Waterfowl – Introduction

Alaska's waterfowl resources include 2 species of swans (in 3 populations), 5 species of geese (14 subspecies or populations), and 27 species of ducks. Of Alaska's 365 million-acre surface, 50–60% is considered suitable waterfowl habitat, made up of rich coastal lagoons and river deltas, large inland valleys, and vast areas of wet tundra and boreal muskegs. Production of waterfowl in Alaska results not only from expansive and stable wetlands, but also from dynamic physical processes (floods, fires, coastal interfaces) that enrich habitats, and bursts of productivity from long summer days. The fall flight of waterfowl from Alaska provides 120,000 swans, 1 million geese, and 10–12 million ducks to all 4 North American flyways. Annually, Alaska produces or seasonally hosts waterfowl that are shared with Canada, Mexico, Russia, and Japan.

Alaskans depend on an annual harvest of about 400,000 migratory game birds for nutritional, economic, cultural, and recreational benefits. In addition, harvest and other benefits from many Alaska-breeding populations are realized most in Canada and the Lower 48 states.

Because Alaska's migratory game bird populations range internationally across many jurisdictions, management of these resources is governed by federal authority. However, they provide substantial benefits to culturally and geographically diverse public interests that are best engaged at state and regional levels. The utility of multilevel management and the valuable capabilities of state wildlife agencies led to the formation of flyway councils in the 1950s. Councils, made up of state wildlife agencies, provide the necessary cooperation to efficiently coordinate management efforts and balance the interests of agencies and user groups. The state of Alaska is a member of the Pacific Flyway Council, but also interacts with the Central, Mississippi, and Atlantic Councils on shared populations. Management efforts are aimed primarily at monitoring distribution and trends of breeding bird populations, assessing annual production and factors that influence populations of concern, measuring and managing harvest, and promoting habitat conservation through land use planning.

Waterfowl are not treated at length in this iteration of the CWCS because there is an extensive research and management network at regional, national, and continental levels. Research and management needs of nearly all populations of swans and geese that occur in Alaska are addressed by individual flyway management plans. Most duck populations are managed under programs of the North American Waterfowl Management Plan, national harvest strategies, and some flyway and regional plans. Thus, pages 58–65 of this appendix focus primarily on a group of sea duck species that breed in Arctic and sub-Arctic regions, have undergone substantial population declines, and for which there is neither adequate information about their status and biology nor a cohesive management plan.

Using criteria shown in Section II(C) (CWCS page 10), CWCS expert participants also selected Spectacled and Steller's Eiders (both listed as Threatened), and Tule White-fronted Geese, as being of major conservation concern. These are populations for which

existing information and management plans do not currently provide means to secure long-term conservation. Information on each of these species follows.

Tule White-fronted Goose (Anser albifrons gambeli)
Tule geese are one of two subspecies of greater white-fronted geese in North America. Since the early 20th century, they were recognized as a larger and darker bird wintering with Pacific White-fronts (*A. a. frontalis*) in California (Swarth and Bryant 1917), but their breeding grounds were unknown until 1979. Nesting Tule geese were first located in the Redoubt Bay and Susitna Flats areas of Cook Inlet, Alaska (Timm et al. 1982). Periodic aerial surveys of Cook Inlet coastal marshes indicate that the use of Redoubt and Trading Bays by Tule geese declined significantly some time between 1983 and 1992 (Campbell et al. 1992); few Tule geese have been seen there in recent years. Telemetry studies since 1994 indicate that most Tule geese now nest in the Kahiltna and Susitna River valleys, and as far north as the Tokositna River (USGS and ADF&G, unpubl. data). The coincident decline of Tule geese at Redoubt Bay and discovery of nesting in valleys north of Cook Inlet may reflect displacement of the breeding population from a major eruption of the Redoubt Volcano in December 1989. Telemetry also indicates that one-third to half of the population crosses the Alaska Range to molt in the Innoko River basin during midsummer.

