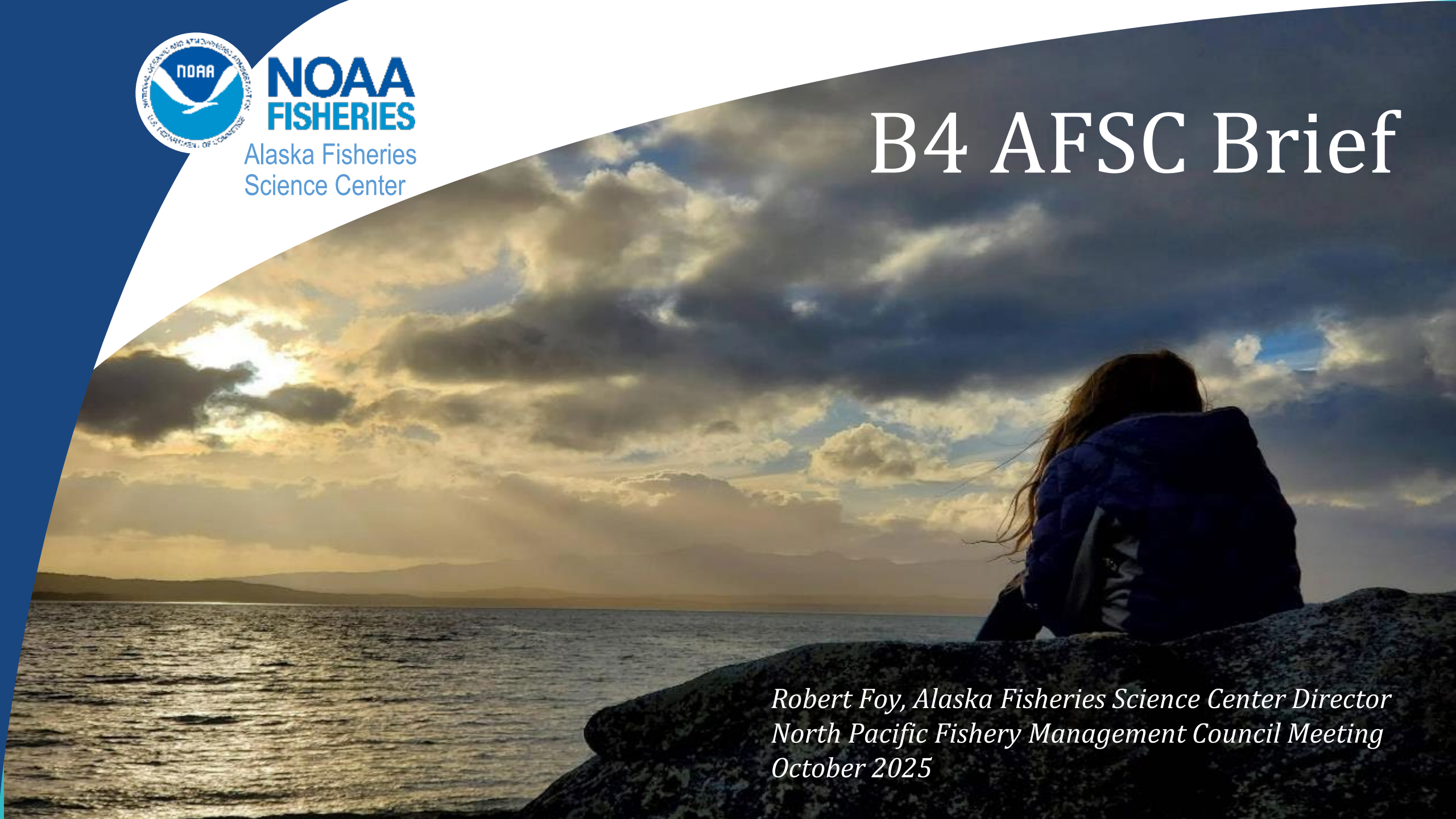
NOAA FISHERIES
Alaska Fisheries Science Center

