

KING EIDER

TAXONOMY

Scientific name: *Somateria spectabilis* (Linnaeus, 1758)

Common name: King Eider

Family: Anatidae

Taxonomic comments:

Monotypic. Genus *Somateria* includes 3 species of large sea ducks (tribe Mergini) (Suydam 2000). The King Eider is grouped with Common Eider (*Somateria mollissima*) in subgenus *Somateria*; Spectacled Eider (*S. fischeri*) falls in subgenus *Lampronetta* (Livezey 1995). It is unknown whether the North American east Arctic and west Arctic wintering populations of King Eiders are genetically distinct (Sea Duck Joint Venture 2003).



Photo by Lynn Dye

DESCRIPTION

Basic description: A sea duck (eider).

General description:

A moderately large, ornately plumaged sea duck; male slightly larger than female. Male breeding plumage distinctive: forehead, crown and nape pearl-blue; cheek pale green; bill reddish-orange with large swollen orange-yellow frontal lobe outlined in black. Neck, breast and upper back white, as well as large white patches on side of rump and on forewing; the rest of the body is black. Female plumage is variable. Breeding adult female reddish-brown, with black barring across sides, flanks and upperparts. Wing-linings dull white, contrasting with dark leading edge of wings. Bill is olive or yellowish-gray, without excessively swollen frontal process. Basic adult male plumage brownish and similar to female in color, except for white patch on blackish wings. Frontal lobe becomes smaller with dark spots. Adult female in basic plumage is similar to breeding plumage except head and neck lighter buff (Suydam 2000).

Length (cm): 56

Weight (kg): 1.2 – 2.1

Reproduction:

Seasonally monogamous; pairs form prior to arrival on breeding grounds in mid-June (Suydam 2000). Eggs laid June-July; few nests started after 10 July. Clutch size is usually 4-5 eggs (Lamothe 1973, Cotter et al. 1997). Incubation by female (male departs) lasts 22-24 days (Parmelee et al. 1967). Severe weather may cause widespread nest failure. Young are precocial and quickly active; tended by female ~ 50 days. Young of

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different broods may flock together. Females and broods move from their nest ponds within 24 hours of hatch and travel continuously among tundra ponds in the direction of the sea (Parmelee et al. 1967). First breeding generally occurs at 3 years, although some may begin at 2 years (Portenko 1972, Cramp and Simmons 1977).

Ecology:

Mass starvation and low productivity can occur when low temperatures, ice, and snow persist in northern breeding areas (Johnson and Herter 1989). Winter flocks may include up to 15,000 birds. Oldest known wild bird lived 15 years, but lifespan may be longer (Salomonsen 1965).

Migration:

Nesters from Beaufort Sea region winter in Bering Sea and along southwestern Greenland. Migrates in large flocks ($\geq 10,000$ birds) over substantial distances (≥ 5000 km). First large pulse of migrants arrives in north-central Alaska around mid-May, and at the Canadian Beaufort Sea coast in early June (or late May in some areas). Hundreds of thousands may migrate past Point Barrow in a single day in late May (Alison 1994). Most reach breeding grounds mid-June (Sea Duck Joint Venture 2003). Development of offshore lead systems in pack ice is a major determinant of spring migration routing and timing (Johnson and Herter 1989).

Males make extensive migration to molting areas in early to mid-summer (see Johnson and Herter 1989 for Beaufort Sea region details). Most have departed from Beaufort Sea region by late September, though commonly observed there later. Eiders arrive in Bering Sea in September-October. A migration corridor runs from central and western Bering Sea molting areas east along the north side of Nunivak Island to wintering areas (King and Dau 1981).

Food:

Herbivore and invertivore. Eats mainly mollusks, crustaceans, and insects; may sometimes eat significant amounts of plant material. Forages mostly under water, by diving to the bottom (Palmer 1976). Feeds in fresh or salt water; observed diving to depths of 55 m (Preble and McAtee 1923 in Suydam 2000).

Phenology:

Migrates at all hours during spring and fall, in daylight or darkness (Thompson and Person 1963, Timson 1976).

Habitat:

Breeding: Seacoasts and large river valleys, vicinity of ponds and pools in open tundra, offshore along rocky coasts (winter) (AOU 1983). Nests on ground away from, but not distant from water in open tundra (Palmer 1976); often in graminoid meadows within a few miles of the coast. Distance from coast varies; generally nests further inland than Common and Spectacled Eider (Palmer 1976). Moves to fresh or salt water habitats to rear broods; fledging occurs in salt water (Suydam 2000).

Molting: Generally occurs on salt water.

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Wintering: Winters near southern edge of the sea ice, or in coastal areas with open shallow water for foraging (Suydam 2000). Generally forages farther offshore and in deeper water than Common and Steller's Eider (*Polysticta stelleri*) (Bustnes and Lonne 1997, Suydam 2000).

STATUS

Global rank: G5 (21Nov1996)

Global rank reasons:

Large range and population size, very remote nesting habitat, non-breeding concentrations at sea, few immediate threats.

