

Seabird Studies on Kittiwakes, Murres, and Auklets

Regime Forcing and Ecosystem Response in the Bering Sea (ReFER): Phase II (R0320)

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The Question: Numbers of some seabird populations at the Pribilof Islands, on the shallow, outer continental shelf, declined dramatically from the mid 1970's to the mid 1990's, while these and other species at Bogoslof Island and Buldir Island, in the oceanic Aleutian Archipelago, dramatically increased. Is changing food availability affecting seabirds in the Bering Sea?

The Habitats: The shallow continental shelf near the Pribilof Islands and the deeper ocean near Bogoslof and Buldir Islands have different amounts of prey species available to the birds. These two habitats also respond differently to changes in the environment, like temperature, making one habitat a better living environment for the plankton and fish which the birds feed on. To explain the changing seabird population, it is important to determine how the Bering Sea food webs are organized from plankton up to fish and birds.



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The Project: Researchers are attempting to view changes in the Bering Sea food web through the eyes of the seabirds. Previous research focused on black-legged kittiwakes, red-legged kittiwakes, thick-billed murres, and common murres, all of which are primarily fish eating birds found at the Pribilof Islands and at several islands in the Aleutians. Each species feeds in different ways and analyzing the birds as a group provides a detailed view of changes in prey (forage fish populations.)

In 2002 plankton eating auklets were added to the target species studied. Data from auklets provides insight into conditions one level lower in the food chain—auklets feed primarily on zooplankton of key importance to food webs of the North Pacific and Bering Sea. Moreover they are very sensitive to changes in the amount of zooplankton prey.

We are undertaking 3 years of study at the bird breeding colonies. United States Fish and Wildlife Service's field crew at Buldir, St. George, and St. Paul will obtain data on the numbers of seabirds, and will test the birds to identify their diets and stress levels. Data on diets and stress will be compared between the different colonies and years and compared to trends in abundance and productivity. The information obtained in this study will make a substantial contribution to the greater goal of understanding how the Bering Sea ecosystem functions and how it may respond to climate change including long term global warming.

The North Pacific Research Board seeks to build a clear understanding of the North Pacific, Bering Sea, and Arctic Ocean ecosystems to enable effective fisheries management and the sustainable use of marine resources. www.nprb.org

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