

Yellow-billed Loon

Class: Aves
Order: Gaviiformes

Gavia adamsii

Review Status: Peer-reviewed

Version Date: 03 April 2018

Conservation Status

NatureServe: Agency:

G Rank: G4 ADF&G: Species of Greatest Conservation Need IUCN: Near Threatened Audubon AK: Red
S Rank: S2S3B,S3 USFWS: Bird of Conservation Concern BLM: Sensitive

Final Rank		
Conservation category: II. Red		
high status and either high biological vulnerability or high action need		
Category	Range	Score
Status	-20 to 20	6
Biological	-50 to 50	6
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
<i>Population Trend in Alaska (-10 to 10)</i>	6
Long-term trends suggest a stable population (USFWS 2014a); however, estimates for the last 10 years suggest a declining population growth rate ($r = 0.961$, 90% CI: 0.903, 1.024; D. Rizzolo, USFWS, pers. comm.).	
<i>Distribution Trend in Alaska (-10 to 10)</i>	0
Unknown.	
Status Total:	6

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
<i>Population Size in Alaska (-10 to 10)</i>	0
Unknown, but likely less than 5,000. It is estimated that between 2,500-4,000 individuals breed in Alaska (Earnst et al. 2005; USFWS 2014a). We rank this question as $0.5 * C + 0.5 * D$ to account for this uncertainty.	
<i>Range Size in Alaska (-10 to 10)</i>	-2
Patchily distributed north of the Brooks Range on the Arctic Coastal Plain and along the coastlines of the northern Seward Peninsula; also breeds on St. Lawrence Island (Earnst 2004; USFWS 2014a). Estimated breeding range is <100,000 sq. km, based on range maps from Earnst (2004) and Earnst et	

al. (2005). Individuals that breed in Alaska overwinter in eastern Asia (Uher-Koch et al. 2020). Yellow-billed loons have been sighted in the winter in southcoastal and southeast Alaska, but these individuals likely belong to populations that breed in Canada (Earnst 2004; Uher-Koch et al. 2020). We therefore do not consider wintering range or habits in this assessment.

Population Concentration in Alaska (-10 to 10)

2

Nests are patchily distributed across breeding range; only a few areas support high densities of individuals (Earnst et al. 2005). In the fall and spring, they migrate alone or in small groups, though larger groups (30-300 individuals) have been observed on staging grounds (Earnst 2004; USFWS 2014).

Reproductive Potential in Alaska

Age of First Reproduction (-5 to 5)

1

Few data available. Yellow-billed loons are thought to reach sexual maturity at age 3, but do not attempt to nest until age 4 (Uher-Koch et al. 2020). Yellow-billed loons are most similar to common loons (*Gavia immer*), which first breed at an average age of 6 years (Evers et al. 2010).

Number of Young (-5 to 5)

3

Produces a single clutch, typically with 2 eggs, per year (Uher-Koch et al. 2020).

Ecological Specialization in Alaska

Dietary (-5 to 5)

1

During the non-breeding season, diet likely consists of marine fish and invertebrates (e.g. crustaceans, worms; Earnst 2004; Uher-Koch et al. 2020). During the breeding season, yellow-billed loons eat mostly small fish including Alaska blackfish, least cisco, and ninespine stickleback; aquatic invertebrates are also consumed (Earnst 2004; Haynes et al. 2015; Uher-Koch et al. 2020). While they are typically considered opportunistic foragers, their diet suggest that they require abundant, energy-dense prey during the breeding season (Haynes et al. 2015; Uher-Koch et al. 2020). The fact that many apparently suitable lakes are not occupied may be related to prey availability (D. Rizzolo, USFWS, pers. comm.), though additional data are needed to confirm this hypothesis. Interestingly, some breeders rely entirely on prey from their freshwater nesting lake, while others undertake daily, foraging movements to and from the ocean (Uher-Koch et al. 2020). Those breeders that do not leave their brood lake may be more constrained in their choice of prey. Collectively, these observations suggest that the distribution of yellow-billed loons may be constrained by their specialized diet and restricted movements during the breeding season. We therefore rank this question as B- Moderately adaptable.

Habitat (-5 to 5)

1

Nests on the tundra north of the treeline. Nest-site selection is quite specific: of the 1,291 lakes surveyed by Schmidt et al. (2014) in northwestern Alaska, yellow-billed loons used only ~33% of these, compared to ~67% for Pacific Loons. Nests are often in low-lying areas on the shoreline of large, deep lakes (North and Ryan 1989; Earnst et al. 2006; Haynes et al. 2014b). On the Arctic Coastal Plain, yellow-billed loons nested on islands and peninsulas that were sheltered from wind, waves, and predators (Haynes et al. 2014b).

Biological Total: 6

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 in Alaska (-10 to 10)

-10

Protected under the Migratory Bird Treaty Act (MBTA 1918). Recreational and subsistence harvest

is closed except on the North Slope where limited harvesting is allowed (AMBCC 2020).

Knowledge of Distribution and Habitat in Alaska (-10 to 10) 2

Breeding distribution and nesting habitat is relatively well-understood, especially on the Arctic Coastal Plain (e.g. North and Ryan 1989; Earnst et al. 2006, Schmutz et al. 2014; Johnson et al. 2019). Recent work in northwestern Alaska documented interesting differences in nest-site selection, and recorded higher densities of yellow-billed loons than expected (Schmidt et al. 2014). Additional research is needed to document migration routes and distribution on wintering grounds.

Knowledge of Population Trends in Alaska (-10 to 10) 2

Monitored annually on the Arctic Coastal Plain (reviewed in Earnst et al. 2005; Stehn et al. 2013). In western Alaska, surveys are sporadic and are not standardized, precluding the determination of population trends. Repeated aerial surveys in 2011 and 2013 in northwestern Alaska found many more breeding loons there than previously thought (Schmidt et al. 2014), highlighting important deficiencies in our monitoring of this species.

Knowledge of Factors Limiting Populations in Alaska (-10 to 10) 2

Some consensus about the factors that regulate reproductive success. Suitable nest sites are limited throughout its Alaskan range (Haynes et al. 2014b; Schmutz et al. 2014). Moreover, yellow-billed loons compete with Pacific loons for nest-sites (Earnst et al. 2006; Haynes et al. 2014a). The effects on this competition on population parameters are still unknown, and may not be significant in all parts of its range (Schmidt et al. 2014), but warrants further research. Lake dynamics such as high water levels, strong waves, and shifting ice can cause nest failure (Haynes et al 2014b). For this reason, there is concern about the potential effects of climate change on changes in shoreline characteristics and water levels, including lake drying (Haynes et al. 2014b; USFWS 2014a). Additionally, high mercury levels have been reported in some individuals, which may affect their reproductive success (Evers et al. 2014). Additional data are needed to determine effects of nest predation and regulating factors during migration and overwinter, including effects of subsistence harvest and by-catch during the non-breeding season (Schmutz 2009; USFWS 2014a; Naves and Zeller 2017).

Action Total: -4

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

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

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