

Northern Harrier

Class: Aves
Order: Accipitriformes

Circus hudsonius

Note: Previously considered conspecific with the Eurasian hen harrier, *Circus cyaneus*, as *C. cyaneus hudsonius*. Differences in morphology, plumage, and genetics support the treatment of the North American harrier as a distinct species (Smith et al. 2011a).

Review Status: Peer-reviewed

Version Date: 15 December 2017

Conservation Status

NatureServe:

Agency:

G Rank: G5

ADF&G: Species of Greatest Conservation Need

IUCN: Least Concern

Audubon AK:

S Rank: S4B

USFWS:

BLM:

Final Rank		
Conservation category: IX. Blue		
low status and low biological vulnerability and action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status	-20 to 20	2
Biological	-50 to 50	-41
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 in Alaska (-10 to 10)

2

Populations declined across their North American range in the early 20th century; the conversion and destruction of wetlands across the continent is thought to be responsible for these declines (Smith et al. 2011a). Data from the Breeding Bird Surveys (BBS) indicate continued declines in many regions, though cautious interpretation of BBS data is warranted for wetland species such as the northern harrier (Smith et al. 2011a). In interior Alaska, BBS data indicate no significant trend from 1993 to 2015; data were inadequate to assess short-term (10-year) trends (Handel and Sauer 2017).

Distribution Trend in Alaska (-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 in Alaska (-10 to 10)

-8

PIF (2019) estimates the Alaska population at 38,000 (95% CI: 20,000 to 64,000). Because the interval estimate spans two categories, we rank this question as 0.5 * E + 0.5 * F.

<i>Range Size in Alaska (-10 to 10)</i>	-10
Widely distributed during breeding season, but rare or uncommon from southeast to northern Alaska (Kessel and Gibson 1978; Johnson et al. 2008b). Although some individuals overwinter in southcoastal and southeast Alaska, its range and density is so small that for the purposes of this assessment we do not consider it a winter resident in Alaska (Kessel and Gibson 1978; MacIntosh 2009; Smith et al. 2011a). Estimated range size during breeding is >400,000 sq. km., calculated in GIS and based on range map from ACCS (2017a).	
<i>Population Concentration in Alaska (-10 to 10)</i>	-10
Often roosts communally during the non-breeding season (Smith et al. 2011a). For example, northern harriers in southwestern Illinois overwintered singly or in small groups ranging from 21 to 43 individuals (Walk 1998). However, northern harriers do not concentrate at specific sites and very large aggregations have not been documented in Alaska or elsewhere (Kessel and Gibson 1978; Smith et al. 2011a).	
<i>Reproductive Potential in Alaska</i>	
<u>Age of First Reproduction (-5 to 5)</u>	-4
Unknown for Alaska. Elsewhere in North America, females may breed as yearlings or subadults (≤ 2 years; Smith et al. 2011a). The proportion of young breeders varies by population; studies have reported a range from 16% to 44% (Smith et al. 2011a). Until data become available for Alaska, we rank this question as $0.5 * D + 0.5 * C$.	
<u>Number of Young (-5 to 5)</u>	1
Few data available for Alaska. Clutch size is typically between 4 to 6 eggs, with females laying a single clutch per year (Smith et al. 2011a).	
<i>Ecological Specialization in Alaska</i>	
<u>Dietary (-5 to 5)</u>	-5
Opportunistic feeders during the breeding season, when they eat small and medium-sized mammals, birds, reptiles, insects, and amphibians (Sherrod 1978; Smith et al. 2011a; Bentzen et al. 2017). During winter, feeds almost exclusively on voles in the northern portion of range (Smith et al. 2011a); because the wintering range and density of the northern harrier population is very small in Alaska, we do not consider its wintering habits in this assessment.	
<u>Habitat (-5 to 5)</u>	-5
Inhabits open habitats that span a range of moisture regimes and elevations, including fresh- and salt-water marshes, bogs, fields, and alpine tundra (Johnson et al. 2008b; Smith et al. 2011a).	
Biological Total:	
	-41

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

<i>Management Plans and Regulations in Alaska (-10 to 10)</i>	-10
Protected under the Migratory Bird Treaty Act (MBTA 1918). Subsistence and recreational harvest is not permitted. Take is permitted for falconry purposes, but is very minimal (ADFG 2018a).	
<i>Knowledge of Distribution and Habitat in Alaska (-10 to 10)</i>	2
Broad distribution is known from multi-species inventories conducted in different regions and at different times of the year (Kessel and Gibson 1978; McIntyre and Ambrose 1999; Johnson et al. 2008b; Handel and Sauer 2017). Additional research is needed to determine specific habitat associations, fine-scale distributions, and migration routes.	

