

# Recovery Strategy for the Showy Goldenrod (*Solidago speciosa*), Boreal population, in Canada

## Showy Goldenrod, Boreal population



2021



Government  
of Canada

Gouvernement  
du Canada

Canada

**Recommended citation:**

Environment and Climate Change Canada. 2021. Recovery Strategy for the Showy Goldenrod (*Solidago speciosa*), Boreal population, in Canada. *Species at Risk Act Recovery Strategy Series*. Environment and Climate Change Canada, Ottawa. 3 parts, 17 pp. + v + 14 pp. + 5 pp.

**Official version**

The official version of the recovery documents is the one published in PDF. All hyperlinks were valid as of date of publication.

**Non-official version**

The non-official version of the recovery documents is published in HTML format and all hyperlinks were valid as of date of publication.

For copies of the recovery strategy, or for additional information on species at risk, including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Status Reports, residence descriptions, action plans, and other related recovery documents, please visit the [Species at Risk \(SAR\) Public Registry](#)<sup>1</sup>.

**Cover illustration:** Showy Goldenrod flower; J. Burke Korol; Canadian Wildlife Service

Également disponible en français sous le titre  
« Programme de rétablissement de la verge d'or voyante (*Solidago speciosa*),  
population boréale, au Canada »

© Her Majesty the Queen in Right of Canada, represented by the Minister of Environment and Climate Change, 2021. All rights reserved.  
ISBN 978-0-660-40404-2  
Catalogue no. En3-4/123-2021E-PDF

*Content (excluding the illustrations) may be used without permission, with appropriate credit to the source.*

---

<sup>1</sup> [www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html](http://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html)

# RECOVERY STRATEGY FOR THE SHOWY GOLDENROD (*Solidago speciosa*), BOREAL POPULATION, IN CANADA

2021

Under the Accord for the Protection of Species at Risk (1996), the federal, provincial, and territorial governments agreed to work together on legislation, programs, and policies to protect wildlife species at risk throughout Canada.

In the spirit of cooperation of the Accord, the Government of Ontario has given permission to the Government of Canada to adopt the *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario* (Part 2) and the *Showy Goldenrod – Boreal population – Ontario Government Response Statement* (Part 3) under Section 44 of the *Species at Risk Act* (SARA). Environment and Climate Change Canada has included a federal addition (Part 1) which completes the SARA requirements for this recovery strategy.

The federal recovery strategy for the Showy Goldenrod, Boreal population, in Canada consists of three parts:

Part 1 – Federal Addition to the *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario*, prepared by Environment and Climate Change Canada.

Part 2 – *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario*, prepared by Jane M. Bowles for the Ontario Ministry of Natural Resources and Forestry.

Part 3 – *Showy Goldenrod – Boreal Population – Ontario Government Response Statement*, prepared by the Ontario Ministry of Natural Resources and Forestry.

## Table of Contents

Part 1 – Federal Addition to the *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario*, prepared by Environment and Climate Change Canada.

Preface.....	1
Acknowledgements .....	3
Additions and Modifications to the Adopted Document .....	4
Recovery Feasibility Summary .....	4
1. COSEWIC Species Assessment Information.....	6
2. Species Status Information .....	6
3. Threats.....	7
3.1 Threat Assessment.....	7
3.2 Description of Threats .....	8
4. Population and Distribution Objectives .....	9
5. Broad Strategies and General Approaches to Meet Objectives.....	10
6. Critical Habitat.....	10
6.1 Identification of the Species' Critical Habitat.....	10
6.2 Activities Likely to Result in the Destruction of Critical Habitat .....	12
7. Measuring Progress.....	14
8. Statement on Action Plans.....	14
9. References .....	15
Appendix A: National and Subnational Conservation Status Ranks of Showy Goldenrod ( <i>Solidago speciosa</i> ) in North America .....	16
Appendix B: Effects on the Environment and Other Species .....	17

Part 2 – *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal Population in Ontario*, prepared by Jane M. Bowles for the Ontario Ministry of Natural Resources and Forestry.

Part 3 – *Showy Goldenrod – Boreal Population – Ontario Government Response Statement*, prepared by the Ontario Ministry of Natural Resources and Forestry.

**Part 1 – Federal Addition to the *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario*, prepared by Environment and Climate Change Canada**

## Preface

The federal, provincial, and territorial government signatories under the [Accord for the Protection of Species at Risk \(1996\)](#)<sup>2</sup> agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of recovery strategies for listed Extirpated, Endangered, and Threatened species and are required to report on progress within five years after the publication of the final document on the SAR Public Registry.