Since the early 1980s, various methods have been used to enumerate Tule geese at 7000–9000 birds, making them one of the smallest populations of geese in North America. For over 20 years, management has been focused on basic research and protection of this vulnerable population; the Pacific Flyway plan (Pacific Flyway Council 1991 [revision in progress]) summarizes needs for fundamental information. Although this plan is currently under revision, there is insufficient information to guide management actions for the long-term conservation of this population: (1) To date, no reliable method has been established to estimate population size on the breeding grounds where they are dispersed in boreal forest habitats, or on the wintering grounds where they are obscured among 380,000 Pacific White-fronts. (2) Tule goose breeding grounds are almost entirely on state lands that are subject to timber sales, oil and gas leases, and increasing recreational activity. (3) Although Tule geese largely evade harvest through seasonal and spatial segregation, and harvest strategies in the Pacific Flyway are designed to avoid them, some Tule geese are taken.

Spectacled Eider (Somateria fischeri)
Spectacled Eiders primarily breed in one of three geographic areas: Arctic Russia, the Yukon-Kuskokwim Delta (YKD) in western Alaska, and Alaska's Arctic Coastal Plain. The rapid decline in Spectacled Eiders on the YKD was the primary reason for listing this species as threatened in 1993 (USFWS 1993). Between the 1970s and 1990s, Spectacled Eiders on the YKD declined by about 96 percent, from 48,000 pairs to fewer than 2,500 pairs in 1992 (Stehn et al. 1993; USFWS 1999). Since then, the population on the YKD has increased slightly (Fischer et al. 2004; Platte and Stehn 2003). The vast majority of the worldwide population, mostly composed of Russian breeding birds, winters in the Bering Sea, where estimates range up to 363,000 birds (Larned and Tiplady 1999; Peterson et al. 1999).

The focus of the 1996 recovery plan (USFWS 1996) is to provide strategies for the recovery of Spectacled Eiders; assess potential threats from socioeconomic, political, biological, and ecological mechanisms; develop strategies to mitigate or alleviate these threats; and monitor population change. Specific mechanisms causing the decline or limiting recovery, however, remain unknown. Primary hypotheses that continue to be implicated in the decline of the eiders, mostly affecting adult survival, include lead poisoning on the YKD, changes in food supply at sea, exposure to marine contaminants, overharvest, increased predation on the YKD breeding ground, and disturbance of nesting birds by researchers (USFWS 1993; Stehn et al. 1993). The current recovery plan does not adequately provide for the long-term conservation of Spectacled Eiders because: (1) the cause(s) for the decline in numbers and distribution of the YKD breeding population are unknown; (2) there are no historical trends from the Arctic Coastal Plain from which to verify a decline or establish realistic recovery objectives; (3) recovery strategies largely address mitigating potential threats that may be impediments to recovery; and (4) without knowledge of the causes of population declines, the efficacy of strategies to actively increase the population is largely speculative.

Steller's Eider (Polysticta stelleri)
Three breeding population segments have been designated for Steller's Eiders, two in Arctic Russia (Atlantic and Pacific) and one in Alaska. The Alaska breeding population occurs in 2 separate regions: the Yukon-Kuskokwim Delta (YKD) in western Alaska and the North Slope, primarily near Barrow (USFWS. 2002). The Alaska breeding population of Steller's Eiders was listed as threatened in 1997 (USFWS. 1997), largely because of a reduction in its breeding range as it became extremely rare on the YKD (Kertell 1991). Although there are few quantitative data from the region, Steller's Eiders on the YKD historically composed the largest number of this species breeding in Alaska. Up to a few thousand eiders may nest irregularly on the North Slope (Quakenbush et al. 2004), where long-term changes in numbers and distribution are poorly known (Quakenbush et al. 2002).

The majority of the Pacific population (over 100,000 birds) nests in Russia, and winters in Alaska from the eastern Aleutian Islands east to lower Cook Inlet. Although Russia-breeding birds are not included in the ESA listing, they intermingle with Alaska breeders for most of the year, which complicates recovery efforts. The Russian Pacific breeding population of Steller's Eiders was recognized as a category 3 ("rare") species in the Red Book for the Yakutia Republic because of reduced breeding range, declining numbers, and illegal harvest (Solomonov 1987). In addition, there has been a declining trend in birds wintering along the Alaska Peninsula (Larned 2003).

