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UNDERSTANDING ECOSYSTEM PROCESSES IN THE

Bering Sea

AN HISTORIC PARTNERSHIP BETWEEN THE NORTH PACIFIC RESEARCH BOARD AND THE NATIONAL SCIENCE FOUNDATION

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North Pacific Research Board and National Science Foundation partner in comprehensive study of eastern Bering Sea ecosystem

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The North Pacific Research Board (NPRB) and National Science Foundation (NSF) are studying the response of the eastern Bering Sea shelf ecosystem to climate change and sea ice loss. The program includes three field seasons and two years of analysis. This project is based on NSF's Bering Ecosystem Study and NPRB's Bering Sea Integrated Ecosystem Research Program. Funds for the $52 million partnership include $16 million from NPRB, $21 million from NSF, and matching funds from NOAA, the US Fish and Wildlife Service, and the US Geological Survey. More than 90 federal, state, and university scientists are involved.

NSF Research Focus

- Atmosphere
- Ocean physics
- Lower trophic levels, including sea ice and benthic sampling
- Primary production near sea ice
- Nutrients and stratification
- Energy transfer through zooplankton

NPRB Research Focus

- Forage fishes, pollock, Pacific cod, arrowtooth flounder
- Northern fur seals, walrus, whales
- Thick-billed murres, black-legged kittiwakes
- Patch Dynamics: studies of marine mammal and seabird foraging patterns at prey aggregations near Pribilofs, Bogoslof, and St. Lawrence Islands
- Local and traditional knowledge research involves the coastal communities of Akutan, St. Paul, Togiak, Emmonak, Savoonga, and Nelson Island.

Savoonga
Emmonak
Togiak
St. Paul
Akutan

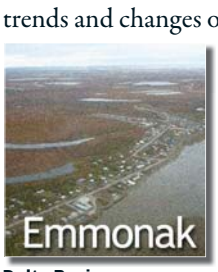
Federal Matching Funds

NOAA, USGS, and USFWS will support trawl surveys; seabird telemetry; and studies of fur seal productivity, and the persistence of foraging hotspots.

Participating Communities

Communities participating in this study are Akutan, St.Paul, Togiak, Emmonak, and Savoonga. All have a history of research on local and traditional knowledge and/or subsistence harvest surveys. These surveys will provide useful information and a basis for identifiying trends and changes over spans of a decade or longer.

Aleutian Region
Population 80; Language/ culture group: Unangan (Aleut)



Delta Region
Population 900; Language/ culture group: Central Yup'ik

Pribilof Region
Population 470; Language/culture group: Unangan (Aleut)

St. Lawrence Region
Population 786; Language/ culture group: St. Lawrence Island Yup'ik

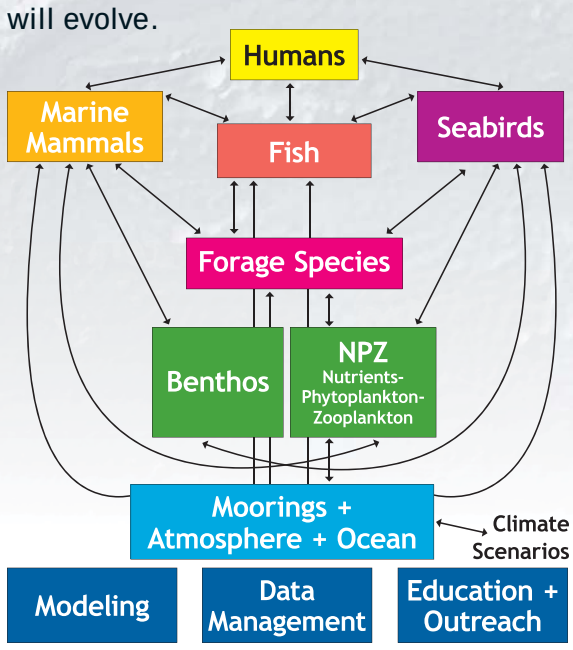
Bristol Bay Region
Population 987; Language/ culture group: Central Yup'ik

Why Study the Bering Sea?

Alaska's Bering Sea fisheries provide more than half of the seafood consumed in the U.S., forming a powerful economic engine for fishing communities and the core of an ocean-based subsistence lifestyle.

Whales, seals and seabirds travel here to feed and mate. Fur seals breed on island rookeries, while walrus haul out on sea ice to bear young. Whales and porpoises feast on fishes, plankton, and tiny crustaceans. Orcas hunt other whales, seals, or salmon. Sea otters pluck invertebrates from the seafloor. Nearly half of Alaska's seabirds live in 10 colonies in the Bering Sea. Some 36 million breed here, including shearwaters, fulmars, kittiwakes, albatrosses, storm petrels, puffins, and murres.

Changes in climate and sea ice could significantly impact the Bering Sea ecosystem. We seek to understand not only what drives and sustains this productive ecosystem, but how it will evolve.



Vertical Integration

As shown above, this expansive effort will provide end-to-end coverage of the Bering Sea ecosystem, from atmospheric forcing and physical oceanography through humans and communities.
Innovative ecosystem modeling and outreach activities will unite the program.

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