<i>Knowledge of Population Trends in Alaska (-10 to 10)</i>	2
Monitored as part of the Breeding Bird Surveys and the Alaska Landbird Monitoring Surveys. Because this species is not commonly sighted, data are only adequate for estimating long-term (20-year) trends (Handel and Sauer 2017).	
<i>Knowledge of Factors Limiting Populations in Alaska (-10 to 10)</i>	2
To our knowledge, no studies have investigated the population ecology of northern harriers in Alaska. Elsewhere in its range, studies suggest that reproductive success is affected by prey abundance, nest predation, nest-site quality, and weather (Smith et al. 2011a). Several studies have reported a positive correlation between reproductive success and vole abundance (reviewed in Smith et al. 2011a). Population densities are thought to be similarly affected by prey abundance and nest-site availability (Smith et al. 2011a). Habitat models for Alaska suggest that harrier habitat will decrease by the end of this century (Marcot et al. 2015). Outside of Alaska, loss of wetland habitats is thought to have caused continental declines in harrier populations in the early 20th century (Smith et al. 2011a).	
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:	None or Prohibited
Seasonal Occurrence:	Breeding
Taxonomic Significance:	Monotypic genus
% Global Range in Alaska:	>10%
% Global Population in Alaska:	<25%
Peripheral:	No

References

- Alaska Center for Conservation Science (ACCS). 2017a. Wildlife Data Portal. University of Alaska Anchorage. Available online: <http://aknhp.uaa.alaska.edu/apps/wildlife>
- Alaska Department of Fish and Game (ADFG). 2018a. Alaska Falconry Manual No. 10. Division of Wildlife Conservation, Alaska Department of Fish and Game, Juneau, AK, USA.
- Bentzen, R., S. Dinsmore, J. Liebezeit, M. Robards, B. Streever, and S. Zack. 2017. Assessing development impacts on Arctic nesting birds using real and artificial nests. *Polar Biology* 40:1527–1536.
- Handel, C. M. and Sauer, J. R. 2017. Combined analysis of roadside and off-road breeding bird survey data to assess population change in Alaska. *The Condor* 119(3):557-575. DOI: 10.1650/CONDOR-17-67.1
- Johnson, J. A., B. A. Andres, and J. A. Bissonette. 2008b. Birds of the major mainland rivers of Southeast Alaska. General Technical Report PNW-GTR-739. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR, USA.
- Kessel, B., and D. D. Gibson. 1978. Status and distribution of Alaska birds. *Studies in Avian Biology* No. 1. Allen Press, Lawrence, KS, USA.
- MacIntosh, R., ed. 2009. Kodiak National Wildlife Refuge and the Kodiak Archipelago birds. Unpublished report, U.S. Fish and Wildlife Service, Kodiak National Wildlife Refuge, Kodiak, AK, USA. Available online: https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_2/Kodiak/PDF/knwr_bird_broc_2009.pdf
- Marcot, B. G., M. T. Jorgenson, J. P. Lawler, C. M. Handel, and A. R. DeGange. 2015. Projected changes in wildlife habitats in Arctic natural areas of northwest Alaska. *Climate Change* 130(2):145–154. DOI: 10.1007/s10584-015-1354-x

Migratory Bird Treaty Act (MBTA). 1918. U.S. Code Title 16 §§ 703-712 Migratory Bird Treaty Act.

McIntyre, C. L., and R. E. Ambrose. 1999. Raptor migration in autumn through the upper Tanana River Valley, Alaska. *Western Birds* 30:33-38.

Partners in Flight (PIF). 2019. Population Estimates Database, version 3.0. Available online: <http://pif.birdconservancy.org/PopEstimates>. Accessed 09-April-2019.

Sherrod, S. K. 1978. Diets of North American Falconiformes. *Raptor Research* 12(3-4):49-121.

Smith, K. G., S. R. Wittenberg, R. B. Macwhirter, and K. L. Bildstein. 2011a. Northern Harrier (*Circus cyaneus*), version 2.0. In Rodewald, P. G., ed. *Birds of North America*. Cornell Lab of Ornithology, Ithaca, NY, USA. DOI: 10.2173/bna.210

Walk, J. W. 1998. Winter roost sites of Northern Harriers and Short-Eared Owls on Illinois Grasslands. *Journal of Raptor Research* 32(2):116-119.

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