

Long-tailed duck*Clangula hyemalis*

Class: Aves

Order: Anseriformes

Conservation Status

NatureServe:

Agency:

G Rank: G5

USFWS:

IUCN: Vulnerable

S Rank: S5B,S4N

ADF&G: Species of Greatest Conservation Need

Final Rank		
Conservation category: VIII. Yellow		
VIII = low status and either high biological vulnerability or high action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status:	-20 to 20	2
Biological:	-50 to 50	-40
Action:	-40 to 40	4
Higher numerical scores denote greater concern		

Status - variables measure the trend in a taxon's population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

Score*Population Trend (-10 to 10)*

2

Population trends for Alaska are variable, but in general the population appears to be relatively stable (P. Flint, pers. comm.). Data from the Waterfowl Breeding Population and Habitat Survey, which includes populations from Alaska and northern Canada, suggest that this species has declined since surveys began 1957, but has stabilized in recent decades (1990-2011; Flint 2013). Estimates for the Arctic Coastal Plain also indicate a stable growth rate from 1992-2011, and the population appears to be increasing relative to the 20-year average (Larned et al. 2012a). Populations on the Yukon-Kuskokwim Delta may have declined relative to the late 1980s, but additional data are needed (Platte and Stehn 2015; Wilson et al. 2016). We rank this question as C- Former declines, but presently stable.

Distribution Trend (-10 to 10)

0

Unknown.

Status Total:

2

Biological - variables measure aspects of a taxon's distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).

Score*Population Size (-10 to 10)*

-10

One of Alaska's most abundant waterfowl species (Larned et al. 2012; Platte and Stehn 2015). Estimates range from 200,000 to 500,000 breeding individuals, but it is difficult to reliably estimate population size because of this species' widespread distribution (SDJV 2003; ADFG 2006a Appendix 4). >25,000 individuals are estimated to breed on the Arctic Coastal Plain alone (Larned et al. 2012).

Range Size (-10 to 10)

-8

Breeds in western Alaska, including the Bering Sea islands, north to the Arctic Coastal Plain (Robertson and Savard 2002). Also found in interior Alaska east to the Yukon and south to southcentral Alaska e.g. Nelchina basin (Robertson and Savard 2002). In the winter, long-tailed ducks are widely dispersed along coastlines from the northern Bering Sea and St. Lawrence Island south to southeast Alaska and west to Attu in the Aleutian Islands (Robertson and Savard 2002; Petersen et al. 2003). Range is most restricted in the winter and is estimated at

~170,000 sq. km. calculated in GIS.

Population Concentration (-10 to 10)

-10

Widely dispersed during winter and breeding seasons (Petersen et al. 2003). During spring migration, large numbers congregate in areas of southwestern Alaska (e.g. Herendeen Bay, Goose Point, Kvieliak Bay, and Kvichak Bay). Individuals may also concentrate on sea ice before breeding areas have opened up for nesting (Robertson and Savard 2002; Meixell and Savage 2004). Large concentrations (between 10,000 and 30,000 individuals) have been reported in coastal lagoons along the Beaufort and Chukchi Seas (Johnson and Herter 1989; Flint et al. 2016), though several other moulting areas have been identified on the Y-K Delta and St Lawrence Island (Petersen et al. 2003). Given the size of the population and their wide distribution across Alaska, number of sites likely > 250.

Reproductive Potential

Age of First Reproduction (-5 to 5)

-3

Begins breeding at 2 years of age (Robertson and Savard 2002).

Number of Young (-5 to 5)

1

One brood per year. Average clutch sizes of 6.2 and 7.1 eggs have been reported for Alaska (Kessel 1989; Schamber et al. 2009).

Ecological Specialization

Dietary (-5 to 5)

-5

Diet is broad and varied. In summer, feeds on freshwater invertebrates e.g. crustaceans, true flies and caddisfly larvae, beetles, gastropods (Johnson and Herter 1989; Kessel 1989; Robertson and Savard 2002). Also consumes fish, roe, and emergent vegetation (Bustnes and Systad 2001; Jamieson et al. 2001; Robertson and Savard 2002). On coastal wintering grounds in Alaska, diet consists of marine invertebrates (small crustaceans, bivalves, worms) and fish such as herring and sandlance (Sanger and Jones 1984; Kessel 1989; Robertson and Savard 2002). Long-tailed are opportunistic foragers that can find high-quality prey items even in low productivity habitats (Bustnes and Systad 2001; Zydulis and Ruskyte 2005).