State rank: S3B, S3N (18May2006)

State rank reasons:

Approximately 10,000-15,000 birds nest on the Arctic Coastal Plain. Trend information is conflicted: migration counts at Point Barrow, Alaska, indicate the Alaskan and western Canadian Arctic population declined by 56% between 1976 and 1996; however, eider breeding population surveys on the Arctic Coastal Plain report a non-significant population increase between 1993 and 1996, and a significant increase for 2005. Threats include exposure to oil spills, especially when concentrated in non-breeding flocks, subsistence harvest on breeding grounds, and noise disturbance.

DISTRIBUTION AND ABUNDANCE

Range:

Holarctic. One of the most northerly nesting ducks, and also a northerly winterer (Palmer 1976). Two populations in North America: one winters in the eastern Arctic (Atlantic), the other in the western Arctic (Pacific) (Suydam 2000, Sea Duck Joint Venture 2003).

Global range:

Breeding: In North America along Arctic coast and islands from northern Alaska east to Greenland, west coast of Hudson Bay, James Bay, and probably northern Labrador; Banks and Victoria islands are important nesting areas. In Eurasia along Arctic coast from northern Russia east to Chukotski Peninsula and St. Lawrence and St. Matthews Islands. Small numbers in northern Finland, Sweden, Norway, and in northern coastal Greenland (Suydam 2000).

Non-breeding: In Pacific, from Kamchatka and Bering Sea south to Kurile, Aleutian, and Shumagin Islands. In Atlantic, from Labrador and Greenland south to New England (less frequently eastern New York and New Jersey). In interior North America (uncommonly) to Great Lakes. Birds breeding in western Siberia and Scandinavia winter from the White Sea to western Norway and eastern coast of Iceland; small numbers as far south as England and Ireland (Suydam 2000). Casual non-breeding visitor to points south of normal southern limits of range (AOU 1983).

Molting areas: Poorly documented but presumably in marine environments. Western arctic population in North America molts primarily in Bering Sea, and to lesser extent in

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the Chukchi Sea (Sea Duck Joint Venture 2003). A small number may also molt in the eastern Beaufort Sea (Johnson and Herter 1989). Satellite telemetry has identified several key molting sites: off the south and east coasts of the Chukotsk (Chukchi) Peninsula, south of St. Lawrence Island, and northern Bristol Bay (Dickson et al. 1999). Eastern arctic population known to molt in areas of western Greenland around Disko Bay, and eastern Greenland at Clyde Inlet (Suydam 2000).

State range:

Breeding: Primarily along the Arctic Coastal Plain east from Cape Lisburne to Canada; also occasionally in the Bering Sea on St. Lawrence Island, Seward Peninsula and possibly St. Matthew Island (Suydam 2000). Uncommon summer resident in the Shumagin Islands (Day 1977).

Non-breeding: Winters in marine waters of the Bering Sea (St. Lawrence and Pribilof Island), Bristol Bay (Amak Island and lagoons and bays of the northern Alaska Peninsula), Aleutian Island chain (primarily the eastern islands), and southern Alaska Peninsula east to Kodiak Island Archipelago (Byrd et al. 1974, Palmer 1976, Gill et al. 1981, SOWLS 1993). Open water leads may be used as far north as the Chukchi Sea offshore of Point Lay. Numbers and occurrence off specific islands or bays are relatively undocumented.

Immature birds noted summering off Nushagak Peninsula in Bristol Bay (~100,000 in 1960 by J. King and H. Hansen in Palmer 1976), and also around St. Lawrence Island (Fay and Cade 1959, Fay 1961).

Molting: Poorly documented but primarily in Bering Sea, and to lesser extent in the Chukchi Sea (Sea Duck Joint Venture 2003). A small number may also molt in the eastern Beaufort Sea (Johnson and Herter 1989). Satellite telemetry has identified several key molting sites including south of St. Lawrence Island and northern Bristol Bay (Dickson et al. 1999). Other reported locations include the shoals of Kvichak Bay, and along the northern Alaska Peninsula (Palmer 1976, Larned and Tiplady 1998).

Abundance:

Global abundance:

Based on the 1996 spring migration count at Point Barrow, Alaska, an estimated 350,000–370,000 King Eiders nest in northern Alaska and western Arctic Canada (Suydam et al. 2000, Sea Duck Joint Venture 2003). An additional 100,000 or more eiders that winter in the Bering Sea and North Pacific nest in Russia (see Goudie et al. 1994 in Sea Duck Joint Venture 2003). An average of 12,000 (between 10,000 and 15,000) King Eiders were detected annually during aerial eider breeding surveys on the Arctic Coastal Plain in Alaska over the past decade (Larned and Balogh 1997, Larned et al. 2001), suggesting that the majority of the Pacific wintering population that migrates past Point Barrow nests in western Arctic Canada (Sea Duck Joint Venture 2003). The eastern Arctic population is suspected smaller, but no reliable breeding estimates exist (Sea Duck Joint Venture 2003). Frimer (1993) estimated the population molting in the Qeqertarsuaz/Disko area of Greenland at 15,000–20,000 during 1990–1992.

