

**Ontario Species at Risk Evaluation Report for
Prothonotary Warbler (*Protonotaria citrea*)**

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

Assessed by COSSARO as Endangered

May 2017

Final

Paruline orangée (*Protonotaria citrea*)

La paruline orangée est une espèce distinctive de paruline qui construit son nid dans les cavités des arbres le long des berges du lac Érié. Elle tend à occuper les forêts marécageuses de caducifoliés matures et semi-matures et les plaines riveraines inondables (MRNO, 2012). L'espèce se trouve à l'Extrême-Nord de son aire de répartition du Sud-Ouest de l'Ontario. Les individus des deux sexes arborent les mêmes couleurs – tête et poitrine jaune, dos vert olive et ailes et queue bleu azur –, mais celles-ci sont plus vives chez le mâle. La population de parulines orangées serait très faible en Ontario; elle compterait environ 28 individus matures. On s'attend à ce que les plantes et insectes envahissants continuent de contribuer à la détérioration de la qualité de son habitat. Vu le nombre très restreint d'individus en Ontario (estimé à moins de 30), l'espèce est considérée comme étant en voie de disparition.

Cette publication hautement spécialisée «COSSARO Candidate Species at Risk Evaluation for Prothonotary Warbler» n'est disponible qu'en anglais conformément au Règlement 671/92, selon lequel il n'est pas obligatoire de la traduire en vertu de la Loi sur les services en français. Pour obtenir des renseignements en français, veuillez communiquer avec le CDSEPO au COSSAROSecretariat@ontario.ca.

Executive summary

The Prothonotary Warbler is a distinctive warbler which builds its nests in pre-existing tree cavities at a few sites along the shores of Lake Erie. They tend to occupy mature and semi-mature deciduous swamp forest and riparian floodplains (OMNR 2012). The species is at the most northern edge of its range in southwestern Ontario. Both sexes have yellow heads and breasts, olive-green backs, and azure blue wings and tails, but the males are more brightly coloured. There are estimated to be a very small population of about 28 mature individuals in Ontario. Its habitat quality is expected to continue to decline due to invasive plants and insects. This species is assessed as Endangered based on the current population size in Ontario, which is estimated to be less than 30 individuals.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Prothonotary Warblers are a recognized distinct species. They have golden yellow heads and breasts, olive-green backs, and azure blue wings and tails, with males more brightly coloured than females (OMNR 2012). Prothonotary Warblers do not have wing bars, but white tail spots are quite prominent (OMNR 2012). They are small birds, weighing about 14 g and measuring about 14 cm in length, but are relatively large among warblers (OMNR 2012).

1.1.2. Designatable units

Not applicable. Species-level designation is used.

1.1.3. Native status

Yes, this species is considered native to Ontario.

1.1.4. Occurrence

The species has occurred regularly in Ontario for many decades.

1.2. Eligibility results

Prothonotary Warbler (*Protonotaria citrea*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