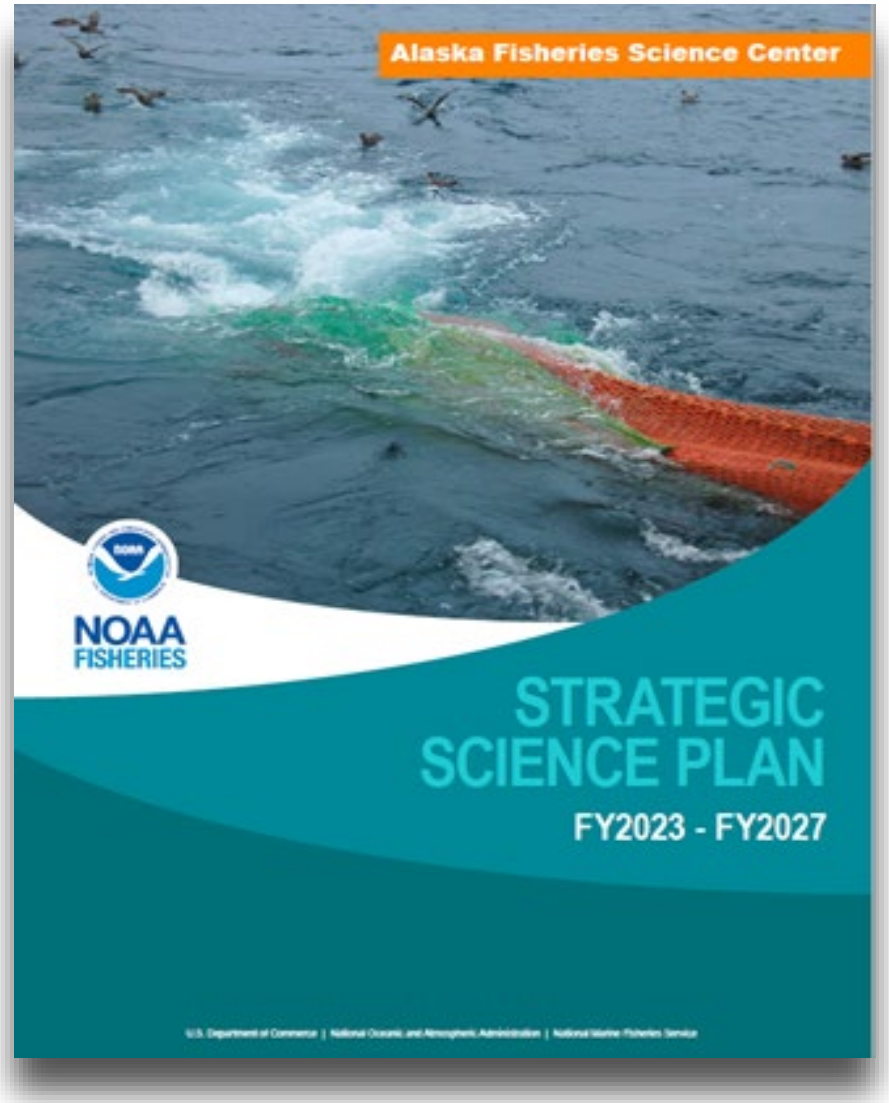
B4 AFSC Brief



Robert Foy, Alaska Fisheries Science Center Director
North Pacific Fishery Management Council Meeting
October 2025

