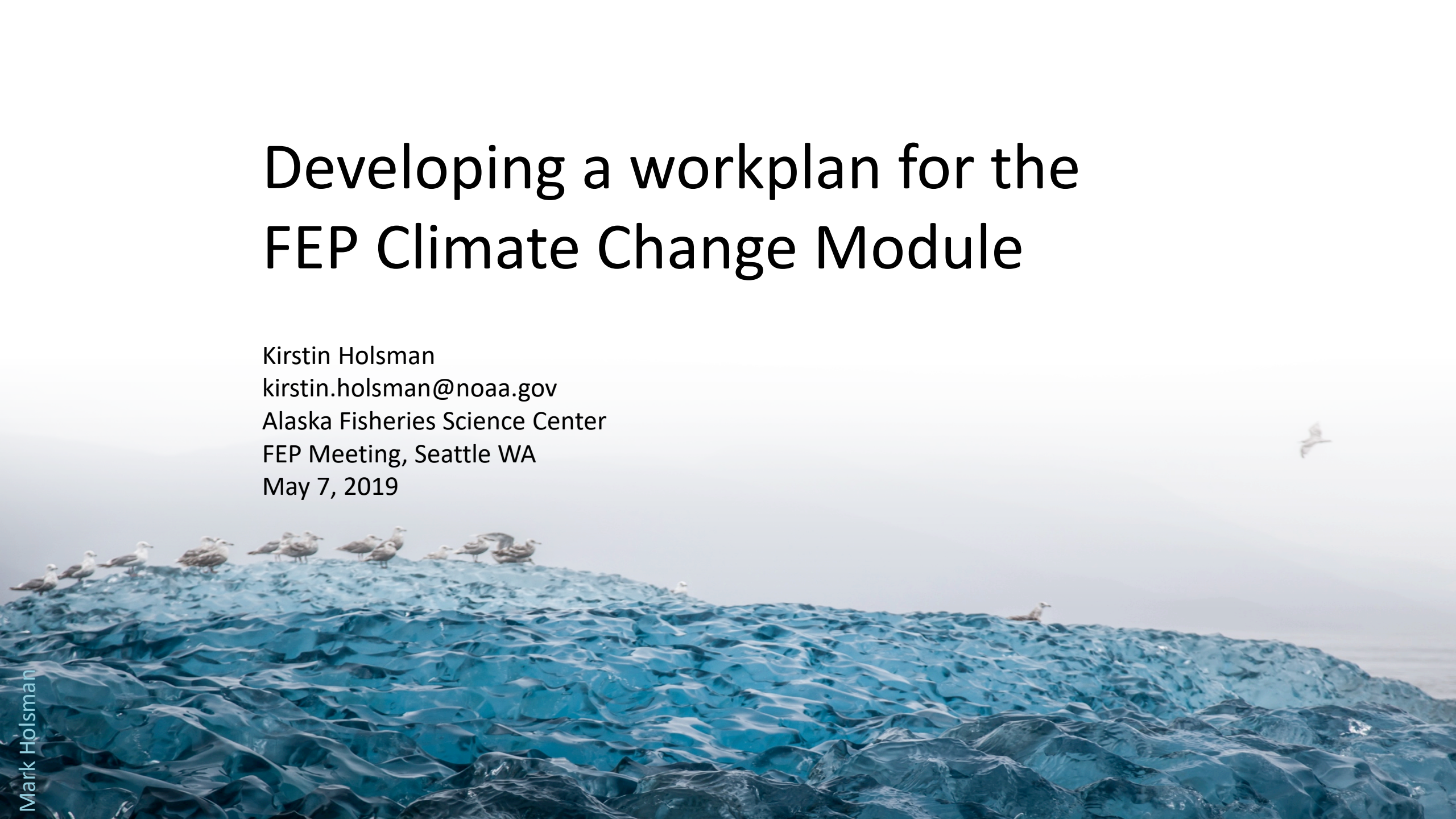
Methodology for better using LK,
TK, and subsistence data



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

Developing a workplan for the FEP Climate Change Module

Kirstin Holsman
kirstin.holsman@noaa.gov
Alaska Fisheries Science Center
FEP Meeting, Seattle WA
May 7, 2019



GOAL:

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

- ✓ **synthesize current knowledge** regarding climate change effects on the EBS system,
- ✓ **identify potential climate-resilient management measures** that can improve adaptive capacity and avoid maladaptation
- ✓ **evaluate the risk, timescale, and probability of success of various climate-resilient management policies** under future scenarios of change.

Policy relevant not policy prescriptive

(climate-resilient management would go through the existing Council process)

Test new & existing tools

Adaptation

incremental (normative) adaptation to preserve current livelihoods, health, and well being and meet future demands

transformational adaptation, especially to address/prevent continued marginalization and promote diverse well being, values, and views

