

INDICATOR: Trends in Species of Conservation Concern Based on General Status Assessment

Startegic Direction: Enhance resilience

Target: 11. By 2030, the conservation of species and ecosystems in Ontario is improved.

Theme: State of Ecosystems and Species — Species Diversity

Previous versions:

- <u>Trends in species of Conservation Concern Based on General Status Assessment 2021</u>
- <u>Trends in species of Conservation Concern Based on General Status Assessment 2015</u>

Background Information

Globally, the majority of indicators that measure biodiversity show net declines over recent decades. The global Living Planet Index shows an average of 73% decrease in population sizes of monitored mammals, birds, amphibians, reptiles and fishes since the year 1970 (World Wildlife Fund 2024). The Living Planet Report Canada (2020) states that species of global conservation concern (IUCN threatened status) have declined by 42% over that same time period. These species are threatened by human activities such as development and the consumption of natural resources.

The Living Planet Report Canada also revealed that "populations of Canadian species assessed as at risk nationally by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) have declined by 59% on average from 1970-2016" (WWF Canada 2020).

The general status of a broad cross-section of wild species in Canada is assessed every 5 years in the Wild Species reports produced by the National General Status Working Group. The provincial ranks for species in Ontario are assessed through NatureServe's Subnational conservation status ranks maintained by Ontario's Natural Heritage Information Centre and serve as a tool which can help identify which species' populations are sensitive or may be at risk and need further protection. Comparing the rankings between species groups is useful for determining patterns of threats that may be affecting these groups of species and pointing the way to improved conservation practices to mitigate the threats. At the provincial and national levels, each assessed species is assigned a rank in one of 10 conservation status categories (Table 1). The first five categories represent species of conservation concern.



Table 1. Definitions of NatureServe Subnational conservation status ranks (CESCC 2016).

Rank	Definition
Presumed extirpated SX	Not located in the jurisdiction despite intensive searches and virtually no likelihood of rediscovery.
Possibly extirpated SH	Known from only historical records but still some hope of rediscovery. There is evidence that the species or ecosystem may no longer be present in the jurisdiction, but not enough to state this with certainty. Examples of such evidence include (1) that a species has not been documented in approximately 20-40 years despite some searching and/or some evidence of significant habitat loss or degradation; (2) that a species or ecosystem has been searched for unsuccessfully, but not thoroughly enough to presume that it is no longer present in the jurisdiction.
Critically imperiled S1	At very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines, severe threats, or other factors.
Imperiled S2	At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
Vulnerable S3	At moderate risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
Apparently secure S4	At a fairly low risk of extirpation in the jurisdiction due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
Secure S5	At very low or no risk of extirpation in the jurisdiction due to a very extensive range, abundant populations or occurrences, with little to no concern from declines or threats.
Unrankable SU	Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
Unranked SNR	National or subnational conservation status not yet assessed.
Not Applicable SNA	A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., long distance aerial and aquatic migrants, hybrids without conservation value, and non-native species or ecosystems) (see Master et al. 2012, Appendix A, pg 70 for further details). Note: When the Element Global Rank is GNA, the Element National Rank should be entered as NNA and Element Subnation Rank should be entered as SNA for all national and subnational records associated with it.

This indicator examines the status of Ontario wild species assessed in the 2020 General Status assessment as well as changes from the previous assessment in 2015, 2010, and 2005. It provides an update to information presented in State of Ontario's Biodiversity 2020 (OBC 2021).

Data Analysis

The status ranks for Ontario species from the 2005, 2010, 2015 and 2020 national general status assessments (CESCC 2006, 2011, 2016, 2022) were downloaded from the national general status assessment <u>website</u>. For Ontario, species subnational status ranks (S-ranks) maintained by the <u>Ontario Natural Heritage Information Centre</u>.

Starting with the 2015 report, the National Working Group is using the NatureServe ranking system. This is a change from early reports — 2000, 2005, and 2010, in which the general status ranking system was used. For comparison purposes the species rankings from previous years were converted to the NatureServe system (Table 2).