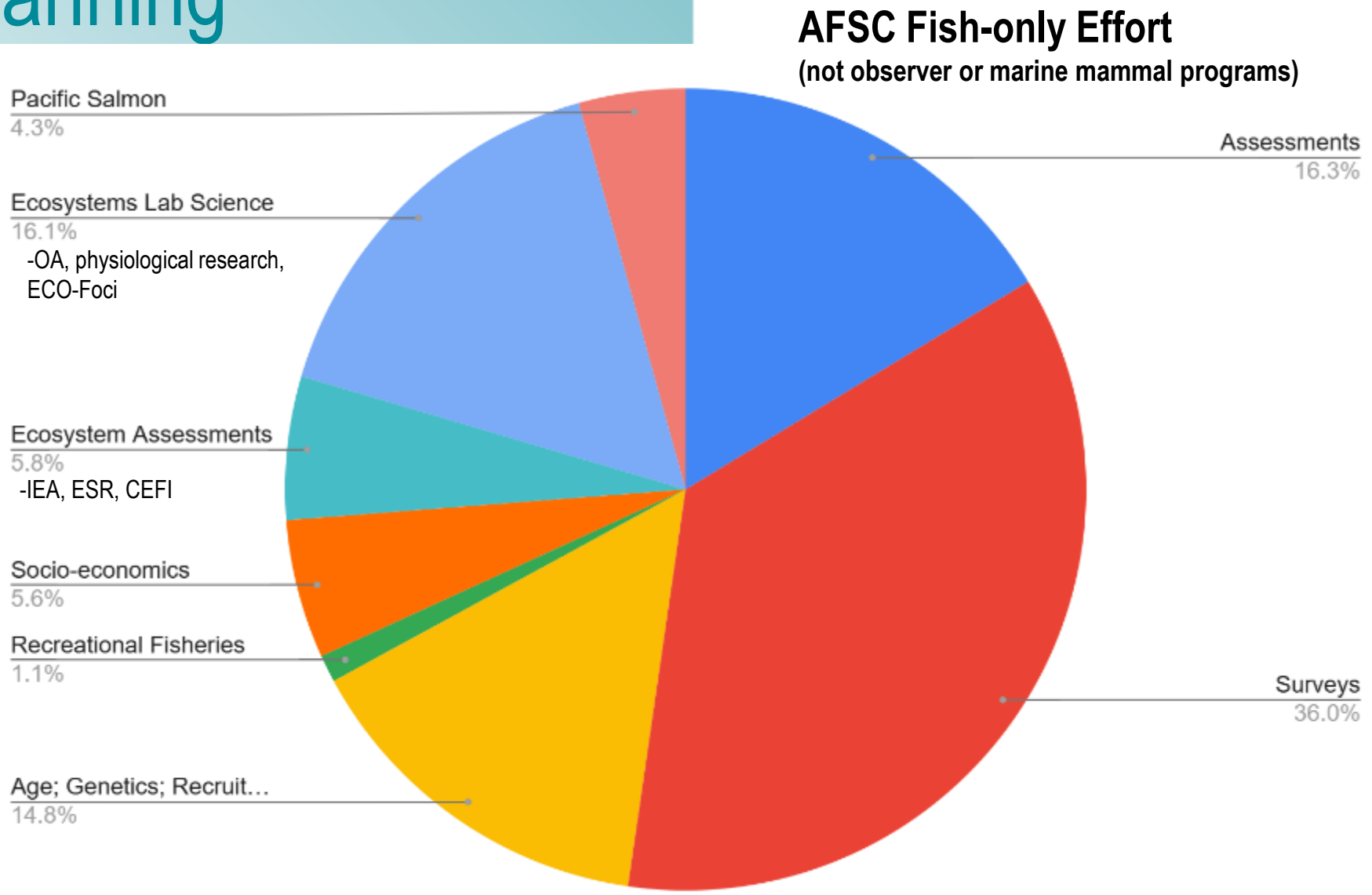
AFSC Updates

- Prioritization of mission execution
  - Priority planning process
- Surveys update



AFSC Priority Planning

- Priority planning to meet intent of Executive Orders, staff losses, and resource expectations.



AFSC Priority Planning

- Priority planning to meet intent of Executive Orders, staff losses, and resource expectations.
  - Vision: Science will support **stability** in fisheries in a variable environment.
  - Goal: Develop a dynamic framework (scalable to available resources) to prioritize science (survey and stock assessments and ecosystem) **to serve MSA-required management**.
  - Prioritize efforts on EBFM approach to economically-important fisheries. This includes monitoring and assessing the strongest climate and species interactions that force stock production and stability.

Survey Priorities (general framework)

- Stock Priorities
  - Congressional mandates
  - High stakeholder and NPFMC interest
  - High economic value (local or national)
  - Mortality pressures (e.g. bycatch, HABS)
- Data Priorities
  - Directly inform **abundance estimate** used in stock assessment (e.g. survey size-specific abundance index)
  - Provides **biological data gap** identified in stock assessment (e.g. length freq, selectivity)
  - Provides ecosystem or ELH data that **directly** informs **stock assessment** (e.g. recruitment index)
  - Provides ecosystem or ELH data that **directly** informs **management** (e.g. risk table)
  - Provides ecosystem or ELH data that **indirectly** informs **management** (e.g. ESR)