Habitat (-5 to 5)

-5

Nests in a variety of habitats in taiga and tundra biomes, from graminoid wetlands to dry lichen tundra, and from coastal sandbars and estuaries to inland or island lakes (Johnson and Herter 1989; Kessel 1989; Robertson and Savard 2002; Liebezeit et al. 2011; P. Flint, pers. comm.). Nests are often near freshwater (Robertson and Savard 2002). In the Arctic National Wildlife Refuge, the highest density of breeding individuals was found in a flooded pond complex dominated by sedges and willows (Spindler and Miller 1982).

During molting and in the winter, uses deep, freshwater ponds and lakes as well as protected coastal lagoons (Derksen et al. 1981; Johnson and Herter 1989; Johnson et al. 1993b; Robertson and Savard 2002). Birds from the Y-K Delta and St. Lawrence Island use a variety of habitats including estuaries, large lakes, and coastal wetlands (Petersen et al. 2003).

Biological Total: -40

Action - variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due of lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).

Score

Management Plans and Regulations (-10 to 10)

-10

Protected under the Migratory Bird Treaty Act (MBTA 1918). Subsistence and sport hunting is permitted (AMBCC 2018; ADFG 2018e), but is subject to closed seasons and bag limits. Recent changes to regulations further restrict recreational harvest of long-tailed ducks (ADFG 2018e).

Knowledge of Distribution and Habitat (-10 to 10)

2

Breeding distribution and habitat associations are well-understood at the core of its range. Although this species occurs at low densities, it is detected during multi-species surveys (Liebezeit et al. 2011; Mallek and Groves 2011; Larned et al. 2012a; Platte and Stehn 2015). Species-specific studies, including telemetry studies, have

informed our understanding of this species' distribution and habitat during breeding, molting, and overwinter (e.g. Spindler and Miller 1982; Sanger and Jones 1984; Butler 1998; Petersen et al. 2003; Johnson et al. 2005; Noel et al. 2005a; Flint et al. 2016a). However, additional work is needed to clarify migration routes and the distribution of birds during the non-breeding season. For example, birds that breed in Alaska have been recovered in Russia (King 1973) and research suggest that there is a high degree of movement of and genetic exchange between birds breeding in eastern Russia, Alaska, and the Canadian Arctic (King 1973; Wilson et al. 2016; Bartzen et al. 2017).

Knowledge of Population Trends (-10 to 10)

2

Included in USFWS multi-species breeding bird surveys in western Alaska and on the Arctic Coastal Plain (Mallek and Groves 2011; Larned et al. 2012a; Platte and Stehn 2015). Monitoring is inadequate to detect statewide population trends because this species occurs at low densities and surveys do not capture the entire range of this species in Alaska.

Knowledge of Factors Limiting Populations (-10 to 10)

10

Factors limiting populations are largely unknown. Harvest rates (Naves 2015; P. Flint, pers. comm.), industrial activity (Lacroix et al. 2003; Johnson et al. 2005; Flint et al. 2016a), and environmental contamination (Henny et al. 1995) do not appear to be of concern to this population. Using a long-term dataset (1991-2004) from the Y-K Delta, Schamber et al. (2009) identified adult female survival and duckling survival as important drivers of population growth rates. Predation was the main cause of nest failures, while factors affecting adult female survival were unknown (Schamber et al. 2009). Shifts in oceanic regimes may contribute to fluctuations in population size, but the ultimate mechanisms behind this pattern are not known and warrant further study (Flint 2013). Additional research is also needed on the impact of disease, as mortality events have been linked to avian adenovirus (Hollmén et al. 2003; Counihan et al. 2015). Genetic differences exist between individuals on different breeding grounds, but these differences are not strong enough to translate into population structuring (Wilson et al. 2016). Overlap in wintering areas likely promotes genetic mixing and diversity across this species' circumpolar range (Wilson et al. 2016).

Action Total: 4

Supplemental Information - variables do not receive numerical scores. Instead, they that are used to sort taxa to answer specific biological or management questions.

Harvest:	Not substantial
Seasonal Occurrence:	Year-round
Taxonomic Significance:	Monotypic genus
% Global Range in Alaska:	>10%
% Global Population in Alaska:	25-74%
Peripheral:	No

References

Alaska Department of Fish and Game (ADFG). 2006a. Our wealth maintained: a strategy for conserving Alaska's diverse wildlife and fish resources. Alaska Department of Fish and Game, Juneau, AK, USA.