The Minister of Environment and Climate Change is the competent minister under SARA for the Showy Goldenrod, Boreal population and has prepared the federal component of this recovery strategy (Part 1), as per section 37 of SARA. To the extent possible, it has been prepared in cooperation with the Province of Ontario, as per section 39(1) of SARA. SARA section 44 allows the Minister to adopt all or part of an existing plan for the species if it meets the requirements under SARA for content (sub-sections 41(1) or (2)). The Province of Ontario led the development of the attached recovery strategy for the Showy Goldenrod – Boreal population (Part 2) in cooperation with Environment and Climate Change Canada (ECCC). The Province of Ontario also led the development of the attached Government Response Statement (Part 3), which is the Ontario Government's policy response to its provincial recovery strategy and summarizes the prioritized actions that the Ontario government intends to take and support towards species' recovery.

Success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this strategy and will not be achieved by ECCC, or any other jurisdiction, alone. All Canadians are invited to join in supporting and implementing this strategy for the benefit of the Showy Goldenrod, Boreal population and Canadian society as a whole.

This recovery strategy will be followed by one or more action plans that will provide information on recovery measures to be taken by ECCC and other jurisdictions and/or organizations involved in the conservation of the species. Implementation of this strategy is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

The recovery strategy sets the strategic direction to maintain the current abundance and distribution of the Canadian population of this species, including identification of critical habitat to the extent possible. It provides all Canadians with information to help take action on species conservation. When critical habitat is identified, either in a recovery strategy or an action plan, SARA requires that critical habitat then be protected.

---

<sup>2</sup> [www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html#2](http://www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html#2)

In the case of critical habitat identified for terrestrial species including migratory birds SARA requires that critical habitat identified in a federally protected area<sup>3</sup> be described in the *Canada Gazette* within 90 days after the recovery strategy or action plan that identified the critical habitat is included in the public registry. A prohibition against destruction of critical habitat under ss. 58(1) will apply 90 days after the description of the critical habitat is published in the *Canada Gazette*.

For critical habitat located on other federal lands, the competent minister must either make a statement on existing legal protection or make an order so that the prohibition against destruction of critical habitat applies.

If the critical habitat for a migratory bird is not within a federal protected area and is not on federal land, within the exclusive economic zone or on the continental shelf of Canada, the prohibition against destruction can only apply to those portions of the critical habitat that are habitat to which the *Migratory Birds Convention Act, 1994* applies as per SARA ss. 58(5.1) and ss. 58(5.2).

For any part of critical habitat located on non-federal lands, if the competent minister forms the opinion that any portion of critical habitat is not protected by provisions in or measures under SARA or other Acts of Parliament, or the laws of the province or territory, SARA requires that the Minister recommend that the Governor in Council make an order to prohibit destruction of critical habitat. The discretion to protect critical habitat on non-federal lands that is not otherwise protected rests with the Governor in Council.

---

<sup>3</sup> These federally protected areas are: a national park of Canada named and described in Schedule 1 to the *Canada National Parks Act*, The Rouge National Park established by the *Rouge National Urban Park Act*, a marine protected area under the *Oceans Act*, a migratory bird sanctuary under the *Migratory Birds Convention Act, 1994* or a national wildlife area under the *Canada Wildlife Act* see ss. 58(2) of SARA.

## **Acknowledgements**

This document was developed by Angela Darwin, Kristina Fitzgerald (formerly), Judith Girard, and Burke Korol (ECCC, Canadian Wildlife Service – Ontario). Additional input and review was provided by by Krista Holmes (ECCC, CWS-ON), Mark Hulsman, Sarah Parna, Ayesha Prasad, and Eric Snyder (Ontario Ministry of Environment, Conservation and Parks), Sam Brinker, Chris Martin, Michael Oldham (Ontario Ministry of Natural Resources and Forestry – Natural Heritage Information Centre) and Judith Jones and Jessica Linton (consulting ecologists).



## Additions and Modifications to the Adopted Document

The following sections have been included to address specific requirements of the federal *Species at Risk Act* (SARA) that are not addressed in the *Recovery Strategy for the Showy Goldenrod (Solidago speciosa) – Boreal population in Ontario* (Part 2 of this document, referred to henceforth as “the provincial recovery strategy”) and/or to provide updated or additional information.

