

**Ontario Species at Risk Evaluation Report for**  
**Bobolink**  
**Goglu des prés**  
**(*Dolichonyx oryzivorus*)**

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

Assessed by COSSARO as Threatened

November 2022

Final

## Executive summary

Bobolink (*Dolichonyx oryzivorus*) is a medium-sized member of the blackbird family with short, conical bills. The sexes look different only during the breeding period where the males have a black bill, head, front, undertail-coverts, wing underparts and tail, contrasting sharply with a white rump and scapulars, and a buffy-golden yellow patch on the back of the head.

Male Bobolink are conspicuous and vocal and frequently found perched on shrubs, tall forbs and fence posts. They are often seen performing their characteristic aerial display flights where they repeatedly flutter up into the air, rising on rapidly vibrating wings and singing their characteristic bubbly songs, before dropping back down (McCracken *et al.*, 2013).

Major threats to the species include habitat loss and degradation due to expansion and intensification of agricultural crops as well as conversion of hayfields and pasture into grain and oilseed crops. Incidental loss of nests to early cutting of hayfields is another major ongoing threat (COSEWIC IN PRESS, 2022).

Bobolink has been assessed as Threatened where there has been a cumulative loss of 36.9% over the most recent 10 year period (2009-2019) (COSEWIC IN PRESS, 2022).

# 1. Eligibility for Ontario status assessment

## 1.1. Eligibility conditions

### 1.1.1. Taxonomic distinctness

Bobolink (*Dolichonyx oryzivorus*) is taxonomically distinct where it is the only species in the genus *Dolichonyx* (COSEWIC IN PRESS, 2022).

### 1.1.2. Designatable units

Bobolink is considered to have one designatable unit in Canada as there is no evidence that any populations are discrete or evolutionarily significant (COSEWIC IN PRESS, 2022).

### 1.1.3. Native status

Bobolink is native to Ontario where it has been present in eastern North America, including Ontario, at least as far back as the mid-1700s. In the 19<sup>th</sup> century, the species became more widespread and common due to wide-scale deforestation and the spread of agricultural practices that provided ample planted grassland habitat in the form of hayfields and pasturelands (COSEWIC IN PRESS, 2022).

### 1.1.4. Occurrence

Bobolink occurs mostly throughout southern Ontario (Cadman *et al.*, 2007).

## 1.2. Eligibility results

Bobolink (*Dolichonyx oryzivorus*) is eligible for status assessment in Ontario.

# 2. Background information

## 2.1. Current designations

- GRANK: G5 (NatureServe, 2022)
- IUCN: Least Concern (November, 2022)
- NRANK Canada: N5B, N4N5M
- COSEWIC: Special Concern (May, 2022)
- SARA: Threatened (Schedule 1)
- ESA 2007: Threatened (June, 2010)
- SRANK: S4B (ranked in 2009)

## 2.2. Distribution in Ontario

Bobolink is found throughout southern Ontario with its range extending to Sault Ste. Marie. Scattered populations occur locally farther north, especially in the Clay Belt areas in Timiskaming and Cochrane Districts in the northeast and in the Thunder Bay, Rainy River, and Dryden areas in northwestern Ontario (COSEWIC IN PRESS, 2022; Cadman *et al.*, 2007).

Bobolink are most common in the Bruce/Grey/Dufferin region, the Kawartha Lakes/Peterborough region, the north shore area of Lake Ontario between Belleville and Kingston, and between the Ottawa and St. Lawrence rivers. These areas correspond with the greatest densities of cattle in Ontario, and the largest areas of hay and pasture (McCracken *et al.*, 2013).

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

Bobolink is widely distributed in its breeding range across southern Canada from B.C. to Québec, the Maritimes and the island of Newfoundland, and in the U.S. from northeastern Washington across the northern Midwest states to New England. The wintering range includes eastern Bolivia, southwestern Brazil, Paraguay, and northeastern Argentina, and this bird may winter in small numbers west of the Andes on the coast of Peru (COSEWIC, 2010). Its breeding density is greatest in North and South Dakota, Minnesota, southern Manitoba, southern Ontario, southwestern Quebec, and western New York (COSEWIC IN PRESS, 2022).

Its status within this broader range varies from critically imperiled to secure. Within areas immediately adjacent to Ontario, the status of Bobolink ranges from apparently secure to vulnerable (NatureServe, 2022). However, data shown per the USGS database (<https://www.mbr-pwrc.usgs.gov/>) are showing overall population decline trends for all these areas.