Alaska Department of Fish and Game (ADFG). 2018e. 2018-2019 Migratory game bird hunting regulations summary. Anchorage, AK, USA.

Alaska Migratory Bird Co-Management Council (AMBCC). 2018. 2018 Alaska subsistence bird harvest regulations. Office of the Alaska Migratory Bird Co-Management Council, U.S. Fish & Wildlife Service, Anchorage, AK, USA.

Bartzen, B. A., D. L. Dickson, and T. D. Bowman. 2017. Migration characteristics of long-tailed ducks (*Clangula hyemalis*) from the western Canadian Arctic. *Polar Biology* 40(5):1085-1099. DOI: 10.1007/s00300-016-2035-6

Bustnes, J. O., and G. H. Systad. 2001. Comparative feeding ecology of Steller's eider and long-tailed ducks in winter. *Waterbirds* 24(3):407-412. DOI: 10.2307/1522072

- Butler, R. W. 1998. Moulting sites of sea ducks and other marine birds in Frederick Sound, southeast Alaska. *Canadian Field-Naturalist* 112(2):346-347.
- Counihan, K. L., L. F. Skerratt, J. C. Franson, and T. E. Hollmén. 2015. Phylogenetic and pathogenic characterization of novel adenoviruses isolated from long-tailed ducks (*Clangula hyemalis*). *Virology* 485:393-401. DOI: 10.1016/j.virol.2015.07.026
- Derksen, D. V., T. C. Rothe, and W. D. Eldridge. 1981. Use of wetland habitats by birds in the National Petroleum Reserve-Alaska. Resource Publication 141, U.S. Fish and Wildlife Service, Washington, D.C., USA.
- Flint, P. L. 2013. Changes in size and trends of North American sea duck populations associated with North Pacific oceanic regime shifts. *Marine Biology* 160(1):59-65. DOI: 10.1007/s00227-012-2062-y
- Flint, P. L., J. A. Reed, D. L. Lacroix, and R. B. Lanctot. 2016a. Habitat use and foraging patterns of molting male long-tailed ducks in lagoons of the central Beaufort Sea, Alaska. *Arctic* 69(1):19-28. DOI: 10.14430/arctic4544
- Henny, C. J., D. D. Rudis, T. J. Roffe, and E. Robinson-Wilson. 1995. Contaminants and sea ducks in Alaska and the circumpolar region. *Environmental Health Perspectives* 103(Suppl. 4):41-49.
- Hollmén, T. E., J. C. Franson, P. L. Flint, J. B. Grand, R. B. Lanctot, ..., and H. M. Wilson. 2003. An adenovirus linked to mortality and disease in long-tailed ducks (*Clangula hyemalis*) in Alaska. *Avian Diseases* 47(4):1434-1440. DOI: 10.1637/7029
- Jamieson S. E., G. J. Robertson, and H. G. Gilchrist. 2001. Autumn and winter diet of long-tailed duck in the Belcher Islands, Nunavut, Canada. *Waterbirds* 24(1):129-132. DOI: 10.2307/1522253
- Johnson, S. R., and D. R. Herter. 1989. *The birds of the Beaufort Sea*. BP Exploration, Anchorage, AK, USA.
- Johnson, S. R., D. A. Wiggins, and P. F. Wainwright. 1993b. Late summer abundance and distribution of marine birds in Kasegaluk Lagoon, Chukchi Sea, Alaska. *Arctic* 46(3):212-227. DOI: 10.14430/arctic1346
- Johnson, S. R., L. E. Noel, W. J. Gazey, and V. C. Hawkes. 2005. Aerial monitoring of marine waterfowl in the Alaskan Beaufort Sea. *Environmental Monitoring and Assessment* 108:1-43.
- Kessel, B. 1989. *Birds of the Seward Peninsula, Alaska: Their biogeography, seasonality, and natural history*. University of Alaska Press, Fairbanks, AK, USA.
- King, J. G. 1973. A cosmopolitan duck moulting resort; Takslesluk Lake Alaska. *Wildfowl* 24:103-109. Available online: <https://wildfowl.wwt.org.uk/index.php/wildfowl/article/view/459>
- Lacroix, D. L., R. B. Lanctot, J. A. Reed, and T. L. McDonald. 2003. Effect of underwater seismic surveys on molting male long-tailed ducks in the Beaufort Sea, Alaska. *Canadian Journal of Zoology* 81(11):1862-1875. DOI: 10.1139/Z03-185
- Larned, W., R. Stehn, and R. Platte. 2012a. *Waterfowl breeding population survey Arctic Coastal Plain, Alaska 2011*. Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Anchorage, AK, USA.
- Liebezeit, J. R., G. C. White, and S. Zack. 2011. Breeding ecology of birds at Teshekpuk Lake: a key habitat site on the Arctic Coastal Plain of Alaska. *Arctic* 64(1):32-44. DOI: 10.14430/arctic4078
- Mallek, E. J., and D. J. Groves. 2011. *Alaska-Yukon waterfowl breeding population survey: May 13 to June 7, 2011*. U.S. Fish and Wildlife Service, Juneau, AK, USA.
- Migratory Bird Treaty Act (MBTA). 1918. U.S. Code Title 16 §§ 703-712 Migratory Bird Treaty Act.
- Meixell, B. W., and S. E. Savage. 2004. A survey of spring staging waterfowl along the Naknek River, Alaska Peninsula, Alaska, March-May 2002 and 2003. U.S. Fish and Wildlife Service, King Salmon, AK, USA.
- Naves, L. C. 2015. *Alaska subsistence bird harvest, 2004-2014 data book*. Special Publication No. 2015-05, Alaska Department of Fish and Game, Division of Subsistence, Anchorage, AK, USA.

