

**Ontario Species at Risk Evaluation Report for  
Red-headed Woodpecker  
(*Melanerpes erythrocephalus*)**

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

Assessed by COSSARO as Endangered

August 2020

## Pic à tête rouge

Le pic à tête rouge est une espèce endémique de l'est de l'Amérique du Nord. En Ontario, sa présence est principalement marquée au sud du Bouclier canadien, en plus d'une petite population dans la région de la rivière Rainy, au nord-ouest de la province. Ce pic habite dans les forêts caducifoliées ouvertes et d'autres habitats de son aire de répartition, et niche dans les cavités d'arbres morts encore debout.

Ces dernières décennies, le pic à tête rouge affiche un déclin dans toute son aire de répartition. En Ontario, les données du Relevé des oiseaux nicheurs (BBS) indiquent une tendance moyenne à la baisse de l'ordre de -3,79 par année sur une période de 45 ans allant de 1970 à 2015, alors que l'Atlas des oiseaux nicheurs de l'Ontario affiche une importante contraction de l'aire de répartition vers le sud comparativement aux éditions précédentes de l'ouvrage. Au cours de cette période, l'espèce a disparu en tant qu'oiseau nicheur dans de nombreuses régions du sud du Bouclier, du lac Simcoe, de la vallée de la Rideau et de l'Outaouais. L'évaluation de l'Ontario classe le pic à tête rouge dans la catégorie des espèces en voie de disparition.

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## Executive summary

The Red-headed Woodpecker is native to eastern North America. In Ontario, it is mainly found south of the Canadian Shield, with a small population in the Rainy River area of northwestern Ontario. This strikingly colored woodpecker inhabits open deciduous forests and other habitats across its range, nesting in cavities in standing dead trees.

Over the last several decades, the Red-headed Woodpecker has declined across its entire range. In Ontario, Breeding Bird Survey data show an average annual declining trend of -3.79 over the 45-year period from 1970 to 2015, and the Ontario Breeding Bird Atlas showed a significant range contraction southward between atlas periods. In that time period, the species has disappeared as a breeder from many areas of the southern Shield, Lake Simcoe, Rideau and Ottawa Valley.

Threats include habitat loss and especially habitat degradation with the loss of mature and dead trees that are suitable for excavating nest cavities. This may be due to agricultural and residential development, park management, and forestry practices. Fire suppression has also resulted in closed canopies in the species' natural habitat, and large reductions in insect biomass may reduce its summer food supply. Non-native species also play a role: Red-headed Woodpeckers compete with European Starlings for nest cavities, and several introduced tree diseases have led to decreases in nest trees and food availability (beech nuts, chestnuts).

# 1. Eligibility for Ontario status assessment

## 1.1. Eligibility conditions

### 1.1.1. Taxonomic distinctness

The Red-headed Woodpecker was first described in 1758 by Linnaeus as *Melanerpes erythrocephalus* L. and remains a distinct taxon.

### 1.1.2. Designatable units

There are no recognized subspecies of the Red-headed Woodpecker (Short 1982, American Ornithological Society 2020) and its population genetics have not been studied. There is no basis known for defining designatable units in Canada (COSEWIC 2018).

### 1.1.3. Native status

This species is considered native to North America (NatureServe 2020).

### 1.1.4. Occurrence

The Red-headed Woodpecker is known to occur in Ontario (COSEWIC 2018).

## 1.2. Eligibility results

Red-headed Woodpecker (*Melanerpes erythrocephalus*) is eligible for status assessment in Ontario.

# 2. Background information

## 2.1. Current designations

- 2.2. GRANK: G5 (NatureServe 2020)
- 2.3. IUCN: NT – Near Threatened
- 2.4. NRANK Canada: N4B, N3M
- 2.5. COSEWIC: Endangered (April 2018)
- 2.6. SARA: Threatened (Schedule 1)
- 2.7. ESA 2007: SC (2008)
- 2.8. SRANK: S4B

## 3.0 Distribution in Ontario

In Ontario, the Red-headed Woodpecker occurs across southern Ontario to the southern edge of the Canadian Shield (Figure 1). It is most numerous in the Carolinian and Lake Simcoe-Rideau Regions, but extends through the Bruce Peninsula to Manitoulin Island, and east to the Frontenac Arch and Ottawa Valley. The Red-headed Woodpecker is a regular breeder, albeit in small numbers, on the Rainy River Clay Plain in northwestern Ontario (Figure 1, from Cadman et al. 2007).