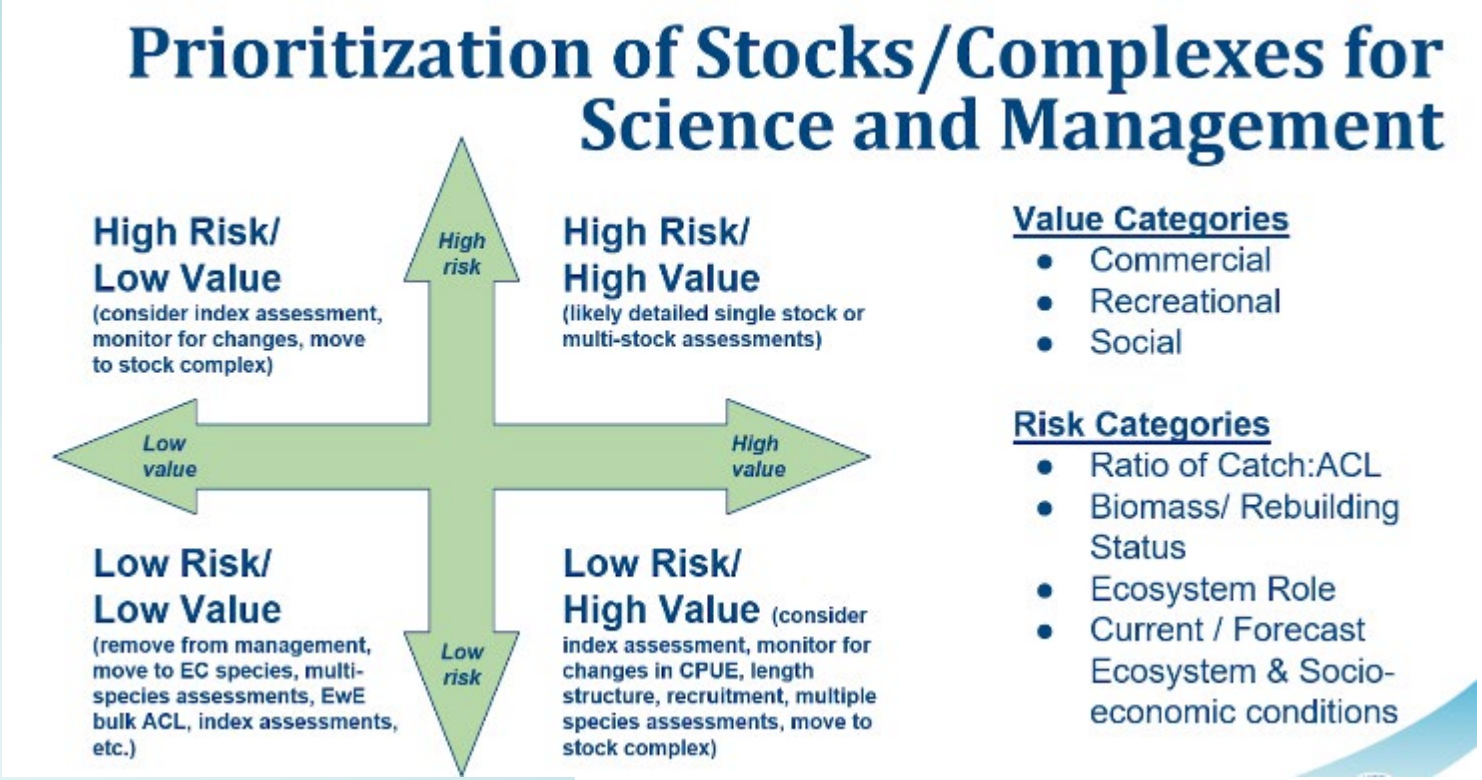
Survey Priorities (SSC recommendations - April 2025)

- **Core surveys** (EBS, GOA, and AI bottom trawl; EBS and Shelikof Strait acoustics; and longline) essential to support the stock assessments.
- Consider **benefits or value in economic, community, social, and ecological context** - such as related to vulnerable species and species of concern.
  - rely on risk tables to identify species dependent on specific surveys.
- **Catch** information (including PSC), accurate survey abundance indices obtained with actionable levels of precision, and the foundational age and length compositions necessary to describe variation in cohort strength.
- Representative **biological samples** (length/age) for understanding stock dynamics (EM and autonomous data secondary).
- Track year class for stocks with **episodic recruitment** (sablefish, pollock)
- Ability to detect **rapid changes** in abundance.
- **Ecosystem** surveys needed along with core abundance surveys

AFSC Priority Planning

- Expectations for aligning priorities between Council and NMFS

  - Survey and assessment
    - groundfish
    - salmon
  - Ecosystem science
  - Marine mammals



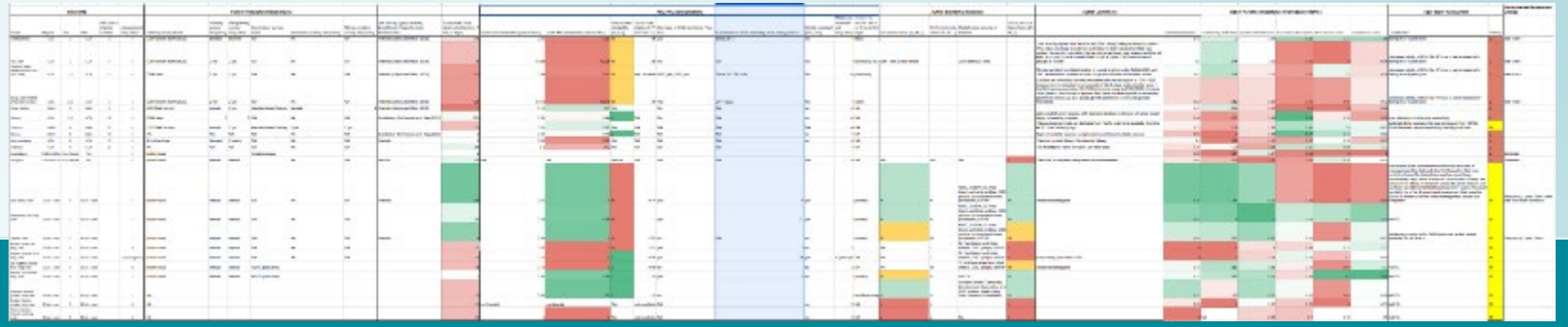
Survey and Assessment - Groundfish

- Stock assessment prioritization should drive data needs and more efficient surveys.
  - Identify stakeholder groups and users of survey and stock assessment products.
  - Identify economic metrics to represent the stakeholder groups most dependent on surveys/assessment/monitoring outcomes (e.g., regional/local quotient).
  - Identify new criteria to prioritize stocks, species, assessments. Build on the previous prioritization criteria.
  - Identify the products and scope (e.g. stock aggregation, frequency, Tier) of data and stock assessment provision.

