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Snowy Owl



Photo: © Audrey Robillard

Scientific Name

Bubo scandiacus

Taxon

Birds

COSEWIC status

Threatened

Canadian Range

YT, NT, NU, BC, AB, SK, MB, ON, QC, NB, NS, PE, NL

Reason for designation

An estimated 90-95% of the North American population of this Arctic owl breeds in Canada. In 1995 the species was assessed by COSEWIC as Not at Risk because it was widespread, with no evidence of decline. Since then, improved estimation techniques have revised the population size downward by an order of magnitude. Data from the North American Christmas Bird Count (CBC), which capture trends in the southern portion of the wintering range, show a decline of 42.6% (2.3% annually) over the last 3 generations or 24 years. Indigenous knowledge from Baffin Island and the Yukon coast reports that this species is observed less frequently than before, likely due

to warming conditions. Ongoing threats to the species include avian influenza, poisoning with anticoagulant rodenticides, collisions, electrocution, and, although specific impacts over the next three generations are uncertain, changes on breeding and wintering grounds brought about by climate change.

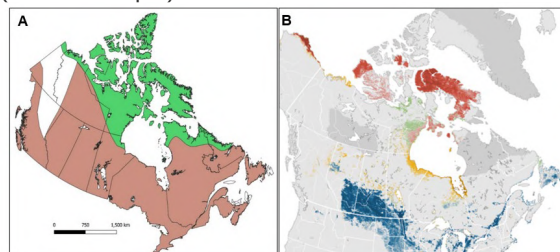
Wildlife Species Description and Significance

A large, unmistakable white owl from the Arctic, Snowy Owl (*Bubo scandiacus*) is a highly mobile species showing irruptive patterns of abundance on both its breeding and non-breeding ranges. As a top predator of tundra ecosystems, its numbers vary tremendously (0 to 0.12 nest/km²) from year to year in a given location according to the abundance of prey.

Snowy Owl has significant importance in both Indigenous and non-Indigenous legends and cultures across Canada, including as Quebec's provincial bird.

Distribution

Snowy Owl breeds across the circumpolar world, within the tundra ecosystems of Greenland, Norway, Finland, Russia, Sweden, USA (Alaska), and Canada. While breeding (May – September) is limited to these ecosystems, Snowy Owl occurs in every province and territory in Canada during the non-breeding season (October – April).



Snowy Owl distribution in Canada and globally. (A) year-round (green); non-breeding (brown; Canada); (B) breeding (red), migration (green: pre-breeding; yellow: post-breeding), and non-breeding (blue) range, Canada and USA (light grey = modelled area, and dark grey = no prediction). Caution should be taken when interpreting distribution of this species (especially in the Arctic and interior British Columbia) because of the localised distribution of observers, non-systematic survey coverage, and the species' patchy breeding distribution and irruptive movements.



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Source: COSEWIC. 2025. IN PRESS. COSEWIC assessment and status report on the Snowy Owl *Bubo scandiacus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xv + 44 pp.

Habitat

Snowy Owl uses a variety of habitats throughout its annual cycle. During the breeding season, it typically nests on mesic to dry tundra. During the non-breeding season, it can be found inland in open country (tundra or temperate grasslands), but also often uses coastlines, ice-covered lakes (e.g., Great Lakes), and even sea ice.

Biology

Snowy Owl is a long-lived bird (annual adult survival rate between 85 and 93%) with a high reproductive potential (average clutch size = 7.1 eggs) and annual reproductive rate of >85%. The juvenile survival rate is low (~68%). Breeding can begin at 2 years of age, but average age of first breeding is likely around 4 years. Across its range, breeding location and success are tightly linked with the local abundance of the preferred prey, lemmings (subfamily Microtinae), which represent as much as 95% of Snowy Owl diet during the breeding season. With lemming populations exhibiting large fluctuations in abundance annually and the owl's high mobility potential, Snowy Owl is highly dispersive, showing very low fidelity to breeding sites. It exemplifies an irruptive species (those that show large-scale irregular movements related to food availability).

Population Sizes and Trends

It is very difficult to estimate the population size of Snowy Owl; however, several lines of evidence suggest there are between 13,000 and 16,000 mature individuals in Canada. This estimate is broadly consistent with previous ones made using mtDNA (14,000 adult females worldwide) or measured via nesting density on the breeding grounds and extrapolated across available tundra ecosystems (ranging from a minimum of 7,000–8,000 pairs to a maximum of 25,000 pairs worldwide). These revised estimates are far lower than the 290,000 individuals estimated worldwide in 2004, with the current estimates the result of a combination of new (e.g., genetics) and more accurate (e.g., modelling for irruptive behaviour) methods

instead of a population decline of an order of magnitude.

Nonetheless, various indices suggest a continuing decline in Canada. Data from the North American Christmas Bird Count (CBC) capture trends in the southernmost portion of the wintering population, and are thought to represent the Canadian population well, as 90–95% of the Snowy Owls in North America breed in Canada. These data show a decline of 42.6% over the last 24 years (3 generations), based on a long-term decline of 2.3% annually. For the Prairie Potholes region, where a high proportion of adults are thought to overwinter, CBC data show a decline of 38.9% over the same timeframe.

Threats and Limiting Factors

Although impacts of climate change are assessed as Unknown because they are hard to quantify over the 3-generation period of a threats assessment, this is the single most serious plausible threat to the species overall because of current and anticipated changes to breeding and wintering habitat in rapidly changing tundra ecosystems. Warming temperatures in breeding habitat could be affecting lemming populations (the main food item) via formation of ice crusts in the snowpack. A worldwide shrinking of tundra ecosystems towards the pole through shrubification (i.e., advancing Arctic shrubline in response to climate warming) and the intensification of rainstorms may also threaten Snowy Owl, with these effects increasingly prominent in the southern part of the tundra biome. Some adults winter in the Arctic sea ice, which is in decline.

During the non-breeding season, mortality associated with anthropogenic structures and vehicles seems to be affecting juveniles heavily, although adults are also affected. Specifically, 22–24% of mortality on the non-breeding grounds comes from weather (exposure), disease, predation, or starvation, while automobile collisions (18–22%), airplane collisions (9–11%) and electrocution (3–6%) are major sources of anthropogenic mortality. Snowy Owl is also exposed to indirect contamination (mostly anticoagulant rodenticides) and diseases (e.g., Highly Pathogenic Avian Influenza, West Nile Virus), of which the population-level



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consequences are likely important, but currently uncertain.

Protection, Status, and Ranks

Snowy Owl is not protected in Canada under the *Migratory Birds Convention Act*, 1994, as owls (Strigidae) were excluded from the original convention, but it receives protection under a *Wildlife Act* (or equivalent) in every province and territory. It is globally assessed as Vulnerable by IUCN and on the Watch list (yellow) for North America by Partners in Flight. Its global conservation status is ranked by NatureServe as G4 (Apparently Secure) and in Canada as nationally Secure (N5B,N5N,N5M), although it is Critically Imperilled in Yukon (S1) and Labrador (S1B), and Vulnerable in Manitoba and the island of Newfoundland (S3N). Although Snowy Owl regularly nests in protected areas such as national parks (e.g., Sirmilik, Auyuittuq, Quttinirpaaq) and uses them as stopover sites (e.g., Grasslands NP), most of the species' range falls outside of national park boundaries or other protected areas.

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