

Key Site 17: Northern Bering Sea, Alaska

Location: 62°39'5"N, 171°16'53"W

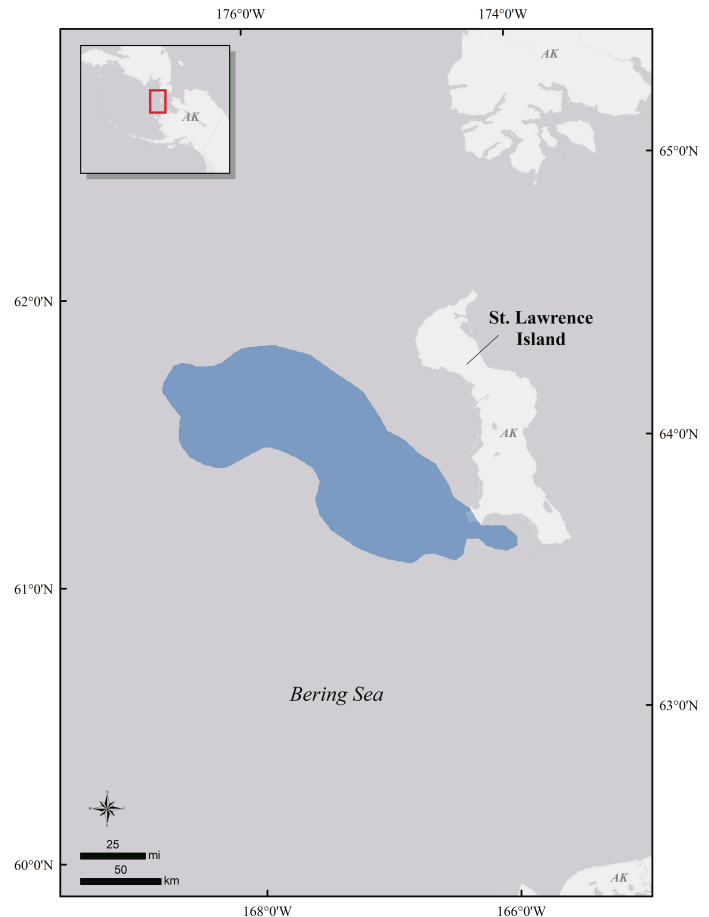
Size: 12,644 km²

Description: This key habitat site lies about 200 km off the southern and western coast of St. Lawrence Island, Alaska. The Anadyr Current from the western side of the Bering Sea controls nutrient distributions in this region. The high productivity in this area along with the shallow shelf of the Bering Sea result in large quantities of carbon available to support productive benthic communities, which in turn support marine animals. In winter, sea ice is a dominant physical feature in the northern Bering Sea.

Precision and Correction of Abundance

Estimates Presented: Abundance estimates presented for this key habitat site have not been adjusted to account for incomplete detection. Within this area, bird abundance estimates were based on aerial oblique photos, in which birds were manually counted. These photos were taken over a geographic area delineated based on the distribution of radio-tagged Spectacled Eiders (*Somateria fischeri*) (Larned et al. 2012) and should be considered an approximate or minimum estimate.

Biological value: Benthic communities in the northern Bering Sea support organisms that forage on benthic food sources, including several sea duck species, most notably Spectacled Eiders (Grebmeier et al. 2006, Grebemeier 2012). This key site supports the entire world population of Spectacled Eiders (~370,000 birds; Larned et al. 2012) during winter (Petersen et al. 1999, Sexson et al. 2014). Spectacled Eiders spend a maximum of nine months in this region, arriving as early as the last week of September and departing by late May (Sexson et al. 2014). The distribution of wintering eiders is controlled to some extent by the location of open water leads and polynyas, which provide areas for foraging and resurfacing after dives (Bump and Lovvorn 2004, Lovvorn et al. 2014). In addition, the distribution and location of eiders also appears to respond to changes in sea ice concentration (Cooper et al. 2013). Sea ice provides a critical habitat as a resting platform between foraging bouts because sea ducks lose heat at a greater rate in water than when exposed to air (De Vries and Van Eerden 1995). The use of this key site as an exclusive



wintering area appears to be unique to Spectacled Eiders. Other sea ducks, such as Common Eiders (*S. mollissima v-nigra*), King Eiders (*S. spectabilis*), and Long-tailed Ducks (*Clangula hyemalis*), have been observed during winter within the key site boundaries (particularly in the northern portion of this site), but most use other areas throughout the Bering Sea and farther south near western Alaska (Petersen and Flint 2002, Petersen et al. 2003, 2012, Phillips et al. 2006, Oppel et al. 2008).

Sensitivities: In 1993, Spectacled Eiders were listed as threatened under the provisions of the U.S. Endangered Species Act due to population decline on its principal breeding areas in Alaska (Federal Register 1993). This key wintering area, along with breeding, migration, and molting areas, are designated as critical habitat for Spectacled Eiders (Federal Register 2000).

Changes in climate have been linked to large-scale decadal regime shifts in the Bering Sea ecosystem (Hare and Mantua 2000, Grebmeier et al. 2006). Within this key site, shifts in the once-dominant

bivalve *Macoma calcaria* to *Nuculana radiata* over the last 40 years (Richman and Lovvorn 2003, Lovvorn et al. 2009) coincided with population declines of Spectacled Eiders (Flint 2013). Other effects of climate change include variation in sea ice conditions and shifts in prevailing winds, which can affect Spectacled Eiders' access to feeding areas and availability of ice as resting platforms and thus increase energetic costs (De Vries and Van Eerden 1995, Lovvorn et al. 2014). Higher energy costs and restricted access to preferred feeding habitat and food items might affect not only short-term survival but also future breeding success (Petersen and Douglas 2004, Lovvorn et al. 2014). Dramatic decreases in ice in the Northern Bering Sea were observed during the winters of 2018 and 2019, and in the winter of 2019–2020 a sample of radio-tagged eiders allowed documentation of dispersion of wintering birds to marine areas far outside the traditional wintering area (i.e., coastal Russia, eastern Chukchi Sea); the consequences of these shifts are not known.

Potential conflicts: Major threats include the risk of oil contamination from vessel spills in the Bering Sea and potential habitat changes (i.e., sea ice) or ecosystem-level (i.e., food web and diet items) changes associated with climate change. Ship traffic through the Bering Strait is expected to increase as decreased sea ice opens the Arctic to shipping and resource development. Threats also include disturbance or harvesting of benthic communities in this area.

Status: This key wintering area in the northern Bering Sea south of St. Lawrence Island was designated as Critical Habitat for Spectacled Eiders in 2001 (U.S. Department of Interior 2001). Of the 7,393,700 hectares in this area, approximately 98.6% is under federal ownership while the remaining 1.4% is owned by the State of Alaska (Federal Register 2000). In December 2016, an executive order was issued designating the Northern Bering Sea Climate Resilience Area in Alaska (Federal Register 2016). The executive order maintained the current prohibition on bottom trawling in this area, required additional steps to protect important places from the impacts associated with human-related activities (i.e., shipping), and prohibited oil, gas, and mineral leasing in specific areas, including this key wintering area for Spectacled Eiders (<http://usa.oceana.org/northern-bering-sea-climate-resilience-area>).

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