BIRDS
**YELLOW-BILLED LOON**  
*Gavia adamsii*

**Description**  
The Yellow-billed Loon is one of the largest of the five world loon species, all of which reside in Alaska. This loon was “warranted but precluded” from listing as a threatened species under the ESA in 2009 and is now designated a candidate species. The Yellow-billed Loon is a Red List (vulnerable and declining) species in Audubon Alaska’s WatchList (Kirchhoff 2010). Between 2000 and 2004, a population decline of about 1% was found for Yellow-billed Loons breeding on the North Slope of Alaska (National Audubon Society 2007; USFWS 2007). The world Yellow-billed Loon population is estimated at 16,500, and the North American population is estimated at around 13,000 (USFWS 2007).

Yellow-billed Loons breed patchily throughout the sub-Arctic and Arctic tundra of northern Alaska, Canada, and Eurasia. In Alaska, the range extends from the Canning River on the Arctic Coastal Plain westward to Point Lay, St. Lawrence Island, and the coastal areas of the Seward Peninsula. The Seward Peninsula is a key breeding ground; however, density and concentration areas are not well known. Although Yellow-billed Loons have been opportunistically observed in the areas denoted by question marks on the map, those areas have not been properly surveyed. Yellow-billed Loons may occur in very low densities in these areas (Fair 2010). Perhaps the most important area for this species in Alaska is the National Petroleum Reserve-Alaska (NPR-A), especially the area around Teshekpuk Lake. Yellow-billed Loon migration has not been well understood, but recent telemetry work (Schmutz 2009) has shed some light on the corridors used by loons to and from the North Slope of Alaska.

Yellow-billed Loons weigh between 4 and 6 kg (9 and 14 pounds) and average 75 to 90 cm in length (Paul and Tankersley 1994; North 1994). Yellow-billed Loons eat mostly small fish (sculpin, stickleback, cod, salmon fry, and others) and also aquatic vegetation and invertebrates (amphipods, marine worms, small crabs, and shrimps) (North 1994). Loons are always found very close to water. These waterbirds are incredible swimmers and divers but quite awkward on land. Loons nest within one meter of water on the shores of permanent, large, deep, remote lakes that are capable of supporting sufficient fish populations (USFWS 2007). Yellow-billed Loons arrive at breeding lakes in late May to early June and begin fall migration in August.

See related maps and descriptions of Ecoregions, Capelin, Pacific Herring, Saffron Cod, Pink Salmon, Chum Salmon, Red-Throated Loon, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**  
The main sources of spatial data were USFWS data, the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), and telemetry locations from Schmutz (2009b). Survey and telemetry locations were buffered by 25 km to provide a guideline for drawing a smoothed boundary depicting breeding and marine use areas. These boundaries were drawn using the buffered survey points and a compilation of similar boundaries drawn by other sources; the data were overlaid and synthesized into the polygons displayed on the map.

Concentrated breeding areas are medium- to high-density polygons from USFWS analysis of North Slope surveys. The Important Bird Area (IBA) represents an area where a substantial number of Yellow-billed Loons
were observed—a finding that triggered criteria for establishment of a globally significant IBA. Migration arrows were drawn by analyzing movement patterns distilled from survey locations and timing information. Telemetry data and communication with Joel Schmutz of USGS (2009) were key components to drawing migration paths.

Data Quality
Because of concern about the population status of Yellow-billed Loons, these birds have been the subject of many agency studies, which have provided important information for this species. This map has a data quality rating of fair. It provides a partial geographic picture for Yellow-billed Loons, and data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions are outdated, opinion-based, or missing altogether. USFWS surveys and USFS telemetry data provided very good information on North Slope concentration areas and the general migration routes of North Slope birds. Russian and Canadian breeding ranges were based on very broad-scale data which, at this scale, do not provide adequate range information. Some key features are missing, such as the extent of terrestrial breeding and marine foraging ranges and the concentration areas on the Seward Peninsula, in the marine environment, and in breeding areas outside the United States.

Summary and Synthesis
The map highlights several key locations for Yellow-billed Loon conservation, including a globally important IBA, concentrated breeding areas, and marine foraging areas. The area around Teshekpuk Lake is critical for this species in Alaska. Degradation or loss of key habitats shown here could further the decline of this candidate species. Yellow-billed Loons are threatened by oil pollution and potential oil spills, increased nest predation from species associated with oil developments (ravens, foxes, etc.), degradation of food sources from pollution, fishing bycatch mortality, and overharvest by subsistence users (USFWS 2007; BirdLife International 2009; Zeller 2010).

Text Citations


Map Data Sources


Fair, J. 2010. Personal communication with M. Smith/Audubon Alaska. 18 December.


**RED-THROATED LOON**  
*Gavia stellata*

**Description**  
The Red-throated Loon is the smallest of the five world loon species, all of which reside in Alaska. This loon is a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010). Population status is a concern because of declining numbers in recent decades for no clear reason (Barr et al. 2000). The world’s Red-throated Loon population is estimated at 400,000, with 40,000 in North America and 15,000 in Alaska (Kirchhoff 2010).

Red-throated Loons breed primarily along the Alaskan coast from the Seward Peninsula to the Canadian Border. This species also breeds inland and across Canada and Russia, although their breeding density is unknown. Breeding concentration areas from Point Lay to Prudhoe Bay, and especially near Teshekpuk Lake, are known important habitats for the Red-throated Loon. Migration of this species has not been well understood, but recent telemetry work (Schmutz 2009) has shed some light on its corridors to and from the North Slope of Alaska.

Red-throated Loons weigh between 1.5 and 2.25 kg (3 and 5 pounds) and average 53 to 69 cm in length (Barr et al. 2000). Red-throated Loons eat mostly small fish (capelin, stickleback, cod, herring, sand lance, and others) and also leeches, crustaceans, polychaetes, mollusks, and aquatic insects (Barr et al. 2000). Loons are always found very close to water. These waterbirds are incredible swimmers and divers, but quite awkward on land. Red-throated Loons prefer breeding in low wetlands but also use mountainous areas. Preference is for larger bodies of freshwater but the species will choose smaller nesting ponds if the adjacent habitat is better (such as that characterized by vegetated lake margin, nesting promontories, or islets); the birds may then fly to more suitable lakes or marine waters to feed (Barr et al. 2000; BirdLife International 2009). They arrive at their breeding grounds in May to June and begin fall migration in August or September.