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	S3 Vulnerable/ cumulative loss of 30.3% (probability of >30% decline 0.51)	NatureServe/ COSEWIC IN PRESS, 2022
Manitoba	Yes	S3 Vulnerable/ cumulative loss of 52.7% (probability	NatureServe/ NatureServe/ COSEWIC IN PRESS, 2022

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Condition	Notes & Sources
		of >30% decline (1.00)	
Michigan	Yes	S4 Apparently Secure	NatureServe
Minnesota	Yes	SNR	NatureServe
Nunavut	No		NatureServe
New York	Yes	S5 Secure	NatureServe
Ohio	Yes	S4 Apparently Secure	NatureServe
Pennsylvania	Yes	S4B, S3M	NatureServe
Wisconsin	Yes	S2 Imperiled	NatureServe
<i>Other Relevant Jurisdiction</i>			

## 2.4. Ontario conservation responsibility

Ontario's conservation responsibility is low where it is estimated that 10% of the global breeding range occurs in Ontario.

## 2.5. Direct threats

Habitat loss and degradation are considered the greatest threats to Bobolink. Expansion and intensification of agricultural crops on both breeding and wintering grounds has contributed significantly to past declines, and in many areas remains an ongoing concern (COSEWIC IN PRESS, 2022). On the breeding grounds, this includes conversion of hayfields and pasture into grain and oilseed crops (e.g., wheat, corn, and soybean) that are largely or wholly unsuitable for Bobolink.

For context with respect to conversion of hayfields to grain and oilseed crops, the following provides an excerpt from a personal communication with a hay farmer in Ontario: Less and less farmers grow hay and have switched to soybean, corn and wheat. Harvesting hay is more work compared to soybean, corn, and wheat because it requires more handling. For example, for corn, it is grown, harvested, and then sold. Comparably for hay, it is cut then flipped twice in the field, baled, stored, and then sold.

Incidental loss of nests to early cutting of hayfields is another major ongoing threat. Over 90% of nests can be lost to haying operations. A modelling exercise estimated that Bobolink productivity (measured as the number of fledged young that would otherwise be expected to survive to migrate south and adjusted for natural mortality) was reduced by about 321,000 birds per year because of haying operations in Canada (COSEWIC IN PRESS, 2022). Nest losses from haying occur directly through the physical destruction of nest contents during routine mowing/raking operations and

indirectly through increased predation exposure that follows mowing (COSEWIC IN PRESS, 2022). Changes in hay harvesting techniques and equipment (e.g., greater mechanization, lower mowing heights, faster tractor speeds, and changes in raking and baling operations) have likely contributed to an increased proportion of nest losses. Hay crops are also cut more frequently now than historically and is carried out about 2-3 weeks earlier compared to 50 years ago.

For context with respect to hay harvest, the following provides an excerpt from a personal communication with a hay farmer in Ontario: Each year, hay can be harvested twice or three times. Usually, it is cut in early June, late July, then late September depending on the year. If you have ample moisture, you can harvest more times. If the hay is grown for feeding dairy cows, it is usually cut the first week of June which produces a higher sugar and protein content. Cutting later increases the ruffage, which helps with gut health. Harvesting hay is very weather dependent where you need at least four to five days of no rain in the forecast. If it is cut, then rained on in the field, the harvest is ruined as it creates moldy/dusty conditions.

Other threats which have a low threat impact include: overgrazing by livestock, residential and commercial development (night-time collisions with tall lighted structures), ongoing loss of grassland areas to expansion of housing and urban areas, oil and gas drilling, and quarrying, wind turbines when situated in grasslands, hunting and animal collections, intentionally poisoned (considered a pest in rice crops), fire suppression in natural grasslands, invasive plants out-competing grasses in natural grasslands, Brown-headed cowbird nest parasitism, exposure to feral cats, increased frequency and intensity of extreme weather events including droughts and heavy precipitation (COSEWIC IN PRESS, 2022).

## 2.6. Specialized life history or habitat use characteristics

Bobolink (*Dolichonyx oryzivorus*) is a medium-sized member of the blackbird family with short, conical bills. The sexes look different only during the breeding period where the males have a black bill, head, front, undertail-coverts, wing underparts and tail, contrasting sharply with a white rump and scapulars, and a buffy-golden yellow patch on the back of the head. Females resemble large sparrows with light pink bills and mostly buff to brown, somewhat streaked plumage. Young of the year resemble females, but have an overall deeper, ochre appearance, particularly on the underside. Prior to fall migration, males moult at which point they closely resemble females. They retain this plumage until arrival on the wintering grounds, after which they then moult back into their distinctive breeding plumage before returning to their northern breeding grounds (Renfrew *et al.*, 2011).

Male Bobolink are conspicuous and vocal and frequently found perched on shrubs, tall forbs and fence posts. They are often seen performing their characteristic aerial display flights where they repeatedly flutter up into the air, rising on rapidly vibrating wings and singing their characteristic bubbly songs, before dropping back down (McCracken *et al.*, 2013).