The focus of the 2002 recovery plan (USFWS 2002) is to provide strategies for the recovery of Alaska-breeding Steller's Eiders; assess potential threats from socioeconomic, political, biological, and ecological mechanisms; develop strategies to mitigate or alleviate these threats; and monitor population change. Specific mechanisms causing the decline or limiting recovery in Alaska, however, remain unknown. Primary hypotheses include lead poisoning, overhunting, nest predation, and changes in the

marine environment (USFWS 2002). The current recovery plan does not adequately provide for the long-term conservation of Steller's Eiders because: (1) the magnitude and cause(s) for the decline in numbers and distribution of breeders on the YKD are unknown; (2) there are no historical trends from the Arctic Coastal Plain from which to verify a decline or establish realistic recovery objectives; (3) recovery strategies largely address mitigating potential threats that may be impediments to recovery; and (4) without knowledge of the causes of population declines, the efficacy of strategies to actively increase the population is largely speculative.

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Sea Ducks

A. Species group description

Common names: Diminished sea duck species in Alaska (selected species that are largely endemic to Alaska, and have experienced significant declines); these include Pacific Common Eider, King Eider, Black Scoter, Surf Scoter, White-winged Scoter, and Long-tailed Duck

Scientific names: *Somateria mollissima v-nigra, Somateria spectabilis, Melanitta nigra americana, Melanitta perspicillata, Melanitta fusca deglandi, Clangula hyemalis*

B. Distribution and abundance

Range:

Global range comments:

Breeding range: Circumpolar in Arctic, sub-Arctic, and boreal habitats

Nonbreeding range: Principally coastal marine waters of Bering Sea and northeastern and northwestern Pacific Ocean

State range comments:

Breeding: Alaska's coastal tundra and Interior wetlands. Alaska wintering birds include some that breed in Russia and Canada

Nonbreeding: Coastal marine waters for winter, migration, staging, and molting; Alaska breeding birds also use coastal waters of Russia and Canada for migration, staging, molting, and wintering

Abundance:

Global abundance comments: Population estimates (current and historical) are considered unreliable for most species. In general the lack of comprehensive surveys and knowledge of distribution and movements allows for gross estimates only ("best guesses") of population size (Sea Duck Joint Venture 2003; Savard et al. 1998; Brown and Fredrickson 1997; Bordage and Savard 1995). Surveys often combine species groups, especially scoters.

Pacific Common Eider: Estimates of 100,000 in North America and 22,000 minimum in Siberia.

King Eider: Western Arctic: Possibly up to 470,000 including 100,000 in Russia.

Black Scoter: Historic estimates up to 550,000 (Savard et al. 1998). Currently unknown.

Surf Scoter: Estimates range from 257,000 to 765,000.

White-winged Scoter: Historic estimates of up to 675,000 birds. Currently unknown.

Long-tailed Duck: Historically up to 4 million. Currently unknown, 500,000 minimum.

State abundance comments: Estimates not reliable. Generally little information on seasonal distribution and abundance; survey data seldom comparable. Estimates during breeding, molting, and wintering vary greatly and may not represent population units, as birds migrate long distances to vast and remote regions for various life history events, often across international borders, (see Alaska status summary [USFWS 1999])

Pacific Common Eider: Estimate up to 67,000 in winter. Many fewer breeding.

King Eider: Arctic Coastal Plain breeding population about 7750. Up to 370,000 during migration from wintering areas primarily in Russia and Alaska.

Black Scoter: Winter unknown. Breeding population estimates of 102,000.

Surf Scoter: Winter population estimates up to 275,000. Breeding unknown.

White-winged Scoter: Winter estimates greater than 100,000. Breeding unknown.

Long-tailed Duck: Currently unknown. Winter population greater than 220,000. Greater numbers during migration.

