

**Committee On Status Of Species At Risk In  
Ontario (COSSARO)**

**Comité de détermination du statut des  
espèces en péril en Ontario**

**ANNUAL REPORT**

**RAPPORT ANNUEL**

**2019 - 2020**

**PREPARED FOR:**

The Honourable Jeff Yurek  
Minister of Environment, Conservation and Parks

**PREPARED BY:**

The Committee on the Status of Species at Risk in Ontario

**SUBMITTED:**

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## **ACKNOWLEDGEMENTS**

COSSARO wishes to acknowledge and thank the observers who attended and contributed to the dialogue in species assessment meetings. Observers in 2020 (listed below) represented First Nations, companies, industry associations, sporting associations and conservation organizations. Their attendance and interest in the work of COSSARO was helpful and is appreciated.

- Algonquins of Pikwakanagan First Nation
- Red Sky Metis Independent Nation
- Temagami First Nation
- Birds Canada (Bird Studies Canada)
- Hydro One
- Nature Conservancy of Canada
- Nature London
- Ontario Federation of Anglers and Hunters (OFAH)
- Ontario Hawking Club (OHA)
- University of Toronto (Algonquin Wildlife Research Station)
- Walker Industries
- Wilderness Committee

We also wish to express our thanks to First Nations and industry and conservation associations who chose to contribute Indigenous and community knowledge to COSSARO during 2020, including:

- Ontario Federation of Anglers and Hunters (OFAH) (Peregrine Falcon contributions)
- Ontario Hawking Club (OHA) (Peregrine Falcon contributions)
- Nature London (Chimney Swift contributions)

As members on COSSARO we are grateful to Hon. Jeff Yurek, Minister of Environment, Conservation and Parks (MECP) and his team at the MECP that serves as the Secretariat and support to COSSARO. In particular we are grateful to the following MECP team members who worked hard to build COSSARO's capacity in terms of membership and scientific knowledge and who supported COSSARO's busy schedule in 2020.

- |                    |                    |                 |
|--------------------|--------------------|-----------------|
| • Brie-Anne Breton | • Susan Ecclestone | • Kathleen Pitt |
| • Kirsten Corrigan | • Megan McAndrew   | • Eric Snyder   |
| • Cathy Darevic    | • Sarah Parna      | • Rebecca Teare |

We are also grateful to the Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) for providing important data to COSSARO allowing our assessment of species. In particular we are grateful to Colin Jones, the Provincial Arthropod Zoologist with the NHIC. He serves as a Province of Ontario member on the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). In that role he was able to support COSSARO's access to and understanding of COSEWIC considerations related to species assessments.

## 1. INTRODUCTION

The Committee on the Status of Species at Risk in Ontario (COSSARO) is an independent committee of experts which considers which plants and animals should be assessed as at risk in Ontario.

The Endangered Species Act gives the committee legal recognition and specific responsibilities:

- Maintaining criteria for assessing and classifying species
- Keeping a list of species that should be assessed and classified (or reclassified) in the future
- Assessing, reviewing and classifying species
- Submitting reports regarding the classification of species and providing advice to the Minister of the Environment, Conservation and Parks

COSSARO can consist of up to 12 members with expertise in scientific disciplines or community knowledge or Indigenous Knowledge. A quorum of eight members is required for voting purposes. 2020 was a very busy year for COSSARO as a substantial backlog of species had accumulated during a period where quorum was not met and where full meetings including voting were not conducted.

During 2020, the MECP appointed new members, renewing the ability of COSSARO to fulfil its mandate. COSSARO was able to begin to re-assess and vote on species as membership ranks grew in the Spring of 2020 and as all new members successfully completed their required IUCN Module 3 and NHIC Data Sensitivity Training in the late Spring.

Rather than the traditional two meetings per year, in 2020, COSSARO held seven virtual meetings in 2020 to catch up on the species assessment backlog. COVID-19 affected COSSARO's activities, but the MECP secretariat team and COSSARO members adapted quickly to the online world of meetings which continued to include observers in open sessions.

By the end of 2020, COSSARO essentially eliminated the backlog of species assessments, a tribute to the willingness of members to invest substantial time and energy to assess more species than would typically be assessed in a given year, despite the disruption of normal operations due to the COVID-19 pandemic.

## 2. SUMMARY OF STATUS ASSESSMENTS

The table below, summarizes the results of assessments and voting completed on 35 species/ Designatable Units (DUs) in 2020.

<b>SPECIES</b> <b>Common Name, Scientific Name</b>	<b>CLASSIFICATION</b> <b>(UNDER ESA)</b>	<b>NEW COSSARO</b> <b>EVALUATED</b> <b>STATUS</b>
Redside Dace <i>Clinostomus elongatus</i>	<i>Endangered</i>	<i>Endangered</i>
Golden-Eye Lichen (Prairie/Boreal population) <i>Teloschistes chrysophthalmus</i>	<i>N/A</i>	<i>Not at Risk</i>
Spoon-leaved Moss <i>Bryoandersonia illecebra</i>	<i>Endangered</i>	<i>Threatened</i>
Olive-sided Flycatcher <i>Contopus cooperi</i>	<i>Special Concern</i>	<i>Special Concern</i>
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i>	<i>Special Concern</i>	<i>Endangered</i>
Lake Whitefish (Como Lake large-bodied populations) <i>Coregonus clupeaformis</i>	<i>N/A</i>	<i>Extinct</i>
Lake Whitefish (Como Lake small-bodied populations) <i>Coregonus clupeaformis</i>	<i>N/A</i>	<i>Extinct</i>
Lake Whitefish (Opeongo Lake large-bodied populations) <i>Coregonus clupeaformis</i>	<i>N/A</i>	<i>Threatened</i>
Lake Whitefish (Opeongo Lake small-bodied populations) <i>Coregonus clupeaformis</i>	<i>N/A</i>	<i>Threatened</i>
Red-tailed Leafhopper <i>Aflexia rubranura</i>	<i>N/A</i>	<i>Special Concern</i>
Common Nighthawk <i>Chordeiles minor</i>	<i>Special Concern</i>	<i>Special Concern</i>
Chimney Swift <i>Chaetura pelagica</i>	<i>Threatened</i>	<i>Threatened</i>

<b>SPECIES</b> <b>Common Name, Scientific Name</b>	<b>CLASSIFICATION</b> <b>(UNDER ESA)</b>	<b>NEW COSSARO</b> <b>EVALUATED</b> <b>STATUS</b>
Monarch <i>Danaus plexippus</i>	<i>Special Concern</i>	<i>Special Concern</i>
Midland Painted Turtle <i>Chrysemys picta marginata</i>	<i>N/A</i>	<i>Not at Risk</i>
Gilman's Goldenrod <i>Solidago gillmanii</i>	<i>N/A</i>	<i>Endangered</i>
Carolina Mantleslug <i>Philomycus carolinianus</i>	<i>N/A</i>	<i>Threatened</i>
Shagreen <i>Inflectarius inflectus</i>	<i>N/A</i>	<i>Endangered</i>
Toothed Globe <i>Mesodon zaletus</i>	<i>N/A</i>	<i>Endangered</i>
Peregrine Falcon <i>Falco peregrinus</i>	<i>Special Concern</i>	<i>Special Concern</i>
Black Ash <i>Fraxinus nigra</i>	<i>N/A</i>	<i>Endangered</i>
Hudsonian Godwit <i>Limosa haemastica</i>	<i>N/A</i>	<i>Threatened</i>
White-rimmed Shingle Lichen <i>Fuscopannaria leucosticta</i>	<i>N/A</i>	<i>Endangered</i>
False-Foxglove Sun Moth <i>Pyrrhia aurantiago</i>	<i>N/A</i>	<i>Endangered</i>
Downy Yellow False Foxglove <i>Aureolaria virginica</i>	<i>N/A</i>	<i>Endangered</i>
Smooth Yellow False Foxglove <i>Aureolaria flava</i>	<i>N/A</i>	<i>Threatened</i>
Fern-leaved Yellow False Foxglove <i>Aureolaria pedicularia</i>	<i>N/A</i>	<i>Threatened</i>
Wood Turtle <i>Glyptemys insculpta</i>	<i>Endangered</i>	<i>Endangered</i>

SPECIES Common Name, Scientific Name	CLASSIFICATION (UNDER ESA)	NEW COSSARO EVALUATED STATUS
Gray Ratsnake (Frontenac Axis population) <i>Pantherophis spiloides</i>	<i>Threatened</i>	<i>Threatened</i>
Gray Ratsnake (Carolinian population) <i>Pantherophis spiloides</i>	<i>Endangered</i>	<i>Endangered</i>
Hairy Valerian <i>Valeriana edulis ssp. ciliata</i>	<i>N/A</i>	<i>Threatened</i>
Frosted Elfin <i>Callophrys irus</i>	<i>Extirpated</i>	<i>Extirpated</i>
Karner Blue <i>Plebejus samuelis</i>	<i>Extirpated</i>	<i>Extirpated</i>
Goldenseal <i>Hydrastis canadensis</i>	<i>Threatened</i>	<i>Special Concern</i>
Gravel Chub <i>Erimystax x-punctatus</i>	<i>Extirpated</i>	<i>Extirpated</i>
Paddlefish <i>Polyodon spathula</i>	<i>Extirpated</i>	<i>Extirpated</i>

