



INDICATOR: TRENDS IN SPECIES OF CONSERVATION CONCERN BASED ON GENERAL STATUS ASSESSMENT

STRATEGIC DIRECTION: Reduce Threats

TARGET: 10. By 2015, the status of species and ecosystems of conservation concern in Ontario is improved.

THEME: State of Ecosystems and Species – Species Diversity

Background Information:

Globally, population sizes of vertebrate species have declined by 52 percent over the last 40 years (World Wildlife Fund 2014). These species are threatened by human activities such as development and the consumption of natural resources. The general status of a broad cross-section of wild species in Canada is assessed every 5 years. General status ranks for species in Ontario are a tool which can help identify which species' populations are sensitive or may be at risk and are in need of 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 general status categories (Table 1). The first five categories represent species of conservation concern.

Table 1. Definitions of general status ranks (modified from CESSC 2006).

	General status rank	Definition
Species of Conservation Concern	Extinct	Species that are extirpated worldwide (i.e., they no longer exist anywhere).
	Extirpated	Species that are no longer present in Ontario, but occur in other areas.
	At Risk	Species for which a formal, detailed risk assessment (COSEWIC or COSSARO status assessment) has been completed and that has been determined to be Endangered or Threatened.
	May Be At Risk	Species that may be at risk of extirpation or extinction and are therefore candidates for a detailed risk assessment by COSEWIC or COSSARO.
	Sensitive	Species that are not believed to be at risk of immediate extirpation or extinction but may require special attention or protection to prevent them from becoming at risk (includes species listed as Special Concern).
	Secure	Species that are not believed to belong in the categories Extirpated, Extinct, At Risk, May Be At Risk, Sensitive, Accidental or Exotic. This category includes some species that show a trend of decline in numbers in Ontario but remain relatively widespread or abundant.
	Exotic	Species that have been moved beyond their natural range and are found in Ontario as a result of human activity. Exotic species are excluded from all other categories. Exotic species = alien species that are not native to any Ontario ecosystem.
	Undetermined	Species for which insufficient data, information, or knowledge is available with which to reliably evaluate their general status.
	Not Assessed	Species that are known or believed to be present in Ontario, but have not yet been assessed by the general status program.
	Accidental	Species occurring infrequently and unpredictably, outside their usual range.



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

Data Analysis:

General status ranks for Ontario species from the 2005 and 2010 national general status assessments (CESCC 2006, 2011) were downloaded from the national general status assessment [web site](#). For Ontario species, general status ranks are largely based on species subnational status ranks (S-ranks) maintained by the [Ontario Natural Heritage Information Centre](#).

In 2010, 6,995 Ontario species were assessed, including 2,778 species in groups that were not assessed in 2005 (Table 2). The new species groups assessed in 2010 included lichens, mosses, spiders and eight new insect groups (predaceous diving beetles, ground beetles, lady beetles, bumblebees, black flies, horse flies, mosquitoes and selected macromoths). Only three insect groups were assessed in 2005 (odonates [dragonflies and damselflies], tiger beetles and butterflies). To simplify presentation all insect groups have been included in a larger general group named "Insects". The status of freshwater fishes was not re-assessed in the Wild Species 2010, so 2005 data for this group are presented. A summary of the proportion of native species in secure and conservation concern general status categories is presented ($n = 4,758$) for each taxon group and for all species combined based on the 2010 assessment (Figure 1). This summary excludes species in the exotic, undetermined, accidental and not assessed categories.

For 4,063 species that were assessed both in 2005 and 2010 (Figure 2), the number of species with changes in general status ranks and the reasons for changes were examined (Table 3). The reasons for changes in status are important. 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:

Trend: Mixed **Data Confidence:** High **Geographic Extent:** Provincial

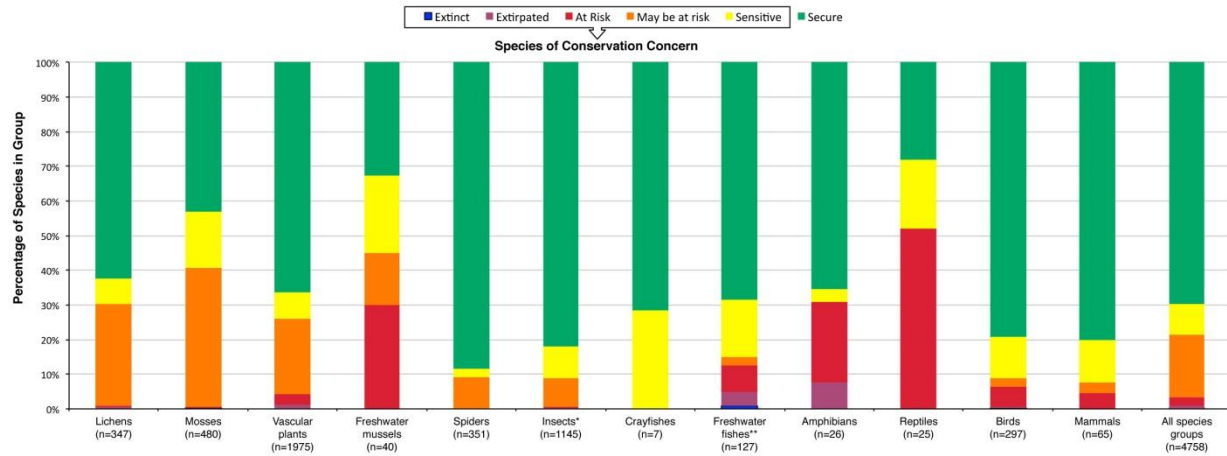


Figure 1. Proportion of Ontario native wild species in secure and conservation concern categories. (n = number of secure species and species of conservation concern in group; *Insect groups assessed are odonates, predaceous diving beetles, ground beetles, lady beetles, bumblebees, black flies, horse flies, mosquitoes, butterflies and selected macromoths; **2005 data for fishes - 2010 assessment not complete.) (CESCC 2011).

Table 2. General Status ranks for Ontario species assessed in 2010 (CESCC 2011).

Taxonomic Group	Species of Conservation Concern						Undetermined	Not Assessed	Exotic	Accidental	Total
	Extinct	Extirpated	At Risk	May be at risk	Sensitive	Secure					
Lichens	0	2	1	102	26	216	61	10	0	0	418
Mosses	1	1	1	192	79	206	41	0	1	0	522
Vascular plants	0	25	62	427	149	1312	73	0	1051	0	3099
Freshwater mussels	0	0	12	6	9	13	0	1	0	0	41
Spiders	0	0	0	32	9	310	366	0	34	0	751
Insects*	0	3	3	95	105	939	317	0	33	43	1538
Crayfishes	0	0	0	0	2	5	0	0	2	0	9
Freshwater fishes**	1	5	10	3	21	87	7	1	19	0	154
Amphibians	0	2	6	0	1	17	0	0	0	0	26
Reptiles	0	0	13	0	5	7	1	0	1	0	27
Birds	1	1	17	7	36	235	4	0	9	173	483
Mammals	0	0	3	2	8	52	5	1	7	3	81
All species groups	3	39	128	866	450	3399	875	13	1157	219	7149

*Insects groups assessed are odonates, predaceous diving beetles, ground beetles, lady beetles, bumblebees, black flies, horse flies, mosquitoes and selected macromoths.

**2005 data for fishes - 2010 assessment not complete.

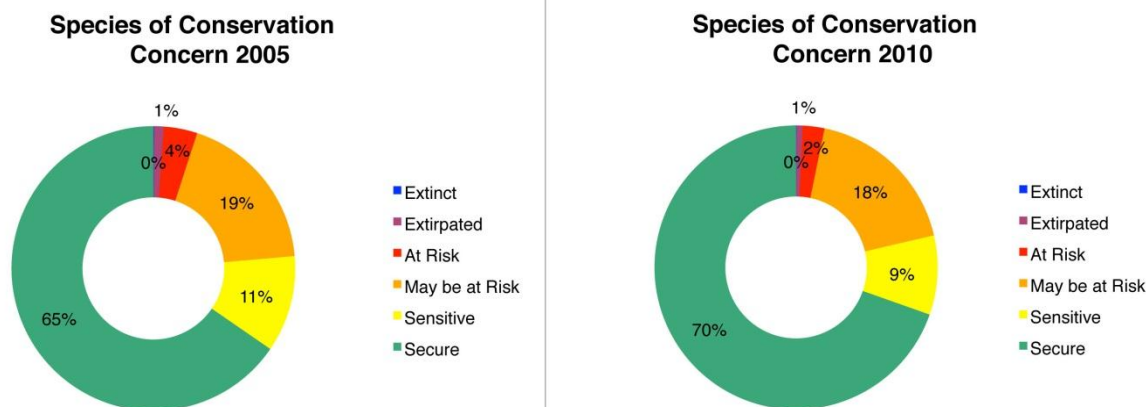


Figure 2. A comparison of the general status of native Ontario species assessed in 2005 ($n = 2,854$) and 2010 ($n = 4,758$).