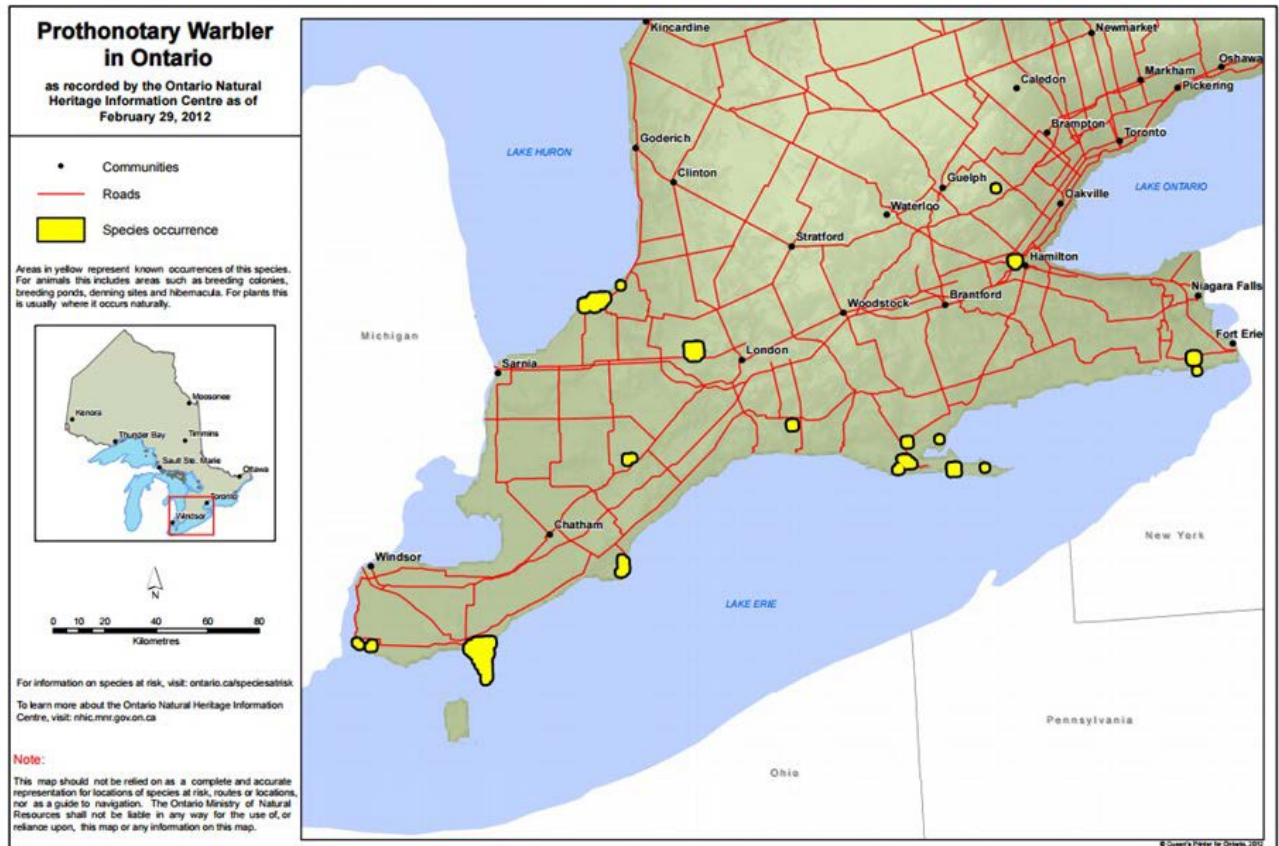
- GRANK: G5 (NatureServe 2017)
- NRANK Canada: N1B
- COSEWIC: Endangered (November 2016)
- SARA: Endangered (Schedule 1)
- ESA 2007: Endangered (2008)
- SRANK: S1B

2.2. Distribution in Ontario

The Prothonotary Warbler occurs and nests primarily along the north shore of Lake Erie in southwestern Ontario (Figures 1 and 2, respectively), which is the northernmost part of its range. As there is variation in the locations occupied on an annual basis, fewer than 10 locations are occupied in Ontario in any given year (e.g., no more than 8 in

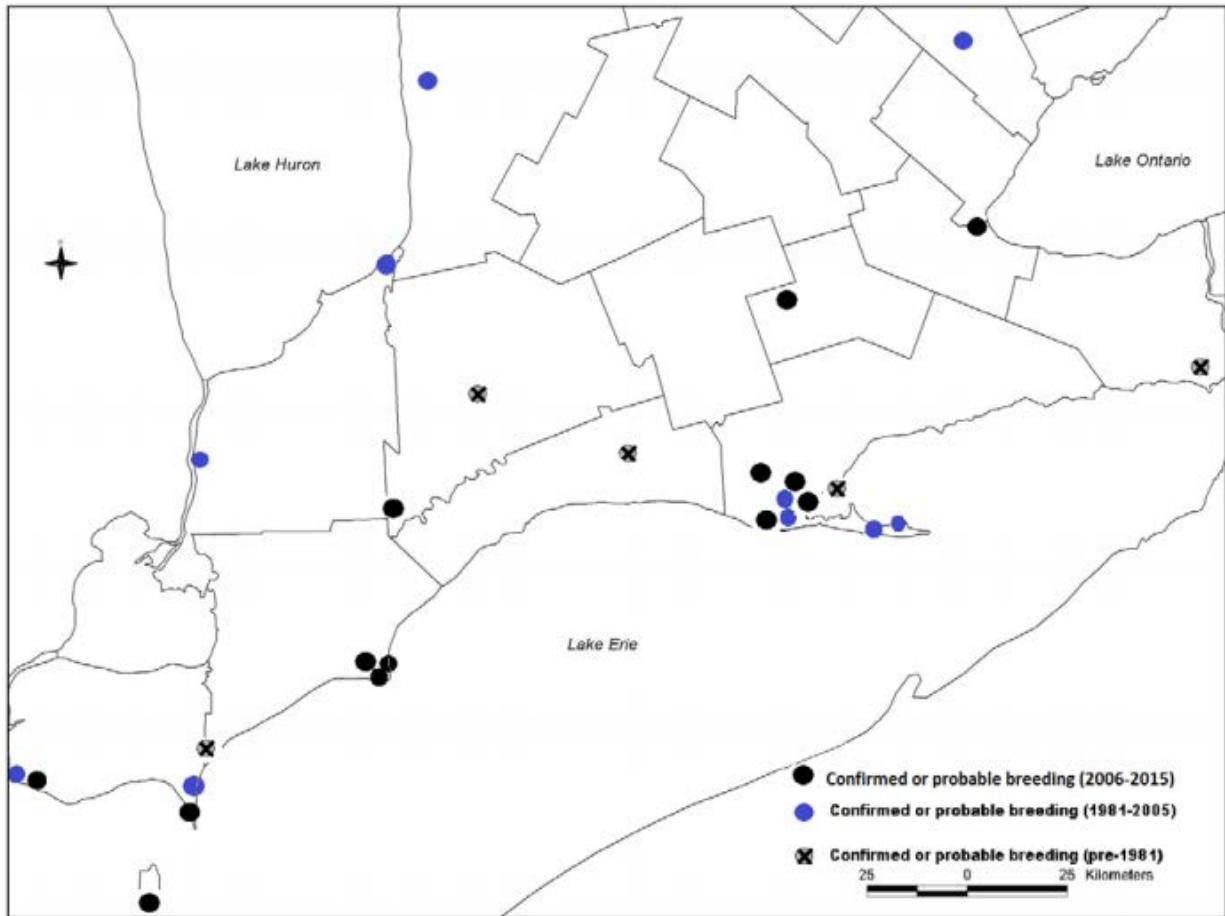
2015) (COSEWIC 2016). Over half of the small population is found in Rondeau Provincial Park. The number of mature individuals in Ontario was estimated to be 28 in 2015.