**NOTES:**

- N/A means the species has not been formerly assigned a status in Ontario
- All English, French and Indigenous names of species are included in Status reports, where known
- In 2020, both Ringed Seal and Lumpfish were determined by COSSARO not to be eligible for assessment

**Nomenclature/Taxonomic Changes**

The following changes were presented, discussed and accepted by COSSARO (update provided by Eric Snyder, Species at Risk Specialist, MECP):

- Eastern Prickly Pear Cactus (*Opuntia humifusa*) to Eastern Prickly-pear Cactus (*Opuntia cespitosa*).
- Ogden’s Pondweed (*Potamogeton ogdenii*) to Ogden’s Pondweed (*Potamogeton x ogdenii*)
- Showy Goldenrod (Great Lakes Plains population) (*Solidago speciosa*) to Stiff-leaved Showy Goldenrod (*Solidago rigidiuscula*)
- Virginia Mallow (*Sida hermaphrodita*) to Virginia Mallow (*Ripariosida hermaphrodita*)
- False Rue-anemone (*Enemion biternatum*) to Eastern False Rue-anemone (*Enemion biternatum*)

- Showy Goldenrod (Boreal population) (*Solidago speciosa*) to Pale Showy Goldenrod (*Solidago pallida*)
- Small-flowered Lipocarpha (*Lipocarpha micrantha*) to Small-flowered Lipocarpha (*Cyperus subsquarrosus*)

COSSARO has also determined that Karner Blue which is currently named, *Lycaeides melissa samuelis* should be amended to *Plebejus samuelis* to follow the naming used by NatureServe.

### 3. SUMMARY OF 2020 COSSARO MEETINGS & OPERATIONS

#### 3.1 Meetings

COSSARO like most agencies and organizations was affected by COVID-19 in 2020. Meetings were held virtually rather than in person. The traditional two meetings per year were replaced with a series of seven virtual meetings.

The following offers a brief summary of each of the 2020 meetings.

MEETING DATE	MEETING SUMMARY
<p><b>May 22, 2020</b> (In-camera administrative meeting)</p>	<p>Given that several members were recent appointees, early administrative meetings allowed for ample time to orient and introduce new members to the Purpose and Role of COSSARO, COSSARO requirements, and Orientation to the Endangered Species Act. All members swore their Oaths of Service and initiated their IUCN Training (module 3) and MNRF NHIC Data sensitivity training. Discussions regarding best practices for information and data storage were discussed amongst the members of COSSARO.</p>
<p><b>May 29, 2020</b> (In-camera administrative meeting)</p>	<p>The orientation and training continued in conjunction with the initiation of work planning to schedule how best to move through the species assessment backlog (of about two dozen species). This backlog included seven assessments that were prepared for the April 2019 meeting when quorum was not achieved. Presentations at this internal administration meeting included COSSARO criteria and ESA Amendments, and COSEWIC &amp; The use of the IUCN Criteria. The latter presentation and training session was led by Dave Fraser, a senior member of the Ministry of the Environment (British Columbia) and a recognized expert in the use of IUCN/COSEWIC species assessment criteria.</p>
<p><b>June 11, 2020</b> (In-camera, Spring work planning meeting)</p>	<p>This meeting addressed a number of administrative matters including ongoing work planning and the assignment of status report to primary and secondary authors for work ahead of the species assessment meetings scheduled for September, October and November 2020. Detailed discussions were also held regarding the amendments to the ESA legislation in 2019 and how that would affect the criteria that COSSARO used for species assessment. In particular COSSARO members were advised of the intention of the legislative amendments (i.e., Rules for classification, section 5, Endangered Species Act). And COSSARO spoke during and after the meeting about required modifications to the interpretation and implementation of the criteria, as affected by those legislative changes.</p> <p>The legislative amendments most pertinent to COSSARO related to how to define and interpret the terms “broader biologically relevant geographic range” and the “condition of the species both inside and outside of Ontario”. Detailed discussions were held during this and subsequent meetings amongst MECP, MNRF (NHIC) and COSSARO members.</p>

MEETING DATE	MEETING SUMMARY
	Attachment 3 is the current working draft of an interpretation piece that COSSARO is using to assess species. The attachment identifies key considerations, practices and tools being use by COSSARO members to adequately address the language in the legislative amendments. These are draft working materials that may be subject to further additions/deletions may be required as ongoing species assessments are undertaken.
<p><b>Aug. 28, 2020</b> (In-camera planning meeting)</p>	This planning and scheduling meeting also included formal voting on assessments that were completed for the April 2019 COSSARO meeting where quorum was not met for the formal votes to be cast. Interested Observers had been in attendance for the formal assessments at the April 2019 COSSARO meeting.
<p><b>Sept. 24-25, 2020</b> (In-camera, open assessment meeting)</p>	<p>This meeting included the assessment of the status and voting on eight species/DUs with a vote regarding Peregrine Falcon deferred to a subsequent meeting to allow the Primary and Secondary Authors to ensure that the “best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge” had been assembled and fully considered.</p> <p>Observers provided helpful materials just ahead of this meeting. The MECP continues to encourage observers at COSSARO meetings to provide any additional information to COSSARO well ahead of each meeting.</p> <p>Preparations for the September COSSARO meeting included focused dialogue with organizations that provided information for consideration by COSSARO (i.e., Ontario Federation of Anglers and Hunters, and the Ontario Hawking Club).</p>
<p><b>Oct. 29-30, 2020</b> (In-camera, open assessment meeting)</p>	<p>This meeting included the assessment of the status and voting on five species/DUs, with a vote regarding six others deferred to a subsequent meeting to allow the Primary and Secondary Authors to ensure that the “best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge” had been assembled and fully considered. For some deferred species, it was also recognized that the delayed votes would enable the members to fully consider the full interpretations of the 2019 legislative amendments.</p> <p>Detailed discussions continued regarding those legislative amendments and how best to address them with an interpretative tool in development and use by COSSARO. Discussions were also included in the October meeting regarding procedures and operations, outreach and assessment report template adjustments.</p>
<p><b>Nov. 26-27, 2020</b> (In-camera, open assessment meeting)</p>	This meeting included the assessment of the status and voting on 13 species/DUs. Some initial planning for 2021 assessments was also initiated at the November meeting.

### **3.2 Updates Regarding Other Operational Matters**

In terms of the work of COSSARO, opportunities were sought in 2020 to streamline aspects of traditional work to allow additional time to be invested in completing species assessments more fully and effectively. For example, in the past, extensive notes were compiled for meetings and other COSSARO activities which placed pressure on COSSARO to be able to effectively maintain and update the species lists for assessment and afforded limited time for outreach and background dialogue to ensure that COSSARO was in possession of the best available scientific information, including information obtained from community knowledge and Indigenous knowledge.

Additional time saved through more efficient remote meetings and reduced meeting documentation was in part invested in more direct dialogue with holders of Indigenous knowledge and with holders of scientific information and community knowledge. COSSARO engaged in direct dialogue with groups and individuals regarding their information for species that were suggested for new assessments and/or reassessments. For example, COSSARO has initiated some additional discussions with COSEWIC representatives regarding the potential assessment of Ringed Seal in Ontario.

The website for COSSARO (<http://cossaroagency.ca>) was helpful in keeping Ontario citizens apprised of COSSARO activities. The MECP continues to update and operate that website on behalf of COSSARO, actions that are appreciated by COSSARO members.

In 2020, Dan Kraus was appointed to the role of Deputy Chair. The Deputy Chair is responsible for temporarily assuming the roles and responsibilities of the Chair where the Chair is unable to complete his or her term, or is temporarily unavailable due to sickness, an emergency, or equivalent circumstances. That allowed COSSARO to continue to effectively function while the Chair was on a medical leave. Dan's role has continued to be important as the work volume has increased, and Mr. Kraus has been able to take a leadership role in many aspects of COSSARO'S technical and strategic work.

COSSARO reviewed the 2017 Terms of Reference for the committee and provided suggested updates and modifications to bring the Terms of Reference up to date. That included reflecting the shift of the species at risk programs, including COSSARO from the MNRF to the MECP. Those updates are a work in progress.

#### 4. 2021 PLAN

In 2021, COSSARO expects to continue to conduct its business online as the pandemic will not permit the safe execution of in-person meetings, at least through the first two meetings in the year.

The following dates are preliminary and are being used as placeholders for upcoming meetings. Dates and time are subject to change. Species to be assessed in February will bring COSSARO fully up to date and on schedule with our traditional review of species assessments completed six months after COSEWIC meetings.

