Marine Birds

Importance

Many marine birds rely heavily on habitats and prey associated with the marine nearshore ecosystem of park coastlines. These species are top-level consumers of fish and marine invertebrates, such as mussels, clams, snails, and limpets. Because of these characteristics, these birds are good indicators of change in the marine ecosystem. Monitoring focuses on birds that are trophically linked to the nearshore food web such as sea ducks (harlequins, Barrow's goldeneye, mergansers, and scoters) and black oystercatchers as well as various guilds of other marine birds (e.g., pigeon guillemots, blacklegged kittiwakes, and cormorants) that occupy other food webs or habitats.

Conducting nearshore surveys in Katmai NPP. NPS photo/J.Walton

Monitoring these various guilds simultaneously improves our ability to discriminate among potential causes of change in seabird populations and the nearshore ecosystem. For example, some of the species we monitor were impacted by the *Exxon Valdez* oil spill, 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 currently affected by human activities like pollution and commercial fishing.

Methods

In Katmai National Park and Preserve (NPP) and Kenai Fjords National Park (NP), ecologists conduct shoreline skiff-based surveys along coastal (nearshore) habitats. We collect data that provides baseline information on species composition, distribution, and density for populations of marine bird and mammals that occur in the nearshore waters of Katmai NPP and Kenai Fjords NP.

Summer surveys are conducted annually and winter surveys are conducted in each park in alternate years as weather permits. Marine bird surveys have been conducted in Katmai NPP and Kenai Fjords NP since 2006 and 2007, respectively.

Fresh common murre carcass that was sent to the U.S. Geological Survey's National Wildlife Health Center for analysis (top, NPS photo/E. Kunisch). Collecting a wing from a dead murre to analyze the feathers for nutritional stress (right, NPS photo/J. Walton).

Findings to date

During the summer of 2015, we observed large increases in common murres compared to previous years. This increase was particularly evident in Katmai NPP (Figure 1) where there are no murre colonies and densities of murres are generally low. This increase in numbers is most likely a function of changed distribution. In poor conditions, these long-lived birds will readily defer breeding; therefore they are not tied to colonies and thus ended up nearshore, likely searching for food.

Although Kenai Fjords NP does have common murre colonies, we still have evidence of an increase of these birds moving into coastal areas not associated with colonies (Figure 2). Our documentation of unusual murre distributions correspond to observations of large die-offs of murres throughout the North Pacific Ocean in winter 2015-2016. We speculate that high water temperature may have disrupted prey abundance and/or availability, leading to changes in murre distribution, behavior, condition, and mortality rates. Our results contribute to observations across the Gulf of Alaska that demonstrates that 2015 was an anomalous year.

In response to this yearlong widespread common murre die-off along the Pacific Coast and the northern Gulf of Alaska, National Park Service, along with agency partners (U.S. Fish and Wildlife Service and U.S. Geological Survey) conducted a winter marine bird and mammal survey in Katmai NPP in March 2016. We also surveyed 19 segments of beaches by foot (a combined total of ~12 linear miles) and two offshore islands, and found evidence of the die-off everywhere we looked. We counted over 2000 seabird carcasses (1,988 murres, 16 crested auklets, 2 least auklets, 1 marbled murrelet, 1 glaucous-winged gull, 2 black-legged kittiwakes, 2 cormorants, and 23 unidentified small alcids). Nearly all carcasses were estimated to be on the beach for over 1.5 months, heavily scavenged, and found further inland on the beaches.

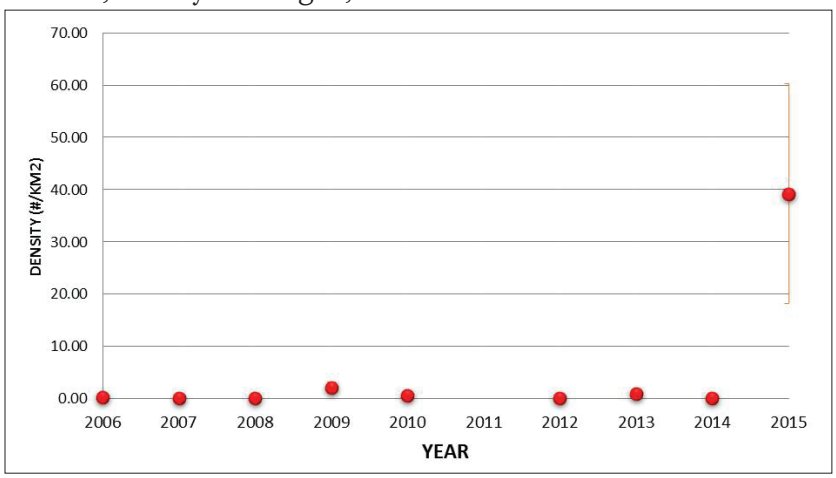

Figure 1. Common murre density estimates in Katmai NPP from 2006 through 2015 (2011 was not surveyed). Error bars equal standard error.

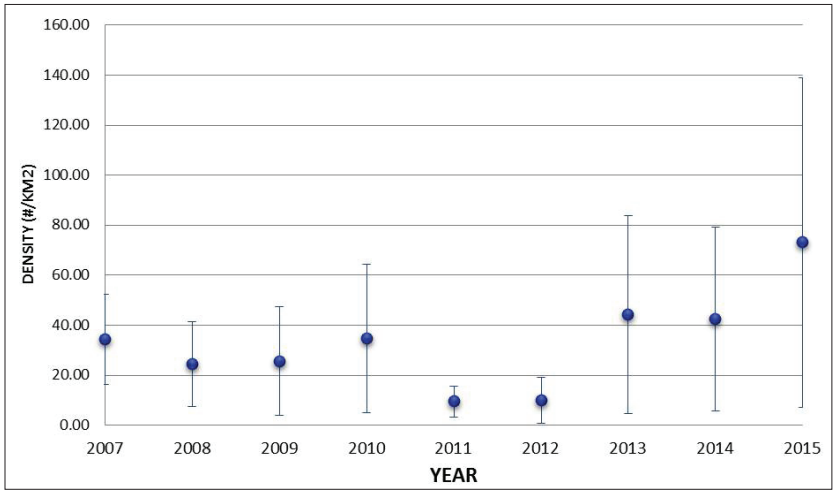

Figure 2. Common murre density estimates in Kenai Fjords NP from 2007 through 2015. Error bars equal standard error.

Common murre with winter plumage found near the coastline of Katmai NPP during the most recent winter survey in March 2016 (top). Starting a nearshore marine bird transect (bottom). NPS photos/E. Kunisch

For more information:

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