

Glacier Bay Research Program at the Alaska Biological Science Center

The USGS, Alaska Biological Science Center (ABSC), in cooperation with the National Park Service, is conducting a number of research projects in Glacier Bay National Park and Preserve (GBNPP). Most of the research is in response to issues of concern for GBNPP resource managers, although



ABSC researchers are also availing themselves of the extraordinary research setting of Glacier Bay to conduct breakthrough science with broad application. The primary projects are briefly listed below.

Marine Fisheries Reserves – ABSC has collected years of data on crabs and halibut as a baseline prior to recent closures of certain portions of the Bay. Now that the areas have been closed, new studies are being designed to use these de facto fisheries reserves for evaluating the effectiveness of **Marine Protected Areas** (MPA) as a fisheries management option. The Glacier

Bay closures are providing the first major opportunity to evaluate MPAs in the North Pacific.

Oceanography and Benthic Mapping – Extensive data is being collected on oceanography of this dynamic and changing habitat. The bottom is being thoroughly mapped as well. These extensive data sets will be correlated with observations on halibut, crabs, sea otters, seabirds,



USGS Vessels

and their prey to further understand the connections among ecosystem components.

Marine Fisheries Population Ecology – ABSC has amassed large amounts of fisheries data, particularly for Dungeness crabs and halibut. Several previous paradigms have been brought into question. For example, our data have revealed that Glacier Bay halibut do not necessarily migrate to the open



Pacific Ocean as much as had been thought and appear to have fairly limited home ranges within the Bay.

Sea Otter Colonization – Sea otters are gradually recolonizing Glacier Bay. They have remarkably strong effects on the ecology of the marine ecosystem wherever they graze heavily. ABSC researchers are documenting the resultant ecosystem changes and differentiating between



effects due to sea otters and changes in commercial fisheries for species such as crabs, one of the otters' favorite prey.

Intertidal Community Monitoring Protocols – ABSC is developing detailed, scientifically credible methods for long-term monitoring of



the rocky intertidal zone to help Park resource managers detect both human-induced and natural changes.

Seabird Ecology and Abundance – Several seabird studies include research on the possible impacts of subsistence egg-collecting on seagulls nesting at Marble Island,



monitoring the population trends and ecology of black-legged kittiwakes, and documenting the seasonal distribution of seabirds on Park waters.

Forage Fish – Small schooling fish are the basis for a number of predator populations of fish, seabirds, and



marine mammals. ABSC scientists are documenting the abundance, distribution, and species composition of these critical populations in relation to oceanographic and habitat features.

Biological Succession of Stream Communities – Glacial recession over the past 200 years has uncovered numerous small streams. These interdisciplinary studies are



revealing the important factors in biological development of stream communities. Results will provide clues for managers trying to restore degraded streams in populated areas of the Pacific Northwest and Alaska.

Bear/Human Interactions – This new study is being designed to help Park managers monitor the frequency and severity of bear/human interactions at popular campsites and then create a management scheme to minimize dangers to humans and bears.



Ecosystem Integration – The myriad ABSC and other studies in Glacier Bay provide a rare opportunity to coordinate scientific



findings and information among all the various ecosystem components being studied. ABSC scientists are seeking opportunities with our cooperators to promote and support integration at every step, to formulate one of the first true “Ecosystem Studies” in the marine environment of the North Pacific.

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