Ontario Species at Risk Evaluation Report for Olive-sided Flycatcher (*Contopus cooperi*)

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

Assessed by COSSARO as Special Concern

August 2020

Moucherolle à côtés olive

La moucherolle à côtés olive est une moucherolle (oiseau insectivore) trapue associée aux forêts boréales du nord du Canada. Cet oiseau est très répandu dans les régions forestières de l'Ontario, principalement dans la partie sud du Bouclier canadien jusqu'au nord, dans les basses terres de la baie d'Hudson. La moucherolle à côtés olive est en plus fortes densités dans le nord de l'Ontario. Sa migration est l'une des plus longues de toutes les moucherolles d'Amérique du Nord, elle qui hiberne en Amérique centrale et en Amérique du Sud.

Les données du Relevé des oiseaux nicheurs (BBS) ont montré un important déclin à long terme de la population, partout au Canada et en Ontario. Les schémas récents de la dernière décennie soulignent en règle générale une diminution continue, et ce, malgré un taux un peu plus faible qui n'est plus significatif. Les données du BBS pour l'Ontario indiquent un déclin de 68 % ces 50 dernières années (1966 à 2015), mais de l'ordre de 16 % durant la dernière décennie (2006 à 2015). Une autre étude, fondée sur un ensemble de données différent, n'a pas pu confirmer un déclin à l'échelle nationale sur la période de 1997 à 2013. Les populations diminuent dans la majeure partie des territoires voisins de l'Ontario, à l'exception du Québec.

L'espèce est encore relativement répandue et largement répartie en Ontario, et ne répond à aucun des critères des statuts d'espèce en voie de disparition et d'espèce menacée. Toutefois, son déclin continu dans les tendances des données du BBS porte à croire que la population montre encore des signes préoccupants. Le COSEPAC a dernièrement (novembre 2018) rétrogradé la moucherolle à côtés olive sur la liste des espèces en péril en la faisant passer d'espèce menacée à espèce préoccupante. L'évaluation ontarienne de la moucherolle à côtés olive la qualifie d'espèce préoccupante.

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Executive summary

The Olive-sided Flycatcher (*Contopus cooperi*) is a stocky flycatcher (aerial insectivore) associated with the boreal forests of northern Canada. It is distributed widely across Ontario's forested regions, primarily from the southern Canadian Shield north to the Hudson Bay Lowlands, with highest densities in northern Ontario. It has one of the longest migrations of any North American flycatcher, wintering in Central and South America.

Breeding Bird Survey (BBS) data have shown significant long-term population declines across Canada and in Ontario. Recent patterns over the past decade generally point to a continuing decline, although at a somewhat lower rate that is no longer significant. BBS data for Ontario show a 68% decline over the past 50 years (1966-2015), but a 16% decline over the most recent decade (2006-2015). An alternate study using a different data set could not confirm a decline nationally over the period 1997-2013. Populations are in decline in most jurisdictions adjacent to Ontario, with the exception of Québec.

The species is still relatively common and widely distributed in Ontario, and it does not meet any of the criteria for Threatened and Endangered status. However, the continued decline in BBS trend data suggest that there are still concerns for the population. Major anticipated threats include ongoing loss of wintering habitat (possibly the most limiting factor), altered fire regimes, reductions in aerial insect prey, human-caused habitat disturbance and fragmentation and climate change and severe weather events. Most of these threats are not stopped or reversed, and several will be exacerbated by climate change. COSEWIC recently (November 2018) downlisted Olive-sided Flycatcher from Threatened to Special Concern. In Ontario, Olive-sided Flycatcher is designated as Special Concern.

1. Eligibility for Ontario status assessment

1.1. Eligibility conditions

1.1.1. Taxonomic distinctness

Contopus cooperi is recognized as a distinct taxon. There are no known subspecies or varieties (COSEWIC 2018).

1.1.2. Designatable units

COSEWIC (2018) recognize only one designatable unit across the Canadian range. Only one designatable unit is recognized at the provincial level.