One new aspect COSSARO is carefully considering for 2021 is completing reassessments for species that should be reassessed but have not been as they are not addressed by COSEWIC in their ongoing assessments. COSSARO has sometimes referred to these as species that have been lost in the assessment process. For example, these include American White Pelican, Black Tern and West Virginia White. The assessment of some of these species may depend upon the availability of funds to seek external expertise on consulting assignments.

Other species that could be addressed in 2021 are those which have been subject to the provision of additional and/or new data provided in the form of Indigenous and community knowledge. COSSARO is placing an emphasis on ensuring that we meet the Endangered Species Act requirements that assessments be based upon “the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.”

<b>PRELIMINARY 2021 MEETING DATES</b>	<b>MEETING FOCUS</b>
February 4 - 5, 2021	<ul style="list-style-type: none"> <li>Final session to complete outstanding assessments</li> </ul>
April 6 - 9, 2021 (subject to confirmation)	<ul style="list-style-type: none"> <li>Return to normal COSSARO Biannual Meetings</li> <li>Assessment focused on COSEWIC species assessed in November 2020</li> </ul>
Sept 24 - 27, 2021 (subject to confirmation)	<ul style="list-style-type: none"> <li>Assessment focused on COSEWIC species assessed in Spring 2021</li> </ul>

Species that will be assessed during 2021 are as follows:

<b>MEETING DATE*</b>	<b>SPECIES SCHEDULED FOR ASSESSMENT</b>
February 4 - 5, 2021	Spring Salamander
	Striped Whitelip
	Pygmy Snaketail

MEETING DATE*	SPECIES SCHEDULED FOR ASSESSMENT
	Rapids Clubtail
	Polar Bear
	Reversed Haploa
	Suckley's Cuckoo Bumble Bee
	American Bumble Bee
	Allegheny Mountain Dusky Salamander (Carolinian population)
	Ringed Seal (may be adjusted in terms of response to data inquiries from COSEWIC and/or Indigenous information sources)
April 6 - 9, 2021	Canada Warbler
	Lesser Yellowlegs
	Deerberry
	Red Knot rufa subspecies (Northeastern South America wintering population)
	Red Knot rufa subspecies (Tierra del Fuego / Patagonia wintering population)
	Red Knot rufa subspecies (Southeastern USA / Gulf / Caribbean wintering population)
	Beluga Whale (James Bay population)
	Beluga Whale (Western Hudson Bay population)
	Northern Brook Lamprey (Great Lakes - Upper St. Lawrence populations)
	Silver Lamprey (Great Lakes - Upper St. Lawrence populations)
	Silver Lamprey (Saskatchewan - Nelson River populations)
	Davis's Shield-backed Katydid
	Aweme Borer
September 24 - 27, 2021	Species to be determined at the Spring 2021 COSEWIC Meeting
<b>Potential New Assessments &amp; Reassessments in 2021</b>	Moose
	Wild Rice
	Algonquin Wolf
	American White Pelican

<b>MEETING DATE*</b>	<b>SPECIES SCHEDULED FOR ASSESSMENT</b>
	Golden Eagle
	Bald Eagle
	Black Tern
	Cougar
	West Virginia White
	Schweinitz's Sedge
	Ram's-head Lady's-slipper
	Methuselah's Beard Lichen
	Auricled Twayblade
	Little White Tiger Beetle
	Duke's Skipper
	Slender Clearwing
	Cupped Fringe Lichen

**ATTACHMENT 1: 2020 COSSARO MEMBERSHIP**

<p><b>Ian Barrett, M. Sc.</b> Sr. Biologist, Sr. Manager of Environmental Projects Colville Consulting Inc</p>	<p><b>Steven Paiero, Ph.D.</b> Curator, University of Guelph Insect Collection School of Environmental Sciences University of Guelph</p>
<p><b>Glenn Cunnington, Ph.D.</b> Sr. Ecologist and Species at Risk Specialist RiverStone Environmental Solutions Inc.</p>	<p><b>Derek Parks, M.Sc.</b> Director, Sr. Aquatic Specialist Parks Environmental Inc</p>
<p><b>Jillian deMan, B.Sc. (Hons.)</b> Sr. Ecologist, Water &amp; Natural Resources, Environment AECOM</p>	<p><b>Darren Sleep, Ph.D.</b> Sr. Director, Conservation Science &amp; Strategies Sustainable Forestry Initiative</p>
<p><b>Tom Hilditch, B. Sc.</b> President Colucent Environmental Inc.</p>	<p><b>Ashley Thomson, PhD, RPF</b> Assistant Professor Faculty of Natural Resources Management Lakehead University</p>
<p><b>Daniel T. Kraus, M. Sc.</b> Sr. Conservation Biologist, National Office Nature Conservancy of Canada</p>	<p><b>Toby Thorne, M. Sc.</b> Coordinator, Native Bat Conservation Program Toronto Zoo</p>

## **ATTACHMENT 2: COSSARO INTERPRETATION OF SELECT JUNE 2019 ESA LEGISLATIVE AMENDMENTS – WORKING DRAFT**

### **Introductory Notes:**

This table is a working tool developed by COSSARO to guide the assessment of species at risk in Ontario, in light of amendments to the Endangered Species Act (ESA) made in 2019.

The Preamble to the ESA notes that, “... *In Ontario, our native species are a vital component of our precious natural heritage. The people of Ontario wish to do their part in protecting species that are at risk, with appropriate regard to social, economic and cultural considerations. The present generation of Ontarians should protect species at risk for future generations.*”

The Purposes of the Act are:

1. *To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.*
2. *To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk.*
3. *To promote stewardship activities to assist in the protection and recovery of species that are at risk. 2007, c. 6, s. 1.*

Amended criteria for classification under the Act, (section 5 (4)(b)), state that, “... *the condition of the species across the broader biologically relevant geographic range in which it exists both inside and outside of Ontario. 2019, c. 9, Sched. 5, s. 3.*”

Section 5 of the ESA states that, “... *If consideration of the condition of the species both inside and outside of Ontario under clause (4) (b) would result in a species classification indicating a lower level of risk to the survival of the species than would result if COSSARO considered the condition of the species inside Ontario only, COSSARO’s classification of a species shall reflect the lower level of risk to the survival of the species. 2019, c. 9, Sched. 5, s. 3.*”

The MECP has explained to COSSARO that “... *Ontario wants to focus its conservation efforts on species that are at the greatest risk with consideration of their overall distribution, not just within the province. This will provide Ontarians with confidence that conservation efforts and dollars are being focused on the species that need them most in the province.*”

*What “outside of Ontario” means in the context of one species may look different for another species. One of COSSARO’s functions in classifying a species is in considering what the appropriate broader biologically relevant geographic range is.*

### **WORKING DEFINITIONS:**

To be developed for: BBRR and Condition of the Species

ESA AMENDMENT LANGUAGE	KEY CONSIDERATIONS	PRACTICAL APPROACHES/TOOLS
<p>“... broader biologically relevant geographic range in which it exists both inside and outside of Ontario...”</p> <p>Acronym applied (BBRR)</p>	<p><b>Where we consider <i>the broader biologically relevant geographic range to be...</i></b></p>	<p><b>Requires COSSARO to decide, on a species by species basis, what the appropriate BBRR is</b></p>
	<p><b>Metapopulation</b> – a group of populations that are separated by space but consist of the same species</p>	<p>The dynamics of the metapopulation in relation to the population in Ontario</p>
	<p><b>Ecoregion</b> – an ecologically and geographically defined area that cover relatively large areas that contain characteristic, geographically distinct assemblages of natural communities and species</p>	<p><a href="https://www.epa.gov/eco-research/ecoregions-north-america">https://www.epa.gov/eco-research/ecoregions-north-america</a></p>
	<p><b>Designatable units/areas:</b></p> <ul style="list-style-type: none"> <li>• evolutionary units</li> <li>• biogeographic zones</li> <li>• faunal province zones</li> </ul>	<p>Will require the committee to define the boundaries of DUs beyond Ontario</p> <p><a href="#">COSEWIC Guidelines</a></p>
<p>“... the condition of the species...”</p>	<p><b><u>How we consider the condition of the species within its BBRR ...</u></b></p>	<p><b>Requires COSSARO apply as accurate a risk lens as possible to these aspects, given the “... best available scientific information, including information obtained from community knowledge and aboriginal (Indigenous) traditional knowledge ...”</b></p>
	<p><b>Current NatureServe Status Ranks across the BBRR</b></p> <p><b>Other Status Ranks (e.g., state or provincial listings)</b></p>	<p>Some ranks in adjacent jurisdictions are dated (e.g., 20 years old) and some species have not been assessed in adjacent jurisdictions</p> <p>Some rankings may exaggerate rarity given a lack of data/study (e.g., more overlooked species including some insects)</p>

