Ontario Species at Risk Evaluation Report for

Snowy Owl

Harfang des neiges

Ookpik/Ukpik (Inuktitut)

(*Bubo scandiacus*)

Committee on the Status of Species at Risk in Ontario
(COSSARO)

Assessed by COSSARO as Special Concern

January 2026

Final

Executive summary

Snowy Owl (*Bubo scandiacus*) is a large, ground-nesting owl of the Arctic tundra, easily recognized by its white plumage and preference for open landscapes. The species is not known to breed in Ontario, but is a winter visitor, irregularly using sites throughout southern and eastern Ontario during the non-breeding season. Occurrences of Snowy Owls in Ontario during the winter fluctuates widely among years in response to prey availability on the Arctic breeding grounds. When they occur, individuals are most often observed in open agricultural areas, shorelines, airports, and coastal habitats along the Great Lakes.

Outside of Ontario, Snowy Owl wintering range extends across southern Canada and the northern United States, as well as parts of northern and western Europe and northern Asia while its breeding range spans northern Alaska and Arctic Canada, Greenland, and the Arctic regions of Scandinavia and Russia. In Ontario, Snowy Owl is an irruptive species that overwinters sometimes as far south as Lake Ontario depending on conditions in the far north.

The persistence of Snowy Owl is threatened by climate-driven changes to Arctic ecosystems that reduce prey availability and breeding success, habitat alteration on breeding grounds, collisions with vehicles and human-made structures during winter, and emerging risks from disease and secondary poisoning. Snowy Owl occurs in Ontario primarily as a transient wintering bird, with highly variable abundance, limited long-term monitoring data, rare and anecdotal breeding evidence, and no element occurrence data. However, long term trends in the rest of Canada suggest there is an ongoing threat to the species in Ontario which puts it at risk of becoming Threatened in the province. Snowy Owl was previously assessed as Not At Risk by COSSARO in 2004.

Based on this evidence Snowy Owl is classified as Special Concern under criteria b. This classification differs from COSEWIC, which classified Snow Owl as Threatened in Canada. The reason for the difference is that despite evidence of declines in Canada, there is a lack of clear evidence that Snowy Owl is declining in Ontario.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Snowy Owl (*Bubo scandiacus*) is a valid taxonomic species recognized in scientific literature, with no taxonomic uncertainty.

1.1.2. Designatable units

A single designatable unit is recognized for Snowy Owl, as there is no evidence of discrete, evolutionarily significant populations, subspecies, or designatable units within Ontario or Canada.

1.1.3. Native status

Snowy Owl is a native species in Ontario.

1.1.4. Occurrence

In Canada, Snowy Owl occurs in all provinces and territories. Abundance trends and Canadian population size are unknown. Snowy Owl does occur in Ontario, but there is no evidence of sustained or regular breeding in the province.

1.2. Eligibility results

Snowy Owl (*Bubo scandiacus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G4 Apparently Secure (NatureServe 2020)
- IUCN: Vulnerable (23 July 2021)
- NRANK Canada: N5B,N5N,N5M (NatureServe 2020)
- COSEWIC: Threatened (May 2025)
- SARA: Not listed
- MBCA protection: No
- Aquatic species under SARA: No
- COSSARO: Not At Risk (March 2004)
- ESA 2007: Not listed
- SRANK: S4N (ranked in 2020)

2.2. Distribution in Ontario

In Ontario, the distribution of Snowy Owl is primarily based on non-breeding and irruptive observations in the southern extent of their range. However, non-breeding observations occur as far south as the northern shores of the great lakes and as far north as the coast of Hudson Bay (eBird 2025). It is unknown whether the species breeds in Ontario.

