

**Ontario Species at Risk Evaluation Report for
Northern Bobwhite
Colin de Virginie
(*Colinus virginianus*)**

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

Assessed by COSSARO as Endangered

November 2023

Final

Executive summary

Northern Bobwhite (*Colinus virginianus*) is a small grouse-like bird, 21-26 cm in length. Males have a black necklace, white throat and a white line above the eye, while females have a buffy throat and eye stripe. Their call is a loud whistle 'bob-bob-WHITE?'.

This is a ground-nesting bird that prefers tallgrass prairie-savannah species, as well as early to mid-successional forest habitats and open areas such as agricultural fields. It prefers areas subject to natural disturbances with an abundance of shade-intolerant herbaceous species and requires large and/or well-connected patches of suitable habitat that provide nesting, feeding and roosting opportunities.

It is a non-migratory species, and an individual may spend its entire lifetime in the same geographic proximity, within 2.6 km² of where it hatched. Their clutch size is typically 12-14 eggs. Most (80%) birds live less than one year, with an average life span of five years.

Each bird generally requires approximately 2 ha of usable habitat to survive, assuming habitat quality is suitable.

In Canada, there is one population of this species, and it is located in southwestern Ontario on Walpole Island First Nation.

The main threat that led to the decline of this bird from the mainland of Ontario were extreme, severe and lasting winter conditions that occurred in the second half of the 19th century. These weather events reduced the range of the Northern Bobwhite to the extreme southwestern portion of Ontario.

Current threats to this species and its habitat include habitat loss and degradation through agricultural intensification, residential development and the spread of the invasive species European Common Reed grass, as well as predation and indiscriminate burnings.

Northern Bobwhite (*Colinus virginianus*) is classified as Endangered in Ontario based on meeting criteria B1, B2ab (i, ii, iii, v), C2a (i, ii), and D1. This species consists of a small range with a small subpopulation that is found in one location in Canada – Walpole Island First Nation, Ontario. Its numbers have been declining, and no records have been recorded in the Christmas Bird Count data since 2001, in eBird since 2014 and visually by Walpole Island First Nation members since 2016. This classification is consistent with the COSEWIC report (2023).

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Colinus virginianus is the current accepted scientific name for Northern Bobwhite and is a taxonomically distinct species. However, there are a number of populations across southwestern Ontario that have either escaped or been released from captive-reared individuals. These individuals contain a different genetic composition than the indigenous individuals.

Overall, there are 22 recognized subspecies of Northern Bobwhite with a long history of introductions to Ontario. Most were introduced from the United States and were of different genetic stock than the indigenous stock, which has complicated the understanding of systematics.

1.1.2. Designatable units

C. virginianus is considered one designatable unit.

1.1.3. Native status

C. virginianus is indigenous to Ontario.

1.1.4. Occurrence

Northern Bobwhite was likely present in Kent and Essex counties prior to European settlement. It is indigenous to eastern North America, and if it was not present in Ontario originally, it colonized naturally several centuries ago (COSSARO 2013). Currently, it is restricted to one small area of southwestern Ontario, Walpole Island First Nation.

1.2. Eligibility results

Northern Bobwhite (*C. virginianus*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G4G5 (G4 rounded) (NatureServe 2016)
- IUCN: Near Threatened (2021)
- NRANK Canada: N1? (NatureServe 2016)
- COSEWIC: Endangered (May 2023)

- SARA: Endangered (Schedule 1) (last amended February 2023)
- ESA 2007: Endangered, Schedule 3 (October 2021)
- SRANK: S1? (ranked in 2016)

2.2. Distribution in Ontario

Northern Bobwhite distribution in Ontario reached its maximum in the mid- to late-1800s, shortly after European Settlement. It was found throughout the province as far north as the southern edges of Muskoka and as far east as Kingston. Its range has been declining since this time period.

Currently, the indigenous species is limited to Walpole Island First Nation in the extreme southwestern part of the province (COSEWIC 2023). Individuals of this species have been recorded periodically on the mainland; however, these are now known to be released or escaped captive-bred birds that are genetically distinct from the indigenous Northern Bobwhite.

There have been no records in the Christmas Bird Count since 2001 and no records in eBird reports since 2014. There have been occasional sightings by Walpole Island Indigenous community members, though none since 2016, indicating that a very small population likely still persists (currently estimated at <<250 individuals, likely <50 individuals).

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

In Canada, Northern Bobwhite is critically imperiled (N1?), with the sole remaining population on Walpole Island First Nation, Ontario (S1?, imperiled).

The species' range is considered globally apparently secure (G4) with a secure widespread distribution in the United States (N5). Its status ranges from critically imperiled to secure in the adjacent jurisdictions, with the current Condition shown for each relevant Province and State in Table 1 (NatureServe 2023).