See related maps and descriptions of Ecoregions, Capelin, Pacific Herring, Yellow-Billed Loon, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**  
The main sources of spatial data were USFWS data, the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), and telemetry locations from Schmutz (2009). Survey and telemetry locations were buffered by 25 km to provide a guideline for drawing a smoothed boundary depicting breeding and marine use areas. These boundaries were drawn using the buffered survey points and a compilation of similar boundaries drawn by other sources; the data were overlaid and synthesized into the polygons displayed on the map.

Concentrated breeding areas are medium- to high-density polygons from USFWS analysis of North Slope surveys. Migration arrows were drawn by analyzing movement patterns distilled from survey location and timing information. Telemetry data and communication with Joel Schmutz of USGS (2009) were key components to drawing migration paths.

**Data Quality**  
This map has a data quality rating of fair. It provides a partial geographic picture for Red-throated Loons, and data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions are outdated,
opinion-based, or missing data altogether. USFWS surveys and USFS telemetry data provided good information on North Slope concentration areas and the general migration routes of North Slope birds, but more information is needed. It was assumed, but not known, that this species breeds to some degree in Russia and Canada, but not Wrangel or Herald Islands. Some key features are missing, such as the true extent of breeding areas outside the United States, the degree of use of those breeding areas, the extent of the marine foraging range, and concentration areas in the marine environment.

Summary and Synthesis
Degradation or loss of core habitat could be detrimental to this species. Breeding concentration areas from Point Lay to Prudhoe Bay, and especially near Teshekpuk Lake, are important habitat for the Red-throated Loon. This species is threatened by oil pollution and potential future oil spills, human disturbance, habitat loss, degradation of food sources from pollution, and fishing bycatch mortality (Barr et al. 2000, BirdLife International 2009).

Text Citations


Map Data Sources


**SPECTACLED EIDER**

*Somateria fischeri*

**Description**

The Spectacled Eider is one of four world eider species, all of which breed in Alaska. This large sea duck was listed as a threatened species under the Endangered Species Act (ESA) in 1993 and is a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010). Population status is a concern because of a 96% decline in breeding birds on the Yukon-Kuskokwim Delta (just off the southern end of the map) between 1970 and 1993 (Kaufman 1996). Spectacled Eiders spend all seasons in the Arctic. On Alaska’s North Slope, they breed from Kasegaluk Lagoon to Camden Bay, with concentration areas near Wainwright, Barrow, Teshekpu Lake, and Prudhoe Bay.

The wintering habitat of Spectacled Eiders was a long-time mystery until Alaskan researchers discovered them wintering in a polynya (an open water area in the sea ice) south of St. Lawrence Island (Petersen et al. 1999). It is believed that the entire world population, estimated at around 360,000, can be found wintering in large concentrations in the Bering Sea, making this species particularly vulnerable to any natural or human-caused disturbance. Ledyard Bay and Norton Sound are USFWS Critical Habitat for use by Spectacled Eiders as staging and foraging areas.

Spectacled Eiders are among the largest ducks in North America, typically weighing 1.5 kg (3.25 pounds) and averaging 52 to 56 cm in length (Petersen et al. 2000; BirdLife International 2009). These eiders eat mostly benthic organisms such as clams, mussels, crabs, amphipods, and some vegetation while at sea, and mollusks, aquatic insects, and plants on breeding grounds (Petersen et al. 2000). Spectacled Eiders depend on benthic mollusks and crabs for pelagic food for approximately eight months of the year (Petersen et al. 2000). Mollusks are the preferred foods for Pacific walrus and gray whales, and are also harvested by commercial fishermen in the Bering Sea (Stehn et al. 1993; USFWS 1996). Studies have not been conducted to determine whether food resources are limiting.

Spectacled Eiders are always found near water, nesting most commonly on a raised hummock on the edge of a tundra pond (Kaufman 1996), and also nesting on small islands, shorelines, peninsulas, and drier spots in wet meadows, and using thick sedges and grasses for nest material (National Audubon Society 2007). This species arrives at its breeding grounds in May to early June; males leave breeding areas in June, and females and immature birds leave in late August (Petersen et al. 2000; National Audubon Society 2007). Predators, including Arctic fox, gulls, jaegers, and ravens, may have a significant impact on nesting success (USFWS 1996; Petersen et al. 2000).

See related maps and descriptions of Bathymetry, Ecoregions, Sea Ice Dynamics, Sea Floor Substrate, Benthic Biomass, Steller’s Eider, King Eider, Common Eider, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**

The main sources of spatial data were USFWS data (reported by USFWS and Larned et al.), the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), telemetry locations from Petersen et al. (1999), and the Audubon Alaska IBAs database (2009). Survey locations were buffered by 25 km to provide a guideline for drawing a smoothed boundary depicting breeding and marine use areas. These boundaries were drawn using the
buffered survey points and a compilation of similar boundaries drawn by other sources (cited below); the data were overlaid and synthesized into the polygons displayed on the map.

Concentrated breeding areas are medium- to high-density polygons from USFWS analysis of North Slope surveys. Concentrated staging areas are from the map presented at Birds of North America Online (Petersen et al. 2000). The IBAs represent areas where a substantial number of Spectacled Eiders were observed—a finding that triggered criteria for establishment of globally and continentally significant IBAs. Migration arrows were drawn by analyzing movement patterns distilled from survey location and timing information. Telemetry data (Petersen et al. 1999) and communication with Margaret Petersen of the USGS (2010) were key components for drawing migration paths.

Data Quality
Because of its status as an ESA-listed species, the Spectacled Eider has received much scientific study. This map has a data quality rating of fair. It provides a nearly complete geographic picture for Spectacled Eiders, but data across the project area are variable—most portions of the map are represented by reliable, high-quality data but data for some areas are missing. Breeding, wintering, staging, marine foraging, and migration areas are based on reliable survey or telemetry data. This map was not assigned a data quality rating of good because Russian breeding areas on the north coast of Chukotka and on Wrangell and Herald islands were not mapped. Other missing information includes spring migration routes, variability in the extent of the wintering area, and a more complete picture of the marine foraging areas for Spectacled Eiders.

