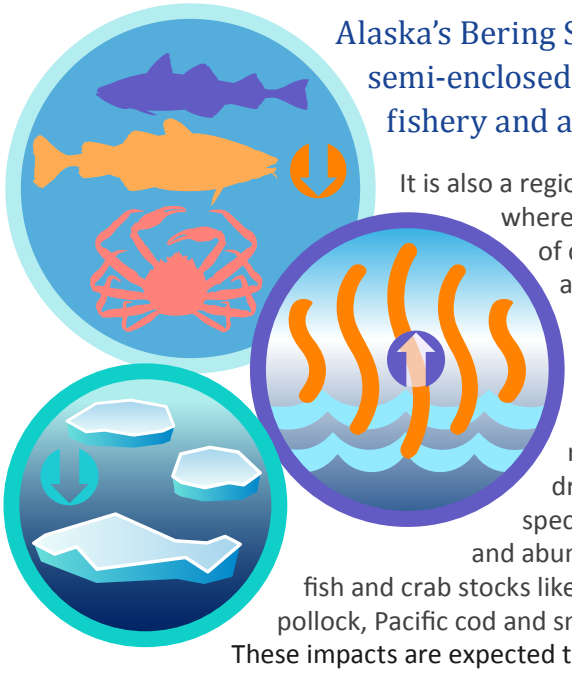
Overview: Alaska Regional Action Plan for the Bering Sea

NOAA FISHERIES



Alaska's Bering Sea is one of the largest and most biologically productive semi-enclosed seas in the world. It boasts the nation's largest commercial fishery and an enduring subsistence culture.

It is also a region of the Arctic where the impacts of climate change are evident. Declining sea ice and marine heatwaves have already resulted in dramatic shifts in species distribution and abundance of fish and crab stocks like Arctic cod, pollock, Pacific cod and snow crab. These impacts are expected to increase.

Science to respond climate change

To help increase the resilience of the region's valuable marine resources and the communities that depend on them, decision-makers need information on what's changing, why it's changing and how to respond.

Scientists at the Alaska Fisheries Science Center have updated their Eastern Bering Sea Climate Regional Action Plan, producing a new draft plan for 2022-2024.

In this 3-year plan, scientists identify their recommendations for ongoing and needed research to implement NOAA Fisheries Climate Science Strategy in Alaska.

Focal areas of research

- Long-term monitoring of marine life and marine ecosystems,
- Process-oriented research (i.e., studying environmental effects on species' reproductive potential, diets, and genetics),
- Climate and ecosystem modeling,
- Marine mammal studies,
- Studies to understand and address climate change impacts on human communities, and
- Synthesis of data for management decisions.

This science will be used to inform preemptive and flexible policy and resource management decisions and help communities plan for the future.

Public Input Requested: *https://www.fisheries.noaa.gov/national/climate/climate-science-strategy-regional-action-plans*

Continuing Projects

	Objective	Sub Group
Stock Assessment Enterprise	1, 2, 6, 7	
Multispecies technical interaction model	2	
Management strategy evaluations (MSEs)	2	
Alaska Integrated Ecosystem Assessments and Ecosystem Status Reports	6	
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Fisheries Monitoring and Assessment	6, 7	
Fish and Crab Surveys	6, 7	
Age and Growth Monitoring	6, 7	
Marine Mammal Assessments	6, 7	
Seabird Bycatch and Encounters	6, 7	
Standard Shipboard Oceanographic Collections for Ecosystem Monitoring	6	
Standard Ichthyoplankton and Juvenile Fish Monitoring	6	
Oceanographic Moorings	6	
Derived products from ecosystem monitoring	5, 6	
Groundfish Stock Structure and Salmon Stock Identification	6	
Recruitment Processes Alliance (RPA)	5	
Ocean Acidification Research	5	
HABs Research	4	
Satellite tagging of northern fur seals	5, 6	
Support for rapid response indicators of ecosystem status	6	
Identify bio-geochemical thresholds and mechanisms driving ecosystem reorganization	5	
Northern fur seal research	2, 5, 6	
Assess economic and social impacts of climate change	3	
Modeling fisher behavior in response to changing climate, markets and management	3	
Identify human community dependence on LMRs and effects of climate change	3	
Regional Economic Impacts of Climate Change	3	
Arctic Council, AMAP, impacts on coastal communities	3	
Integrated economic impact assessments of Ocean Acidification	3, 5	
Community and economic surveys	3	

