

Key Site 9: Kodiak Archipelago, Alaska

Location: 57°43'3"N, 153°21'16"W

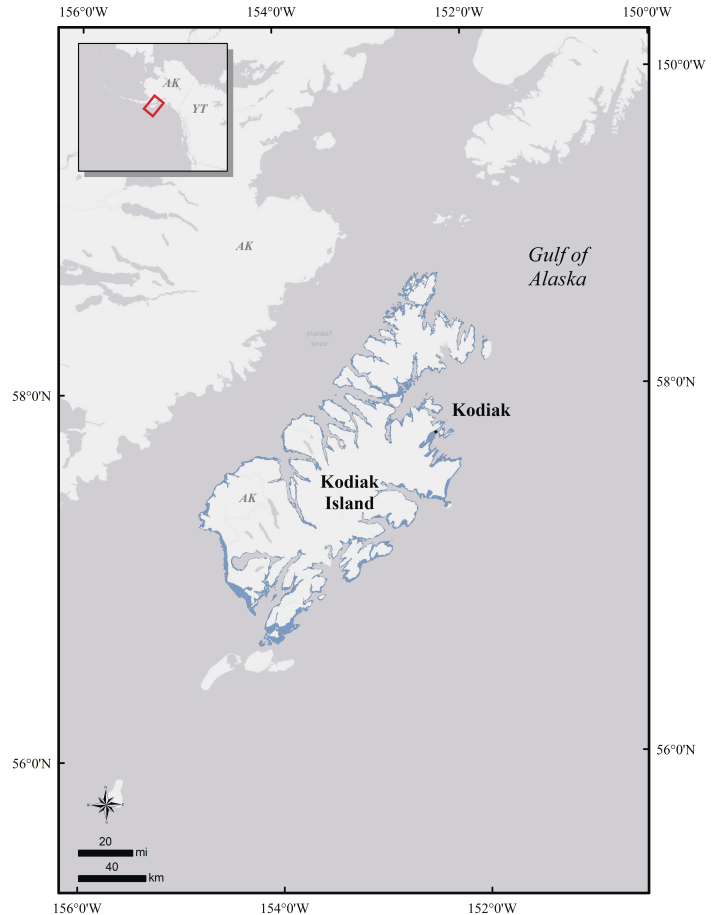
Size: 1883 km²

Description: The Kodiak Archipelago is in the northwest Gulf of Alaska, in the North Pacific Ocean. The key site consists of nearshore areas around the perimeter of the archipelago's islands but is mostly confined to sea duck coastal habitats of depths less than 20 m. The area's rich marine ecosystem is influenced by a variety of oceanographic features, including the Alaska Coastal Current, the Alaska Stream, and large amounts of freshwater runoff into its bays and inlets. The Whale Pass and Afognak Strait area has tidal flows as high as 7.5 knots that produce large upwellings over an extensive shallow bottom, providing foraging areas for some wintering sea ducks. Large tidal ranges (up to 9 m) in most bays produce local productive upwelling areas and feeding habitats accessible to birds at low tides. Most of the inner bays, lagoons, and estuaries are relatively ice-free during winter. Steep mountains and convoluted shorelines provide waterfowl with shelter from high winds and rough seas even in the worst winter storms (Zwiefelhofer and Forsell 1989).

Precision and Correction of Abundance

Estimates Presented: Estimates of sea duck abundance are based on winter boat strip transects using methods described by Gould and Forsell (1989) and shoreline aerial surveys of most of the area conducted in 1980 (Forsell and Gould 1981). The accuracy of sea duck counts is high because most sea ducks inhabit nearshore protected waters where detection of birds is high. Because Forsell and Gould (1981) did not estimate abundance for northern Afognak Island (about 20% of the water area), population estimates from 1980 were increased by 20% to represent the entire archipelago. Trends were derived from 28 years of boat surveys that sampled about 17% of Uyak and Uganik Bays, and Sitkalidak Strait, and abundance compared between 1980–1983 and 2004–2008.