Noel, L. E., S. R. Johnson, and G. M. O'Doherty. 2005a. Long-tailed duck, *Clangula hyemalis*, eider, *Somateria* spp., and scoter, *Melanitta* spp., distributions in central Alaska Beaufort Sea lagoons, 1999-2002. *Canadian Field-Naturalist* 119(2):181-185. DOI:

Petersen, M. R., B. J. McCaffery, and P. L. Flint. 2003. Post-breeding distribution of long-tailed ducks *Clangula hyemalis* from the Yukon-Kuskokwim Delta, Alaska. *Wildfowl* 54:103-113.

Platte, R. M., and R. A. Stehn. 2015. Abundance and trend of waterbirds on Alaska's Yukon-Kuskokwim Delta coast based on 1988 to 2014 aerial surveys. Waterfowl Management Branch, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Anchorage.

Robertson, G. J., and J.-P. L. Savard. 2002. Long-tailed duck (*Clangula hyemalis*), version 2.0. In Rodewald, P. G., ed. *The Birds of North America*, Cornell Lab of Ornithology, Ithaca, NY, USA. DOI: 10.2173/bna.651

Sanger, G. A., and R. D. Jones. 1984. The winter feeding ecology and trophic relationships of oldsquaws and white-winged scoters on Kachemak Bay, Alaska. In Nettleship, D. N., G. A. Sanger, and P. R. Springer, eds. *Marine birds: their feeding ecology and*

Schamber, J. L., P. L. Flint, J. B. Grand, H. M. Wilson, and J. A. Morse. 2009. Population dynamics of long-tailed ducks breeding on the Yukon-Kuskokwim Delta, Alaska. *Arctic* 62(2):190-200.

Sea Duck Joint Venture (SDJV). 2003. Sea Duck Information Series: Long-tailed duck (*Clangula hyemalis*). Sea Duck Joint Venture, Anchorage, AK, USA. Available online at: <http://www.seaduckjv.org/> Accessed 13-Dec-2017.

Spindler, M. A., and P. A. Miller. 1982. Terrestrial bird populations and habitat use on coastal plain tundra of the Arctic National Wildlife Refuge. ANWR Progress Report No. FY83-5. Arctic National Wildlife Refuge, U. S. Fish and Wildlife Service, Fairbanks.

Wilson, R. E., J. R. Gust, M. R. Petersen, and S. L. Talbot. 2016. Spatial genetic structure of long-tailed ducks (*Clangula hyemalis*) among Alaskan, Canadian, and Russian breeding populations. *Arctic* 69(1):65-78. DOI: 10.14430/arctic4548

Zydelis, R., and D. Ruskyte. 2005. Winter foraging of long-tailed ducks (*Clangula hyemalis*) exploiting different benthic communities in the Baltic Sea. *Wilson Bulletin* 117:133-141.

Review status: Peer-reviewed

Version date: 3/2/2019

Alaska Center for Conservation Science
Alaska Natural Heritage Program
University of Alaska Anchorage
Anchorage, AK