Bobolink currently show preference for non-native grasslands in much of its breeding range where it nests in hayfields and pastures dominated by non-native herbaceous plants such as clover (*Trifolium spp.*), Timothy (*Phleum pratense*), tall grasses (e.g. Kentucky Bluegrass, *Poa pratensis*) and broad-leaved plants (COSEWIC IN PRESS, 2022). Nests are built on the ground at the base of tall forbs where egg-laying begins within about 10 days after pair formation. In Ontario, this usually begins during the last week of May. Eggs are incubated by the females and lasts about 12 days and young remain in the nest for 10 to 11 days (COSEWIC IN PRESS, 2022).

Bobolink population size is chiefly limited by habitat supply throughout the life cycle. Although Bobolink can nest in relatively small patches of grassland, relative abundance and productivity are higher in large patches (>10ha) and in patches surrounded by other open habitats. Outside the breeding season, Bobolink migrates and roosts in very large flocks, which exposes large numbers to localized hazards (eg., hurricanes during migration and lethal-control measures in rice crops), making the species vulnerable to rapid population declines (COSEWIC IN PRESS, 2022).

The number of locations for Bobolink in Canada is primarily a function of the number of private landowners who have influence over the primary threat to the species, which specifically is the conversion of hayfields to other crops and mowing practices (COSEWIC IN PRESS, 2022).

## 2.7. Existing Conservation and Recovery Actions

A provincial recovery strategy for Ontario (McCracken *et al.*, 2013) has been developed with the following conservation and recovery actions:

- Single-species recovery strategies have been developed for several other grassland species at risk in Ontario, including American Badger (Ontario American Badger Recovery Team 2010), Eastern Prairie Fringed-orchid (Eastern Prairie Fringed-orchid Recovery Team 2010), Barn Owl (Ontario Barn Owl Recovery Team 2010), Henslow's Sparrow (Environment Canada 2010a), and Eastern Loggerhead Shrike (Environment Canada 2010b).
- Ecosystem-based recovery planning documents have been drafted for various habitats containing native grasslands in Ontario. Examples include tallgrass prairie (Rodger 1998, Bowles 2005), alvars (Jones and Jalava 2005), and grassland birds (Bird Studies Canada 2009). Similarly, a plan for conserving grassland birds in New York has been developed, with much relevant information and tools applicable to recovery efforts in Ontario (Morgan and Burger 2008).
- Site-specific conservation action plans have been developed for some important grassland areas in Ontario, including the Carden Plain (Coxon and Reid 2001), Luther Marsh (Cheskey and Wilson 2001) and Prince Edward County South Shore (Wilson and Cheskey 2001). The Nature Conservancy of Canada has also been heavily involved in conservation planning in the Napanee and Carden Plains (D.

Kraus, pers. comm. 2012).

Other historical and current actions include:

- Protection of the species under the Migratory Birds Convention Act in 1917 and the banning of market hunting.
- The Bobolink Project based in the northeastern U.S. uses donated funds to provide financial assistance to participating farmers who modify their mowing schedules so that grassland nesting birds can successfully raise their young (<https://www.bobolinkproject.com/>).

### 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

Meets Criterion A2abce for Threatened.

Population size decreased sharply throughout the 1980s and 1990s, and has since continued to decline, but at a slower rate.

Based on improved analytical techniques, the ten-year decline reported in 2010 is now believed to have been -26%, similar to the -25% change between 2009 and 2019 overall for Canada.

For Ontario, over the most recent 10 year period (2009-2019), there has been an average annual decline of -4.50%, equivalent to a cumulative loss of 36.9% with a high probability (0.93) of the 10-year decline exceeding 30%. This is based on (a) direct observation, (b) an index of abundance and (c) a decline in extent of occurrence and quality of habitat and (e) effects of disturbance (COSEWIC IN PRESS, 2022).

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

Not applicable. Estimated Extent of Occurrence is well over Endangered and Threatened thresholds. Area of occupancy is unknown, but is also expected to be well over Endangered and Threatened thresholds.

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

Not applicable. Estimated number of individuals is well over the Endangered and Threatened thresholds.



### 3.1.4. Criterion D – Very small or restricted total population

Not applicable. This species' population is not restricted and extends across Southern Ontario.

### 3.1.5. Criterion E – Quantitative analysis

Not applicable. A quantitative analysis has not been conducted for this species.

## 3.2. Application of Special Concern in Ontario

Not applicable.

## 3.3. Status category modifiers

### 3.3.1. Ontario's conservation responsibility

Does not apply. Ontario contains almost 10% of the global population. Ontario's conservation responsibility is low given global range within Ontario.

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

There are clear threats attributing to an overall decline to this species showing that it is Threatened or could become Threatened throughout its broader biologically relevant geographic range.

Utilizing BBS data from Manitoba and Quebec, Bobolink is showing a cumulative loss of -52.7% and -30.3% respectively. This is comparable or greater than the cumulative loss estimated for Ontario (-36.9%) (COSEWIC IN PRESS, 2022).