Environment and Climate Change Canada (ECCC) is adopting the provincial recovery strategy (Part 2) with the exception of sections 1.6 (Threats to Survival and Recovery) and 2 (Recovery). In place of section 1.6, ECCC has completed an IUCN-CMP (International Union for Conservation of Nature–Conservation Measures Partnership) unified threats classification. In place of section 2, ECCC has established its own population and distribution objective that is consistent with the provincial recovery goal, and is adopting the government-led and government-supported actions of the Showy Goldenrod – Boreal population Ontario Government Response Statement<sup>4</sup> (Part 3) as the broad strategies and general approaches to meet the population and distribution objective.

Under SARA, there are specific requirements and processes set out regarding the protection of critical habitat. Therefore, statements in the provincial recovery strategy referring to protection of the species’ habitat may not directly correspond to federal requirements. Recovery measures dealing with the protection of habitat are adopted; however, whether these measures will result in protection of critical habitat under SARA will be assessed following publication of the final federal recovery strategy.

## Recovery Feasibility Summary

Based on the following four criteria that ECCC uses to establish recovery feasibility, recovery of the Showy Goldenrod, Boreal population has been deemed technically and biologically feasible.

1. Individuals of the wildlife species that are capable of reproduction are available now or in the foreseeable future to sustain the population or improve its abundance.

Yes. There are individuals capable of reproduction within the Canadian range. The last systematic survey of this species was in 2009, at which time approximately 1 110 vegetative and flowering plants were counted in the single known Canadian location for this species (Bowles 2014). In 2018, several hundred plants (both flowering and non-flowering) were observed at the same location (Korol pers. comm. 2018). Individuals are also available in the United States; however, it is unknown if those plants could be used to sustain the Canadian population or increase its abundance or distribution.

---

<sup>4</sup> The Government Response Statement is the Ontario Government’s policy response to the recovery strategy and summarizes the prioritized actions that the Ontario Government intends to take and support.

2. Sufficient suitable habitat is available to support the species or could be made available through habitat management or restoration.

Yes. Sufficient suitable habitat is currently available to support the Canadian population. This plant occurs on an open, rocky and herb-dominated, south facing slope. There appears to be unoccupied habitat at the known location. Additional unoccupied but apparently suitable habitat occurs quite widely in the Kenora region (Bowles 2014).

3. The primary threats to the species or its habitat (including threats outside Canada) can be avoided or mitigated.

Yes. There are currently no threats with high impact identified for this species. However, high water levels and recreational activities (e.g., trampling by boaters) have been identified as threats with lower impacts. Flooding can be avoided or mitigated by informing water level managers (e.g., dam operators). Detrimental recreational activities can be prevented or mitigated by site monitoring, public education and enforcement.

4. Recovery techniques exist to achieve the population and distribution objectives or can be expected to be developed within a reasonable timeframe.

Yes. The recovery of Showy Goldenrod, Boreal population depends primarily on habitat protection. There are existing recovery techniques that can be used to protect its habitat, and thus achieve the population and distribution objectives.

As Showy Goldenrod, Boreal population was only identified in Canada in 2005, there is no information about its historic distribution in Canada. However, given that its current Canadian range is at the northern edge of its global range and it has only been found in a single location in Canada, it is likely that it will continue to be considered rare in Canada. If the species remains rare, it will likely always be vulnerable to human-caused stressors and natural, random events.

## 1. COSEWIC\* Species Assessment Information

**Date of Assessment:** November 2010

**Common Name (population):** Showy Goldenrod (Boreal population)

**Scientific Name:** *Solidago speciosa*

**COSEWIC Status:** Threatened

**Reason for Designation:** A morphologically and ecologically distinct population has recently been found at a single location in northwestern Ontario. It occurs in a geographically distinct area from the Great Lakes Plains population. This small population may consist of only about 1000 individuals. Such geographically restricted small populations are potentially subject to negative chance events.

**Canadian Occurrence:** Ontario

**COSEWIC Status History:** The species was considered a single unit and designated Endangered in April 1999. Status re-examined and confirmed in May 2000. Split into two populations in November 2010. The Boreal population was designated Threatened in November 2010.

\* COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

## 2. Species Status Information

The following information adds to the information provided in the provincial recovery strategy. The most recent genetic evidence suggests that the Showy Goldenrod, Boreal population belongs to *Solidago pallida* (Pale Showy Goldenrod) (Semple et al. 2012; Bowles 2014; Semple et al. 2017). However, the nomenclature and classification of Showy Goldenrod, Boreal population used throughout this document follows the most recent COSEWIC assessment and Listing on Schedule 1 of SARA, based on currently accepted taxonomy published in Semple and Cook (2006).