1.1.3. Native status

The Olive-sided Flycatcher is native to Canada and Ontario, and much of its global breeding range (53%) occurs in Canada (COSEWIC 2018).

1.1.4. Occurrence

The Olive-sided Flycatcher (*Contopus cooperi*) is known to occur in Ontario (COSEWIC 2018).

1.2. Eligibility results

Olive-sided Flycatcher (*Contopus cooperi*) is eligible for status assessment in Ontario.

2. Background information

2.1. Current designations

- GRANK: G4 (NatureServe 2020)
- NRANK Canada N4B, N3M (NatureServe 2020)
- COSEWIC: Special Concern (November 2018)
- SARA: Threatened (Schedule 1) (SARA 2018)
- ESA 2007: Special Concern (Government of Ontario 2018) (September 2009)
- SRANK: S4B

2.2. Distribution in Ontario

The Olive-sided Flycatcher occurs across much of Ontario. It is distributed widely across the forested regions of Ontario, occurring primarily from the southern Canadian Shield north to the Hudson Bay Lowlands, with highest densities in northern Ontario forests. It is widespread throughout the boreal forest, and occurs at lower densities in the Great Lakes-St Lawrence forest to the southern edge of the Canadian Shield (Cheskey 2007; COSEWIC 2018). Highest relative abundance occurs in northwestern Ontario between the Severn River and the Manitoba border. north of Lake of the Woods, in the north-central region near Winisk River Provincial Park, east of Lake Nipigon and north of Lake Superior (Cheskey 2007, COSEWIC 2018). There is also an area of high relative abundance along the northeastern border of Ontario and Québec.

The number of locations of occurrences is not readily identifiable for this wide-ranging species (COSEWIC 2018). However, many of the threats (2.5) are regionally or locally site-specific, and COSEWIC (2018) concluded that the number of locations is far greater than 10. This same rationale would appear to apply within Ontario. The Extent of Occurrence was calculated as 1,063,105 km2 based on NHIC observation records. This is a minimal estimate, as the distribution is known to go much further north in Ontario.

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

The Olive-sided Flycatcher is widely distributed across Canada and the western and northeastern United States, with highest breeding densities west of the Rocky Mountains in Alaska, and northwestern British Columbia (COSEWIC 2018). It is found in the northern forests of every Canadian jurisdiction. Throughout its range its distribution is generally patchy, and it generally occurs at low densities (COSEWIC 2018). BBS data indicate both long-term and short-term declines across North America; although the annual index of decline is lower in the last decade, the population continues to decline (COSEWIC 2018).

2.4. Ontario conservation responsibility

An estimated 53% of the global population (Environment Canada 2016) and breeding range (COSEWIC 2018) occurs in Canada. Based upon an estimated 11.7% of the Canadian population occurring in Ontario (Haché et al 2014), Ontario's population is estimated to be 6.3% of the global population.

2.5. Direct threats

The Olive-sided Flycatcher faces a Medium level of Threat (COSEWIC 2018). Threats with a predictable effect in descending order of impact include:

- Agriculture – loss of wintering habitat (forest cover) to agricultural use is possibly the most limiting threat (Altman and Sallabanks 2008);
- Natural system modifications:
  - Changing fire regimes,
  - Reductions in aerial insect prey due to habitat changes and increasing use of specific potentially harmful pesticides; and
- Anthropogenic habitat disturbance and fragmentation (COSEWIC 2018).

Potential threats with unknown levels of effects include:

- Climate change and severe weather events impacting habitat availability, timing of insect emergence, and nestling mortality due to severe weather events;
- Exposure to pollution such as pesticides (e.g. neonicotinoids) and mercury; and
- Effects of forest harvesting on habitat quality and use (COSEWIC 2018).

Discrete locations cannot be readily identified for Olive-sided Flycatcher. However, many of the threats are considered to have effects at the regional or local scale, and the number of locations is expected to be much greater than 10.