Table 3. Summary of changes in general status ranks for Ontario species assessed in 2005 and 2010 and reasons for rank change. This table compares species groups that were assessed both in 2005 and in 2010. Species groups that are new in 2010 are not included in this table (lichens, mosses, spiders, new insect groups).

Direction of General Status Rank Change	Reason for Change			
	Total	Better Information	Increasing risk	Decreasing risk
Species in Lower Risk Rank	134	128	n/a	6
Species in Higher Risk Rank	45	32	13	n/a
Into accidental or exotic	16	16	n/a	n/a
Into undetermined	18	18	n/a	n/a
From undetermined to another rank	22	22	n/a	n/a
Total Number of Changes*	235	216	13	6
No Change	3,759			

* This total excludes 69 species that were new to the groups that were assessed in Wild Species 2005: 54% of these species were newly discovered, introduced exotics or have expanded their range into Ontario. 46% were considered “new” due to taxonomic changes.

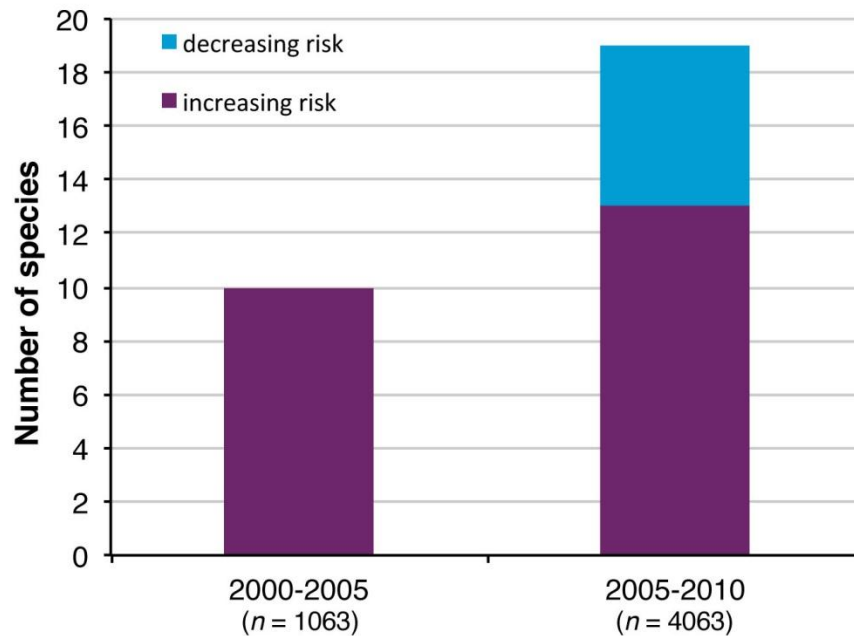


Figure 3. Number of species with real general status rank changes due to increasing risk and decreasing risk between the 2000 and 2005 assessments (OBC 2010) and between the 2005 and 2010 assessments.

Status:

- Reptiles and freshwater mussels are the most vulnerable species groups. 72% of reptiles and 68% of freshwater mussels are of conservation concern (ranked as extinct, extirpated, at risk, may be at risk or sensitive).
- Spiders (88%) and select insects (82%) are the groups with the highest proportion of secure species. However, almost half (49%) of spider species were ranked as undetermined due to insufficient information. Among vertebrate groups, mammals had the highest proportion of secure species (80%).
- General status ranks of 2,778 new Ontario species have been introduced in the *Wild Species 2010* report, including lichens, mosses, spiders, predaceous diving beetles, ground beetles, lady beetles, bumblebees, black flies, horse flies, mosquitoes and selected macromoths.
- 235 of 4,063 species (6%) assessed in 2005 and 2010 had a change in general status rank. The majority of changes in ranks can be attributed to improved knowledge (92%). There were 69 new species added due to introductions, range expansions, new discoveries and taxonomic changes.
- Since 2005, 13 species changed status due to increasing risk. These changes can be attributed to changes in population size, distribution or threats to the species. Only six species changed status due to decreasing risk.

Links:

Related Targets: N/A

Related Themes: N/A



Web Links:

General Status of Species in Canada <http://www.wildspecies.ca/home.cfm?lang=e>

References:

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Ontario Biodiversity Council. 2015. State of Ontario's Biodiversity [web application]. Ontario Biodiversity Council, Peterborough, Ontario. [Available at: <http://ontariobiodiversitycouncil.ca/sobr> (Date Accessed: May 19, 2015)].