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
Michigan	no	S2	NatureServe 2023
Indiana	no	S4	NatureServe 2023
New York	no	S4	NatureServe 2023
Ohio	no	S5	NatureServe 2023

Northern Bobwhite does not disperse widely compared with other bird species (NatureServe 2023). Chabot (2014) found very little historical gene flow with Michigan birds.

2.4. Ontario conservation responsibility

Ontario includes <1% of the global range and population.

2.5. Direct threats

A Threat Assessment was completed in the federal recovery strategy (ECCC 2018).

Agricultural and residential development were ranked High; invasive plants (European Common Reed), predation, indiscriminate burnings and release of non-indigenous, pen-reared Northern Bobwhite individuals were ranked Medium; European Fire Ant and herbicide and insecticide application resulting in reduced food supply were ranked Unknown.

2.6. Specialized life history or habitat use characteristics

Northern Bobwhite are a tall-grass prairie-savannah bird which also inhabits early to mid-successional forest habitats and open areas such agricultural fields. It prefers areas that are largely composed of shade-intolerant herbaceous species that are subject to disturbances such as fire. It requires large and/or well-connected areas of suitable habitat that support nesting (open grassy areas), roosting (early successional shrubby areas) and foraging (agricultural crops). This bird is a non-migratory bird that typically spends its entire life close to its nesting grounds, and therefore, all of its life history requirements must be in close proximity to provide suitable habitat (ECCC 2018; Wyshynski 2019). This species has very high site fidelity. They have relatively small home ranges, often <30 ha, but that can vary depending on breeding/non-breeding season and habitat quality.

2.7. Existing Conservation and Recovery Actions

Both federal and provincial recovery strategies have been prepared (ECCC 2018; Wyshynski 2019, respectively). Despite the threats to this species and based on the criteria that Environment Climate Change Canada uses to establish recovery feasibility, the recovery of the Northern Bobwhite has been deemed technically and biologically feasible. Short term (5-10 years), medium term (10-20 years) and long term (time frame to be determined) objectives for the Northern Bobwhite in Canada have been established (ECCC 2018). These objectives start off with maintaining the existing population on Walpole Island First Nation, to increasing the abundance to a minimum of 230 adult birds. Then, if biologically and technically feasible, increase that population to a minimum of 500 adult birds, increasing its distribution to historically occupied areas on the First Nation Island. The objectives then move into the long-term timeframe where the goal is to achieve a self-sustaining, resilient and redundant population with one viable population on Walpole Island First Nation and re-establish one viable population on the mainland of Ontario.

Walpole Island Heritage Centre and the Walpole Island Land Trust have undertaken restoration and protection of tallgrass prairie and savannah sites used by Northern Bobwhite historically; however, it is uncertain whether there is an appropriate mixture of early successional wooded areas and open and semi-open habitats to maintain this species (Wyshynski 2019).

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. There are insufficient data to calculate rate of population decline, and major declines likely occurred >10 years ago.

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

Meets Endangered, B1, B2ab (i, ii, iii, v), as EOO is <5000 km²; AOO is <500 km²; the population occurs at one location, Walpole Island First Nation.

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

Meets Endangered, C2a (i, ii), as the total population is estimated to be <250 mature individuals, with an inferred decline in numbers that is liable to continue; and is the only subpopulation with <250 mature individuals and 100% of all mature individuals in this subpopulation.

3.1.4. Criterion D – Very small or restricted total population

Meets Endangered, D1, because the population is estimated to have <250 mature individuals.

3.1.5. Criterion E – Quantitative analysis

Does not apply.

3.2. Application of Special Concern in Ontario

Does not apply.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Does not apply. Current and historical ranges in Ontario represent a very small proportion of the species' global range and is globally ranked G4 (rounded).

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

No status modifiers based on broader biologically relevant geographic range have been considered. Species' ranks range from S2-S5 in adjacent jurisdictions, but populations may be in decline.

3.3.3. Rescue Effect

No. Numbers are likely declining in adjacent U.S. states, habitat quality is declining in Canada (Ontario), and long-distance dispersal is rare.

3.4. Other status categories

3.4.1. Data deficient

Not applicable.

3.4.2. Extinct or extirpated

Not applicable.

3.4.3. Not at risk

Not applicable.

4. Summary of Ontario status

Northern Bobwhite (*Colinus virginianus*) is classified as Endangered in Ontario based on meeting criteria B1, B2ab (i, ii, iii, v), C2a (i, ii), and D1.

5. Information sources

Chabot, A. 2014. Development of genomic tools for population management and risk assessment for Northern Bobwhite in Ontario. Unpublished report for Canadian Wildlife Service – Ontario. Arden, Ontario. 30 pp.

COSSARO. 2013. COSSARO Candidate Species at Risk Evaluation for Northern Bobwhite (*Colinus virginianus*). Committee on the Status of Species at Risk in Ontario. 15 pp. (https://cossaroagency.ca/wp-content/uploads/2017/06/Final-COSSARO-Evaluation-Northern-Bobwhite-Sep-2013_GFM-FINAL-s.pdf).