Figure 1. Occurrence of the Prothonotary Warbler in southern Ontario. Source: OMNR 2014. Larger map: [Prothonotary Warbler in Ontario](#).



ontario.ca/speciesatrisk

Figure 2. Confirmed and probable breeding occurrences in southern Ontario across various time periods Source: COSEWIC 2016 (reproduced with permission).



2.3. Distribution and status outside Ontario

The Prothonotary Warbler breeds throughout much of the eastern USA and is abundant in the southeastern United States and along the Mississippi River (COSEWIC 2016). Based on the Breeding Bird Survey (Sauer et al. 2014), the long-term North American trend was -1.1% per year from 1966-2013 (95% CI = -1.6 to -0.7) (COSEWIC 2016). The short-term 10- year trend was -0.5% per year from 2003 to 2013 (95% CI = -1.7 to 0.7), which is equivalent to a decline of no more than 17% over the decade (COSEWIC 2016). It still remains widespread with over 1.5 million mature individuals estimated throughout its North American range (COSEWIC 2016).

2.4. Ontario conservation responsibility

Less than 1% of the species global range occurs in Ontario (OMNR 2012).

2.5. Direct threats

The threats of invasive plants (e.g. common reed) and insects (Emerald Ash Borer) at

the breeding sites has increased since the last assessment of this species (COSEWIC 2016). Habitat loss (e.g. logging) is also a known threat but likely has not increased to the same extent at these sites (COSEWIC 2016).

2.6. Specialized life history or habitat use characteristics

Prothonotary Warblers nest in pre-existing tree cavities and tend to occupy mature and semi-mature deciduous swamp forest and riparian floodplains along the shores of Lake Erie (OMNR 2012).

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

Not applicable. The current population and range are exceedingly small and thus it is difficult to apply this criterion.

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

Threatened under B2ab(ii,iii)

The IAO is estimated to be maximum 40 km², but there are likely more than 5 locations. Habitat quality and number of mature individuals are projected to continue declining.

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

Endangered C2a

The number of estimated mature individuals is much smaller than the 2500 threshold. There is an observed continuing decline in mature individuals and none of the sites contain 250 or more individuals.

3.1.4. Criterion D – Very small or restricted total population

Endangered D1

The population is estimated to be 28 individuals (COSEWIC 2016). Much smaller than the threshold required for this criterion.

3.1.5. Criterion E – Quantitative analysis

Not applicable, has not been performed.

3.2. Application of Special Concern in Ontario

Not applicable, species meets other criteria.

3.3. Status category modifiers

3.3.1. Ontario's conservation responsibility

Less than 1% of the species global range occurs in Ontario (OMNR 2012).

3.3.2. Rescue effect

There is evidence of decline outside of its Ontario range as well as lack of suitable habitat making rescue unlikely. This species does migrate and it is likely they can move into suitable habitat, if available. However, this species has had a small population in Ontario for many years, indicating rescue is not occurring.

3.4. Other status categories

3.4.1. Data deficient

Not applicable, there is sufficient data for the assessment of this species' status.

3.4.2. Extinct or extirpated

Not applicable, species has been observed in Ontario in recent years.