Trends*:

Global trends: (Sea Duck Joint Venture 2003) In general, a lack of comprehensive surveys and standardized methods makes it difficult to extrapolate regional trend data to a global scale. The North American Waterfowl Breeding Population Survey was not designed to coincide with the life history patterns of sea ducks. Surveys often combine similar species, especially scoters.

- Pacific Common Eider: Downward trend. Possible 50% decline of spring migrants since 1976.
- King Eider: Declines of 40–75% since 1960s.
- Black Scoter: Declining about 1% annually.
- Surf Scoter: Possibly declined up to 2% annually since 1950s. May have stabilized.
- White-winged Scoter: Possibly declined up to 2% annually since 1950s. May have stabilized.
- Long-tailed Duck: Western North American population declined 70% since 1960s.

State trends: (Sea Duck Joint Venture 2003; USFWS 1999).

- Pacific Common Eider: Breeding population declined 4.5% annually from 1976 to 1994. May be stable or increasing since late 1980s. Currently below historic levels.
- King Eider: Stable or increasing slightly on Arctic Coastal Plain since 1990. Declines in winter/migrants of 55% from 1976 to 1996.
- Black Scoter: Breeding populations declined about 2% annually from 1977 to 1998 in western Alaska, otherwise stable or increasing since 1988. Currently below historic levels.
- Surf Scoter: Possibly declined up to 2% annually since 1950s. May have stabilized or increased since late 1980s.
- White-winged Scoter: Possibly declined up to 2% annually since 1950s. May have stabilized or increased since late 1980's.
- Long-tailed Duck: Declines of 5.5% annually since 1977 in breeding population. May have stabilized on Arctic Coastal Plain since 1986 and increased on Yukon Delta since 1988.

*Trends primarily reference breeding populations. Little time-series data is available to quantify changes in numbers of wintering or molting birds. For most species, sea ducks are most abundant in Alaska during winter from October through May.

References: Bordage and Savard (1995); Brown and Fredrickson (1997); Savard et al. (1998); Sea Duck Joint Venture (2003); USFWS (1999)

C. Problems, issues, or concerns for species group

Overview of problems: Sea ducks congregate in large dense flocks during migration, molting, and winter. This makes large numbers vulnerable to oil spills, other marine contaminants, disturbance, or habitat changes in areas where birds concentrate. Migrate over vast and remote regions under various governmental jurisdictions. Relatively little knowledge of population delineation, trends, life history, and ecology.

- Lack of good baseline information on population status, trends, and distribution
- Climate change
- Marine pollution
- Changes in prey abundance
- Avian and mammalian predation
- Overharvest/lead poisoning
- Off- and onshore mineral and energy development
- Commercial fishing and mariculture interactions

D. Location and condition of key or important habitat areas

Breeding habitat (Savard et al. 1998; Brown and Fredrickson 1997; Bordage and Savard 1995; Goudie and Reed 2000; Suydam 2000): Generally very good with exceptions, although overall conditions are largely unknown.

- Pacific Common Eider: Along marine coasts, mostly on barrier islands, river deltas, spits
- King Eider: Arctic tundra near lakes and ponds
- Black Scoter: Deltas, tundra and taiga lakes and ponds
- Surf Scoter: Boreal forest lakes, rarely on tundra
- White-winged Scoter: Boreal forest lakes, rarely on tundra
- Long-tailed Duck: Coastal and interior tundra

Non-breeding habitat (Savard et al. 1998; Brown and Fredrickson 1997; Bordage and Savard 1995; Goudie and Reed 2000; Suydam 2000): Generally very good with exceptions (includes molting and wintering areas), although overall conditions are largely unknown.

- Pacific Common Eider: Shallow offshore marine waters
- King Eider: Offshore marine waters and edge of sea ice
- Black Scoter: Nearshore marine waters
- Surf Scoter: Nearshore marine waters
- White-winged Scoter: Near- and offshore marine waters
- Long-tailed Duck: Near- and offshore marine waters

E. Concerns associated with key habitats

See Section C.