ESA AMENDMENT LANGUAGE	KEY CONSIDERATIONS	PRACTICAL APPROACHES/TOOLS
		<p>COSSARO will need to have an assessment of the currency and accuracy of that information across relevant BBRR jurisdictions</p> <p>Many states and provinces have lists of threatened species (e.g. <a href="#">NY Department of Environmental Conservation</a>)</p> <p>COSEWIC does not consider jurisdictions outside of Canada in detail, making COSEWIC reports less helpful for COSSARO when addressing external jurisdictions</p>
	<p><b>Status Trends across the BBRR (Past and Current)</b></p>	<p>Consider the timelines relied upon for trends, by species or groups of species</p> <p>Trend data for birds outside of Ontario is available from <a href="#">Breeding Bird Surveys</a></p>
	<p><b>Projected Future Risk Trends Across the BBRR</b></p>	<p>How is a species changing in response to biophysical changes and to the spread of insects and disease</p> <p>e.g., Emerald Ash borer vs Dutch Elm disease</p> <p>Requires understanding and knowledge of cyclical nature of declines or extreme fluctuations (if present) and responses from interrelated species</p>
	<p><b>Life Cycle Viability, Permanence and Adaptability across the BBRR:</b></p> <p>Ability of the species in various conditions/areas to effectively continue all life cycle functions, including an ability to persist and migrate</p>	<p>Includes: Gene flow – ability to transfer genetic variation from one population to another</p> <p>Includes: Immigration – ability to move from one jurisdiction to another</p> <p>Reproduction and health</p> <p>Interspecific interactions – parasitic interactions, significant species, host/associated species</p>

ESA AMENDMENT LANGUAGE	KEY CONSIDERATIONS	PRACTICAL APPROACHES/TOOLS
	over time (natural and assisted migration)	See Naturereserve Condition of EO
	<p><b>Habitat Risk across the BBRR:</b></p> <p>Degree of dependence on viable, stable and healthy habitats</p>	<p>Availability and structure/composition of habitat</p> <p>Availability of specialized habitat</p> <p>Dependence upon specialized processes and habitats (e.g., fire, flooding, water level fluctuations and adaptation)</p> <p>Many State Conservation Data Centres have status ranks for vegetation communities</p>
	<p><b>Harvest/Use Risk across the BBRR:</b></p> <p>Susceptibility to Illegal Collection, Harvesting, Sale and Harvest Sustainability</p>	<p>Largely unknown (or undisclosed) in Ontario – requires interaction and dialogue with Indigenous Peoples, communities and with provincial and federal enforcement agencies</p> <p>What do we know about licensed and/or regulated commercial and/or traditional harvests?</p>
	<p><b>Climate Change Risk across the BBRR:</b></p> <p>Climate change in and outside of Ontario</p>	<p>e.g., water level changes and effects on specialized habitat use such as open shorelines</p> <p>e.g., risk of change related to potential for increased wildfires and increased and more intense storm events</p> <p>Requires an understanding and knowledge of predicted changes, resilience and adaptation in Ontario, and in the broader BBRR over time</p>
	<p><b>Degree of Recoverability:</b></p> <p>Degree of risk abatement given known biological potential and known outcomes in terms of recovery across the BBRR</p>	<p>Requires understanding and knowledge of previous and ongoing activities in Ontario, and in the broader BBRR over time (including effects of actions by communities, ENGOs and governments and the effects and</p>

<p><b>ESA AMENDMENT LANGUAGE</b></p>	<p><b>KEY CONSIDERATIONS</b></p>	<p><b>PRACTICAL APPROACHES/TOOLS</b></p>
	<p>Is there evidence that recovery actions are improving the status of the species?</p> <p>What is the feasibility of improving the status of the species through recovery actions? (with justification)</p>	<p>predicted effects of legislative and regulatory effects over time</p>
	<p><b>Indigenous &amp; Traditional Knowledge Leadership &amp; Co-Management</b></p> <p>Degree of risk abatement given known positive conservation Guardian and recovery actions underway across the BBRR</p>	<p>Requires ongoing, direct and respectful dialogue with Indigenous Peoples (First Nations, Independent Métis Nations, and others) to understand their knowledge and activities in Ontario, and in the broader BBRR over time</p>

**ATTACHMENT 3: 2019/2020 SPECIES SUMMARIES**

<p><b>SPECIES</b> (Common Name, <i>Scientific Name</i>)</p>	<p><b>Summary of Species Assessments</b></p>
<p><b>Redside Dace</b> <i>Clinostomus elongatus</i></p>	<p>Redside Dace live in clear, cool headwater streams. Its Canadian range is restricted to Ontario, and most occurrences are from tributaries in the watersheds surrounding western Lake Ontario. It is also found in the upper Grand River, a few rivers in the Lake Huron watershed, and two Lake Simcoe tributaries. Redside Dace has a discontinuous distribution in eastern North America. It occurs from New York and southern Ontario west to Minnesota and south to West Virginia and Kentucky. It is vulnerable globally and rare throughout most of its range.</p> <p>In Ontario, Redside Dace are threatened by habitat loss and degradation, alterations to stream flows, invasive species and non-point source pollution. Redside Dace was originally assessed as Threatened in Ontario in 2000. Based on observed declines and threats to remaining populations the species was reassessed as Endangered in 2009. A recovery strategy was prepared for the Redside Dace in February 2010 and a provincial government response statement was finalized in November 2010.</p> <p>The status of Redside Dace has not improved in Ontario, and it continues to be assessed as Endangered. It has a small, declining range that is severely fragmented. The population appears to have declined by over 50% in the last decade based on a reduction in its range and the number of sites where it has been found.</p>
<p><b>Golden-Eye Lichen</b> (Prairie/Boreal populations) <i>Teloschistes chrysophthalmus</i></p>	<p>Golden-eye Lichen is a distinctive bright orange to greenish-grey lichen. The abundant orange fruiting bodies with fine hairs along the margins distinguish this species. There are two populations of Golden-eye Lichen in Ontario: Prairie/Boreal and Great Lakes. The Prairie/Boreal population occurs in localized areas from the Manitoba border east to Rainy Lake and Dryden. The Great Lakes population was once more widespread in southern Ontario but is now restricted to Sandbanks Provincial Park on Lake Ontario.</p> <p>Golden-eye Lichen requires open, humid habitats and is often found along shorelines. In northwestern Ontario, it generally grows in relatively open, conifer-dominated woods and rocky barrens on White Spruce, Trembling Aspen, Jack Pine, Balsam Fir and Bur Oak. It has also been found in rocky barrens and in a cemetery. In the southern Great Lakes region of Ontario, the only extant site grows on the bark of Red Oak in a remnant old-growth coastal deciduous forest.</p> <p>Nationally, the Prairie/Boreal population has been assessed as Special Concern, primarily because of its small range and threats to the Prairie population from fire suppression. The Great Lakes</p>

<b>SPECIES</b> <b>(Common Name,</b> <b>Scientific Name)</b>	<b>Summary of Species Assessments</b>
	<p>population has previously been assessed as Endangered in Canada and Ontario.</p> <p>Golden-eye Lichen (Prairie/Boreal population) is assessed as Not at Risk in Ontario. Although it is currently only known from a relatively small region in northwestern Ontario, there are over 20 locations, and these do not appear to be declining or threatened with decline. Additional survey work conducted since the COSEWIC report was published in 2016 revealed more than twice as many individuals than previously documented, and significantly increased the known range of this species.</p>
<p><b>Spoon-leaved Moss</b> <i>Bryoandersonia illecebra</i></p>	<p>Spoon-leaved moss is the only species in the genus <i>Bryoandersonia</i>. It is widespread in eastern North America, but in Ontario is restricted to only 20 known sites. It grows in a variety of disturbed and successional habitats. Males of this species are rarely observed, and only female plants have been documented in Ontario. Surveys completed since the previous assessment have revealed that this species is more common than originally thought. The number of individuals directly observed in Ontario meets the thresholds for Endangered status. However, the increasing success of discovering new subpopulations, and the lack of comprehensive censuses at known sites, indicates that the actual population would most likely meet the threshold for Threatened status. Furthermore, there is no data to suggest the population is declining, or that it faces severe threats.</p> <p>Accordingly, COSSARO assessed this species as Threatened. This decision is in agreement with the most recent COSEWIC evaluation. It represents a non-genuine down-listing from the previous Ontario status of Endangered. That is, the change in status does not indicate an actual increase in the size of the Ontario population, but rather that recent field work has documented previously overlooked individuals.</p>
<p><b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i></p>	<p>The Olive-sided Flycatcher 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.</p> <p>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 -</p>