Summary and Synthesis
The map highlights several key locations for Spectacled Eider conservation, including: USFWS Critical Habitat, selected IBAs, concentrated breeding areas, concentrated staging areas, and the wintering area just south of St. Lawrence Island, which may be home to the entire world population of this species from November to April. At sea, Spectacled Eiders concentrate in large groups, making them particularly vulnerable to natural or human-caused disasters. They are threatened by oil pollution and potential oil spills, increased nest predation from species associated with oil developments (ravens, foxes, etc.), degradation of food sources from pollution, fishing bycatch mortality, overharvest, and lead shot (Petersen et al. 2000; National Audubon Society 2007).

Text Citations


Map Data Sources


survey and USFWS Arctic Coastal Plain aerial breeding pair survey).


**Steller’s Eider**

*Polysticta stelleri*

**Description**

The Steller’s Eider is one of four world eider species, all of which breed in Alaska. This medium-sized sea duck was listed as a threatened species under the ESA in 1997. The Steller’s Eider is a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010) and is listed as Vulnerable on the 2009 Red List of Threatened Species prepared by the International Union for Conservation of Nature (IUCN) (BirdLife International 2009). Of the estimated 220,000 Steller’s Eiders worldwide, 2,000 breed and 150,000 winter in Alaska (Kirchhoff 2010). A small breeding population on the Arctic Alaska Coastal Plain, primarily in the western Arctic, is the only in North America; a western Alaska breeding population centered on the Yukon-Kuskokwim Delta declined to near zero. Although the cause is not known; potential causes include lead poisoning, increased predation, and changes in food availability (Kaufman 1996; BirdLife International 2009).

Satellite data collected as recently as 2002 shed light on the previously unknown migration pathways used by Steller’s Eiders. Steller’s Eiders breed on the North Slope from Kasegaluk Lagoon to Prudhoe Bay. On the map there appear to be concentrations of breeding birds in two areas: near Barrow and near Peard Bay. The concentrations, however, may be artifacts of more intensive survey efforts in those areas. Steller’s Eiders are also found in the Yukon-Kuskokwim Delta (off the map) and along the north coast of the Chukchi Peninsula in Russia. In winter, they migrate to the Kamchatka Peninsula in Russia and the Alaska Peninsula and Aleutian Islands in Alaska, feeding in shallow, clear, coastal water (National Audubon Society 2007).

Steller’s Eiders are the smallest of the eiders, weighing just over 1 kg (2 pounds) and averaging 43 to 46 cm in length (Fredrickson 2001). These eiders eat mostly benthic organisms such as clams, mussels, amphipods, and marine worms (Fredrickson 2001).

Steller’s Eiders are always found near water, nesting commonly on open tundra or surrounded by low scrub (Kaufman 1996). They breed in June; failed breeders migrate south shortly thereafter, followed by breeding males, and finally females and immature birds (National Audubon Society 2007).

See related maps and descriptions of Bathymetry, Ecoregions, Sea Ice Dynamics, Sea Floor Substrate, Benthic Biomass, Spectacled Eider, King Eider, Common Eider, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**

The main sources of spatial data were USFWS data, the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), and telemetry locations from Martin (2009). Survey locations were buffered by 25 km to provide a guideline for drawing a smoothed boundary depicting breeding areas. These boundaries were drawn using the buffered survey points and a compilation of similar boundaries drawn by other sources (cited below); the data were overlaid and synthesized into the polygons displayed on the map. Migration arrows were drawn by analyzing movement patterns distilled from survey location and timing information. Telemetry data from and communication with Philip Martin of USFWS (2009) were key components to drawing migration paths. The IBA represents an area where a substantial number of Steller’s Eiders were observed—a finding that triggered criteria for establishment of a globally significant IBA.
Data Quality
This map has a data quality rating of fair. It provides a partial geographic picture for Steller’s Eider, and data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions are outdated, opinion-based, or missing altogether. USFWS North Slope bird surveys provide very good data. However, Steller’s Eiders breed in low numbers in Alaska, so survey locations are sparse compared to other species, making it more difficult to map concentration areas. We have few survey locations of Steller’s Eiders at sea, therefore marine use areas are not mapped. Some key map features are missing, such as complete migration routes; a complete picture of the at-sea distribution of Steller’s Eiders, including marine foraging, staging, and concentration areas; and more specific range information on the North Slope and Chukchi Peninsula during breeding season.

Summary and Synthesis
Degradation or loss of key habitats shown here could further the decline of this threatened species. Preliminarily, the Barrow area and the barrier islands and peninsulas near Peard Bay appear to be concentrated breeding areas. These places should be safeguarded until further telemetry studies and breeding surveys better estimate core habitats. Steller’s Eiders are threatened by oil pollution and potential oil spills, increased nest predation from species associated with oil developments (ravens, foxes, etc.), degradation of food sources from pollution, fishing bycatch mortality, overharvest, and lead shot (National Audubon Society 2007).

Text Citations


Map Data Sources


**King Eider**  
*Somateria spectabilis*

**Description**  
The King Eider is one of four world eider species, all of which breed in Alaska. This large sea duck is listed as a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010). Although this species may number 1 million worldwide, approximately 400,000 occur in North America, and only 45,000 occur in Alaska (Kirchhoff 2010). Population status is in question because of migration counts at Point Barrow, which have declined 55% between 1976 and 1996, as well as a significant decrease in birds in the Northwest Territories (Suydam 2000). The King Eider breeds in the Arctic and winters along the southern coast of Alaska, sometimes as far south as California. This species breeds most heavily on the North Slope between Wainwright and Prudhoe Bay, with concentration areas near Atqasuk and from Teshekpuk Lake to Deadhorse. The extent of its breeding range covers nearly the whole North Slope of Alaska, and goes far along the Canadian and Russian Arctic coasts.

Telemetry work by Oppel (2008) and Oppel et al. (2009) sheds light on the migration pathways and staging areas used by King Eiders. They found that potentially all King Eiders breeding in western North America use Ledyard Bay and Kasegaluk Lagoon (between Point Hope and Wainwright) as a staging area during migration. They also learned of important winter staging and molting areas near St. Lawrence Island, Alaska, and Mechigmensk Bay, Russia.

King Eiders are among the largest ducks in North America, measuring nearly 60 cm in length and weighing 1.5 to 2 kg (1 to 1.5 pounds) (Suydam 2000). These eiders eat mostly benthic organisms such as clams, mussels, crabs, amphipods, and algae while at sea, and mollusks, aquatic insects, and plants on breeding grounds (Suydam 2000).