The Ontario population of Red-headed Woodpeckers was estimated at 3,000 individuals based on BBS data from 1998-2007 (Partners in Flight Science Committee 2013 cited in COSEWIC 2018). Using abundance estimates from the second OBBA coupled with BBS decline rates, the current abundance range (2018) has been estimated between 1000-1400 mature individuals, with the lower end of this estimate appearing more likely (COSEWIC 2018). The number of COSEWIC locations is unknown but is certainly greater than 10 (Figure 1).

Evidence from a variety of sources shows that this species has been in decline for many decades. In the twenty-year period between the first (1981–1985) and second (2001–2005) Ontario Breeding Bird Atlases, the overall probability of observation of the Red-headed Woodpecker declined by 64% (Woodliffe 2007). The species' range receded almost entirely from the Southern Shield and Lake Simcoe-Rideau regions, representing a shift southward. Red-headed Woodpeckers are now absent from 33 previously occupied atlas squares within of their former breeding range and new occurrences in only 3 atlas squares. However, OBBA data show that the distribution has remained almost unchanged in the Rainy River region of northwestern Ontario (Woodliffe 2007).

BBS data also show a declining trend for this species. Data for Ontario show a significant long-term annual decline of -3.69% (95% CI: -5.20, -2.02) over the 46-year period from 1970 to 2017 (Environment and Climate Change Canada unpub. data. 2019). This amounts to a cumulative loss of -82.9% (95% CI: -91.9, -61.7) in Ontario in 47 years (COSEWIC 2018). However, short-term (2004-2017) declines of -3.01% per year (95% CI: -8.04, 2.56) for Ontario are not statistically significant.

Christmas Bird Count (CBC) data for Canada show an overall decline and levelling-off at all-time low abundances from about 2005 onwards (COSEWIC 2018).

Although the abundance of Red-headed Woodpeckers is influenced by human land use and populations have therefore widely fluctuated in the past, multiple sources of evidence point towards significant long-term declines of this species in Ontario. Although short-term BBS trends for Ontario are not statistically significant, there is no evidence to suggest that the reasons for decline have ceased or reversed. At best, the rates of decline have slowed (COSEWIC 2018, p 33).

### 3.3 Distribution, broader biologically relevant geographic range and status outside Ontario

The Red-headed Woodpecker is found only in North America, where it ranges across

eastern North America from eastern Montana and Wyoming to the New England states, and south to Florida, Louisiana and Texas. Based on BBS data, the highest relative abundance occurs in the US mid-west, centered on Iowa, Missouri, Kansas and Nebraska (see COSEWIC 2007). Across the northern portion of the range including southern Saskatchewan, Manitoba, Ontario and Quebec, Red-headed Woodpeckers are mostly migratory breeders (i.e. non-resident), although overwintering is occasional in southern Manitoba and southern Ontario.

Across North America, this species has experienced a statistically significant decrease of -23.3% per decade over the last 40 years (based on BBS and CBC data, NatureServe 2020). Long-term declines exceed 80% in five of eight states bordering Canada. Significant declines of >45% have been documented over three generations in adjacent Minnesota, Michigan, and New York (COSEWIC 2018). The species has recently been included on the Partners in Flight Yellow Watch List, a list of bird species in North America of high conservation concern (Partners in Flight 2018).

### 3.4 Ontario conservation responsibility

Based on BBS data, all populations of Red-headed Woodpecker in Canada comprise 0.6% of the species' breeding population (COSEWIC 2018). As a portion of its Canadian breeding range, Ontario therefore contributes less than 0.6% of the global breeding population.

### 3.5 Direct threats

There are a number of cumulative threats that may be having an effect on the Red-headed Woodpecker in Ontario, categorized here following the IUCN-CMP (International Union for the Conservation of Nature – Conservation Measures Partnership) unified threats categorization system (based on Salafsky et al. 2008).

Habitat loss and degradation is a threat to this species (Other Ecosystem Modifications, IUCN 7.3). Residential development and agricultural intensification reduce habitat availability and quality in heavily settled areas of southern Ontario. The removal of dead trees from urban areas and parks also reduce nesting opportunities. The Red-headed Woodpecker obtains a large part of its breeding season diet from aerial insects, and a reduction in insect populations (due to pesticide use or other factors) may be contributing to population declines. The Red-headed Woodpecker obtains a large part of its breeding season diet from aerial insects, and a reduction in insect populations (due to pesticide use or other factors) may be contributing to population declines. Red-headed Woodpeckers rely on mature stands of hardwood species, with beech trees providing an important food resource for Redheaded Woodpeckers; their disappearance may be one of the many reasons for the species' declines in some parts of their range (Graber and Graber 1977; Peterjohn 1989).