Table 2. Comparison of the NatureServe rounded ranks with the previous General Status ranking system (CESCC 2016).

Previous General Status ranking system

Extinct	0.2	X	Presumed Extirpated
Extirpated	0.1	н	Possibly Extirpated
At Risk	1	1	Critically Imperiled
May Be At Risk	2	2	Imperiled
Sensitive	3	3	Vulnerable
	1	4	Apparently Secure
Secure	4	5	Secure
Undetermined	5	U	Unrankable
Not Assessed	6	NR	Unranked
Exotic	7	NA	Not Applicable

More and more species are assessed with each update. In 2020, 25,776 species were assessed in Ontario, almost 10,000 more species than the 2015 report (15,858 Ontario species). This is also a significant increase from the approximately 7,000 assessed in 2010 and the just over 4,000 species in 2005. New taxonomic groups were added in 2020 including ticks, fleas, harvestmen, leeches, pseudoscorpions, sawflies, slime molds, springtails, myriapods, true bugs, and select flies that had not been assessed in previous reports. There were also new species added to many of the previously assessed taxonomic groups.

The number of insect groups assessed has expanded significantly since 2005, when only tiger beetles and odonates (dragonflies and damselflies) were assessed. Since then, numerous insect groups have been added and in 2020 there were more than 14,000 insects assessed



NatureServe rounded ranks



including ants, bees, bee flies, beetles, black flies, caddisflies, dragonflies and damselflies, fleas, flower flies, grasshoppers and relatives, horse flies, lacewings, mayflies, mosquitoes, moths and butterflies, sawflies, scorpionflies, springtails, stoneflies, true bugs, yellowjacket wasps. To simplify presentation, all insect groups have been included in a larger general group named "insects".

A summary of the proportion of native species in secure or conservation concern categories is presented (n=11,949) for each taxon group and for all species combined based on the 2020 assessment (Figure 1). This summary table excludes species in the exotic, undetermined, accidental and not assessed categories.

For species that were assessed in consecutive years the number of species with changes in general status ranks, and the reasons for changes were examined (Table 3). This included 4,063 species assessed in both 2005 and 2010, 6,989 species assessed in both 2010 and 2015, and 14,900 species assessed in both 2015 and 2020 (Figure 2).

The reasons for changes in status provide valuable information. Some changes in rank occurred as a result of real changes in the distribution, population size or threats to the species causing ranks to either increase or decrease in risk (see Figure 3). Many of the changes in risk were due to improved information about the species, but do not represent real changes in distribution and abundance (i.e., new survey data provided a more accurate assessment of the status of the species). Some changes in rankings also occurred due to taxonomic changes – a formerly recognized species is combined with another species, or a single species is divided into two or more species. Procedural changes and rectifying errors from the previous report also resulted in some changes in the general status of species.

Results



Figure 1. Proportion of Ontario native wild species assessed in secure and conservation concern categories (n = number of secure species and species of conservation concern in group). Does not include species assessed as unranked, unrankable or not applicable.

*Insects group include: ants, bees, bee flies, beetles, black flies, caddisflies, dragonflies and damselflies, fleas, flower flies, grasshoppers and relatives, horse flies, lacewings, mayflies, mosquitoes, moths and butterflies, sawflies, scorpionflies, selected flies (what does this include), springtails, stoneflies, true bugs, yellowjacket wasps.



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Table 3. Species ranks for Ontario species assessed in 2005, 2010, 2015, 2020 (NHIC 2006, 2011, 2016, 2022).006, 2011, 2016).

assessed include: ants, bees, bee flies, beetles, black flies, caddisflies, dragonflies and damselflies, fleas, flower flies, grasshoppers and relatives, horse flies, lacewings, mayflies, mosquitoes, moths and butterflies, sawflies, scorpionflies, selected flies springtails, stoneflies, true bugs, yellowjacket wasps.

Notes:

- The status of freshwater fishes was not re-assessed in the Wild Species 2010.
- Decapods in 2005 and in 2010 were strictly freshwater crayfish, in 2015 freshwater shrimp and crab were added.