King Eiders are always found near water, nesting on dry Arctic tundra near lakes, bogs, and streams near the coast or up to 50 km inland (BirdLife International 2009). Following brood rearing, they move to more saline waters where the young fledge (BirdLife International 2009). They begin migration in April and arrive at their breeding grounds in May to early June; males leave breeding areas in late June and July to migrate to molting areas, and females and immature birds follow later (Rothe and Matthews 1994).

See related maps and descriptions of Bathymetry, Ecoregions, Sea Ice Dynamics, Sea Floor Substrate, Benthic Biomass, Spectacled Eider, Steller’s Eider, Common Eider, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**  
The main sources of spatial data were USFWS data (reported by USFWS and Larned et al.), the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), telemetry locations from Oppel et al. (2009), and data georeferenced and digitized from Dickson et al. (1997). Survey locations were buffered by 25 km to provide a guideline for drawing a smoothed boundary depicting breeding and marine use areas. These boundaries were drawn using the buffered survey points and a compilation of similar boundaries drawn by other sources (NOAA 1988; Dickson et al. 1997; multiple USFWS surveys). The data were overlaid and synthesized into the polygons displayed on the map.

Concentrated breeding areas are medium- to high-density polygons from USFWS analysis of North Slope surveys. The Canadian concentration area is from Dickson et al.
Concentrated staging areas were from Oppel et al. (2009), and staging and molting areas were drawn based on telemetry data from and communication with Oppel (2009). Migration arrows were digitized from NOAA (1988) and updated based on telemetry data.

Data Quality
Because of its past decline and importance as a subsistence species, the King Eider has received much scientific study. This map has a data quality rating of fair. It provides a nearly complete geographic picture for the King Eider, but data across the project area are variable—some portions of the map are represented by reliable, high-quality data, and data for other portions are outdated or opinion-based. The King Eider is one of the species in this atlas we know the most about; the map could almost be given a data quality rating of good. Staging, concentrated staging, molting, migration, breeding, and concentrated breeding areas are based on very good information. This data is not consistent across the whole map, however. Some key features are missing, such as a complete picture of marine use areas (which is from both opinion-based and survey-based information, and is likely missing some areas); marine foraging concentration areas; and data-driven breeding ranges in Canada and Russia (which are currently drawn based on estimated suitable habitat).

Summary and Synthesis
Concentrated breeding areas on the North Slope from Wainwright to Prudhoe Bay, and especially near Teshekpuk Lake, are key to this species in Alaska. Ledyard Bay, Kasegaluk Lagoon, and Peard Bay are stopovers for possibly the entire western North American population (~400,000), which migrates through these areas twice per year. Areas near St. Lawrence Island are important for staging and molting in fall and winter. The King Eider is threatened by oil pollution and potential oil spills, as well as degradation of food sources from oil exploration (BirdLife International 2009).

Text Citations


Map Data Sources


COMMON EIDER
Somateria mollissima

Description
The Common Eider is one of four world eider species, all of which breed in Alaska. This large sea duck is listed as a Yellow List (vulnerable) species on Audubon Alaska’s Watch List (Kirchhoff 2010). Although this species numbers between 3 million and 4 million worldwide, approximately 850,000 breed in North America, of which 75,000 to 100,000 breed in Alaska (Kirchhoff 2010). Common Eiders breed in the Arctic and winter along the southern coast of Alaska. They breed most heavily on barrier islands and spits around Kasegaluk Lagoon and Prudhoe Bay, as well as on the coast and islands near Kaktovik and Barrow. The extent of their breeding habitat covers the northern Alaska coast, and goes far along the Canadian and Russian Arctic coasts, although the degree of use of these unmapped areas is unknown.

The Common Eider is perhaps the largest duck in the northern hemisphere, weighing 1.5 to 3 kg (3 to 6 pounds) and averaging 61 cm in length (Rothe and Matthews 1994; Goudie et al. 2000). These eiders eat mostly benthic organisms such as clams, mussels, echinoderms, and fish eggs (Goudie et al. 2000).

Common Eiders are always found near water, nesting on barrier islands, spits, and rocky coasts, often in colonies, and sometimes associated with gulls and terns (Kendall 2005). They begin migration in April and arrive at their breeding grounds in May to early June; males leave breeding areas in late June and July to migrate to molting areas, and females and immature birds follow later (Rothe and Matthews 1994).

See related maps and descriptions of Bathymetry, Ecoregions, Sea Floor Substrate, Benthic Biomass, Spectacled Eider, Steller’s Eider, King Eider, Important Bird Areas, Seabird Colonies, Arctic Fox, and Energy Development and Protected Areas.

Data Compilation and Mapping Methods
The most complete depiction of breeding and marine use polygons was found in NOAA’s 1988 atlas, which was digitized and partially included here. Survey locations from the USGS North Pacific Pelagic Seabird Database (Drew and Piatt 2003), USFWS Eider Breeding Population Survey, USFWS Arctic Coastal Plain Aerial Breeding Pair Survey (1992–2008), USFWS Arctic Coastal Plain Molting Sea Duck Survey (1998–2003), USFWS Beaufort Sea Nearshore and Offshore Waterbird Aerial Survey (1999–2001), USFWS Common Eider Survey (1999–2001), and USFWS Western Alaska Yellow-billed Loon Survey (2005–2007) were used to delineate known breeding areas along the Alaska coast (much remains unknown). Information from Audubon Alaska’s IBA database (2009) and the USFWS Beringian Seabird Colony Catalog (2008) were added to the map, providing a somewhat more current and complete picture for this species. The IBAs represent areas where a substantial number of Common Eiders were observed—a finding that triggered criteria for establishment of globally significant IBAs.

Data Quality
The Common Eider is an important subsistence species and has received much scientific study. This map has a data quality rating of fair. It provides a partial geographic picture for Common Eider, and data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions are outdated, opinion-based, or missing. Intensive surveys for this species have been conducted along the Alaskan coast since the early 1990s;
however, similar data are lacking for the Russian and Canadian parts of the map. The light yellow line indicates that Common Eiders generally breed along the coast at an unknown abundance, and stars indicate colonies where these birds breed at an estimated abundance. It is not known whether this species breeds along other unmarked coasts outside of known colonies, such as the southern coast of St. Lawrence Island or along Norton Sound. Some key features are missing, such as an understanding of breeding and concentration areas on the Canadian and Russian coasts, breeding concentration areas along the Alaska coast, and a complete picture of the at-sea distribution of Common Eiders, including key foraging areas.