<b>SPECIES</b> <b>(Common Name,</b> <b>Scientific Name)</b>	<b>Summary of Species Assessments</b>
	<p>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.</p> <p>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. COSEWIC recently (November 2018) down-listed Olive-sided Flycatcher from Threatened to Special Concern. In Ontario, Olive-sided Flycatcher is assessed as Special Concern.</p>
<p><b>Red-headed Woodpecker</b> <i>Melanerpes erythrocephalus</i></p>	<p>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 woodpecker inhabits open deciduous forests and other habitats across its range, nesting in cavities in standing dead trees.</p> <p>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. In Ontario, Red-headed Woodpecker is assessed as Endangered.</p>
<p><b>Lake Whitefish</b> <i>Coregonus clupeaformis</i></p> <p><b>Opeongo Lake:</b></p>	<p>Lake Whitefish is a cool water fish that averages about 30 cm in length and is distributed across much of Canada. In some lakes, Lake Whitefish have co-evolved as species pairs with two distinct populations of Larger and Smaller bodied individuals. These pairs are distinct in appearance, occupy different habitats and represent recent evolutionary processes. These pairs are not different species, but distinct lineages. This same evolutionary phenomenon has been documented in other lake fishes in Canada including Three-spined stickleback (<i>Gasterosteus aculeatus</i>) in BC and Rainbow Smelt (<i>Ismerus mordax</i>) in New Brunswick.</p> <p>In Ontario, unique Lake Whitefish pairs have been documented in four lakes. Evidence of reproductive isolation between the pairs has been documented for Lake Opeongo in Algonquin Provincial Park, and Como Lake, located in the Michipicoten River basin of Lake Superior. There is insufficient evidence to confirm reproductive isolation of the species pairs observed in Lake Superior and Lake Simcoe.</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
<p>Small-bodied populations Large-bodied populations</p> <p><b>Como Lake:</b> Small-bodied populations Large-bodied populations</p>	<p>In Lake Opeongo and Como Lake, Lake Whitefish fill two separate habitat niches. One (small-bodied form) often occupies surface waters, while the other (large-bodied-form) is often found in habitat near the bottom of lake.</p> <p>Lake Whitefish species pairs each occur in a single location which makes them vulnerable to extinction. The Lake Opeongo Lake Whitefish pairs are assessed as Threatened because it has a very restricted range and is vulnerable to rapid extinction.</p> <p>In Como Lake, the accidental invasive of the Spiny Waterflea (<i>Bythotrephes longimanus</i>) has resulted in the extinction of both forms.</p>
<p><b>Red-tailed Leafhopper</b> <i>Aflexia rubranura</i></p>	<p>The Red-tailed Leafhopper is a small, pale, and usually brachypterous cicadellid (2 - 4 mm long) with distinct dark dorsal markings. Adult males have a red-tipped abdomen, giving rise to the common name. The species feeds exclusively on Prairie Dropseed (<i>Sporolobus heterolepis</i>) and has limited dispersal ability due to its host specificity and its inability to fly. COSEWIC (2019) recognizes two designated units (DUs) for this species of which one, the Great Lakes Plains DU, occurs entirely in Ontario on Manitoulin Island and adjacent islands; the other DU does not occur in Ontario. The Great Lakes Plains DU is a relict population from a previous expansion of prairie habitat during the Hypsithermal period (5000 to 8000 years ago) and is currently known from 19 locations on Manitoulin and other nearby Lake Huron islands. It is threatened by habitat loss from a variety of causes.</p> <p>The Red-tailed Leafhopper has been assessed by COSSARO as Special Concern based on the potential of decline the small range cause by various threats, and Ontario's conservation responsibility for the Great Lakes Plain population. This status is consistent with COSEWIC (2019)</p>
<p><b>Common Nighthawk</b> <i>Chordeiles minor</i></p>	<p>Common Nighthawk is a member of the nightjar family and is known for its nasal <i>peent</i> calls and booming courtship dives. It breeds in a wide variety of habitats that provide open areas for foraging in flight, and bare ground with nearby shade for nesting. Common Nighthawk physiology and life history are strongly linked to the availability of flying insects. It occurs across much of Ontario with highest densities in the south and northwest.</p> <p>Common Nighthawk is assessed by COSSARO as Special Concern as it does not meet any of the criteria for Endangered or Threatened. However, this species has experienced declines over the last 20 years, with reduced but continued declines over the last decade. This assessment is consistent with the federal classification of this species by COSEWIC (2018).</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
<p><b>Chimney Swift</b> <i>Chaetura pelagica</i></p>	<p>The Chimney Swift is Ontario's only swift. The species has an extensive global range: the breeding population is distributed across the US and Canada, and swifts migrate south in the fall to overwinter in South America. Chimney Swifts are common and widely distributed across southern Ontario and have readily adapted to artificial habitats such as chimneys in place of natural roosts following deforestation. Ontario accounts for approximately 10% of the Canadian breeding population, and &lt; 1% of the global breeding population.</p> <p>North American Breeding Bird Survey data provide a comprehensive dataset on long-term population trends in Chimney Swifts. These data show a long-term decline across the species breeding range since surveys began in 1970. Using the most recent available data, decline over the past three generations of Chimney Swift in Ontario was estimated to be 57% (2005 - 2018). Chimney Swifts are considered globally vulnerable by the IUCN and were assessed as threatened by COSEWIC in 2018.</p> <p>Chimney Swift meets the criteria for assessment as Endangered in Ontario, based on its declining number of mature individuals associated with declining availability of their insect prey, and loss of roosting habitat. However, the status has been modified to Threatened based on its condition across the broader biologically relevant range (BBRGR). The status of this species is consistent with the assessment of Threatened by COSEWIC (2018).</p>
<p><b>Monarch</b> <i>Danaus plexippus</i></p>	<p>The Monarch is readily recognized throughout North America, based on the unique black, orange and white markings on the wings of the adults. Its biology and migration patterns are well known. Monarchs breed and occur throughout Canada, with a distribution that largely reflects the distribution of its larval host plants, milkweed species (<i>Asclepias</i> spp.). Like all butterflies, the Monarch has a four-part life cycle (egg-caterpillar-pupa-adult). Adult females will individually lay up to 400 eggs on various milkweed species, where the caterpillar will feed and develop, before pupating and transforming into an adult in the late summer and early fall and then migrating south. Chemicals produced by the milkweed plants are sequestered by the caterpillar, which protect both the caterpillar and adult stage from vertebrate predators.</p> <p>The Monarch population in Canada is generally divided into two subgroups: one that breeds west of the Rocky Mountains and overwinters in California, and one that breeds east of the Rocky Mountains and overwinters in Mexico. Adults of eastern Monarchs overwinter in large congregations in highland Oyamel Fir (<i>Abies religiosa</i>) forests in central Mexico. In early February to March, adults begin to migrate north into the United States and Canada</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
	<p>and arrive in Ontario in late May or early June. Most individuals that arrive in Ontario are from the second or third generation of the individuals that left Mexico.</p> <p>The area of overwintering habitat occupied by Monarchs in Mexico is very small and has been on a downward trend since it was first evaluated in 1999. This makes the subpopulation susceptible to disturbances and threats such as extreme weather, fire, disease, parasites, predation, and illegal logging. The eastern Monarch is also threatened within its breeding range by reduced availability of milkweed host plants due to increasing herbicide use and agricultural intensification.</p> <p>The Monarch has been assessed as Special Concern by COSSARO based on the current positive trends in the area of occupied overwintering habitat in Mexico, only recently recovering from previous negative trends in this habitat. There also remains ongoing concern about the area and quality of breeding habitats along with various threats that the Monarch faces which may cause this subpopulation to start to decline in the near future.</p> <p>This status differs from COSEWIC (2016) based on trend data published since the national assessment.</p>
<p><b>Midland Painted Turtle</b> <i>Chrysemys picta marginata</i></p>	<p>Painted Turtles are a small to medium-sized freshwater species of turtle that is widespread across North America. In the eastern portion of its North American range, three subspecies of Painted Turtles are recognized: Western Painted Turtle (<i>Chrysemys picta bellii</i>), Midland Painted Turtle (<i>Chrysemys picta marginata</i>) and Eastern Painted Turtle (<i>Chrysemys picta picta</i>). In general, Painted Turtles play important ecological roles in aquatic ecosystems, that include but are not limited to nutrient cycling and seed dispersal. Painted Turtles are also of importance for some Indigenous peoples in Ontario. Painted Turtles expansive geographic range, gregarious basking behaviour, and easily recognizable patterns have resulted in this species becoming well known to naturalists, biologists, and the public.</p> <p>Midland Painted Turtles are distributed throughout central and southwestern Ontario. This species is typically found in slow moving, relatively shallow and well-vegetated wetlands. This species has also been documented in lakes, rivers, creeks, and streams where abundant basking sites are present. Submergent aquatic plants, which are used for cover and feeding are typical of Midland Painted Turtle habitat. This species has been assessed as Special Concern by COSEWIC. Midland Painted Turtle is assessed as Not at Risk in Ontario based on not meeting COSSARO's criteria for being at risk.</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
<p><b>Gilman’s Goldenrod</b> <i>Solidago gillmanii</i></p>	<p>Gillman’s Goldenrod an herbaceous perennial plant that grows to 30cm to 120 cm in height. It has tiny yellow flowers clustered into heads. This plant is a Great Lakes endemic. It is only found in open Great Lakes sand dunes with sparse vegetation and patches of bare sand on the shores of Lake Michigan and northern Lake Huron in Wisconsin, Michigan, Indiana, and Ontario. In Ontario it currently occurs on Great Duck Island in northern Lake Huron south of Manitoulin Island. A collection from 1976 shows a subpopulation once occurred at Deans Bay on Manitoulin Island but was extirpated prior to 2000. It is unknown why Gillman’s Goldenrod does not occur at any of the more than 30 apparently suitable dune sites across the south shores of Manitoulin and Cockburn island.</p> <p>Gillman’s Goldenrod is assessed as Endangered in Ontario by COSSARO. It is only known from two locations on Great Duck Island and there has been an observed decline in habitat quality due to invasive species. The greatest threat to Gillman’s Goldenrod is the invasive Glandular Baby’s Breath. This species is now established at one of the locations where Gillman’s Goldenrod occurs in Ontario.</p>
<p><b>Carolina Mantleslug</b> <i>Philomycus carolinianus</i></p>	<p>Carolina Mantleslug is a large slug with a grey mantle covering the entire body, averaging a length of 7 cm. The mantle is marbled dark grey to brown and there are two central lines of black dots on its back. The slug is most often seen when inactive, so the head is not visible and only one pair of light grey tentacles may extend from beneath the mantle (COSEWIC 2019).</p> <p>Carolina Mantleslug inhabits undisturbed older-growth forests and riparian areas in the Carolinian Forest Region of Ontario, near the northern limit of its global range. Snails, and by extension slugs (collectively gastropods), generally play important roles in forest ecosystem functioning, specifically by aiding in decomposition, nutrient cycling, and soil building processes.</p> <p>Carolina Mantleslug is a mostly inactive species that lives hidden under old, very moist, decaying logs. Recent searches have confirmed only a small number of sites within this small range. The species is threatened by climate change (extreme temperatures, droughts, and flooding), prescribed burns, and invasive species. Carolina Mantleslug is assessed as Threatened in Ontario.</p>
<p><b>Shagreen</b> <i>Inflectarius inflectus</i></p>	<p>Shagreen is a medium brown terrestrial snail and the only member of the genus <i>Inflectarius</i> in Canada. It occurs in moist forest where it can be found in the leaf litter, on logs and exposed rocks. It is</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
	<p>found in eastern North America, from Ontario to Texas. In Ontario, it is currently restricted to two Lake Erie islands, Pelee Island and Middle Island. Shagreen is thought to be in decline in Ontario due to the impacts of invasive species and habitat fragmentation and is threatened from various threats including climate change and strong localized weather patterns.</p> <p>Shagreen has been assessed as Endangered by COSSARO based on having a small range, number of locations, an inferred decline in the quality of available habitat and decline in the quality of habitat from introduced species in Ontario. This status is consistent with COSEWIC (2019).</p>
<p><b>Toothed Globe</b> <i>Mesodon zaletus</i></p>	<p>Toothed Globe is a large-sized terrestrial snail (shell ~2.4 – 3.1 cm in diameter), with a yellow, unperforated shell with a single weakly raised denticle in the opening, and a yellow-gray foot. It occurs in mature to old growth forests and has been recorded in 9 sites in southern Ontario. It is now thought to be extant in, at most, 3 of these sites, largely as a result of habitat degradation, weather and climatic change. As a terrestrial snail, it has limited ability to disperse to new sites or escape threats to the broader landscape, and for populations to be rescued from external sources.</p> <p>Toothed Globe has been assessed as Endangered by COSSARO based on having small EOO and IAO, occurring in three or less locations, and an inferred decline of habitat quality based on ongoing habitat degradation from invasive species and anthropogenic alteration of the landscape. This status is consistent with COSEWIC (2019).</p>
<p><b>Peregrine Falcon</b> <i>Falco peregrinus</i></p>	<p>The Peregrine Falcon is an emblematic symbol of species at risk conservation and recovery. At one time biologically extirpated in Ontario, the species' status has improved significantly as a result of sustained provincial, national and international recovery efforts over several decades. The Peregrine Falcon population occurring in Ontario is entirely comprised of the <i>anatum/tundrius</i> subspecies.</p> <p>While historical breeding records are sparse and incomplete, the species likely occurred throughout most of the Great Lakes watershed where suitable nesting habitat was available. The population is currently distributed from Rainy River and western Lake Superior eastward along the north shore of Lakes Superior and Huron to the Ottawa River valley, and south to southwestern Ontario, the north shore of Lake Ontario, and eastern Ontario. Much of the former documented historical nesting habitat in southcentral Ontario east of Georgian Bay has not been recolonized. The Peregrine Falcon nests on high steep cliffs in northern Ontario, and some cliffs but mostly tall anthropogenic structures in urban centers in southern Ontario. Ontario's Peregrine</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
	<p>Falcon population represents a very small proportion of the global and national population.</p> <p>Despite this improving population status, with fewer than 1000 mature individuals in the province Ontario's Peregrine Falcon population still meets the Threatened designation under Criterion D. However, rescue effect is likely as the species' status is also improving in all adjacent jurisdictions. And the recent past recovery of the species in the province demonstrates strong recovery potential (i.e., from no occupied territories in 1985 to over 150 in 2015). The threats calculator has also indicated that there is an unknown but low overall threat for the species in Canada.</p> <p>Peregrine Falcon meets the criteria for Threatened in Ontario, based on its small population, a result of previous threats from pesticides. However, the assessed status has been modified to Special Concern based on the potential for rescue effect from surrounding jurisdictions. The status of this species is not consistent with the designation of Not at Risk by COSEWIC (2018) because of Ontario's relatively small and still recovering population, compared to the rest of Canada.</p>
<p><b>Black Ash</b> <i>Fraxinus nigra</i></p>	<p>Black Ash is a medium-sized, shade-intolerant hardwood tree species that occurs on moist to wet sites such as swamps, bogs, and riparian areas. Like other Ash (<i>Fraxinus</i>) species, black ash has wind-dispersed pollen and seeds and regenerates readily from seed and via stump sprouting. The species occurs throughout most of Ontario (MNRF 2020), ranging from southern Ontario east to the Quebec border, west to the Manitoba border and north to approximately 51° latitude. While Black Ash is still relatively common throughout Ontario and adjacent jurisdictions (Manitoba, Quebec, Minnesota, Wisconsin, Michigan, Ohio, New York, and Pennsylvania), declines in both extent and index of occupancy are inferred based on significant mortality that has occurred in areas affected by Emerald Ash Borer (EAB).</p> <p>Black Ash is assessed as Endangered in Ontario based on projected declines in the total number of individuals of &gt; 70% over the next 100 years (2 generations). Currently, 53% of the Ontario range is considered susceptible to EAB, and 78.16 – 99.98% of the Ontario range could be affected over the next two generations due to climate change. Predicted mortality of Black Ash is expected to exceed 90% across much of the area affected by EAB.</p> <p>Ontario's conservation responsibility is deemed to be significant based on the fact that the species is globally at risk (IUCN 2017) and &gt;=25% of the global range is found in Ontario.</p> <p>The status of this species differs from that of the COSEWIC (2018) assessment. The species was assessed by COSEWIC as meeting</p>