Survey and Assessment - Groundfish

- Socioeconomic, assessment, and survey criteria identified and evaluated to help establish priorities/efficiencies

  - Tier
  - Assessment frequency
  - Catch/ABC
  - Recruitment variability (H,M,L)
  - Stock status (B??)
  - Biomass trend declining (Y/N)
  - Duration of decline (years)
  - Ecosystem role (low→high)
  - Ex-vessel value (H,M,L)
  - AK community value (H,M,L)
  - Stakeholder groups
  - Socio/Econ Importance (H,M,L)
  - Fisheries Importance Indices (Commercial, Community, Constituent demand, Non-catch value, Recreational, Subsistence) - peer reviewed indices



Survey and Assessment - Groundfish

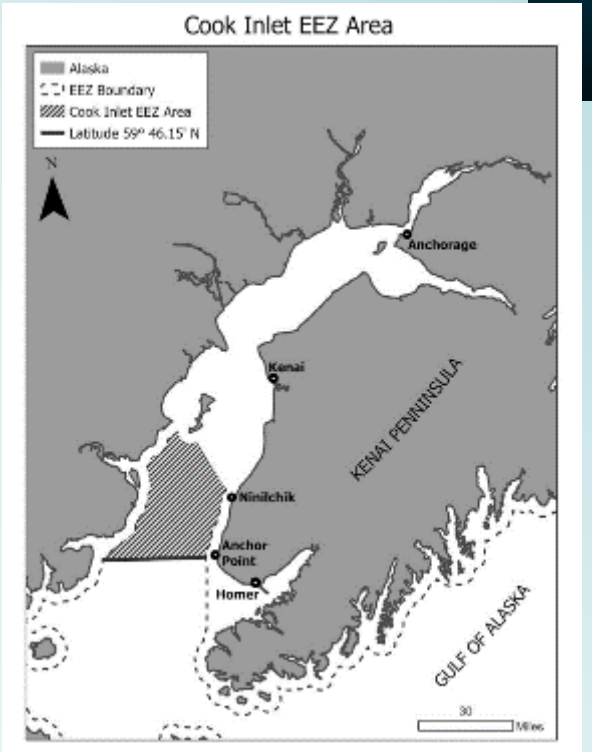
- Socioeconomic, assessment, and survey criteria identified and evaluated to help establish priorities/efficiencies

  - Socioeconomic and overfishing concerns elevate choke species risk.
  - Survey reductions should focus on frequency and intensity of effort rather than areal extent or on-deck data collections.
  - Reduced survey intensity in the GOA is not recommended due to concerns for choke species.
  - Reduced survey intensity and/or frequency in the BS is possible if higher risk/higher value stocks are prioritized.
  - Expanding the types of data collected on surveys will provide multipurpose efficiencies.
  - Pacific cod and crab stocks are high risk/high value stocks because of their vulnerability to warm conditions.
    - The fast growth, shorter life span, and high recruitment variability for these stocks make annual surveys valuable.
  - High risk/high value stocks could be assessed on a biennial basis if BS trawl survey frequency is reduced.
  - While several high risk/high value stocks exist, many medium risk/medium value and low risk/low value stocks could be assessed less frequently or at a lower tier level.
    - Assessment frequency reductions are flagged for 11 stocks and tier level reductions for 14 stocks that are primarily under-utilized stocks.

Survey and Assessment - Salmon

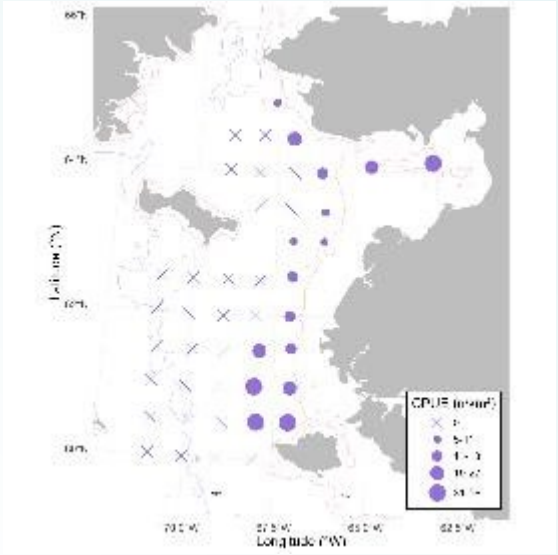
- Support sustainable salmon fisheries managed under MSA
  - Bycatch monitoring & assessment (e.g.,genetics, AEQ)

