**Ledyard Bay**

**Description of Area**
Stretching from Cape Lisburne to central Kasegaluk Lagoon, Ledyard Bay is the largest bay on Alaska’s Chukchi Sea coast (Map 1). This area is also part of the greater Chukchi Sea lead system. The bay is very shallow, even by Chukchi Sea standards, averaging 15–25 meters depth (Map 2). The main ocean current in Ledyard Bay is the Alaska Coastal Current, which carries low-salinity water north from coastal areas in the Bering Sea (Map 4). The bay is not often covered in pack ice; instead, the nearshore areas are covered in landfast ice several months per year, while farther offshore is a recurring system of polynyas and leads (Map 5).

The seafloor is made up mostly of muddy gravel (Map 6). Sea surface temperatures range from 3–5°C during ice-free months (Map 7). Analysis of sea surface temperature anomalies in recent decades indicates the bay has not been affected by climate change as drastically as other Chukchi Sea waters (Map 8).

**Outstanding Biological Features**
The nearshore area of Ledyard Bay is very productive—with large phytoplankton blooms similar to the Bering Strait region (Maps 9–10). Benthic productivity appears to be fairly average for the Chukchi Sea, which could be misleading since only a couple of survey points have been sampled in this area (Map 12).

These waters are home to capelin from June to September, and coastal waters are a capelin spawning area (Map 14). Ledyard Bay is also National Marine Fisheries Service essential fish habitat for saffron cod, which occur year-round (Map 16). Both pink and chum salmon are also present (Maps 17–18).

Ledyard Bay is very important for birds, especially eiders. This is critical habitat for migrating, staging and foraging Spectacled Eiders (Map 21). The area is also a concentrated staging area for King Eiders during spring and fall migration. The entire breeding population of King Eiders in western North America—about half of a million birds—is believed to use this area (Map 23). The bay is a staging area for Common Eiders as well, which breed along the coastline leading to Kasegaluk Lagoon (Map 24). Steller’s Eiders migrate through the bay in unknown numbers (Map 22). All four eider species breed just inland of the bay and northward, as do Yellow-billed Loons, Red-throated Loons, and Long-tailed Ducks (Maps 19–20, 25). All of these species migrate through and forage in the bay on the way to their breeding grounds. Kittlitz’s Murrelets are present, but abundance data in this region is very poor (Map 27). Fulmars and shearwaters forage in the offshore waters of the bay (Maps 28–29). Because of these spectacular bird values, this is designated as a globally significant Important Bird Area (Map 31).

The bay is also home to significant mammal populations. Polar bears regularly den and feed in Ledyard Bay (Map 32). Arctic foxes forage atop the landfast ice in winter (Map 33). Pacific walrus migrate through, and also haul out in small numbers (Map 34). All four species of ice seals are present (Maps 35–38). Spotted seals use the coastal waters and...
haulouts in summer and fall, from about June to December. Ringed and bearded seals concentrate in the bay in winter and spring, from about February to June.

The bay is a spring migration area for bowhead whales (Map 39), a migration and nearshore concentration area for beluga whales (Map 40), and is also a feeding area for gray whales (Map 41).

**Current Resource Use**
Subsistence uses include hunting of seals, walrus, and seabirds, as well as bowhead whales at times.

**Conservation Status**
- Ledyard Bay is a globally significant Important Bird Area designated by the National Audubon Society and BirdLife International (Map 31).
- Designated critical habitat for Spectacled Eiders by the U.S. Fish and Wildlife Service (Map 21).
- Designated essential fish habitat for saffron cod by the U.S. National Marine Fisheries Service (Map 16).
- Designated critical feeding habitat for polar bears by the U.S. Fish and Wildlife Service (Map 32).
- Bowhead whale subsistence hunting quiet area designated by Alaska’s North Slope Borough (Map 39).
- Currently closed to commercial fishing by the U.S. North Pacific Fishery Management Council.
- Waters within 40 kilometers of the Chukchi coast and Point Barrow are not currently open to oil and gas leasing by the U.S. Bureau of Ocean Energy Management or the State of Alaska (Map 42).

**Current and Future Threats**
- Disturbance or pollution from shipping traffic (Map 43).
- Future increased vessel traffic due to shipping, tourism, or fishing as the ice-free season continues to lengthen.
- High air temperature increases (up to $3.0\,^\circ\mathrm{C}$) projected by the end of the century (Map 44).
- Expected, but not well understood, changes in marine productivity due to changes in timing and extent of sea ice.