**Summary and Synthesis**

Barrier islands, spits, low-lying coastal areas along Kasegaluk Lagoon and in and around Prudhoe Bay, and the southern coast of St. Lawrence Island are key breeding areas for the Common Eider in Alaska. This species is threatened by oil pollution and potential oil spills, as well as degradation of food sources from oil exploration (BirdLife International 2009).

**Text Citations**


**Map Data Sources**


**LONG-TAILED DUCK**
*Clangula hyemalis*

**Description**
The Long-tailed Duck is a small sea duck present in low-lying coastal and wetland areas and nearshore feeding zones. This species is listed as a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010). With a world population estimated at 6.5 million and a North American population of 1 million, this determination is based not on current abundance, but on status of the species as a sharply declining population. Alaska is home to 20% of the North American population of Long-tailed Ducks (Kirchhoff 2010). These birds congregate in dense flocks at sea, making a large percentage of the population vulnerable to a single natural or human-caused disaster. Although the population is currently abundant in Alaska, a 50% decline was observed between 1975 and 1998 (Robertson and Savard 2002).

This species breeds in the Arctic and western Alaska, and winters along the southern coast of Alaska south to Washington state. Breeding concentration is shown for the North Slope, but not known for other parts of Alaska, Canada, or Russia. They breed heavily throughout the Arctic Coastal Plain and the NPR-A. Dense flocks forage in nearshore waters surrounding Russia, Alaska, and Canada. Concentrations occur in Mechigmensk Bay, the south shore of Wrangel Island, Kasegaluk Lagoon, Peard Bay, Stefansson Sound, and the spring open lead zone along Canada’s coast.

The Long-tailed Duck weighs between 0.5 and 1 kg (1 to 2.5 pounds) and averages 42 to 53 cm in length (Robertson and Savard 2002). Their diet includes crustaceans, amphipods, shrimp, clams, and fish (BirdLife International 2009). Long-tailed Ducks will also eat freshwater insects, plant material, fish eggs, and plants on their breeding grounds (Robertson and Savard 2002).

Long-tailed Ducks are always found in wet areas, nesting on marshy grass tundra, especially around polygon grass tundra, slow rivers, and barrier islands, generally avoiding wooded tundra (BirdLife International 2009). In the Arctic they begin migration in May and arrive at their breeding grounds in May to early June; males leave breeding areas in late June and early July to migrate to molting areas, and females and immature birds leave in August to October (Robertson and Savard 2002; BirdLife International 2009).

See related maps and descriptions of Ecoregions, Sea Floor Substrate, Zooplankton, Capelin, Pacific Herring, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**
The most complete depiction of breeding and marine use polygons was found in NOAA’s 1988 atlas, which was digitized and presented here. Concentrated breeding areas are medium- to high-density polygons from USFWS analysis of North Slope surveys. Nearshore concentration areas were from the NOAA atlas (1988), Alexander et al. (1997), and historical records translated from Russian (Portenko 1981). Migration arrows are from NOAA’s 1988 atlas. Two small bays on the Chukotkan (Russian) coast are globally significant IBAs because of high densities of Long-tailed Ducks (BirdLife International 2009).

**Data Quality**
Because of its population decline and importance as a subsistence species, the Long-tailed Duck has received much scientific study. This map has a data quality rating of
fair. It provides a nearly complete geographic picture for this species, but data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions are outdated, opinion-based, or missing. Intensive survey work done for the Long-tailed Duck along the northern Alaska coast in combination with other range depictions has resulted in a good geographic picture for this species compared to others in the Arctic Marine Atlas. However, some key features are missing, such as an understanding of breeding areas on the Canadian and Russian coasts (which are currently drawn based on estimated suitable habitat), breeding concentration areas outside Alaska’s North Slope, and a complete picture of the at-sea distribution of Long-tailed Ducks, including key molting, foraging, and concentration areas in the United States, Canada, and Russia. It is not known how climate change—such as potential drying of tundra lakes and redistribution of water on the North Slope—may affect this species.

Summary and Synthesis

Key habitats in the project area include nearshore marine concentration areas in Kasegaluk Lagoon, Peard Bay, Stefansson Sound, Mechigmensk Bay, and the spring open lead zone along the Canadian coast, as well as dense breeding concentrations on the North Slope from Point Lay to Prudhoe Bay. Nearshore marine concentration areas should not be disturbed during periods of molting or staging, and the highest concentration breeding areas should not be disturbed during nesting. The Long-tailed Duck is threatened by wetland degradation or loss, oil pollution and potential oil spills, and degradation of food sources from oil exploration (BirdLife International 2009).

Text Citations


Map Data Sources


**IVORY GULL**  
*Pagophila eburnea*

**Description**  
The Ivory Gull inhabits remote areas of the high Arctic. It is a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010) and is listed as Near Threatened on the 2009 IUCN Red List of Threatened Species (BirdLife International 2009). The Ivory Gull is also on the Canadian Endangered Species List (National Audubon Society 2007). This species of remote Arctic waters is declining rapidly (perhaps by 80% during the last 20 years) in some parts of its range and is poorly known in other areas (National Audubon Society 2007; Mallory et al. 2008; BirdLife International 2009). The world population Ivory Gulls is estimated at 28,000, and the North American population is estimated at 4,000 (Kirchhoff 2010).

These gulls concentrate at the ice edge and at polynyas (recurring areas of open water) (National Audubon Society 2007; Mallory et al. 2008). They rarely make landfall in Alaska, although as many as 80 birds have been observed on St. Lawrence Island in the spring (Benter 2009). Ivory Gulls may occasionally stop along the shores of Kasegaluk Lagoon, of Peard Bay, and near Barrow. Data from the North Pacific Pelagic Seabird Database (Drew and Piatt 2003) is 25 years old, but may indicate that Hanna Shoal is a key feeding area for these birds. Historical records translated from Russian indicate the Ivory Gull has been repeatedly observed on the shores of Wrangel Island, although the abundance of this species was not indicated (Portenko 1981). The Ivory Gull is not believed to breed or nest in Alaska; its range is poorly understood both here and throughout Russia and Canada.