Fire suppression (IUCN 7.1) in the natural habitat of this species (e.g. open woodland, oak savanna) has resulted in an increase in closed canopies and shade-tolerant tree species, making these areas less suitable for Red-headed Woodpeckers.

Competition from invasive and other problematic species (IUCN 8.1) like European Starlings for nest cavities is known to reduce the reproductive rate of Red-headed Woodpeckers. In an Ontario study, almost half of nest failures were due to aggression by starlings (Frei et al. 2015), although large-scale analysis has not shown correlations between declines in Red-headed Woodpeckers and abundance of European Starlings (Koenig et al. 2017). Competition from Red-bellied Woodpeckers has also been thought to be a threat, but large-scale studies found little evidence that interactions are linked to population-level declines (Koenig et al. 2017). Tree diseases including Chestnut Blight, Dutch Elm Disease and Beech Bark Disease may have had a short-term positive effect on this species, followed by a long-term reduction in nest site availability. The loss of beech and chestnut trees has reduced important food resources in some areas.

Forestry practices, including clear cutting and firewood cutting, may impair habitat by removing mature trees. Red-headed Woodpeckers may sometimes collide with vehicles and utility lines (Frei et al. 2017).

### 3.6 Specialized life history or habitat use characteristics

Red-headed Woodpeckers are considered generalist omnivores, feeding on a variety of plants, insects and even small vertebrates, and showing flexibility in habitat selection.

However, they are cavity-nesters. As such, they rely on an abundance of dead older wood to excavate nests, and in this sense they may be limited by habitat availability.

Research in Ontario and northern New York has shown that Red-headed Woodpeckers show low fledgling success (39%). This level may be below the estimated minimum thresholds to offset mortality at the periphery of the species' range (Frei et al. 2015a).

## 4 Ontario status assessment

### 4.3 Application of endangered/threatened status in Ontario

#### 4.3.1 Criterion A – Decline in total number of mature individuals

Meets Threatened (A2 a,c). A2 is met under Threatened because a decline of 41% has been observed in BBS data over the last 3 generations (12 years) through direct observation. Observed declines in IAO, EOO and habitat quality have also been documented and supported through a variety of sources (e.g. OBBA, Woodliffe 2007). Thresholds for A1 are not met. It is possible that A3 and A4 could also apply, although projected declines are not known and much less data are available to apply these criteria with confidence.

#### 4.3.2 Criterion B – Small distribution range and decline or fluctuation

Not applicable. This species has a relatively broad distribution across Ontario. EOO, although not calculated, likely exceeds 20,000 km<sup>2</sup> and IAO certainly exceeds 2,000 km<sup>2</sup>. The number of locations are unknown but certainly exceed 10.

### 4.3.3 Criterion C – Small and declining number of mature individuals

Meets Endangered (C1). The total number of mature individuals in Ontario is estimated at 1000–1400, and there is an estimated continuing decline of 27.4% within two generations (8 year estimate from BBS data). C2 does not apply because although continuing declines have been observed, none of criteria a(i), a(ii) or b are met.

### 4.3.4 Criterion D – Very small or restricted total population

Not applicable. The estimated number of mature individuals in Ontario is estimated at 1000–1400, so the threshold is met at the low end of this estimate for Threatened under D1. D2 does not apply, as the IAO far exceeds 20 km<sup>2</sup> and the number of locations is greater than 5.

### 4.3.5 Criterion E – Quantitative analysis

Insufficient Information. No quantitative analysis is available for this species.

## 4.4 Application of Special Concern in Ontario

Not applicable. See above.

## 4.5 Status category modifiers

### 4.5.1 Ontario's conservation responsibility

Not applicable.

### 4.5.2 Status modification based on rescue effect

Immigration from adjacent American states is possible, as this species is highly mobile and most Canadian birds are migratory. Some immigration likely takes place, given the persistence of the species in Ontario despite low fecundity (COSEWIC 2018).

Immigrants would likely be adapted to survive in Ontario, and there is likely sufficient unoccupied habitat available. The Ontario population is likely a sink, dependent on immigration from adjacent American states. Thus, rescue is considered very unlikely because of large population declines in adjacent American states.

## 4.6 Other status categories

### 4.6.1 Data deficient

Not applicable.



#### 4.6.2 Extinct or extirpated

Not applicable.

#### 4.6.3 Not at risk

Not applicable.

## 5 Summary of Ontario status

Red-headed Woodpecker (*Melanerpes erythrocephalus*) is classified as Endangered in Ontario based on meeting criterion C1 – Small and Declining Number of Mature Individuals, with less than 2,500 mature individuals and an estimated continuing decline in total number of mature individuals of at least 20% within 5 years or two generations, whichever is longer. This assessment concurs with the species' COSEWIC status of Endangered (2018).