<b>SPECIES</b> <b>(Common Name,</b> <b>Scientific Name)</b>	<b>Summary of Species Assessments</b>
	<p>the criteria for Endangered but was assessed as Threatened due to factors that may reduce mortality over the projected period. Black Ash, is assessed as Endangered in Ontario and does not meet the criteria for down-listing to Threatened considering Ontario's significant conservation responsibility and the specie's declining status in the broader biologically relevant range.</p>
<p><b>Hudsonian Godwit</b> <i>Limosa haemastica</i></p>	<p>The Hudsonian Godwit is a large shorebird in the sandpiper family with a long, slightly upturned bicolored bill. The Hudson Bay lowlands of Ontario and Manitoba are one of only three known breeding areas. It also breeds in the Mackenzie Delta in the Northwest Territories and four sites in Alaska.</p> <p>Hudsonian Godwit has one of the longest migrations of any North American shorebird. It travels approximately 32,000 km round trip annually between its breeding areas and wintering grounds in South America. The total global population is estimated to be fewer than 77,000 individuals.</p> <p>Based on comprehensive surveys on the wintering grounds Hudsonian Godwit has been rapidly declining. It is because of this decline that this shorebird is assessed as Threatened in Ontario.</p>
<p><b>White-rimmed Shingle Lichen</b> <i>Fuscopannaria leucosticta</i></p>	<p>White-rimmed Shingle Lichen is a rare lichen that grows on trees in wet forests of eastern Canada. The lichen consists of many small, overlapping lobes (like shingles), with a dark olive-grey colour on their upper surface, and a noticeable white rim on the edges. Mature colonies produce many brownish coloured discs (fruiting bodies) on their upper surface. Less than 5% of the globally known thalli in Canada occur in Ontario, with an estimated provincial population of approximately 639 individuals spread over 77 thalli on 31 trees (COSEWIC 2019).</p> <p>While the lichen meets several criteria for endangered status, a very small population occurs in Ontario, and Ontario has a very small conservation responsibility, and it is therefore assessed as Endangered.</p>
<p><b>False-Foxglove Sun Moth</b> <i>Pyrrhia aurantiago</i></p>	<p>False-Foxglove Sun Moth, <i>Pyrrhia aurantiago</i>, is an owlet moth (family Noctuidae). Adults are approximately 30 mm long with a wingspan of 25 mm – 33 mm. The forewing is dark orange at the base and purple on the outer third, separated by a dark, jagged band. This rare moth is extant at three locations in Canada, all within the oak-dominated savannas and open woodlands of southern Ontario.</p> <p>It is estimated that 99% of this habitat type has been lost in Ontario. The larvae depend on Smooth Yellow False Foxglove and Fern-leaved Yellow False Foxglove, both of which are species at risk in</p>