2.6. Specialized life history or habitat use characteristics

Several ecological traits may make the Olive-sided Flycatcher more vulnerable to threats include:

- It has a short nesting season compared to other songbirds and only raises a single brood annually, making it less resilient to recover from population stresses (Cheskey 2007, COSEWIC 2018).
- It has the longest known migration of any North American flycatcher, potentially increasing exposure to migration risks such as severe weather events and stopover habitat loss (Cheskey 2007, COSEWIC 2018).
- Fidelity to breeding sites may also be a factor (Cheskey 2007).

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. Observed 10-year decline of -15.8% in Ontario based upon BBS data (2005–2015) (Sauer et al. 2017), which does not meet thresholds. Longer-term (50 year) trend in Ontario indicated a 68% decline (1966–2015).

COSEWIC (2018) noted that nationally, “overall, the species may be relatively stable or declining by as much as 19% over a ten year period, but additional work is needed to improve estimate accuracy”. Much of the species’ range lies north of the road network and low numbers of birds are reported per route, suggesting that the provincial population may not be adequately sampled by the BBS. There is some indication of a positive roadside bias (Haché et al. 2014). Haché et al. (2014) could not confirm a declining population trend between 1997-2013 in the Boreal Avian Modelling project, likely due to different estimation methods than those used for BBS data (COSEWIC 2018).

While the general distribution was relatively unchanged between the two breeding bird atlases (1980–1984 vs 2001–2005), the probability of observation declined significantly in the more southern parts of its distribution: Lake Simcoe-Rideau Region (-44%) and the Southern Shield Region (-35%) (Cheskey 2007). The probability of occupancy in all atlas squares in Ontario declined 7% from 37.5% (1981–1985) to 34.8% (2001–2005) (COSEWIC 2018).

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

Does not apply. EOO and IAO exceed thresholds.

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

Does not apply. Total number of mature individuals far exceeds thresholds.

3.1.4. Criterion D – Very small or restricted total population

Does not apply. Total number of mature individuals far exceeds thresholds.

3.1.5. Criterion E – Quantitative analysis

Does not apply. Analysis not completed.

3.2. Application of Special Concern in Ontario

No criteria for Threatened or Endangered were met. However, the Ontario population of Olive-sided Flycatcher has experienced a substantial long-term decline (-72% between

1970 and 2016), although the rate of decline appears to have slowed in the past decade (-15.8% from 2005-2015, Sauer et al. 2017). Although there are some limitations to the BBS data, there has clearly been a consistently declining long-term population trend, although not always significant, both nationally and provincially over several decades. Highest ongoing threats appear to be loss of wintering habitat in South America, impacts on breeding habitat from changing fire patterns and climate change, and reductions in aerial insect prey. The species is likely to become Threatened if these factors affecting it negatively are not reversed or managed effectively.

3.3. Status category modifiers

Does not apply.

3.3.1. Ontario's conservation responsibility

Does not apply. Ontario represents an estimated 6.4% of global population (see 2.5)

3.3.2. Status modification based on rescue effect

Does not apply. Rescue from outside populations is possible but unlikely as populations are declining in all adjacent jurisdictions except Québec (see Appendices 1 and 2).

3.4. Other status categories

3.4.1. Data deficient

Does not apply.

3.4.2. Extinct or extirpated

Does not apply.

3.4.3. Not at risk

Does not apply.

4. Summary of Ontario status

Olive-sided Flycatcher (*Contopus cooperi*) is classified as Special Concern in Ontario based on meeting criterion as it does not meet any of the criteria for Endangered or Threatened. However, the species has experienced dramatic declines over the last 20 years, with reduced by continued declines over the last decade. This assessment is consistent with that of COSEWIC for this species.