Build capacity to reevaluate & enable transformative actions

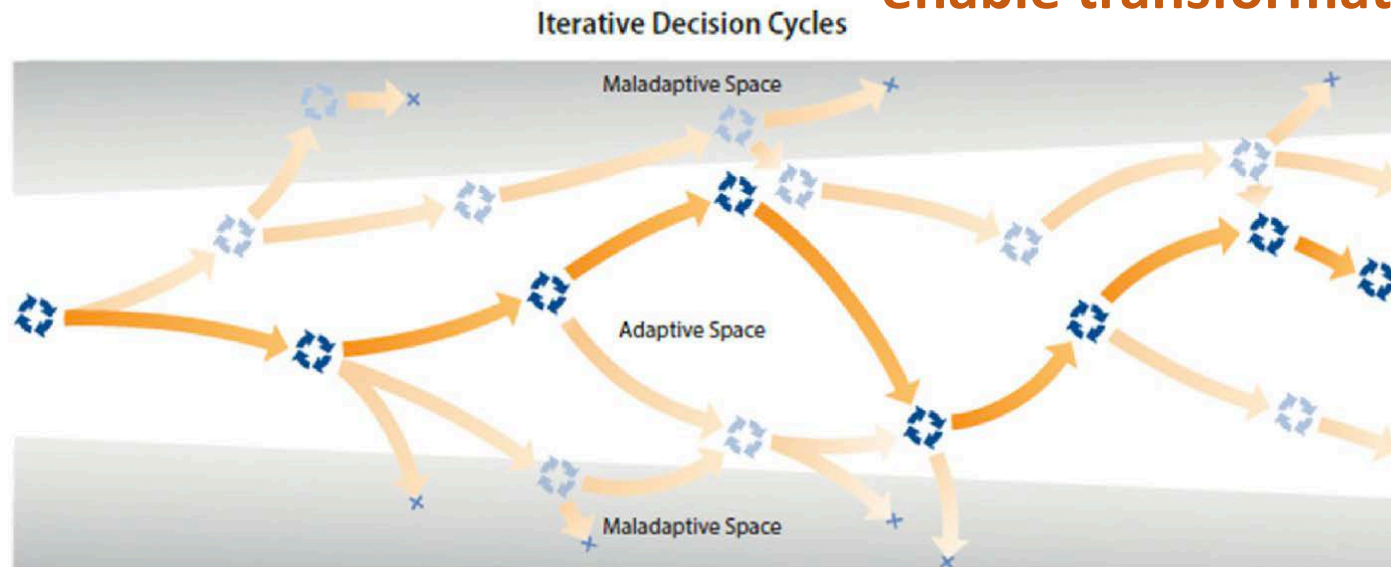


Fig. 1 from Wise et al. 2014. Reconceptualising adaptation to climate change as part of pathways of change and response. *Global Environmental Change* 28: 325–336


- ✓ Risk inherently depends on values
- ✓ Include a “plurality of perspectives” *
- ✓ Consider interacting (non-linear) pressures

WHO?

Taskforce comprised of diverse knowledge holders and experts



WHAT:

- a) ***Synthesize current and projected climate change impacts on the coupled social-ecological Bering Sea system*** through synthesis of diverse knowledge sources of understanding, context and impacts of change and evaluation of future impacts and risk.
 - b) ***Rapid Climate Vulnerability Assessments***, which use expert knowledge to identify vulnerable species and communities to climate change and prioritize research needs.
 - c) ***Operationalized climate change management strategy evaluations (MSEs)*** of various alternative harvest strategies for key species under the most recent Intergovernmental Panel on Climate Change projections of carbon mitigation scenarios (*sensu ACLIM: Alaska Climate Integrated Modeling Project*). Include synthesis of current understanding from cross regional and global coordination of ensemble modeling projects aimed at evaluating climate-resilient management tools.
 - d) ***Project changes in species distributions and phenology*** which includes projected changes in habitat under future climate scenarios in order to estimate potential shifts in BSAI FMP species distributions and potential fishing grounds (*sensu Predicting changes in habitat for groundfishes under future climate scenarios using spatial distribution modeling*)
 - e) ***Performance, validation, and operationalized delivery of 9 month seasonal forecasts*** of Bering Sea conditions and fish and fisheries specifically aimed at informing the annual groundfish assessment cycle (*sensu The Bering Seasons Project*).
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Action Module Workplan:
Develop protocols for
Local Knowledge,
Traditional Knowledge, and
Subsistence

Action Module

Goal (p. 1)

- 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.
- This Action Module is meant to positively inform the overall Council process and decision-making structure.



ROADMAP (p. 1)

Provide a **roadmap for operationalizing LK and TK** as well formulating methods for **assessing the likelihood a given Council action may affect subsistence.**



3 PARTS (p. 2)

Part 1: Processes for incorporating LK

Part 2: Processes for incorporating TK

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

- Separating this Action Module reflects acknowledgement of differences in the current state of incorporating LK, TK, and subsistence information in the Council process.



MEMBERSHIP (p. 5)

- Stakeholders have recommended the Taskforce be composed of a diverse group of individuals geographically representative of the BS FEP area, including local residents and people from multiple age groups.
- Look outside normal areas of inclusion (ie, agencies and academia)



TIMELINE (p. 6)

- First meeting: develop a succinct list of key objectives that are consistent with Council's overall goal
 - Report back to Council with refined workplan
- Approximately 6 meetings; overall project timeline 2-3 years



Team discussion and recommendations

- Team recommends the Council endorse the 2 workplans in principle
- Taskforce formation: Team recommends the following:
 - Both should include those familiar with the Council process
- Climate change – approx. 10 person taskforce
 - Balanced mix of interdisciplinary and specialist members
 - Leverage people with connections to other partnerships
- LK/TK/Subs – max 15 person taskforce
 - 7-10 appointed, 2/3 TK and subsistence, 1/3 LK; plus up to 5 agency staff
 - Include both experts and knowledge bearers

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

Council action in June 2019?

FEP Team recommendations

- Approve FEP Team Terms of Reference

Action Module Workplans

- Endorse workplans in principle
- Appoint taskforces
 - Call for nominations
 - Council Chair will appoint members