Species of conservation concern over time

Figure 2. A comparison of the conservation status of native Ontario species assessed in 2005 (n = 2,854), 2010 (n = 4,758), 2015 (n=7,739) and 2020 (n=11,949).

Table 3. Summary and reason of changes in general status ranks for Ontario species assessed in 3 time periods (2005-2010, 2010-2015, and 2015-2020). This table compares species groups that were assessed over 3 time periods to the changes in the status between those years. Only species that were assessed in both time periods being compared are included.

	Total 05-10	Total 10-15	Total 15-20	Better Information 06-10	Better Information 10-15	Better information 15-20	Biological, new assessment 05-10	Biological, new assessment 10-15	Biological, new assessment 15-20
Species in Lower Risk Rank	134	203	436	128	92	430	6	11	6
Species in Higher Risk Rank	45	628	260	32	359	237	13	5	23
Into accidental or exotic (labelled as Not Applicable in 2015)	16	49	46	16	24	36	n/a	n/a	n/a
Into undetermined/ unrankable	18	135	1082	18	n/a	313	n/a	n/a	n/a
From undetermined/ unrankable to another rank	22	154	546	22	21	545	n/a	n/a	n/a
Total Number of Changes	235	1169	2370	216	496	1,561	19	16	29
No Change	3,759	5.820	12,530						

Status¹





Figure 3. Number of species with real general status rank changes due to increasing risk and decreasing risk between the 4 time periods— 2000-2005 (OBC 2010), 2005-2010 assessments (OBC 2015), 2010-2015 (OBC 2020) and 2015-2020.

• In the 2020 assessment, the most vulnerable species were slime molds with 114 species (82%) falling within the species of concern categories, followed by reptiles, and mosses.

• Similar to previous assessments, 19 species or 73% of reptiles were categorized as species of conservation concern (ranked as presumed extirpated, possibly extirpated, critically imperiled, imperiled, or vulnerable), the same percentage as in 2015 and similar to the 2010 assessment report at 72% (n=25).

• Of the 531 mosses that were ranked from extirpated to secure, 356 species (67%) were categorized as species of conservation concern.

• Based on the species that have been assessed, (excluding unrankable, unranked, or not applicable categories) four taxonomic groups had 100% of species ranked in the secure or apparently secure categories, including leeches (n=18), macrofungi (926 species), ticks (10 species), and sponges $(4 \text{ species})^2$.

• Some of the groups with a high percentage of secure species (excluding unrankable, unranked,

- 1 Status bullets are based on species categories presumed extirpated, possibly extirpated, critically imperiled, imperiled, vulnerable, apparently secure and secure and exclude unrankable, unranked, or not applicable categories.
- 2 Some species assessed in this category did fall under unrankable, Not applicable and unranked see Table 3 for details.

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or not applicable categories), include spiders at 92% or 299 species, and insects at 83% (5178 species) and amphibians at 72% (18 species). Note that for insects and spiders, more than half of known species have not been ranked (insects: 8,506/14,763, or 57.6%; spiders: 432/757, or 57.1%).

- Birds were assessed at 68% secure, lower than the previous assessment which had birds at 82% secure or apparently secure and 79% in 2010.
- Though spiders were listed as one of the most secure, over half (57%) are still unrankable or not applicable. Insects also have 57% of species as unrankable or not applicable.
- Between 2015 and 2020, 2370 species that were reassessed changed general status rankings. More than half (66%) can be attributed to improved knowledge.
- Change status between 2015 and 2020 identified 23 species changed due to increasing risk. These changes can be attributed to changes in population size, distribution or threats to the species. Six species changed status due to decreasing risk.

Links

Related Targets: N/A

Related Themes: N/A

Web Links

Changes in the status of wildlife species - <u>https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/changes-status-wildlife-species-risk.html</u>

Natural Heritage Information Centre – biotics conservation database -General Status of Species in Canada <u>http://www.wildspecies.ca/home.cfm?lang=e</u> <u>https://www.natureserve.org/conservation-tools/conservation-status-assessment</u>

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