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

5. Information sources

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[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: Olive-sided Flycatcher (*Contopus cooperi*)

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.	Uncertain, but estimated by COSEWIC (2018) to be approximately 3 years
Is there an observed, inferred, or projected continuing decline in number of mature individuals?	Yes inferred
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.	-15.8 % provincially based upon BBS data (2005-2015) (Sauer et al. 2017). Longer-term (50 year) trend in Ontario indicated a 68% decline (1966-2015).
Projected or suspected percent reduction or increase in total number of mature individuals over the next 10 years or 3 generations.	Approximately 3-30% reduction nationally, based on overall medium threat impact assessment (COSEWIC 2018).
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.	Approximately 15-20% reduction nationally, based on BBS trend analysis and mid-range of overall medium threat impact assessment (COSEWIC 2018).
Are the causes of the decline (a) clearly reversible, and (b) understood, and (c) ceased?	a. Some but not others b. Some but not others 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). *If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.*	1,063,105 km^{2}. Based on NHIC observation records

Extent and occupancy attributes	Value
	(Figure 2, element occurrences not available). This is a minimal estimate, as the distribution is known to go much further north in Ontario.
Index of area of occupancy (IAO). *If value in COSEWIC status report is not applicable, then use geocat.kew.org. State source of estimate.*	10,530 $km^{2.}$ Canadian population estimated at 450,000-4.6 million breeding pairs (COSEWIC 2018). Ontario's population represents 11.7% of the national population (Haché et al 2014), equating to 52,650 to 538,200 breeding pairs. Based upon an average territory size of 20 ha (COSEWIC 2018) and the estimated minimum provincial population of 52,650 pairs, this represents an IAO of 10,530 km^2
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. *See Definitions and Abbreviations on COSEWIC and IUCN websites for more information on the term "location". Use plausible range to reflect uncertainty if appropriate.*	Unknown; much greater than 10.
Number of NHIC Element Occurrences *Request data from MNRF.*	NHIC has not yet created EOs for this species (MNRF pers. comm.). 334 observations in MNRF (NHIC) data base.
Is there an observed, inferred, or projected continuing decline in extent of occurrence?	Unknown. Range retraction is likely in the south, but northward expansion may be possible (COSEWIC 2018 in press)

Extent and occupancy attributes	Value
Is there an observed, inferred, or projected continuing decline in index of area of occupancy?	Unknown. Declines are projected for southern parts of the range, but northward expansion is possible (COSEWIC 2018). While the general distribution was relatively unchanged between the two breeding bird atlases (1980–84 vs 2001–05), the probability of observation declined significantly in the Lake Simcoe-Rideau Region (-44%) and the Southern Shield Region (-35%) (Cheskey 2007). Data from the breeding bird atlas indicate the probability of occupancy in atlas squares in Ontario declined 7% from 37.5% (1981-1985) to 34.8% (2001-2005) (COSEWIC 2018).
Is there an observed, inferred, or projected continuing decline in number of sub-populations or EOs?	Unknown
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, inferred
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
Ontario (Ontario's population cannot be divided into sub-populations,	105,300–1,072,400. Canadian population estimated at 450,000–4.6

although there are clearly areas of higher and lower density)	million breeding pairs (COSEWIC 2018). Ontario's population represents 11.7% of the national population (Haché et al 2014), equating to 52,650 to 538,200 breeding pairs, or 105,300-1,072,400 mature (breeding) individuals. Haché et al. (2014) concluded that the "actual [national] population size is likely somewhere between the 900,000 estimated by PIF [Partners in Flight] and the 9.2 million estimated by BAM [Boreal Avian Modelling]". Applying the BAM data that suggest that Ontario's population represents 11.7% of the national population (Haché et al. 2014), Ontario's; population would be estimated to likely be between 99,000 (PIF) and 1,070,000 individuals.

Quantitative analysis (population viability analysis conducted)

Probability of extinction in the wild is unknown (no analysis undertaken) (COSEWIC 2018).