COSEWIC. 2013. COSEWIC status appraisal summary on the Northern Bobwhite *Colinus virginianus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiii pp. (www.registrelep-sararegistry.gc.ca/default_e.cfm).

COSEWIC. 2023. IN PRESS. COSEWIC Rapid Review of Classification on the Northern Bobwhite *Colinus virginianus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv pp.
(<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>).

Environment and Climate Change Canada. 2018. Recovery Strategy for the Northern Bobwhite (*Colinus virginianus*) in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. ix + 38 pp.

NatureServe. 2023. Website: <https://explorer.natureserve.org/> [accessed November 2023].

Natural Heritage Information Centre. 2023. Website: <https://www.ontario.ca/page/natural-heritage-information-centre> [accessed November 2023].

Wyshynski, S.A. 2019. Recovery Strategy for the Northern Bobwhite (*Colinus virginianus*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. v + 11 pp. + Appendix. Adoption of the Recovery Strategy for (*Colinus virginianus*) in Canada (Environment Canada 2018).

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.

Appendix 1: Technical summary for Ontario

Species: Northern Bobwhite (*Colinus virginianus*)

*This section is intended as a short tabular summary with brief responses (i.e usually one word or up to one sentence of explanation, if necessary). Additional supporting information and sources should be included in the text above. If the species only occurs in Ontario in Canada, the summary may be pasted from the COSEWIC report. If not, please fill out using information from Ontario only. In some cases the **Red** font indicates an option for selection.*

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.	2.3 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, inferred continuing decline. No recent data available.
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. No b. Yes c. No
Are there extreme fluctuations in number of mature individuals?	No

Extent and occupancy information in Ontario

Extent and occupancy attributes	Value
Estimated extent of occurrence (EOO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	<72 km ² (EOO of Walpole Island First Nation is smaller than maximum IAO; therefore the value for

Extent and occupancy attributes	Value
	IAO is used for EOO (IUCN 2022).
Index of area of occupancy (IAO). <i>If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.</i>	<72 km ²
Is the total population severely fragmented? i.e., is >50% of its total area of occupancy 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. Unknown b. Possibly
Number of locations. <i>See Definitions and Abbreviations on COSEWIC and IUCN websites for more information on the term "location". Use plausible range to reflect uncertainty if appropriate.</i>	1
Number of NHIC Element Occurrences <i>Request data from MNR.</i>	26 – dates range from as early as 1800 - 1993
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Possibly
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Not applicable
Is there an observed, inferred, or projected continuing decline in number of locations?	Not applicable
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes
Are there extreme fluctuations in number of populations?	No
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)

Sub-population (or total population)	Number of mature individuals
Total population (no subpopulations)	<<250, high probability of <50, and perhaps close to extirpation.

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is [unknown].

Threats

Was a threats calculator completed for this species?	Threats assessments included in provincial (Wyshynski 2019) and national (ECCC 2018) recovery strategies.
<p>The main threats to Northern Bobwhite in Canada, in decreasing order of impact, are (Wyshynski 2019):</p> <ul style="list-style-type: none"> • habitat loss and fragmentation, mainly through agricultural expansion and intensification, residential development and invasion by European Common Reed (<i>Phragmites australis</i>); • predation; • indiscriminate burning; • release of non-indigenous, captive-reared Northern Bobwhites (no longer released on Walpole Island First Nation); • herbicide/pesticide use, and • potentially European Fire Ant (<i>Myrmica rubra</i>), feral cats, and feral pigs. <p>What additional limiting factors are relevant? High site fidelity (COSEWIC 2013) which limits movement among alternate areas.</p>	

Was a threats calculator prepared for this species and by whom? List direct threats from highest to least impact based on the threats calculator.

Rescue effect

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Possibly
Status of outside population(s) most likely to provide immigrants to Ontario	S2 (Imperilled) in Michigan, S4 (apparently secure) in New York, and S5 (secure) in Ohio. BBS results indicate declines every year from 1987 to 2019.
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Possible, but unlikely Northern Bobwhite does not disperse widely compared with other bird species. Chabot (2014) found very little historical gene flow with Michigan birds.

Rescue effect attribute	Value
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Possibly
Would immigrants be adapted to survive in Ontario?	Possible, but unlikely
Is there sufficient suitable habitat for immigrants in Ontario?	No
Are conditions deteriorating in Ontario?	Yes
Is the species of conservation concern in bordering jurisdictions?	Yes - S2 (Imperiled) in Michigan, S4 (apparently secure) in New York
Is the Ontario population considered to be a sink?	Unknown
Is rescue from outside populations likely?	No - Numbers declining in adjacent U.S. states, habitat quality declining in Canada, and long-distance dispersal is rare.

Sensitive species

Not data sensitive.

Acronyms

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

MNRF: Ministry of Natural Resources and Forestry

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