

Red Knot

Class: Aves
Order: Charadriiformes

Calidris canutus roselaari

Note: Only one subspecies, *C. c. roselaari*, occurs in Alaska.

Review Status: Peer-reviewed

Version Date: 19 February 2019

Conservation Status

NatureServe: Agency:

G Rank: G4 ADF&G: Species of Greatest Conservation Need IUCN: Near Threatened Audubon AK: Red

S Rank: S2S3B USFWS: Bird of Conservation Concern BLM: Sensitive

Final Rank		
Conservation category: I. Red		
high status, biological vulnerability, and action need		
Category	Range	Score
Status	-20 to 20	6
Biological	-50 to 50	2
Action	-40 to 40	12
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> Suspected to be decreasing in Alaska (Andres et al. 2012a; ASG 2019).	6
<i>Distribution Trend in Alaska (-10 to 10)</i> Unknown.	0
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> Uncertain, but estimated to be between 3,000 and 10,000 birds (J. Johnson, USFWS, pers. comm.). The global breeding population is estimated at 21,770 (Lyons et al. 2016).	-2
<i>Range Size in Alaska (-10 to 10)</i> Disjunct distribution. The primary breeding range in Alaska includes the western Brooks Range and the Lisburne Hills, insular mountain ranges in Cape Krusenstern National Monument and Noatak National Preserve (Kessel and Gibson 1978; Baker et al. 2013; Johnson et al. 2011), and the Seward Peninsula (Baker et al. 2013; Tomkovich et al. 2017). The red knot does not overwinter in Alaska. Breeding range is between 10,000 sq. km. and 100,000 sq. km., calculated in GIS and based on range	-2

map from ACCS (2017a).

Population Concentration in Alaska (-10 to 10)

2

Concentrates in flocks of several thousands during spring migration (see Carmona et al. 2013). Large numbers have been reported near Yakutat (Andres and Browne 1998), the Copper River Delta (Kessel and Gibson 1978; Cooper and Mickelson 2013), Controller Bay (Bishop et al. 2016), and the Yukon-Kuskokwim Delta (Gill and Handel 1990; Carmona et al. 2013). Estimated number of sites is less than 25.

Reproductive Potential in Alaska

Age of First Reproduction (-5 to 5)

-3

Unknown for Alaska and data are limited elsewhere in its range. Age at first breeding is suspected to be at least 2 years old (Baker et al. 2013).

Number of Young (-5 to 5)

1

Lays a single, 4-egg clutch per year (Baker et al. 2013). Can lay a replacement clutch of 3 eggs if the first one fails (Johnson et al. 2011; Baker et al. 2013). On the Seward Peninsula, the average number of live young fledged per female is two (J. Johnson, USFWS, pers. comm.). Data for other areas in Alaska are unavailable.

Ecological Specialization in Alaska

Dietary (-5 to 5)

1

No information available for Alaska. On Ellesmere Island in Canada, Red Knots fed on plants (sedges, horsetails) early in the summer (Nettleship 1974; Baker et al. 2013). Later, they switched to an omnivorous diet consisting of invertebrates (especially adult chironomid flies) and plant material, which continued to be an important part of their diet (Nettleship 1974). During non-breeding, red knots feed predominantly on bivalves and their distribution is influenced by sites that support high densities of bivalves (Alerstam et al. 1992; Piersma et al. 1993).

Habitat (-5 to 5)

5

During breeding season, they are associated with alpine and sparsely vegetated dwarf-shrub tundra habitats (Kessel 1989; Johnson et al. 2011; Baker et al. 2013; Tomkovich et al. 2017), often at elevations >100m in sloping terrain such as terraces, ridges, and domes (Johnson et al. 2011; Baker et al. 2013). Little is known about habitat associations on the North Slope. During migration, they are associated with inter-tidal habitats such as deltas, beaches, and mudflats (Isleib and Kessel 1973; Gill and Handel 1990; Baker et al. 2013). Given its restricted, coastal distribution and nesting requirements, we rank this species as A- Not Adaptable.

Biological Total: 2

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). Closed to recreational and subsistence harvest (ADFG 2018e; AMBCC 2018).

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

2

Recent tracking studies have increased our understanding of distribution during breeding and migration (Johnson et al. 2011; Carmona et al. 2013; Bishop et al. 2016; CEC 2017). These data are supplemented by spring count surveys (e.g. Isleib and Kessel 1973; Gill and Handel 1990; Andres and Browne 1998; Buchanan et al. 2018).

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

Not currently monitored in Alaska. Limited trend data are available from overwintering and migration sites at Grays Harbor, WA and at Guerrero Negro in Mexico (Morrison et al. 2006).

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

Very little is known about the ecology of the red knot in Alaska. Ongoing research is being conducted in western Alaska (Johnson 2018), but results are not yet available. Predation by skuas and foxes are likely one of the main causes of nest failures (Nettleship 1974; Johnson et al. 2011). On Ellesmere Island, Canada, food availability may influence timing of breeding and departure from breeding grounds, as well as the distribution of nest sites (Nettleship 1974). The role of avian influenza viruses (AIV) on population dynamics is not well-known. Rates of antibodies in Alaskan red knots are among the highest of any bird species, which may suggest some degree of immunity to AIV, but additional research is needed to understand spatial patterns and causes of infection (Johnson et al. 2014).

Across its circumpolar range, climate change is thought to have negative impacts on the availability of suitable habitat, body size, and foraging behavior (van Gils et al. 2016; Wauchope et al. 2017). Distribution models throughout the red knot's Arctic breeding range, which includes several subspecies, suggest significant declines in suitable habitat by the end of this century (Wauchope et al. 2017). van Gils et al. (2016) also documented an important reduction in body size and bill length in juveniles of the nominate subspecies *C. c. canutus*, which breeds in northwestern Russia. The authors found a relationship between shrinking body size and earlier snow melt, which advances the timing of peak invertebrate abundance and leads to more small-bodied invertebrates (van Gils et al. 2016). Shorter bill lengths may have implications on wintering grounds by making it harder for Red Knots to forage on high-quality bivalves (van Gils et al. 2016). In *roselaari*, it is unknown whether observed inter-annual variations in the timing of migration is within the normal range or is related to changes in the timing of peaks in food resources (Buchanan et al. 2018).

Action Total: 12

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

Harvest:	None or Prohibited
Seasonal Occurrence:	Breeding
Taxonomic Significance:	Monotypic species
% Global Range in Alaska:	>10%
% Global Population in Alaska:	25-74%
Peripheral:	No

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