<b>SPECIES</b> <b>(Common Name,</b> <b>Scientific Name)</b>	<b>Summary of Species Assessments</b>
	<p>Canada. Canadian subpopulations of this moth are mostly in protected areas where the primary threats are over-browsing of the larval host plants by native White-tailed Deer and the effects of competition from invasive plants on the host plants.</p> <p>False-Foxglove Sun Moth is assessed as Endangered in Ontario.</p>
<p><b>Downy Yellow False Foxglove</b> <i>Aureolaria virginica</i></p>	<p>Downy Yellow False Foxglove is a tall, herbaceous perennial that can reach a height of 2.5 m and has finely pubescent stems. This species are hemi-parasites where they secure some of their water and nutrients by tapping into the roots of other plants, particularly oak species (<i>Quercus spp</i>). They are found in dry, open to semi-open, upland oak forests, woodlands and savanna habitats on well-drained soils (COSEWIC 2018). Occupancy was confirmed for five potentially viable subpopulations: Shep’s Subdivision, Waterloo; Clappison Escarpment Woods, Halton; Spencer Gorge, Hamilton; Normandale Fish Hatchery, Norfolk; and Spottiswood Lakes, Brant (COSEWIC 2018).</p> <p>Downy Yellow False Foxglove is assessed by COSSARO as Endangered. This considers an inferred low extent of occurrence and index of area of occupancy for 5 to 7 locations. There is also a projected continuing decline in extent and habitat quality resulting from fire suppression, problematic native species as well as invasive species. This assessment is consistent with the federal classification of this species by COSEWIC (2018).</p>
<p><b>Smooth Yellow False Foxglove</b> <i>Aureolaria flava</i></p>	<p>Smooth Yellow False Foxglove is a tall, herbaceous perennial that can reach a height of 2.5 m. This species are hemi-parasites where they secure some of their water and nutrients by tapping into the roots of other plants, particularly oak species (<i>Quercus spp</i>). They are found in dry, open to semi-open, upland oak forests, woodlands and savanna habitats on well-drained soils (COSEWIC, 2018). Occupancy was confirmed for seven potentially viable subpopulations: Ojibway Prairie Complex, Essex County; Venison Creek, Norfolk; Walpole Island, Walpole Island First Nation; Fifty Road Escarpment, Hamilton; Branchton Railway Oak Knoll, Waterloo; Sixteen Mile Creek Complex, Halton; and Sudden Bog, Waterloo (COSEWIC 2018).</p> <p>Smooth Yellow False Foxglove is assessed by COSSARO as Threatened. This considers that there is a small declining number of mature individuals that are at 7 to 9 locations resulting in a low extent of occurrence and index of area of occupancy. For these areas, there is a projected continuing decline in extent and habitat quality resulting from fire suppression, problematic native species as well as invasive species. This assessment is consistent with the federal assessment of this species by COSEWIC (2018).</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
<p><b>Fern-leaved Yellow False Foxglove</b> <i>Aureolaria pedicularia</i></p>	<p>Fern-leaved Yellow False Foxglove is a tall, herbaceous perennial that can reach a height of 1.5 m. This species are hemi-parasites where they secure some of their water and nutrients by tapping into the roots of other plants, particularly oak species (<i>Quercus spp</i>). They are found in dry, open to semi-open, upland oak forests, woodlands and savanna habitats on well-drained soils (COSEWIC 2018). Occupancy was confirmed for seven potentially viable subpopulations: Turkey Point Complex, Norfolk; Pinery Complex, Lambton; Hendrie Valley, Halton; Cootes Paradise Complex, Hamilton; Sixteen Mile Pond Island, Niagara; Fifteen Mile Creek, Niagara; and Forced Road Woods, Brant (COSEWIC 2018).</p> <p>Fern-leaved Yellow False Foxglove is classified by COSSARO as Threatened. This is considering an inferred low extent of occurrence and index of area of occupancy for 6 to 10 locations. There is also a projected continuing decline in extent and habitat quality resulting from fire suppression, problematic native species as well as invasive species. This classification is consistent with the federal classification of this species by COSEWIC (2018).</p>
<p><b>Wood Turtle</b> <i>Glyptemys insculpta</i></p>	<p>Wood Turtles are declining across the majority of their range in Ontario. Where this species does occur, it is present in small, disjunct subpopulations located beyond this species dispersal abilities. Wood Turtles show high site fidelity and require both aquatic and terrestrial habitats. This species is more terrestrial than other turtles in Ontario, rendering it vulnerable to road mortality and habitat loss due to changing land use practices. Wood Turtles are actively collected for the pet trade, further reducing wild populations. Wood Turtles have long generation times and low annual recruitment making this species at risk of population collapse if increases in adult or juvenile mortality occur. Road mortality, habitat loss, subsidized predators, and mortality from forestry operations have led to reductions in numbers of Wood Turtles in Ontario.</p> <p>Wood Turtle is assessed as Endangered in Ontario by COSSARO, based on suspected past declines in the number of mature individuals due to poaching and road and forest related mortality, and projected future declines from the same threats. No assessment modifiers were applied, because of the low probability of rescue effect, and poor condition of the species across its broader biologically relevant geographic range (BBRGR). This assessment is higher than the status of Threatened reached by COSEWIC (2018), reflecting large declines and clear threats to Ontario's population.</p>
<p><b>Gray Ratsnake</b></p>	<p>Gray Ratsnakes are the largest snakes in Ontario. This species has a late age of sexual maturity and low reproductive rates and</p>

<p><b>SPECIES</b> (Common Name, Scientific Name)</p>	<p><b>Summary of Species Assessments</b></p>
<p>(Frontenac Axis population) <i>Pantherophis spiloides</i></p>	<p>occupies a region of Ontario that is increasingly fragmented. Gray Ratsnakes are threatened by ongoing development and by expansion of road networks which result in both habitat loss and mortality. This species is especially sensitive to habitat loss in areas of communal hibernacula. The extent of this species occurrence appears to have declined significantly within the province. Data from multiple subpopulations within the Frontenac Axis population indicate decreasing populations at some locations; however, widespread estimates of abundance and population trends are unavailable. Rescue from other populations is unlikely since this population is already separated from upstate New York by the St. Lawrence River and by at least 100 km from the main species range in New York State.</p> <p>The Frontenac Axis population of Gray Ratsnake is assessed by COSSARO as Threatened, due to an inferred decline greater than 30% in the number of mature individuals in the past three generations. The species' threatened by habitat loss and fragmentation, deliberate killing and road mortality, and hibernacula disturbances, and has a poor ability to rebound from threats. This assessment is consistent with the federal classification of this species by COSEWIC (2018).</p>
<p><b>Gray Ratsnake</b> (Carolinian population) <i>Pantherophis spiloides</i></p>	<p>Historically, this species was found across much of the Carolinian zone of southwestern Ontario. Ratsnakes in this population are found in an increasingly fragmented region of Ontario and are threatened by ongoing development and expansion of road networks. The Carolinian population is persisting in only two small disjunct subpopulations, and are surrounded by intensive agriculture, and residential and commercial development. The number of mature individuals in the Carolinian population is estimated to be fewer than 250. Data suggest that two additional subpopulations in this population have been extirpated in the past 10 years, and its range within this portion of the province has declined over that same time period. Development significantly threatens communal hibernacula, while roads represent a significant mortality threat to Gray Ratsnakes, where these snakes commonly bask. Finally, this species is persecuted by humans along roads and at hibernacula. Rescue from other populations is unlikely as the Carolinian population is disjunct from other Ontario populations and separated from adjacent populations in the U.S. by Lake Erie suggesting that a broader biologically relevant geographic range (BBRGR) outside of Ontario is not applicable to this population.</p> <p>The Carolinian population of Gray Ratsnake is assessed by COSSARO as Endangered, due to an inferred decline greater than 50% in the number of mature individuals in the past three</p>