Threats

A Threats Calculator was completed (COSEWIC 2018). Identified direct threats include:

- Low to High Threat Impact:
    - Agriculture and aquaculture
    - Natural system modifications
    - Energy production and mining
    - Transportation and service corridors
- Unknown Threat Impact:
    - Climate change and severe weather
    - Pollution
    - Biological resource use
    - Invasive and other problematic species and genes
- Negligible Impact:
    - Residential and commercial development.

See text for more details (2.5).

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	Declining in United States (-74.7% between 1966 and 2015) and Canada (-72% between 1970 and 2016) (COSEWIC 2018). Declining in all adjacent jurisdictions except Québec. In jurisdictions bordering Ontario which have a breeding population, status is; S4 – Michigan S3S4 - Manitoba S3 - New York, Québec S2 - Wisconsin SH – Ohio SX - Pennsylvania SNRB – Minnesota, Nunavut
Is immigration of individuals and/or propagules between Ontario and outside populations known or possible?	Possible
Would immigrants be adapted to survive in Ontario?	Yes
Is there sufficient suitable habitat for immigrants in Ontario?	Yes
Are conditions deteriorating in Ontario?	Unknown but likely (COSEWIC 2018)
Is the species of conservation concern in bordering jurisdictions?	Yes
Is the Ontario population considered to be a sink?	No
Is rescue from outside populations likely?	No

Sensitive species

Not a data sensitive species. Widespread distribution..

Appendix 2: Broader biologically relevant geographic range

Information regarding rank and decline for Olive-sided Flycatcher (*Contopus cooperi*)

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Status & Trends	Condition	Notes & Sources
Ontario	Yes	S4B (-15.8)	n/a	NatureServe 2020, Sauer et al. 2017
Quebec	Yes	S3 (+25.5)	On list of wildlife species likely to be designated threatened or vulnerable	NatureServe 2020, Sauer et al. 2017, COSEWIC 2018
Manitoba	Yes	S2S3B (-41.7)	Threatened	NatureServe 2020, Sauer et al. 2017 COSEWIC 2018
Michigan	Yes	S3B (-34.0)	n/a	NatureServe 2020, Sauer et al. 2017
Minnesota	Yes	SNRB (-32.7)	Designated a Species in Greatest Conservation Need by the Minnesota Department of Natural Resources. Marginally significant negative population trend (1995-2015, Zlonis et al. 2015).	NatureServe 2020, Sauer et al. 2017 Minnesota Breeding Bird Atlas 2018
Nunavut	No	NA	n/a	
New York	Yes	S3B (-48.7)	n/a	NatureServe 2020, Sauer et al. 2017
Ohio	n/a	SH	n/a	NatureServe 2020, Sauer et al. 2017
Pennsylvania	Yes	SXB (-81.6)	n/a	NatureServe 2020, Sauer et al. 2017

Adjacent Jurisdictions	Biologically Relevant to Ontario (n/a, yes, no)	Status & Trends	Condition	Notes & Sources
Wisconsin	Yes	S2B (19.8)	Special Concern	NatureServe 2020, Sauer et al. 2017, Wisconsin Department of Natural Resources 2018

Broader Biologically Relevant Geographic Range in Other Jurisdictions

While all adjacent jurisdictions to Ontario with the exception of Nunavut have extant populations of Olive-sided Flycatchers, all but Quebec are experiencing significant population declines. With Ontario's continued declines, it may be that Ontario is acting as a sink, and experiencing continued immigration from Quebec, which has documented population increases.

List and justify other jurisdictions that are part of the broader biologically relevant geographic range for Ontario. Describe the status, trends and condition. This section will be most applicable to migratory species.

Global Status and Trends

- GRANK: G4 (NatureServe 2020)
- NRANK Canada N4B, N3M (NatureServe 2020)
- COSEWIC: Special Concern (November 2018)
- SARA: Threatened (Schedule 1) (SARA 2018)
- ESA 2007: Special Concern (Government of Ontario 2018) (September 2009)
- SRANK: S4B

Cite and describe any additional information on global status and trends (see Section 2.1).

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