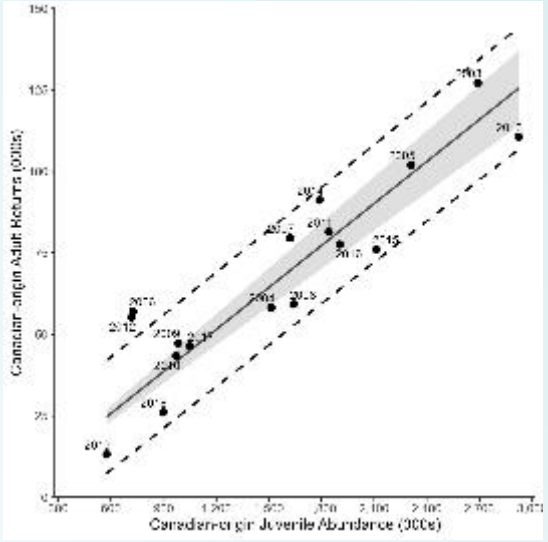
- Cook Inlet stock assessment

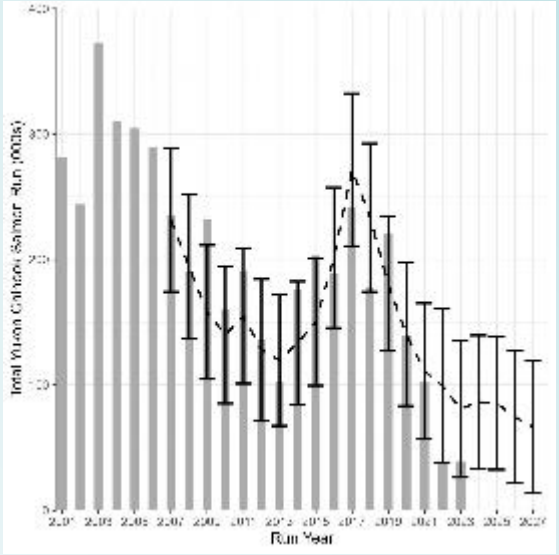


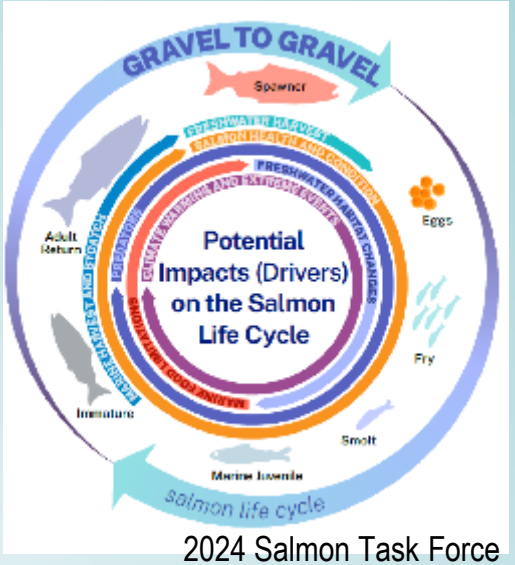
Survey and Assessment - Salmon

- Support sustainable salmon fisheries managed under the Pacific Salmon Treaty (partnership with ADFG)
  - Northern Bering Sea Ecosystem and Salmon Trawl Survey
    - Yukon River juvenile Chinook and chum salmon forecasts – predicts run abundance up to 3 years into the future
    - A critical element of gravel-to-gravel understanding of survival bottlenecks









2024 Salmon Task Force

Ecosystem Science

- Stock assessment prioritization should drive ecosystem data needs, surveys, and analyses.
  - Identify stakeholders and users of ecosystem science products.
  - Identify current dependence of ecosystem science for each stock assessment: incorporation in model, used to explain results, applied contextually (risk table), treaty/partner obligations, inform Council advice or decisions, only used in the broader ecosystem context.
  - Compile ecosystem factors in relevant stock assessment risk tables.
  - Identify minimum ecosystem science needed and AFSC skill sets required to inform impacts of environmental forcing, recruitment, competitors, and predators on prioritized stocks.

Ecosystem Science

- Scalable Framework maps ecosystem metrics against time-varying parameters in stock assessments to identify ecosystem information needed to understand each stock-specific process.