F. Goal: Ensure sea duck populations remain sustainable throughout their range within natural population-level variation and historic distribution throughout Alaska.

G. Conservation objectives and actions

Objective: Conserve and manage sea duck population levels at a sustainable level within their historic range.

Target: Specific population objectives have not been set because available inventory data are not reliable and a geographic regime for management has not been established; establishing population goals and objectives is one of the primary management needs for each species.

Measure: Population indices are currently based on several standard and special surveys:

a) Alaska-Yukon Waterfowl Breeding Population Survey (not designed for sea ducks).
b) Arctic Coastal Plain survey.
c) Miscellaneous regional surveys.

Establishing survey methods and protocols at a local, regional, and continental scale is a primary management need (see below).

Issue 1: Lack of reliable information to delineate populations and ranges.

Conservation actions:

a) Improve population delineation through increased banding, marking, telemetry, and genetic studies.
b) Expand existing level of research/monitoring.

Issue 2: Lack of effective survey methods to produce abundance and trend data.

Conservation actions:

a) Develop and implement effective population survey and monitoring techniques at continental, regional, and local scales (Sea Duck Joint Venture 2001) during breeding, molting, staging, and wintering periods.
b) Expand existing level of monitoring.

Issue 3: Important coastal habitats for staging, molting, and wintering are not identified or inventoried.

Conservation actions:

a) Identify, inventory, and assess attributes of important coastal habitats for staging, molting, and wintering.
b) Develop statewide sea duck GIS.
c) Identify potential impacts from development activities, vessel traffic, oil spills, commercial fishing, and subsistence activities.

Issue 4: Lack of baseline data on the prevalence and effects of diseases, parasites, and contaminants on sea duck populations.

Conservation actions:

a) Implement field and laboratory studies to screen for diseases, parasites, and contaminant exposure and assess effects.
b) Continue and expand programs to reduce exposure to lead shot.
c) Monitor contaminant levels in prey.

Issue 5: It is not known if climate change is negatively impacting these sea ducks.

Conservation action: Monitor sea duck population trends, abundance, and distribution, and test for correlations with climate change on a regional basis.

Issue 6: Changes in prey abundance may be affecting sea duck populations.

Conservation actions:

a) Identify primary prey species at key winter, staging, and molting sites.
b) Monitor prey intake and changes over time.

Issue 7: Lack of baseline data on the prevalence and effects of predators and unknown population effects of avian and mammalian predation.

Conservation actions:

a) Identify and evaluate abundance and effects of predator populations during breeding, molting, and winter on a regional basis.
b) Identify situations where human activities may enhance predator/scavenger populations.

Issue 8: Lack of knowledge on sea duck population age and sex structure makes it difficult to understand their population dynamics.

Conservation actions:

a) Identify population age and sex structure and age-specific survival rates to improve understanding of population dynamics.
b) Expand existing level of research/monitoring.

Issue 9: Unknown levels of harvest over range of species makes it difficult to understand mortality rates and effect of harvest on population.

Conservation actions:

a) Improve surveys of recreational and subsistence harvest over the range of species in the United States and Canada.
b) Expand existing level of research/monitoring.

H. Plan and time frames for monitoring species and their habitats

Plan proposal: A 10-year time frame is proposed to implement conservation and management needs. A comprehensive survey and monitoring program will be developed at continental and regional scales over the next few years. Surveys will be conducted at index locations on a predetermined schedule of once every 1–5 years.

Planning and implementation of monitoring programs will involve partnerships within the Sea Duck Joint Venture (an international program of the North American Waterfowl Management Plan), USFWS divisions of Migratory Bird Management and Refuges, the USGS, Alaska Native village and regional corporations, National Audubon Society, Ducks Unlimited, Inc., Canadian Wildlife Service, flyway councils, and other state and federal agencies with regulatory or management authority within a species range. The lead agency will be determined on an individual project basis.

I. Recommended time frame for reviewing species status and trends

Review every 5 years, or at more frequent intervals in response to additional information.

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