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

## 6 Information sources

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<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: Red-headed Woodpecker (*Melanerpes erythrocephalus*)

### 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.	4 years (estimated)
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, observed based on BBS and OBBA trend data.
Estimated percent of continuing decline in total number of mature individuals within 5 years or 2 generations.	27.4% decline in 8 years based on long-term Ontario data of -3.42% annual decline
Observed, estimated, inferred, or suspected percent reduction or increase in total number of mature individuals over the last 10 years or 3 generations.	41.0% decline in 12 years based on long-term Ontario data of -3.42% annual decline
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Unknown, but anticipated to continue based on ongoing threats.
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, partially 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 <a href="http://geocat.kew.org">geocat.kew.org</a>. State source of estimate.</i>	Unknown, but probably exceeds 20,000 km <sup>2</sup> threshold for distribution-related status criteria
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>	Unknown, but probably exceeds the 2000 km <sup>2</sup> threshold for distribution-related status criteria
Is the total population severely fragmented?	a. No

<b>Extent and occupancy attributes</b>	<b>Value</b>
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?	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 >10.
Number of NHIC Element Occurrences <i>Request data from MNRF.</i>	12 Extant EOs, 5 Historical.
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Yes, based on range shift/contraction in OBBA
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes, based on range shift/contraction in OBBA
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Yes, observed from NHIC data
Is there an observed, inferred, or projected continuing decline in number of locations?	Locations not calculated.
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes, observed decline in habitat quality.
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)

<b>Sub-population (or total population)</b>	<b>Number of mature individuals</b>
Ontario population	~1000-1400 (range of estimates ~593-2255)

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown. No analysis available.

## Threats

Results from Threats Calculator (IUCN)

i. Other Ecosystem Modifications (IUCN 7.3) – medium to high threat

- ii. Invasive Non-Native/Alien Species (IUCN 8.1) – medium threat
- iii. Logging & Wood Harvesting (IUCN 5.3) – low to medium threat
- iv. Housing and Urban Areas (IUCN 1.1) – low threat
- v. Annual & Perennial Non-Timber Crops (IUCN 2.1) – low threat
- vi. Roads & Railroads (IUCN 4.1) – low threat
- vii. Fire and Fire Suppression (IUCN 7.1) – low threat

## Rescue effect and broader biologically relevant geographic range

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	Long-term declines in 5 of 8 states bordering Canada including significant declines >45% over 3 generations in adjacent Minnesota, Michigan and New York
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Yes
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Probably
Are conditions deteriorating in Ontario?	Yes
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	Unknown, but possible
Is rescue from outside populations likely?	No

## Sensitive species

Not applicable.

## Appendix 2: Broader biologically relevant geographic range

### Information regarding rank and decline for Red-headed Woodpecker (*Melanerpes erythrocephalus*)

Give SRANK or write "Not Present" for each jurisdiction

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Status & Trends	Condition	Notes & Sources
Ontario		S4B	< -75% (1970–2016) in southern Ontario, -10 to -25% in northwestern Ontario	A. Smith unpubl. data 2018 from COSEWIC 2018 (Figure 9)
Quebec	Yes	S1B	< -75% (1970–2016)	As above
Manitoba	Yes	S2B	-25 to -75% (1970–2016)	As above
Michigan	Yes	S3	< -75% (1970–2016)	As above
Minnesota	Yes	SNRB	-50 to -75% (1970–2016)	As above
Nunavut	n/a	Not present	N/A	N/A
New York	Yes	S2?B	< -75% (1970–2016)	As above
Ohio	Yes	S5	Variable but < -75% (1970–2016) in adjacent areas	As above
Pennsylvania	Yes	S4B, S4N	-10 to -25% (1970–2016)	As above
Wisconsin	Yes	S3B	< -75% (1970–2016)	As above

### Broader Biologically Relevant Geographic Range in Other Jurisdictions

The broader biologically relevant geographic range for this species includes much of eastern North America. Jurisdictions bordering Ontario have documented long-term declines in 5 of 8 states, including significant declines >45% over 3 generations in adjacent Minnesota, Michigan and New York. It is suspected that Ontario is a sink population, dependent on immigration from adjacent jurisdictions for persistence.

### Global Status and Trends

GRANK: G5 (NatureServe 2018)  
IUCN: NT – Near Threatened  
NRANK Canada: N4B, N3M  
COSEWIC: Endangered (April 2018)  
SARA: Threatened (Schedule 1)  
ESA 2007: SC (2008)  
SRANK: S4B



## 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