This species is a small gull, weighing 0.5 to 1 kg (1 to 1.5 pounds) and averaging 43 cm in length (Sibley 2000; Mallory et al. 2008). Ivory Gulls eat ice-associated fish (walleye pollock, Arctic cod) and invertebrates (euphausiids, copepods) in surface waters or upwellings, and carrion (Mallory et al. 2008). Like Arctic foxes, they are known to follow polar bears on the sea ice and scavenge leftover kills. They usually breed in colonies, nesting on a cliff ledge or flat rocky ground in June to August (Kaufman 1996; National Audubon Society 2007). In winter Ivory Gulls move to the Bering Sea. Little is known about their summer use of the Chukchi and Beaufort seas.

See related maps and descriptions of Ecoregions, Sea Ice Dynamics, Observed Climate Change, Zooplankton, Capelin, Pacific Herring, Saffron Cod, Important Bird Areas, Polar Bear, Arctic Fox, Gray Whale, Energy Development and Protected Areas, and Predicted Climate Change.

**Data Compilation and Mapping Methods**  
Geographic data for the Ivory Gull is very limited. Survey locations were from the North Pacific Pelagic Seabird Database (Drew and Piatt 2003), which in turn were from data collected during the OCSEAP, which occurred in the 1970s to 1980s.

**Data Quality**  
This map has a data quality rating of poor. The Ivory Gull is among species we know very least about. Understanding of its habitat needs, particularly in the Arctic, is rudimentary. Some key features are missing, such as breeding colonies; seasonal migration routes; a complete picture of the at-sea distribution of Ivory Gulls, including marine foraging, staging, and concentration areas; and use of Canadian and Russian lands and waters. It is unknown how climate change will affect this ice-associated species.
Summary and Synthesis
Hanna Shoal appears to be an important foraging concentration area. Impacts on breeding colonies and foraging habitat could further the decline of the Ivory Gull. In the immediate future, the species is threatened by potential oil spills and degradation of food sources from pollution (National Audubon Society 2007; BirdLife International 2009). In the long term, it is vulnerable to the loss of summer sea ice from climate change.

Text Citations
Benter, B./USFWS. 2009. Personal communication with M. Smith/Audubon Alaska. 21 August.


Map Data Sources

Benter, B./USFWS. 2009. Personal communication with M. Smith/Audubon Alaska. 21 August.


**Kittlitz’s Murrelet**  
*Brachyramphus brevirostris*

**Description**  
The Kittlitz’s Murrelet is one of two regularly occurring *Brachyramphus* murrelets in Alaskan waters. This small, ice-associated seabird was named a candidate species under the ESA in 2004. It is a Red List (vulnerable and declining) species on Audubon Alaska’s WatchList (Kirchhoff 2010) and is listed as Critically Endangered on the 2009 IUCN Red List of Threatened Species (BirdLife International 2009). Population status is a concern because of population trends, general rarity, and specialized habitat needs (Day et al. 1999). The world population of Kittlitz’s Murrelets is estimated at 24,000, and the North American population is estimated at 18,000, occurring entirely within Alaska. In the project area, they breed on the Seward Peninsula, on Cape Thompson/Point Hope, and between Wainwright and Barrow.

Kittlitz’s Murrelets are small alcids, weighing 0.25 kg (0.5 pound) and averaging 23 cm in length (Day et al. 1999). Murrelets eat fish (capelin, sand lance, Pacific herring, Pacific sandfish, and others) and zooplankton (Day et al. 1999). In other parts of Alaska, they generally forage at the outflow of glaciers and in silty, turbid waters (Day et al. 1999). Those same attributes are not necessarily present along Alaska’s Arctic coast, where the nearest glaciers are atop the Brooks Range. The specifics of Kittlitz’s Murrelet habitat selection in the project area is not well understood.

Kittlitz’s Murrelets nest on unvegetated scree or rocky slopes, often near glaciers when present, laying their single egg on bare rock (Day et al. 1999). Because few nests have ever been located, knowledge of nesting habitat is not well developed. The timing of migration and degree of use of the Chukchi Sea is not known.

See related maps and descriptions of Ecoregions, Sea Ice Dynamics, Sea Surface Temperature, Observed Climate Change, Zooplankton, Capelin, Pacific Herring, Important Bird Areas, Arctic Fox, Energy Development and Protected Areas, and Predicted Climate Change.

**Data Compilation and Mapping Methods**  
Geographic data for this species are very limited. Breeding areas and nest locations were compiled from Day et al. (1999), the Anchorage Field Office of USFWS (2009), and the Arctic Ocean Diversity database (2009). Survey locations shown are more than 30 years old. The IBA shown was established in part because of concern for Kittlitz’s Murrelets foraging near Point Hope.

**Data Quality**  
In the project area, Kittlitz’s Murrelet is one of the species we know the least about. This map has a data quality rating of poor because of the very small number of survey location points, making it difficult to map breeding and marine use areas. We have almost no knowledge of Russian breeding areas. Understanding of Kittlitz’s Murrelet habitat needs, particularly in the Arctic, is rudimentary. Some key features are missing, such as the true extent of the breeding range; migration routes; wintering areas; the at-sea distribution of Kittlitz’s Murrelets, including marine foraging, staging, and concentration areas; and use of Canadian and Russian lands and waters. It is unknown how climate change will affect this ice- and glacier-associated species.

**Summary and Synthesis**  
The Seward Peninsula, Lisburne Peninsula, Cape Thompson, and Cape Lisburne areas appear to be the most important Kittlitz’s
Murrelet habitats in the project area. This species is threatened by loss of glaciers and sea ice caused by both natural variation and climate change, oil pollution and potential oil spills, degradation of food sources from pollution, fishing bycatch, and human disturbance (Day et al. 1999; National Audubon Society 2007; BirdLife International 2009).

Text Citations


Map Data Sources


**NORTHERN FULMAR**

*Fulmarus glacialis*

**Description**
The Northern Fulmar is abundant in the offshore waters of the Chukchi Sea, through the Bering Strait, and around St. Lawrence Island. This species numbers 11 million worldwide, with approximately 2.1 million in North America and 1.4 million in Alaska (Kirchhoff 2010). The Northern Fulmar was included in the Arctic Marine Atlas because it is numerous and far-ranging and, therefore, may be broadly suitable as an indicator of ecosystem health.