### 3.3.3. Rescue Effect

Does not apply.

## 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. There are clear threats attributing to an overall decline to this species.

## 4. Summary of Ontario status

Bobolink (*Dolichonyx oryzivorus*) is classified as Threatened in Ontario based on meeting Criterion A2abce.

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

## 5. Information sources

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

COSEWIC. 2022. IN PRESS. COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 60 pp. <https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>.

COSEWIC. 2010. COSEWIC assessment and status report on Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa, Ontario. Vi + 42 pp.

Link, W.A.I, J.R. Sauer, and D.K. Niven. 2020. Model selection for the North American Breeding Bird Survey. Ecological Applications 30(6): c02137.10.1002/cap.2137

McCracken, J.D., R.A. Reid, R.B. Renfrew, B. Frei, J.V. Jalava, A. Cowie, and A.R. Couturier. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario. viii + 88 pp.

Renfrew, R.B., S.J.K. Frey, and J. Klavins. 2011. Phenology and sequence of the complete prealternate molt of Bobolinks in South America. Journal of Field Ornithology 82:101-113.

Sauer, J. R., D.K. Niven, J.E. Hines, D.J. Ziolkowski, Jr., K.L. Pardieck, J.E. Fallon, and W.A. Link. 2017. The North American Breeding Bird Survey, results and analysis 1968-

2015. Version 2.07.2017. Patuxent Wildlife Research Centre, Laurel MD. Available at <https://www.mbr-pwrc.usgs.gov/bbs/> [accessed November 2022].

<sup>1</sup> 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: Bobolink (*Dolichonyx oryzivorus*)

### 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.	2.9 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, estimated
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	Estimated 15% over 2 generations, based on average annual 2.87% decline over the past 10 years for Canada. This can be applied for Ontario.
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	Estimated 25% reduction over the last 10 years (2009-2019) based on Breeding Bird Survey data for Canada. This can be applied for Ontario.
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Unknown, but continuing decline is anticipated given long-term trend in population and habitat.
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, but decline is apparent given long-term trend in population and habitat.
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	(a) Yes, part (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).	Estimate 691,598.94 km <sup>2</sup>

Extent and occupancy attributes	Value
<i>If value in COSEWIC status report is not applicable, then use <a href="http://geocat.kew.org">geocat.kew.org</a>. State source of estimate.</i>	
Index of area of occupancy (IAO). <i>If value in COSEWIC status report is not applicable, then use <a href="http://geocat.kew.org">geocat.kew.org</a>. State source of estimate.</i>	IAO based on a 2x2km grid cannot be calculated, but would be much more than 2,000km <sup>2</sup> , given the extensive range of the species and its large population size.
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. No b. No
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>	Unknown, but at minimum hundreds, based on the key threat of agricultural land management being under the control of many land owners.
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	n/a
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	No
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?	N/a
Is there an observed, inferred, or projected continuing decline in number of locations?	Unknown
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes, observed and projected declines in area, extent and quality of breeding habitat, and perhaps also wintering habitat.
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	~1,000,000

## Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is [unknown].

## Threats

A threats calculator was prepared as part of the COSEWIC IN PRESS, 2022 report with an overall threat impact of High including:

- i. High Impact: Annual & perennial non-timber crops: conversion of hayfields, pastures and native grassland to grain, oilseed and alfalfa mix crops. Bobolink now nests primarily in actively managed hayfields, where nests are highly vulnerable to mowing/harvesting because the species nests relatively late in the season.
- ii. Medium to Low Impact: Agricultural & forestry effluents: Pesticide, herbicide, and insecticide exposure can cause mortality or toxicity, but there is some uncertainty as to severity of effects on the population.
- iii. Low Impact: overgrazing by livestock, residential and commercial development (night-time collisions with tall lighted structures), ongoing loss of grassland areas to expansion of housing and urban areas, oil and gas drilling, and quarrying, wind turbines when situated in grasslands, hunting and animal collections, intentionally poisoned (considered a pest in rice crops), fire suppression in natural grasslands, invasive plants out-competing grasses in natural grasslands, Brown-headed cowbird nest parasitism, exposure to feral cats, increased frequency and intensity of extreme weather events including droughts and heavy precipitation (COSEWIC IN PRESS, 2022).

## 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	Yes
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Yes

<b>Rescue effect attribute</b>	<b>Value</b>
Does the broader biologically relevant geographic range for this species extend beyond Ontario?	Yes
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Yes, but declining
Are conditions deteriorating in Ontario?	Yes
Is the species of conservation concern in bordering jurisdictions?	No
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	Unlikely, given long- and short-term declines in the U.S.

## Sensitive species

Not a data sensitive species.

## 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