Post 2016 Projects

	Objective	Sub Group
Inshore and coastal assessments	6	
eDNA (northward shifts)	7	
Shifting Spatial Distributions	6	
Biogeochemical process monitoring	4	
Ecosystem and Socioeconomic Profiles (ESPs)	5	
Risk Tables	1, 5, 6	
Species Distribution Models for Identifying Essential Fish Habitat	5	
Transition from ROMS to MOM6	4	
Bering Seasons program-phase 2	4	
The Alaska Climate Integrated Modeling Project Phase 2	1–4	
Northern fur seal foraging model in ACLIM Phase 2	3. 5	
Fisheries Integrated Modeling System	1, 2	
Council Bering SEa FEP Local Knowledge Traditional Knowledge and Subsistence Taskforce	2, 3, 6	
Climate Change and Crab Working Group	1, 5	
International coordination (NMFS/ DFO and PICES	2, 4, 5	
The PICES/ICES Working Group on Impacts of Warming on Growth Rates and Fisheries Yields	1, 5	
Sustainability of Marine Ecosystems through global knowledge networks	4, 5	
Modeling the management and fishery response to changing fishing abundance with the ACLIM ATTACH Model	3	
Developing socioeconomic scenarios to evaluate possible future management and harvest scenarios	3	
Identifying fishing effort by modeling Vessel Monitoring System (VMS) and Automatic Information System (AIS) data	5	
Annual Community Engagement and Participation Overview (ACEPO)	5	
Communication foundation for co-producing science with Bering Sea communities	3	

Gap Projects

	Objective	Sub Group
Discretionary Funds for Rapid/ Emergency	6, 7	
Supplemental Support for Southeastern Bering Sea Ecosystem Assessment and Monitoring Surveys	6, 7	
Supplemental Support for Northern Bering Sea Ecosystem Assessment and Monitoring Surveys	6, 7	
Forage Fish Population Dynamics	7	
Expand Marine Mammal Assessments	3, 6, 7	
Fully support NOAA oceanographic moorings	6, 7	
Expanded bio-physical data collections on NOAA moorings	6, 7	
Expanded bio-physical data collections on NOAA uncrewed surface vehicles	5–7	
Laboratory infrastructure - environmental tolerances, food habits and bioenergetics	5–7	
Information trade-offs with current and alternative sample size and data collection methods	6, 7	
Strengthen partnerships with Russian Federation to share data on transboundary stocks	6, 7	
Communication, Cooperation and Infrastructure to Increase Efficiency and Comfortability of Monitoring data	7	
Euphausiid population dynamics	5–7	
Nearshore ecosystems and juvenile fish population dynamics	5	
Climate Fisheries Initiative funding for Fisheries and Climate Decision Support Systems	1–5	
AFSC Climate Research and Activity Facilitator	7	
Improve communication of risks of climate change to fishing dependent communities	3	
Bridging knowledge to inform Bering Sea Management (BKIBS)	3	
Invest in training, education, and infrastructure though implementation of CFI FACSS	1-7	
Arctic marine assessment program for Protected Species (ArMAPPS)	6, 7	
Modernize Alaska marine mammal assessment surveys	5, 6	
Expand research to understand how climate change will impact fishery-dependent human communities and evaluate socioeconomic scope for adaptation	3	
Adapting to Life Without Ice: Food security, subsistence, and nutrition in the Bering Strait	3	
Non-market values of the Bering Sea ecosystem	3	
Ecosystem service valuation (SPURF)	3	

OBJECTIVES

1. Climate-Informed Reference Points
2. Robust Management Strategies
3. Adaptive Management Processes
4. Project Future Conditions
5. Understand Mechanisms of Change
6. Track Change and Provide Early Warnings
7. Build and Maintain Adequate Science Infrastructure

PRIMARY AFSC SUB GROUP

- Monitoring
- Socio-economics
- Process Research
- Marine Mammals
- Management - Oriented Synthesis

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