3.4.3. Not at risk

Not applicable given information described above.

4. Summary of Ontario status

Prothonotary Warbler (*Protonotaria citrea*) is classified as Endangered in Ontario based on meeting criterion C2a(i);D1.

5. Information sources

COSEWIC. 2007. [COSEWIC assessment and update status report on the Prothonotary Warbler *Protonotaria citrea* in Canada](#). Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. ([Species at Risk Public Registry website](#)).

COSEWIC. 2016. [COSEWIC status appraisal summary on the Prothonotary Warbler *Protonotaria citrea* in Canada](#). Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi pp. ([Species at Risk Public Registry](#)).

Ontario Ministry of Natural Resources (OMNR). 2012. [Recovery Strategy for the Prothonotary Warbler \(*Protonotaria citrea*\) in Ontario](#). Ontario Recovery Strategy Series. Ontario Ministry of Natural Resources, Peterborough, Ontario. i + 3 pp. + Appendix vi + 26 pp. Adoption of the Recovery Strategy for the Prothonotary Warbler (*Protonotaria citrea*) in Canada (Environment Canada, 2011). [website accessed February 7, 2018].

Ontario Ministry of Natural Resources (OMNR). 2014. [Prothonotary Warbler \(*Protonotaria citrea*\): Where it's been found in Ontario](#). [website accessed February 7, 2018].

Sauer, J.R., J.E. Hines, J.E. Fallon, K.L. Pardieck, D.J. Ziolkowski, Jr., and W.A. Link. 2014. The North American Breeding Bird Survey, Results and Analysis 1966 - 2013. Version 01.30.2015 [USGS Patuxent Wildlife Research Center](#), Laurel, MD.

Appendix 1: Technical summary for Ontario

Species: Prothonotary Warbler (*Protonotaria citrea*)

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.	2-4 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes, counts have remained stable or declined slightly in Canada since the previous status report, from 28-34 mature individuals (COSEWIC 2007) to 28 in 2015 (COSEWIC 2016). Also, decline is projected based on deteriorating habitat quality (COSEWIC 2016).
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.	Not applicable. While the number of individuals may have declined, the population is so small that calculation of a percent change is not appropriate.
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 (EEO).	~ 11,500 km ²
Index of area of occupancy (IAO).	Maximum of 40 km ² , based on no more than 10 (2 km x 2 km) squares being occupied annually
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. No b. No
Number of locations.	<10
Number of NHIC Element Occurrences	19
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Not likely, but some uncertainty due to annual fluctuation in occupied sites
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Yes, projected decline based on invasive species threats.
Is there an observed, inferred, or projected continuing decline in number of populations?	N/A
Is there an observed, inferred, or projected continuing decline in number of locations?	Yes, projected decline due to invasive plants and insects.
Is there an observed, inferred, or projected continuing decline in [area, extent and/or quality] of habitat?	Yes, observed and projected decline in area and quality of habitat due to invasive plants and insects.
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
	28 individuals estimated in 2015 (COSEWIC 2016)

Quantitative analysis (population viability analysis conducted)

Not conducted.

Threats

A threats calculator was not prepared for this species.

Rescue effect

Rescue effect attribute	Value
Status of outside population(s) most likely to provide immigrants to Ontario	Population in the US has been showing small but sustained declines since 1968.
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?	Unknown, based on increased decline in habitat quality
Are conditions deteriorating in Ontario?	Yes, primarily owing to deteriorating habitat quality and quantity because of invasive plants and insects.
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	Unknown but unlikely given the small proportion of its global range which occurs in Ontario
Is rescue from outside populations likely?	No

Sensitive species

Yes. (Its nests are very popular with birders and photographers; precise site data should not be released).

Appendix 2: Adjoining jurisdiction status rank and decline

Information regarding rank and decline for Prothonotary Warbler (*Protonotaria citrea*)

Jurisdiction	Subnational rank	Population trend	Sources
Ontario	S1B	Unknown	Natureserve 2017
Quebec	n/a	Not applicable	Not applicable
Manitoba	n/a	Not applicable	Not applicable
Michigan	S3	Unknown	Natureserve 2017
Minnesota	SNRB	Unknown	Natureserve 2017
Nunavut	n/a	Not applicable	Not applicable
New York	S2B	Unknown	Natureserve 2017
Ohio	S3	Unknown	Natureserve 2017
Pennsylvania	S2S3B	Unknown	Natureserve 2017
Wisconsin	S3B	Unknown	Natureserve 2017

Acronyms

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

COSSARO: Committee on the Status of Species at Risk in Ontario

EOO: extent of occurrence

ESA: Endangered Species Act

GRANK: global conservation status assessments

IAO: index of area of occupancy

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

S3: Vulnerable

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