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Trends:

Global trend:

Little range-wide information, although declines have been documented in both eastern (Mosbech and Boertmann 1999) and western Arctic populations (Suydam et al. 1997, Suydam et al. 2000). In northern Alaska and the western Canadian Arctic, breeding population apparently declined by 56% from 1976 to 1996, based on standardized migration counts (Suydam et al. 2000). These data are corroborated by results of breeding-pair surveys in the western Canadian Arctic (Dickson et al. 1997), but results should be viewed with caution, and there is currently no breeding survey evidence indicating a decline in the Alaska population. A significant decrease in King Eider numbers in the Rasmussen Lowlands, N.W.T. was observed between 1975 and 1995 (Suydam 2000). Little information on status of eastern Arctic breeding population, but regional declines have been reported on the Melville Peninsula and Boothia Peninsula (Sea Duck Joint Venture 2003) and surveys of molting birds off Greenland suggest present numbers are only half of 1950s numbers (Mosbech and Boertmann 1999).

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In northern Alaska, two different sets of aerial surveys for breeding eider populations both indicated a stable or increasing population during the 1990s (King and Brackney 1997, Larned and Balogh 1997). In 2005, 14,934 King Eiders were counted during breeding population surveys on the Arctic Coastal Plain; this population index was 14% above the 13-year mean and shows a significant positive growth rate of 1.021 (Larned et al. 2005).

EXISTING PROTECTION

Global protection:

Protected under the Migratory Bird Treaty Act (1918) in the United States and Canada.

State protection:

The Arctic National Wildlife Refuge (ANWR) currently supports a small number of breeding eiders. Some of these birds occur in the 1002C section of ANWR, which receives limited protection from development (Johnson and Herter 1989). This species lacks protection in the central Arctic Coastal Plain, where highest nesting densities occur (Larned and Balogh 1997). Elsewhere, wintering habitat is protected in nearshore waters of the Alaska Maritime, Alaska Peninsula/Izembek, and Kodiak National Wildlife Refuges.

CHALLENGES

Global challenges:

Significant causes of mortality include exposure on nesting grounds (50,000 females and young perished in one season in the Beaufort Sea) (Barry 1968); adult starvation during spring migration when weather conditions are severe (~100,000, or 10% of the Beaufort Sea population, died in 1964) (Barry 1968); and predation, especially on breeding grounds, by Long-tailed Jaeger (*Stercorarius longicaudus*) and arctic fox (*Alopex lagopus*).

Reasons for the apparent large decline in northern Alaska and the western Canadian Arctic are unknown (Suydam et al. 2000). Annual mortality from hunting in that area ranged from 2.5 to 5.5% of the total population, but this is within the sustainable harvest limits of other sea ducks (Suydam et al. 2000). Small numbers are hunted during spring migration (Madge and Burn 1988). Potentially threatened by oil spills when concentrated in large non-breeding flocks.

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Threatened by oil spills when concentrated in large non-breeding flocks (i.e. molting and wintering areas and along migration routes). In 1996, an estimated 1,609 birds were killed as a result of a small oil spill in the Pribilof Islands, Alaska (Suydam 2000). This species is extremely sensitive to noise disturbance, especially during molting. When disturbed by distant airplane or boat noise, birds will cease feeding, swim offshore in an alert posture, and dive; they may not return to feeding areas for 6–8 hours after being disturbed (Suydam 2000).

RESEARCH AND INVENTORY NEEDS

Global research needs:

The degree of fidelity to non-breeding concentration sites should be determined. Determine extent of interchange between eastern and western North American populations. Investigate reasons for the decline in northern Alaska and the western

Canadian Arctic (Suydam et al. 2000). Impacts of oil exploration on species' habitat and behavior in arctic environments are unknown and need study. Investigate global point-source pollution at wintering, molting and staging areas.

State research needs:

Factors affecting mortality and magnitude of impact need to be investigated (Suydam et al. 2000). Information needed on survival and productivity rates, as well as locations of staging, molting, and wintering areas (Suydam et al. 2000). Impacts of oil exploration on species' habitat and behavior in arctic environments are unknown, need study.

Global inventory needs:

A systematic, range-wide monitoring system, especially of non-breeding birds, needs to be developed. Document level and composition of subsistence eider harvest in Alaska, Canada, Russia and Greenland (Suydam 2000).

State inventory needs:

Data is conflicted as to whether or not percentage of the population that breeds in Alaska is declining; determine whether the large decline noted during migration counts is valid. A complete inventory of wintering, molting and spring staging areas is needed. Continue standardized migration counts. Document level and composition of subsistence harvest.

CONSERVATION AND MANAGEMENT NEEDS

Global conservation and management needs:

Ensure continued protection of currently remote and relatively inaccessible arctic breeding grounds. Establish co-management agreements between agencies and native peoples to manage this species more effectively. Determine sustainable sport and subsistence harvest levels for northern Alaska and western Canada to avoid further additive mortality.

State conservation and management needs:

See Global conservation and management needs.

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