Biological Value: Forsell and Gould (1981) estimated that more than 200,000 sea ducks of 14 species wintered in the archipelago. [Appendix 1](#) lists the most abundant sea ducks as estimated in 1980,



with 2008 populations estimated by adjusting the 1980 numbers by the percent change on long-term monitoring surveys of selected bays. More than 5% of the continental populations of Black Scoter (*Melanitta americana*), White-winged Scoter (*M. fusca*), Harlequin Duck (*Histrionicus histrionicus*), and Barrow's Goldeneye (*Bucephala islandica*) winter in the Kodiak Archipelago. Long-tailed Ducks (*Clangula hyemalis*) were, and remain, the most abundant sea duck, although their numbers appear to have declined by about 50%. Other abundant species included Black Scoter and White-winged Scoter, whose numbers also appear to be declining but remain the third and fourth most abundant sea ducks. Steller's Eider (*Polysticta stelleri*) and King Eider (*Somateria spectabilis*) do not occur in high enough numbers in areas where boat surveys were conducted to determine a trend, but anecdotal evidence indicates that there are far fewer eiders now. Barrow's Goldeneye appear to have increased substantially and now are the second most-abundant sea duck. Bufflehead (*Bucephala albeola*), Surf Scoter (*M. perspicillata*), Harlequin Duck, Red-breasted

Merganser (*Mergus serrator*), and Common Merganser (*M. merganser*) are also increasing. In addition to wintering and migratory stopover habitats, the marine waters of the Kodiak Archipelago provide breeding and molting habitat for over 20,000 Harlequin Ducks, Barrow's Goldeneyes, and Red-breasted and Common Mergansers (Corcoran 2016). Kodiak Island is the southernmost wintering area for Steller's Eider in the U.S., where it is listed as a threatened species. Radio-telemetry of wintering birds indicated that most eiders subsequently flew to breeding areas in Russia (Rosenberg et al. 2014).

Sensitivities: Declining numbers of wintering Black Scoter and White-winged Scoter, along with Long-tailed Duck and Steller's Eider, may be due to climate change. Kodiak is located toward the middle or southern end of the winter ranges of Black Scoter and White-winged Scoter and the southern edge of Steller's Eider range. The waters to the north seldom freeze as they did 35 years ago. Increasing numbers of Bufflehead, Harlequin Duck, Barrow's Goldeneye, and Red-breasted and Common Merganser may be a result of changes in distribution due to climate change, the recovery of pollock and herring stocks, increased survival of breeding birds, and/or better management of illegal take and overharvest. Because of the unique 1980–2008 dataset and its northern location, Kodiak Archipelago should be considered as a monitoring site for measuring response of sea ducks and seabirds to climate change. No large-scale winter surveys of sea ducks have been conducted since 2008.

Potential Conflicts: Kodiak Island is within a major marine transportation corridor and has frequent ferries, freighters, and barges in the outer waters. Kodiak is home to more than 700 commercial fishing vessels, including large trawl, longline, and crab vessels, plus at least 16 land-based seafood processing plants (Kodiak Chamber of Commerce 2009). Within the bays, hundreds of fishing boats and recreational craft can disturb wintering sea ducks. In addition to disturbance and oil spills, some types of fishing present further threats to sea ducks from entanglement in both actively fished and derelict gillnets, crab pots, or trawl nets.

The Kodiak Archipelago has 32 sea duck hunting guides registered with the state and the highest sport sea duck harvest in Alaska (USFWS 1999). Mortality from hunting and poaching may have caused local-

ized depletion of sea ducks, although the actual contribution of harvest to declines in sea duck populations has not been quantified.

Some waters and shoreline of the Kodiak Archipelago were oiled by the 1989 *Exxon Valdez* Oil Spill, and the potential exists for additional oil spills from sinking boats and chronic oil contamination. Offshore areas have been considered for oil and gas leasing in the past, but there was little industry interest in developing resources there.

Status: The terrestrial area falls within multiple agency and corporate jurisdictions, including four Federal (USCG, USFWS, BLM, and FAA), four state (ADFG, DNR, DOT, and the University of Alaska), 12 Alaska Native corporations, and seven municipalities. The state of Alaska has jurisdiction over submerged lands between mean high water and 5.6 km from shore, with the authority to manage, develop, and lease resources, except the tidal waters surrounding Afognak Island that are part of the Alaska Maritime National Wildlife Refuge.

The Kodiak Archipelago has five coastal and two marine IBAs (Audubon Alaska 2016). The importance of Kodiak as a wintering area for sea ducks may change as birds shift their winter ranges northward in response climate change.

Literature Cited

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Barrow's Goldeneyes. Photo: Tim Bowman.