Ontario functions primarily as an irregular/irruptive wintering area for Snowy Owl. The numbers of individuals observed in Ontario fluctuates, and increases particularly during irruption years when either food shortages or high productivity in the Arctic drive large numbers south (Curk et al 2018). From late fall through early spring, Snowy Owl is most often recorded along shorelines of the Great Lakes, open agricultural landscapes, airports, and other wide, treeless areas that resemble tundra and support small-mammal prey. In contrast, evidence for breeding in Ontario is extremely limited and considered exceptional. Snowy Owl is classified as a non-breeding visitor to the province, with no confirmed, sustained breeding population. However, there are a small number of historical and anecdotal records suggesting possible nesting attempts in far-northern Ontario during years of unusually high prey availability. These observations have not been repeated or verified sufficiently to demonstrate regular breeding, reinforcing the view that Ontario's conservation relevance for the species lies overwhelmingly in its role as a seasonal winter refuge rather than a breeding zone.

2.3. Distribution, status and the broader biologically relevant geographic range outside Ontario

Snowy Owl has a circumpolar distribution across the Northern Hemisphere, breeding almost exclusively in the Arctic tundra. Its core breeding range spans northern Alaska and Arctic Canada, Greenland, and the Arctic regions of Scandinavia and Russia (Parmelee 1992). Snowy Owl nests on the ground in open tundra landscapes and is closely tied to the abundance of lemmings, primary prey.

Outside the breeding season, Snowy Owl disperses southward into a highly variable winter range that depends on Arctic prey conditions rather than fixed migration routes (Cheveau et al 2004). In winter, it occurs across southern Canada and the northern United States, as well as parts of northern and western Europe and northern Asia. The species favors open habitats that resemble tundra, including coastal shorelines, grasslands, agricultural fields, and other treeless landscapes.

Snowy Owl is well known for irruptive movements, during which large numbers move far beyond their typical winter range. These events are driven by fluctuations in prey availability or high breeding success (Cheveau et al 2004) and can bring Snowy Owl well into the southern Canada and parts of the United States, with similar events occurring in their range outside of North America.

Table 1. Condition of the Species in Adjacent Jurisdictions and Broader Biologically Relevant Geographic Range

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
Quebec	Yes	Apparently Secure (S4)	NatureServe 2020.
Manitoba	Yes	Vulnerable (S3)	NatureServe 2020.
Michigan	n/a	n/a	Species does not occur in Michigan.
Minnesota	n/a	n/a	Species does not occur in Minnesota.
Nunavut	n/a	n/a	Species does not occur in Nunavut.
New York	n/a	n/a	Species does not occur in New York.
Ohio	n/a	n/a	Species does not occur in Ohio.
Pennsylvania	n/a	n/a	Species does not occur in Pennsylvania.
Wisconsin	n/a	n/a	Species does not occur in Wisconsin.

2.4. Ontario conservation responsibility

Ontario's conservation responsibility is low, as less than 5% of the species' global range occurs in Ontario. Observations of Snowy Owl in Ontario have not been repeated or verified sufficiently to demonstrate regular breeding, reinforcing the view that Ontario's conservation relevance for the species lies overwhelmingly in its role as a seasonal winter refuge rather than a breeding zone.

2.5. Direct threats

Climate change is widely considered the most significant long-term threat to Snowy Owl (COSEWIC 2025, IN PRESS). The species depends heavily on cyclic populations of lemmings on the Arctic tundra to breed successfully. Warmer temperatures, increased rain-on-snow events, and altered snow structure reduce lemming survival and accessibility, leading to poor breeding years or complete breeding failure. Reduced reproductive output on the breeding grounds ultimately translates into fewer birds

reaching Ontario during winter irruption years, which could be contributing to population decline at the national scale.

Although Snowy Owl does not breed in Ontario, habitat changes in the Arctic have direct consequences for individuals that winter in the province. Industrial development, increased infrastructure, and climate-driven vegetation changes are altering tundra ecosystems, reducing the availability of suitable nesting sites and prey habitat. These pressures compound climate effects and may force owls to travel farther or expend more energy to find adequate breeding areas, reducing overall survival and recruitment.

In Ontario, Snowy Owl faces elevated risks during winter due to collisions with vehicles, power lines, fences, buildings, and other human-made structures (McCabe et al. 2021). Owls often hunt low over open landscapes such as agricultural fields, airports, shorelines, and road corridors, increasing their vulnerability. Collision mortality is a well-documented cause of death for wintering Snowy Owl in southern Canada and represents one of the most direct, local threats within the province.

