



Alagnak

Aniakchak

Katmai

Kenai Fjords

Lake Clark

Marine Birds

Resource Brief
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Importance

Marine birds rely heavily on habitats and prey associated with the marine nearshore ecosystem of park coastlines. These species are top-level consumers of marine invertebrates such as mussels, clams, snails, limpets, and forage fish. Because of these characteristics, marine birds are good indicators of change in the marine ecosystem. Monitoring will focus on birds that are trophically linked to the nearshore food web such as sea ducks (harlequin duck, Barrow's goldeneye, and scoters), mergansers, and black oystercatchers as well as various guilds of other marine birds (e.g., pigeon guillemots, black-legged kittiwakes, and cormorants) that occupy other food webs or habitats. Monitoring these various guilds simultaneously may improve our ability to discriminate among potential causes of change in seabird populations and the nearshore ecosystem. Many of these species were impacted by the Exxon Valdez oil spill as well, and exhibited protracted recovery periods as a consequence of lingering oil in nearshore habitats. Public concern exists for the welfare of marine birds because they are affected by human activities like oil pollution and commercial fishing.

Long-term Monitoring

The distribution and density of marine birds has been monitored in Katmai National Park and Preserve (KATM) and Kenai Fjords National Park since 2006 and 2007, respectively. Summer surveys have been conducted annually and winter surveys are conducted in each park on alternate years as weather permits. Preliminary analysis suggests that the survey design is adequate for detecting trends in more common species such as harlequin ducks and pigeon guillemots. SWAN will use a power analysis to estimate number of samples and sample frequency required to detect a specified trend with some level of confidence for selected species. This will lead to a better understanding of trends for specific indicator species across the western Gulf of Alaska.



Laura Phillips (KEFJ) and George Esslinger (USGS) survey for marine birds and mammals during the 2010 KEFJ winter survey.

Discussion

Estimated nearshore densities of Barrow's goldeneye and harlequin duck approximately doubled between our 2008 and 2010 winter surveys (Table 1). Neither species exhibited changes in their general distribution from 2008 to 2010. This apparent doubling in estimated density may be a reflection of inter-annual variation of overwintering sea ducks and not necessarily a doubling of the population. The survey design does not currently account for imperfect detection nor does it focus on any one species. Also, because only one survey is conducted per year intra-annual variation is high. Additional data analysis of the summer surveys is scheduled for 2012.

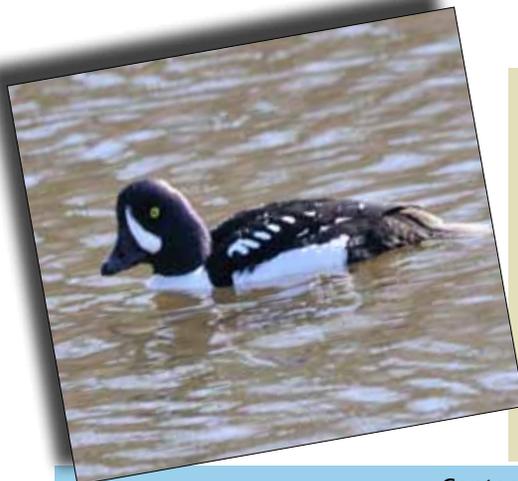


Table 1. Sea duck densities per square kilometer for Barrow's goldeneye (left) and harlequin duck (right) from the 2008 and 2010 winter bird surveys conducted in KEFJ. Photos by Bill Thompson.

Year	Harlequin duck	Barrow's goldeneye
2008	14.10	9.58
2010	229.30	29.35