The only known nesting locations of this species within the project area are in Russia on the southeastern end of the Chukotka Peninsula. The Alaskan breeding colony closest to the project area is on St. Matthew Island, just off the south end of the map. Northern Fulmars nest directly on cliff ledges, often in mixed colonies with other colonial seabirds such as murres, kittiwakes, and cormorants (Kaufman 1996; Hatch and Nettleship 1998). Non-breeding birds roam the Chukchi Sea during the summer, and breeders and non-breeders alike forage in the northern Bering Sea. During winter Northern Fulmars migrate farther south; they can be found all the way to Baha California in Mexico during winter months (Kaufman 1996).

Despite only producing at best one egg per year and not beginning reproduction until ages 6 to 12, the Northern Fulmar has a large population, and a very long lifespan (Hatch and Nettleship 1998). After reaching adulthood, Northern Fulmars have a mean life expectancy of 30 years, with some breeding for 40 years or more (Hatch and Nettleship 1998).

The Northern Fulmar is a large petrel, weighing about 1 kg (1.5 pounds) and averaging 46 cm in length (Hatch and Nettleship 1998; Sibley 2000). The species eats mostly fish, cephalopods, and zooplankton—especially amphipods, copepods, and crustaceans; it also eats the remains of marine mammals and fish refuse from ships (Hatch and Nettleship 1998).

See related maps and descriptions of Ecoregions, Observed Climate Change, Zooplankton, Capelin, Pacific Herring, Saffron Cod, Short-Tailed Shearwater, Gray Whale, Energy Development and Protected Areas, and Predicted Climate Change.

**Data Compilation and Mapping Methods**
The most complete depiction of marine use areas was found in NOAA’s 1988 atlas, which was digitized and presented here. Survey locations are from the North Pacific Pelagic Seabird Database (Drew and Piatt 2003), which in turn were from data collected during the OCSEAP that occurred in the 1970s to 1980s. Information from the USFWS Beringian Seabird Colony Catalog (2008) depicts breeding colonies in Russia.

**Data Quality**
This map has a data quality rating of fair. It provides an almost complete geographic picture for the Northern Fulmar, but data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions of the map are outdated, opinion-based, or missing. To the best of our knowledge, all Northern Fulmar breeding colonies in the project area have been surveyed, and likely the full foraging range is depicted; therefore, this map probably depicts a complete picture of the breeding and at-sea distribution of the species. Survey data are 25 to 35 years old, however, and not extensive enough to be used for identifying key foraging locations.
concentration areas. Additionally, surveys were generally limited to U.S. waters. Some key features are missing, such as foraging concentration areas at sea and adjacent to breeding colonies.

Thousands of Northern Fulmars starved to death in the North Sea in 2004 because of food shortages that were believed to be linked with changing regimes, which in turn were linked to climate change (BirdLife International 2005). It is not known how climate change will affect the distribution of this species in the Arctic Ocean.

Summary and Synthesis
With as many as 30,000 breeding birds present, protection of the Russian fulmar breeding colonies is very important. Limited survey data appear to indicate that the Bering Strait is a key foraging area. Northern Fulmars are sometimes common off Russia’s Herald Island (Hatch and Nettleship 1998). This species is threatened by overfishing, human disturbance, and degradation of food sources from oil exploration (Hatch and Nettleship 1998).

Text Citations


Map Data Sources


**SHORT-TAILED SHEARWATER**  
*Puffinus tenuirostris*

**Description**  
The Short-tailed Shearwater is abundant offshore in the Chukchi Sea, through the Bering Strait, and around St. Lawrence Island, and to a lesser extent in the Beaufort Sea. This species numbers 23 million worldwide, with approximately 17 million in North America and 6 million in Alaska (Kirchhoff 2010). The Short-tailed Shearwater was in the Arctic Marine Atlas because it is numerous and far-ranging and, therefore, may be broadly suitable as an indicator of ecosystem health. These birds nest only in Australia, where they are so abundant that chicks are commercially harvested for food and oil (Kaufman 1996; USFWS 2006). Some non-breeders may stay in Alaska through the northern winter (USFWS 2006).

Short-tailed Shearwaters weigh just under 1 kg (1.25 pounds) and average 41 cm in length (Sibley 2000). They eat primarily crustaceans, plus fish and squid (Kaufman 1996; USFWS 2006).

See related maps and descriptions of Ecoregions, Zooplankton, Capelin, Pacific Herring, Saffron Cod, Northern Fulmar, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**  
The most complete depiction of marine use areas was found in NOAA’s 1988 atlas, which was digitized and presented here. Survey locations are from the North Pacific Pelagic Seabird Database (Drew and Piatt 2003), which in turn were from data collected during the OCSEAP that occurred in the 1970s to 1980s.

**Data Quality**  
This map has a data quality rating of fair. It provides an almost complete geographic picture for the Short-tailed Shearwater, but data across the project area are variable—some portions of the map are represented by reliable, high-quality data and data for other portions of the map are outdated, opinion-based, or missing. This map probably depicts a complete picture of at-sea distribution for the Short-tailed Shearwater in the Arctic; however, survey data are 25 to 35 years old. Additionally, surveys were generally limited to U.S. waters. Some key features are missing, such as foraging concentration areas in the Beaufort and Chukchi seas.

**Summary and Synthesis**  
Limited data appear to indicate that the Bering Strait and waters west of St. Lawrence Island are key foraging areas. The Short-tailed Shearwater is vulnerable to fishing bycatch, overfishing of food resources (USFWS 2006), and large oil spills.

**Text Citations**  


**Map Data Sources**  
Alaska Science Center, USGS, Anchorage.


**SEABIRD COLONIES**

**Description**

Arctic seabird colonies support a diversity of species in very high numbers. The colonies shown here are home to 11 million birds. Several hundred thousand individuals occur at many of these sites, and all colonies with greater than 100,000 birds are labeled on the map.

According to the USFWS Beringian Seabird Colony Catalog (2008), an estimated 5.3 million birds are present at the Alaskan seabird colonies shown on this map, and another 5.7 million in Russia. The following table summarizes the species present and their estimated abundance.