Snowy Owl in Ontario is also threatened by disease and toxic exposure. Highly pathogenic avian influenza (H5N1) has been confirmed in Snowy Owls found dead in southern Ontario, posing an emerging and potentially severe risk (Canadian Wildlife Health Cooperative 2025). In addition, secondary poisoning from rodenticides used in agricultural and urban environments can occur when owls consume contaminated prey.

2.6. Specialized life history or habitat use characteristics

Snowy Owl exhibits a highly specialized, prey-driven life-history strategy characterized by boom-and-bust reproduction and nomadic movements. Breeding effort is tightly linked to the abundance of lemmings on the Arctic tundra. In years of high prey availability, owls may produce exceptionally large clutches, while in poor prey years they may forego breeding entirely. Rather than undertaking predictable migrations, Snowy Owl responds to these fluctuations by dispersing nomadically across vast areas during winter, sometimes moving far into southern Canada and the northern United States in search of food. This flexible strategy allows the species to exploit highly variable environments, but it also results in dramatic year-to-year changes in distribution and exposes individuals to increased risks in unfamiliar, human-dominated landscapes.

3. Ontario status assessment

3.1. Application of endangered/threatened status in Ontario

3.1.1. Criterion A – Decline in total number of mature individuals

Does not apply. Globally, there is an inferred decline in the total number of mature individuals based on Christmas Bird Count (CBC) data showing declines in the southern portion of the Canadian range. However, in Ontario the population trend, population size and total number of mature individuals are not known.

3.1.2. Criterion B – Small distribution range and decline or fluctuation

With no collected element occurences for Snowy Owl in Ontario, there is insufficient data to assess the species' range size or fluctuations.

3.1.3. Criterion C – Small and declining number of mature individuals

There is insufficient information to determine the number of mature individuals in Ontario.

3.1.4. Criterion D – Very small or restricted total population

There is insufficient information to determine the total population size in Ontario.

3.1.5. Criterion E – Quantitative analysis

Does not apply. A quantitative analysis was not completed.

3.2. Application of Special Concern in Ontario

Snowy Owl is considered as Special Concern in Ontario. While there is insufficient data to determine the species population status or trend in Ontario, the species has been classified as Threatened in the rest of its Canadian range and therefore could become Threatened in Ontario if threats to the species are not stopped or reversed.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

It is difficult to estimate Ontario's conservation responsibility. Significant portions of the Canadian population are thought to overwinter in Manitoba but breeding activity and overwintering numbers in Ontario are not known.

3.3.2. Status modification based on level of risk in broader biologically

relevant geographic range

Does not apply. As there is no evidence the Snowy Owl breeds in Ontario, and occurrences during winter are geographically and temporally irregular, no status modifier based on level of risk in broader biologically relevant geographic range is considered warranted for Snowy Owl in Ontario.

3.3.3. Rescue Effect

As the species is not documented to breed in Ontario, rescue effect is not relevant.

3.4. Other status categories

3.4.1. Data deficient

Does not apply. The CBC, eBird and iNaturalist data, although they are biased to the southern edge of the species range, are based on relatively accurate identifications, and provide sufficient data to assess the species. NHIC does not collect occurrence data for the species as it has not been confirmed that Snowy Owl breeds in Ontario. While breeding has anecdotally been documented in Ontario, the species conservation status in Ontario is based solely on non-breeding occurrences.

3.4.2. Extinct or extirpated

The species is not considered Extinct or Extirpated.

3.4.3. Not at risk

Does not apply.

4. Summary of Ontario status

Snowy Owl (*Bubo scandiacus*) is classified as Special Concern in Ontario. While there are few and inconsistent records of occurrences, and surveys – when undertaken – are not sufficient or extensive enough to assure the reliability of the species' population or trend in the province, data from across Canada suggest a long-term decline and the species could become threatened in Ontario if those trends persist (COSEWIC 2025, IN PRESS).

This status of this species is consistent with the definition of Special Concern under the *Endangered Species Act, 2007*.

The change in status of this species from the 2004 assessment is considered a genuine[1] change based on the fact that Snowy Owl is classified as Threatened in the rest of its Canadian range and therefore could become Threatened in Ontario if threats to the species are not stopped or reversed.