- Ecosystem metrics (e.g., temperature, fish condition, prey abundance, predator abundance)
- Time-varying parameters in stock assessments (e.g., growth, mortality, recruitment)
- Data availability (high, med, low) scoring includes to prioritize and identify gaps.
- Iterative process among ecosystem authors, stock assessment authors, managers, stakeholders

	Growth	Mortality	Catchability	Recruitment	Distribution
Temperature	✓	✓	✓	✓	✓
Adult fish condition	✓	✓			
Adult fish diet	✓	✓			✓
Prey abundance and quality	✓	✓		✓	✓
Age-0 (-1, -2) abundance				✓	
Predator abundance		✓		✓	
Competitor abundance	✓	✓		✓	

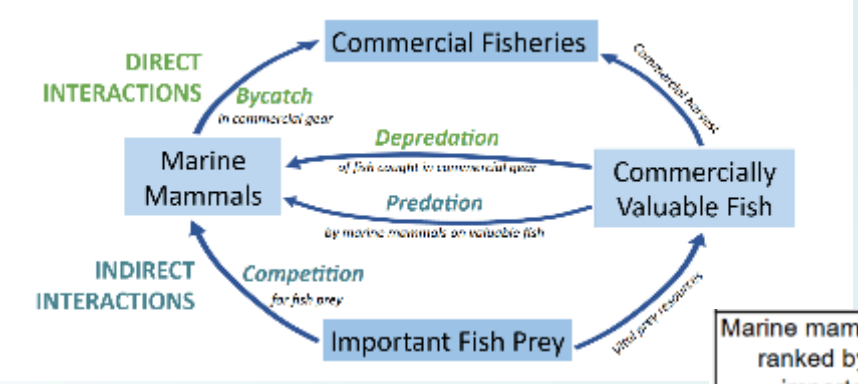
Ecosystem Science - EBS pollock example

- Ecosystem indicators and data that could inform time-varying parameters in the EBS pollock stock assessment.
- The text in each box reflects the “best” or “bare-bones” data;
- the color indicates the current availability of those data (green = regularly available, blue = limited availability, yellow = not currently available).

	Growth	Mortality	Catchability	Recruitment	Distribution
Temperature	Summer water column		Bottom temperature	SST Temperature change index	Cold pool areal extent, sea ice extent
Adult fish condition	Length-weight residuals (fishery and survey)	Length-weight residuals (fishery and survey), disease prevalence (not readily available)			
Adult fish diet	Stomachs from BTS during summer	Evidence of starvation (empty stomachs, stomach fullness) from BTS summer			Stomachs from BTS during summer
Prey abundance and quality	Krill, copepods, cannibalism. Energy density of prey.	(absolute lack of prey)		Krill, copepod size fraction. Energy density of prey.	Krill, copepods, cannibalism
Age-0 (-1, -2) abundance		(Age-1 mortality estimates from CEATTLE)		Survey of age-0 late summer, potential age-1, 2s in ATF/groundfish diets?	
Predator abundance		Fur seal abundance,		Cannibalism, fur seals, seabirds, toothed whales, piscivorous groundfish	
Competitor abundance	Salmon, planktivorous fish (including juveniles), planktivorous birds, mammals (cetaceans), jellyfish, juv sablefish	(Only if prey are limiting)		Extreme (high or low) abundances of salmon, planktivorous fish (including juveniles), planktivorous birds, mammals (cetaceans), jellyfish, juv sablefish	

Survey and Assessment - Marine Mammal Priorities

- Marine Mammal Stock Assessments: MM-Fisheries Interactions



Marine mammal species ranked by relative importance of commercial fisheries resources consumed as prey	Average annual commercial fishery harvest ir		
	Pollock/ Pacific cod	Salmon	Flatfish/ rockfish/ Atka mackerel
	1,500,000 mt	*360,000 mt*	*330,000 mt*
Steller sea lion	179,000 mt	55,000 mt	104,000 mt
Northern fur seal	100,000-390,000 mt	10,000-40,000 mt	
Harbor seal	major		
Bearded seal	minor	likely none	
Ringed seal			
Ribbon seal			
Spotted seal	6,700 mt		182 mt
Beluga whale	potentially large		
Killer whale			
Pacific white-sided dolphin			
Harbor porpoise			
Dall's porpoise			
Sperm whale			
Beaked whales			
Humpback whale			
Fin whale			
Minke whale			

Marine mammal species ranked by relative importance of commercial fisheries resources consumed as prey	Total prey consumed annually (metric tons)	Abundance estimates by species (SARs)
Steller sea lion	445,000	54,000
Northern fur seal	389,000	625,000
Harbor seal	347,367	244,000
Bearded seal	1,142,857	300,000
Ringed seal	233,382	171,000
Ribbon seal	290,523	185,000
Spotted seal	342,495	460,000
Beluga whale	563,768	67,000
Killer whale	45,802	2,000
Pacific white-sided dolphin	109,811	26,800
Harbor porpoise	105,918	40,000
Dall's porpoise	86,008	41,000
Sperm whale	71,344	345
Beaked whales		
Humpback whale	1,685,515	16,000
Fin whale	413,185	3,000
Minke whale	116,938	3,200