<table>
<thead>
<tr>
<th>Species</th>
<th>Alaska Count</th>
<th>Russia Count</th>
<th>Total Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Fulmar</td>
<td>0</td>
<td>81,500</td>
<td>81,500</td>
</tr>
<tr>
<td>Pelagic Cormorant</td>
<td>6,229</td>
<td>18,128</td>
<td>24,357</td>
</tr>
<tr>
<td>Common Eider</td>
<td>2,887</td>
<td>0</td>
<td>2,887</td>
</tr>
<tr>
<td>Herring Gull</td>
<td>719</td>
<td>517</td>
<td>1,236</td>
</tr>
<tr>
<td>Glaucous Gull</td>
<td>6,343</td>
<td>3,911</td>
<td>10,254</td>
</tr>
<tr>
<td>Black-Legged Kittiwake</td>
<td>184,414</td>
<td>116,069</td>
<td>300,483</td>
</tr>
<tr>
<td>Arctic Tern</td>
<td>609</td>
<td>0</td>
<td>609</td>
</tr>
<tr>
<td>Aleutian Tern</td>
<td>796</td>
<td>0</td>
<td>796</td>
</tr>
<tr>
<td>Doveskie</td>
<td>61</td>
<td>0</td>
<td>61</td>
</tr>
<tr>
<td>Common Murre</td>
<td>363,215</td>
<td>21,807</td>
<td>385,022</td>
</tr>
<tr>
<td>Thick-billed Murre</td>
<td>302,108</td>
<td>153,932</td>
<td>456,040</td>
</tr>
<tr>
<td>Unidentified Murre</td>
<td>439,735</td>
<td>167,245</td>
<td>606,980</td>
</tr>
<tr>
<td>Black Guillemot</td>
<td>602</td>
<td>79,783</td>
<td>80,385</td>
</tr>
<tr>
<td>Pigeon Guillemot</td>
<td>5,980</td>
<td>12,607</td>
<td>18,587</td>
</tr>
<tr>
<td>Parakeet Auklet</td>
<td>66,721</td>
<td>63,200</td>
<td>129,921</td>
</tr>
<tr>
<td>Least Auklet</td>
<td>2,105,093</td>
<td>3,500,000</td>
<td>5,605,093</td>
</tr>
<tr>
<td>Crested Auklet</td>
<td>1,757,455</td>
<td>550,000</td>
<td>2,307,455</td>
</tr>
<tr>
<td>Unidentified Auklet</td>
<td>0</td>
<td>900,000</td>
<td>900,000</td>
</tr>
<tr>
<td>Tufted Puffin</td>
<td>12,451</td>
<td>24,624</td>
<td>37,075</td>
</tr>
<tr>
<td>Horned Puffin</td>
<td>32,002</td>
<td>22,648</td>
<td>54,650</td>
</tr>
<tr>
<td><strong>Total Count</strong></td>
<td><strong>5,287,420</strong></td>
<td><strong>5,715,971</strong></td>
<td><strong>11,003,391</strong></td>
</tr>
</tbody>
</table>

Foraging areas adjacent to these nesting sites are highly important seabird habitat, resulting in Audubon’s designation of multiple marine IBAs in Arctic waters. Colonies on the Diomede Islands, on St. Lawrence Island, and in areas around Point Hope have the highest abundance numbers in Alaska. Depicted are both the number of birds present and the species richness for each site. No similar data were available for the Canadian coast.

See related maps and descriptions of Zooplankton, Benthic Biomass, Capelin, Pacific Herring, Saffron Cod, Common Eider, Northern Fulmar, Important Bird Areas, Arctic Fox, and Energy Development and Protected Areas.

**Data Compilation and Mapping Methods**

Data came from the USFWS Beringian Seabird Colony Catalog (2008). Abundance and species richness were calculated using this database.

**Data Quality**

This map has a data quality rating of fair. It provides a partial geographic picture of seabird colonies. Canadian seabird colonies are not inventoried as part of the Beringian Seabird Colony Catalog; therefore, important colonies may be missing on that part of the map. Estimates are based on what USFWS biologists believed to be the most accurate or recent of multiple surveys, although many counts are based on a single survey. Survey dates for colonies range from the 1970s to present.

**Summary and Synthesis**

Although some colonies with more than 1 million birds are obvious conservation targets, others with only several hundred birds are also important, depending on the sensitivity of the species. Some species may have few breeding sites in Alaska or low population numbers. All colonies depicted on this map...
should be protected from human disturbance and development.

Text Citations

Map Data Sources
**IMPORTANT BIRD AREAS**

**Description**
The National Audubon Society (2009) and BirdLife International (2007) (in cooperation with Bird Studies Canada and the Canadian Nature Federation [2004]) have identified IBAs in the United States, Russia, and Canada. All important areas have not been identified; however, the maps in this section present a good summary. Generally, globally significant IBAs are home to more than 5% of the world population of one or more species, and continental or state IBAs contain 5% or more of the populations living in those respective geographic regions. Alaska’s Arctic marine IBAs include numerous areas of global significance, clustered around Prudhoe Bay, St. Lawrence Island, and the Chukchi Sea coast from Wainwright to Point Hope.

Many of these IBAs are designated because of the great abundance of colonial seabirds in Arctic Alaska and Russia. Living in these areas are more than 11 million colonial nesters, plus millions more seabirds such as eiders, loons, murrelets, and shearwaters.

See related maps and descriptions of Bathymetry, Ecoregions, Ocean Circulation, Sea Ice Dynamics, Sea Floor Substrate, Zooplankton, Benthic Biomass, Opilio Crab, Capelin, Pacific Herring, Saffron Cod, Pink Salmon, Chum Salmon, Yellow-billed Loon, Spectacle Eider, Steller’s Eider, Common Eider, Long-tailed Duck, Seabird Colonies, Arctic Fox, and Energy Development and Protected Areas.

**Data Quality**
This map has a data quality rating of fair. It presents a partial geographic picture of IBAs, but some data gaps are known. For example, the Canning River Delta and Yukon Flats are two areas under consideration for IBA designation. Audubon Alaska is conducting research to refine existing marine IBA boundaries and identify new areas.

**Summary and Synthesis**
Development should not occur within globally or continentally significant IBAs and caution should be used for development in areas of state significance. Major portions of global, continental, and state bird populations concentrate in these areas, which should be adequately considered during development planning. Birds of the IBAs are threatened by potential oil spills, shipping traffic, heavy metal contamination, overharvest, and fishing bycatch mortality.

**Map Data Sources**


**Data Compilation and Mapping Methods**
IBA databases from Audubon Alaska (2009), BirdLife International (2007), and Bird Studies Canada and the Canadian Nature Federation (2004) are shown on the map.