[1] A change in the classification of a species during reassessment by COSSARO may be for genuine or non-genuine reasons. Genuine reasons may include a reduction in threats to a species such that status of the species has improved, or the continuation of threats to the species such that the status of the species has further deteriorated. Non-genuine reasons may include new information on population size or threats that was not available during a previous assessment, the use of previous COSSARO criteria that may have yielded a different result or, taxonomic revisions that result in changes in range, population sizes or designatable units

5. Information sources

BirdLife International. 2021. Bubo scandiacus. The IUCN Red List of Threatened Species 2021: e.T22689055A205475036.

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Appendix 1: Technical summary for Ontario

Species: Snowy Owl (*Bubo scandiacus*)

Demographic information

Demographic attribute	Value
Generation time. Based on average age of breeding adult: age at first breeding = X year; average life span = Y years.	Approximately 8 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Unknown based on lack of data.
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	Unknown
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Unknown
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over any 10 years, or 3 generations, over a time period including both the past and the future.	Unknown
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Unknown b. Unknown c. Unknown
Are there extreme fluctuations in number of mature individuals?	Unknown as population size is unknown

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO).	Unknown
Index of area of occupancy (IAO).	Unknown
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy is in habitat patches that are: (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. Unlikely b. Unlikely
Number of locations.	Unknown
Number of NHIC Element Occurrences	None available

Extent and occupancy attributes	Value
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Unknown
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Unknown
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Not available
Is there an observed, inferred, or projected continuing decline in number of locations?	Not available
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Not available
Are there extreme fluctuations in number of populations?	Unknown, but possible given the species' irruptive nature
Are there extreme fluctuations in number of locations?	No
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

Number of mature individuals in each sub-population or total population (if known)

Number of mature individuals is not known.

Quantitative analysis (population viability analysis conducted)

Unknown, analysis not conducted.

Threats

A threats calculator was prepared by COSEWIC (2025, IN PRESS). Key threats were identified as:

i. Invasive & other problematic species & genes (IUCN #8) – High – Low impact
ii. Transportation & service corridors (IUCN #4) – Medium – Low impact
iii. Pollution (IUCN #9) – Medium – Low impact
iv. Residential & commercial development (IUCN #1) – Low impact
v. Energy production & mining (IUCN #3) – Low impact
vi. Climate change (habitat shifting and alteration) (IUCN #11) – Low impact
vii. Agriculture & aquaculture (IUCN #2) – Unknown impact
viii. Biological resource use (IUCN #5) – Unknown impact
ix. Intrusions and disturbance (IUCN #6) – Unknown impact

Rescue effect

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Yes
Status of outside population(s) most likely to provide immigrants to Ontario	Quebec – Apparently secure Manitoba – Vulnerable
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Yes
Would immigrants be adapted to survive in Ontario?	Likely
Is there sufficient suitable habitat for immigrants in Ontario?	Unknown
Are conditions deteriorating in Ontario?	Unknown, but possibly
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	Unknown
Is rescue from outside populations likely?	Unknown

Sensitive species

Snowy Owl is not a data sensitive species.

Acronyms

BBRGR: Broader Biological Relevant Geographic Range
COSEWIC: Committee on the Status of Endangered Wildlife in Canada
COSSARO: Committee on the Status of Species at Risk in Ontario
ESA: Endangered Species Act
EO: Element occurrence (as defined by NHIC)
EOO: extent of occurrence
GRANK: global conservation status assessments
IAO: index of area of occupancy
IUCN: International Union for Conservation of Nature and Natural Resources
MNR: Ministry of Natural Resources
NHIC: Natural Heritage Information Centre
NNR: Unranked
NRANK: National conservation status assessment
SARA: Species at Risk Act
SNR: unranked
SRANK: subnational conservation status assessment
S1: Critically Imperiled
S2: Imperiled
S3: Vulnerable
S4: Apparently Secure
S5: Secure
IUCN: International Union for Conservation of Nature and Natural Resources
CDSEPO: Le Comité de détermination du statut des espèces en péril en Ontario