Survey and Assessment - Marine Mammal Priorities

- Marine Mammal Stock Assessments: MM-Fisheries Interactions

Step 1. Identifying which marine mammal stocks are most important to assess	Step 2. Setting priorities for what marine mammal assessment topics are most important to monitor
Importance of ***commercial fisheries*** that interact with specific marine mammal stocks that have significance.	***Abundance and trends*** -- full or partial stock -- trends
Direct interactions with commercial fisheries -- bycaught by fisheries -- depredation of fisheries catch	***Distribution*** -- seasonal densities -- migration pathways
Indirect interactions with commercial fisheries -- predation on fishery target species -- competition for target species' prey	***Foraging ecology*** -- prey preferences -- amounts of prey consumed annually
Important ***ecosystem roles*** that may affect fisheries -- nutrient turnover -- physical modification of seabed system	***Health and condition*** -- size and weight -- injury and disease
Importance of ***Native subsistence harvests*** that depend on specific marine mammal stocks	***Direct and Indirect Impacts on commercial fisheries*** -- on fisheries' target species (e.g., tonnage consumed) -- on fisheries operations (e.g., depredation on gear)

AFSC Survey Updates

- Most FY25 surveys completed
- FY26 planning underway
- Survey modernization
- FY27 Oscar Dyson midlife

AFSC Fisheries Surveys Prioritized (1-11)

planned

Priority	LME	Platform	Survey	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
1	Bering Sea	Charter	GAP-SAP Eastern Bering Sea Bottom Trawl_Summer																	
2	Gulf of Alaska	Charter	GAP Gulf of Alaska Bottom Trawl_Summer																	
3	Aleutian Islands	Charter	GAP Aleutian Islands Bottom Trawl_Summer																	
4	Gulf of Alaska	NOAA Ship	MACE Shelikof Strait Pollock Acoustic-Trawl_Winter																	
5	Bering Sea	NOAA Ship	MACE Eastern Bering Sea Pollock Acoustic-Trawl_Summer											Drone						
6	Gulf of Alaska	Charter	MESA Gulf of Alaska & Eastern Bering Sea & Aleutian Islands Longline_Summer																	x
7	Bering Sea	Charter	MESA Gulf of Alaska & Eastern Bering Sea & Aleutian Islands Longline_Summer																x	
8	Aleutian Islands	Charter	MESA Gulf of Alaska & Eastern Bering Sea & Aleutian Islands Longline_Summer																	
9	Bering Sea	Charter	GAP-SAP Northern Bering Sea Bottom Trawl_Summer															x		
10	Bering Sea	Charter	EMA Northern Bering Sea Ecosystem Surface Trawl_Fall																	
11	Gulf of Alaska	NOAA Ship	MACE Shumagin/Sanak Pollock Acoustic-Trawl_Winter																	

GREEN=planned/completed YELLOW=Partial RED=Not Completed WHITE=not planned

AFSC Fisheries Surveys Prioritized (12-24)

planned

Priority	LME	Platform	Survey	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
12	Bering Sea	NOAA Ship	MACE Bogoslof Pollock Acoustic-Trawl_Winter																	x
13	Bering Sea	NOAA Ship	EMA Eastern Bering Sea Juvenile Fish_Fall																	
14	Gulf of Alaska	NOAA Ship	EcoFOCI Gulf of Alaska Ichthyoplankton_Spring																	
15	Bering Sea	NOAA Ship	EcoFOCI Eastern Bering Sea Ichthyoplankton_Spring																	
16	Bering Sea	NOAA Ship	EcoFOCI Eastern Bering Sea & Gulf of Alaska Moorings_Spring																	
17	Bering Sea	NOAA Ship	EcoFOCI Eastern Bering Sea & Gulf of Alaska Moorings_Fall																	
18	Gulf of Alaska	State Ship	EMA Southeast Alaska Coastal Monitoring_Summer																	
19	Gulf of Alaska	NOAA Ship	EcoFOCI Western Gulf of Alaska Juvenile Fish_Fall																	
20	Gulf of Alaska	Charter	GulfWatch oceanography&forage fish/humpback																	
21	Gulf of Alaska	NOAA Ship	MACE Gulf of Alaska Pollock Acoustic-Trawl_Summer																x	
22	Gulf of Alaska	Charter	GAP Gulf of Alaska Bottom Trawl_Slope		x		x		x		x		x		x		x		x	
23	Bering Sea	NOAA Ship	GAP-SAP Eastern Bering Sea Slope Bottom Trawl_Summer									x		x		x		x		x
24	Aleutian Islands	NOAA Ship	EcoFOCI Alaska Movement of Key Fishes_Summer											x	x	x	x	x	x	x

GREEN=planned/completed YELLOW=Partial RED=Not Completed WHITE=not planned

Thank You!

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