

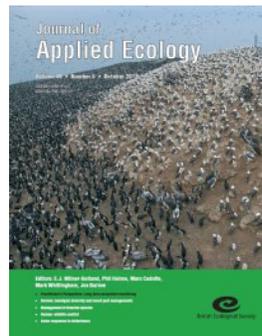


2012 Field Seasons Highlights

Article offers practical advice for long-term monitoring

Chris Sergeant, Brendan Moynahan, and Bill Johnson authored one of the first papers accepted into the *Journal of Applied Ecology's* new peer-reviewed feature, Practitioner's Perspective. Their article, "Practical advice for implementing long-term ecosystem monitoring," presents guidance for implementing and successfully sustaining long-term monitoring programs. The Southeast Alaska Network (SEAN) and other National Park Service experiences were the basis for the article. Implementation guidance of this type is rare in scientific literature.

Shortly after publication, full article reprints were requested by scientists in 15 countries. The full article is available on the SEAN website at: <http://science.nature.nps.gov/im/units/sean>. Look for it under the "Plans and Key Documents" page.



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Collaborative study in Glacier Bay investigates ocean acidification

For the past year Glacier Bay National Park and Preserve (NP & P) and the University of Alaska-Fairbanks, with support from SEAN, have studied ocean acidification (OA) in the highly productive Glacier Bay marine ecosystem. Ocean Acidification is the decrease in ocean pH and is caused by increased carbon dioxide, as well as by deglaciation. Lower

ocean pH reduces the availability of calcium carbonate, an essential component for shells and skeletons of many marine organisms. The rapid deglaciation experienced in Glacier Bay NP & P over the past 250 years has increased the amount of freshwater entering the bay. This surge of naturally low alkalinity glacial runoff is expected to reduce the buffering capacity of marine surface waters and enhance their vulnerability to OA. Monthly sampling shows seasonal OA events to occur bay-wide, beginning along the densely glaciated arms during summer and mixing south into the lower bay, Icy Strait and Cross Sound in fall. The project will continue for two more years.



UAF researcher Stacey Reisdorph prepares instruments for sampling. Photo NPS/SEAN

2012 Field Season by the Numbers

- 245 Kilometers of transects sampled in Glacier Bay National Park and Preserve (NP & P) during Kittlitz's murrelet surveys
- 14,202 Hourly water quality measurements
- 1,283 Estimated number of glaciers in Glacier Bay NP & P, as determined by 2012 Glacial Dynamics Report
- 400 Hours aboard the R/V Fog Lark monitoring Kittlitz's Murrelets in Glacier Bay NP & P
- 46 Dolly Varden sampled in the development of the Freshwater Contaminants Monitoring Protocol
- 0 Temperature (°C) recorded in the Taiya River (Klondike Gold Rush National Historical Park) on November 16, 2012

SEAN monitoring highlights Glacier Bay as a major population center of a rare seabird

The Kittlitz's murrelet (*Brachyramphus brevirostris*) is a rare seabird endemic to Alaska and northeastern Russia. It is closely associated with glacially-influenced habitats and breeds in several national parks, including Glacier Bay, Kenai Fjords, and Wrangell-St. Elias. Although the global population size is not known, it is clear that Glacier Bay National Park & Preserve (NP &P) supports a substantial proportion of this species, which is currently being considered for protection under the Endangered Species Act.

Populations are believed to have declined since the 1980s, yet factors causing the decline are not well known. SEAN began development of a focused monitoring program for Kittlitz's murrelets in Glacier Bay NP & P in 2009 and recently completed the fourth season of population abundance and distribution monitoring in 2012. Results from 2009 and 2010 indicate a July population of approximately 14,000 individuals, and 2011 and 2012 estimates will be completed in the near future.



SEAN researchers survey for Kittlitz's murrelets in Glacier Bay. Photo: NPS/SEAN

Dolly Varden aid SEAN researchers in developing protocols

During the 2012 field season SEAN biologists collected 46 Dolly Varden (*Salvelinus malma*) from Glacier Bay National Park and Preserve (NP &P). This field work was part of a joint mercury analysis study with the National Park Service and the United States Geological Survey to determine mercury levels found in fish across the western United States. Freshwater fish were sampled in 20 national parks. Results from this study are expected to be reported in 2013. The analysis of Dolly Varden collected in 2012, along with the results of a Natural Resource Technical Report baseline inventory completed in 2011, are guiding the development of the

Freshwater Contaminants Monitoring Protocol. The new protocol is being developed in cooperation with University of Alaska Fairbanks Principal Investigator Todd O'Hara and graduate student Andrew Cyr.



Ecologist Chris Sergeant samples Dolly Varden in Glacier Bay. Photo: NPS

Southeast Alaska Network Vital Signs

Airborne Contaminants

Freshwater Contaminants

Freshwater Water Quality

Glacial Dynamics

Intertidal Communities

Kittlitz's Murrelets

Landform and Landcover

Marine Contaminants

Marine Predators

Oceanography

Streamflow

Weather and Climate

Staff News

Chris Sergeant finished up his detail as SEAN Program Manager in November 2012. Heather Coletti (SWAN) has taken over duties as Program Manager until a new manager is selected this winter/spring.