SPECIES (Common Name, Scientific Name)	Summary of Species Assessments
	<p>generations; the small geographic range and area occupied by the population, and the very small and declining population size. The species' threatened by habitat loss and fragmentation, deliberate killing and road mortality, and hibernacula disturbances, and has a poor ability to rebound from threats. This assessment is consistent with the federal classification of this species by COSEWIC (2018).</p>
<p><b>Hairy Valerian</b> <i>Valeriana edulis ssp. ciliata</i></p>	<p>Hairy Valerian is an herbaceous, long-lived perennial native to the Great Lakes states and Southern Ontario. The species occurs in three extant subpopulations in southwestern Ontario located near Goderich, Brantford, and Paris (COSEWIC 2018). The preferred habitat of Hairy Valerian is open, wet and mesic prairies and fens with calcareous soils, but the species can also tolerate partial shade and can be found on dry sites such as wooded hillsides and dry bluffs. It reproduces only by seeds, which are mainly wind dispersed.</p> <p>Habitat loss due to the establishment of invasive species is currently the most significant threat facing Canadian subpopulations of Hairy Valerian, although habitat loss associated with commercial and industrial development also poses a threat. The status of Hairy Valerian varies from S1 (critically imperiled) to S3 (vulnerable) across the broader biologically relevant range in Minnesota, Wisconsin, Michigan, Ohio, Illinois, Iowa, and Indiana. The species is listed as Endangered in Ohio and Indiana, Threatened in Michigan and Minnesota, and Special Concern in Wisconsin and Illinois. It is ranked as G5T3 (NatureServe 2020) but has not been assessed by the IUCN.</p> <p>Hairy Valerian meets the criteria for listing as Endangered in Ontario based on its small extent of occurrence and area of occupancy. However, the status has been modified to Threatened based on its lower risk status (Special Concern or Threatened) in Wisconsin, Illinois, Michigan, and Minnesota. The status of this species is not consistent with the designation of Endangered by COSEWIC (2018) because of the modification to its status in Ontario based on its condition within the broader biologically relevant geographic range, as per the requirements of the Endangered Species Act (ESA) of Ontario.</p>
<p><b>Frosted Elfin</b> <i>Callophrys irus</i></p>	<p>Frosted Elfin is a tiny butterfly with a wingspan of about 2.5 cm. It gets its name from the pale gray scales along the edge its hind wings that give it a frosted look. The male has gray-brown upper wings, and the females are reddish brown. A distinct black spot is located near the tail. The caterpillar is yellowish green with white dashes and is covered with brownish hairs.</p> <p>Frosted Elfin is found predominately in oak savannah and pine barren habitats, as well as open woods and forest edges. In</p>

<b>SPECIES</b> <b>(Common Name,</b> <b>Scientific Name)</b>	<b>Summary of Species Assessments</b>
	<p>Ontario, females only lay eggs on the flower buds of Wild Lupine, and the caterpillars feed on the flowers and seedpods. In late summer, the caterpillars build a shelter in the leaf litter on the ground by tying leaves together with silk, and they overwinter in the pupal stage. In early spring, the adult butterflies emerge.</p> <p>This species is globally imperiled and has declined throughout its entire range. In Ontario it was historically known only from a single site in remnant oak savannah within St. Williams Conservation Reserve in Norfolk County. It has not been seen at this or any other site in the province since 1988, despite repeated searches. Frosted Elfin is assessed as Extirpated in Ontario.</p>
<p><b>Karner Blue</b> <i>Plebejus samuelis</i></p>	<p>Karner Blue is a small butterfly with a wingspan of 2.5 cm. The underside of the wings are light silver- grey in colour with black dots and orange crescents along the outer edges. Males have deep blue wings with black edges and a white outer fringe. Females are a deeper purple-blue to purple-brown in colour, with a row of dark spots with orange crescents along the wing edges. The larvae are green and covered in very fine hairs and for protection from predators.</p> <p>The female Karner Blue lays eggs on or near Wild Lupine, the sole food source of the larvae. Two broods are produced each year. In spring, eggs that were laid the previous year metamorphose to produce a first brood of caterpillars. Adult butterflies that emerge in late summer mate and lay eggs that do not hatch until the following spring.</p> <p>The habitat of the Karner Blue is restricted to where Wild Lupine grows – in sandy soils, sandy pine barrens, beach dunes, and oak savannahs. Karner Blue occurs in isolated populations from New Hampshire and New York, west through southern Ontario and states bordering the Great Lakes to Minnesota. Karner Blue is extirpated from some of the states throughout its range, but some jurisdictions (e.g., Ohio and New Hampshire) have initiated reintroductions.</p> <p>The most recent occurrences of Karner Blue in Ontario are from Port Franks and St. Williams in the late 1980s and early 1990s. Karner Blue was historically more widespread with records from Toronto, London and the Oak Ridges Moraine. Despite repeated searches it has not been observed in Ontario since 1991 and is assessed as Extirpated in Ontario.</p>
<p><b>Goldenseal</b> <i>Hydrastis canadensis</i></p>	<p>Goldenseal is a long-lived herbaceous perennial native to the eastern Deciduous forest area of the United States and Canada. In Ontario, Goldenseal is known to occur in 25 extant subpopulations from the southwestern portion of the province. The species</p>

<b>SPECIES</b> (Common Name, Scientific Name)	<b>Summary of Species Assessments</b>
	<p>generally occupies mesic deciduous forest sites and prefers slightly acidic soils under closed to semi-open forest canopies. It reproduces both vegetatively and through seed, although the majority Ontario populations appear to spread by clonal reproduction via sprouting of the underground rhizome.</p> <p>Ontario Goldenseal populations have declined historically due to habitat loss, as only an estimated 5% of the original southwestern Ontario forests that support the species remain. Currently, the most significant threats facing Ontario populations are logging and wood harvesting, harvesting/gathering, and recreational activities. While several populations appear to have decreased between 1991, 1998, and 2015 survey periods, other populations have increased in size such that Goldenseal populations in Ontario are currently considered to be stable. The status of Goldenseal varies from critically imperiled to apparently secure across the broader biologically relevant geographic range (Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin). Populations in some areas of the BBRGR are considered naturally rare, but the species is listed as at-risk in several jurisdictions due to concerns over unsustainable exploitation and declines in suitable habitat.</p> <p>Goldenseal does not meet the criteria for listing as endangered or threatened in Ontario, as populations are currently considered stable and the number of locations, population size, and extent of occurrence exceed thresholds for listing. However, the species has a small area of occupancy (&lt; 500 km<sup>2</sup>) and could potentially become threatened if factors influencing the persistence of the species are not reversed or managed with demonstrated effectiveness. Thus, Goldenseal is assessed as Special Concern in Ontario. The change in the status of this species from the 2007 assessment is considered to represent both a genuine and non-genuine change as the number of mature individuals appears to be stable in recent decades, but a number of new subpopulations have been discovered since the last assessment.</p>
<b>Gravel Chub</b> <i>Erimystax x-punctatus</i>	<p>Gravel Chub is a small stream-dwelling cyprinid. This species is extirpated in Canada, with the last observations of Gravel Chub in the wild being in 1958. Despite substantial targeted sampling over the past six decades, no additional captures have been made.</p> <p>The Gravel Chub population capture records were limited to the Thames River in southwestern Ontario and was the only population identified within the Great Lakes watershed. The Gravel Chub has specific habitat needs. It is only found in waters of low turbidity with enough current to keep the bottom silt-free. These conditions limit the species' occurrence. In addition, impoundment of riffle areas is</p>

<b>SPECIES</b> (Common Name, <i>Scientific Name</i> )	<b>Summary of Species Assessments</b>
	a threat to the gravel chub. It is thought that increased turbidity and siltation may have led to the extirpation of the Gravel Chub.
<b>Paddlefish</b> <i>Polyodon spathula</i>	<p>Paddlefish is an ancient species related to sturgeon. It has a long, very distinctive paddle-like snout and a large, toothless mouth. Paddlefish primarily feed on zooplankton, small invertebrates and insect larvae by using their long gill rakers to filter food from the water.</p> <p>Paddlefish occurs throughout the Mississippi River system from Montana to Louisiana, and some smaller rivers draining into the Gulf of Mexico. This fish was never common in the Great Lakes and there are only four records for the Canadian portion of its range.</p> <p>This fish is a long-distance migrant, and it is possible that these early records represent individuals that were able to enter the Great Lakes through natural connections, or after the construction of the Chicago canal. However, there is no clear evidence to support these recent dispersal event and the species is considered native to the Great Lakes.</p> <p>Paddlefish disappeared at a time when many fishes were declining in the Great Lakes due to overfishing, dam construction and degradation of spawning habitats. The species has not been observed in Canadian waters since the early 1900s despite extensive sampling and being a large distinctive fish that is easily recognizable. It is assessed as Extirpated in Ontario and in the Great Lakes basin.</p>

**NOTES:**

BBRGR represents the “broader biologically relevant geographic range” as per section 5 (4)(b) of the Endangered Species Act, 2007.