Showy Goldenrod, Boreal population was listed as Threatened<sup>5</sup> on Schedule 1 of SARA in 2018. Less than 1% of the species' global range occurs in Canada (COSEWIC 2010). The species is ranked Critically Imperiled<sup>6</sup> (S1) in Nebraska. Semple et al. (2012) described this species as frequent in the Black Hills of South Dakota and occasional in the lower foothills of the Frontal Range of the Rocky Mountains in Wyoming, Colorado and northern New Mexico. Definitions of National (N) and Subnational (S) ranks, as well

<sup>5</sup> Threatened: A wildlife species facing imminent extirpation or extinction in Canada.

<sup>6</sup> Critically Imperiled: At a 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.

as the national and subnational ranks of Showy Goldenrod in North America, are provided in Appendix A.

Since the publication of the provincial recovery strategy, no new local populations of this species have been reported. Site visits in 2017 and 2018 confirmed that hundreds of individuals of the species were still present at the single known Canadian location, but systematic counts were not conducted (Brinker pers. comm. 2018; Korol pers. comm. 2018).

### 3. Threats

#### 3.1 Threat Assessment

No current, immediate or direct threats were known or identified in the provincial recovery strategy, but increased use of the land for recreation or change of land ownership were identified as potential threats. During a site visit in 2018, no threats were noted to be currently affecting Showy Goldenrod, Boreal population (Korol pers. comm. 2018).

The following Showy Goldenrod, Boreal population threat assessment is based on the IUCN-CMP unified threats classification system. Threats are defined as the proximate activities or processes that have caused, are causing, or may cause in the future the destruction, degradation, and/or impairment of the entity being assessed (population, species, community, or ecosystem) in the area of interest (global, national, or subnational). Limiting factors are not considered during this assessment process. For purposes of threat assessment, only present and future threats are considered. Historical threats, indirect or cumulative effects of the threats, or any other relevant information that would help understand the nature of the threats are presented in the Description of Threats section.

**Table 1.** Threat Assessment Table.

Threat #	Threat description	Impact <sup>a</sup>	Scope <sup>b</sup>	Severity <sup>c</sup>	Timing <sup>d</sup>
6	Human intrusions & disturbance	Negligible	Restricted	Negligible	High
6.1	Recreational activities	Negligible	Restricted	Negligible	High
7	Natural system modifications	Low	Small	Moderate	High
7.2	Dams & water management/use	Low	Small	Moderate	High

<sup>a</sup> **Impact** – The degree to which a species is observed, inferred, or suspected to be directly or indirectly threatened in the area of interest. The impact of each threat is based on Severity and Scope rating and considers only present and future threats. Threat impact reflects a reduction of a species population or decline/degradation of the area of an ecosystem. The median rate of population reduction or area decline for each combination of scope and severity corresponds to the following classes of threat impact: Very High (75% declines), High (40%), Medium (15%), and Low (3%). Unknown: used when impact cannot be determined (e.g., if values for either scope or severity are unknown); Not Calculated: impact not calculated as threat is outside the assessment timeframe (e.g., timing is insignificant/negligible or low as threat is only considered to be in the past); Negligible: when scope or severity is negligible; Not a Threat: when severity is scored as neutral or potential benefit.

<sup>b</sup> **Scope** – Proportion of the species that can reasonably be expected to be affected by the threat within 10 years. Usually measured as a proportion of the species' population in the area of interest. (Pervasive = 71–100%; Large = 31–70%; Restricted = 11–30%; Small = 1–10%; Negligible < 1%).

<sup>c</sup> **Severity** – Within the scope, the level of damage to the species from the threat that can reasonably be expected to be affected by the threat within a 10-year or three-generation timeframe. Usually measured as the degree of reduction of the species' population. (Extreme = 71–100%; Serious = 31–70%; Moderate = 11–30%; Slight = 1–10%; Negligible < 1%; Neutral or Potential Benefit ≥ 0%).

<sup>d</sup> **Timing** – High = continuing; Moderate = only in the future (could happen in the short term [ $< 10$  years or 3 generations]) or now suspended (could come back in the short term); Low = only in the future (could happen in the long term) or now suspended (could come back in the long term); Insignificant/Negligible = only in the past and unlikely to return, or no direct effect but limiting.

## 3.2 Description of Threats

### IUCN Threat 6. Human intrusions & disturbance

#### 6.1 Recreational activities

The shoreline in the eastern part of the habitat is occasionally used by boaters for stopovers and shore lunches (Martin, pers. comm. 2017). There is the potential for trampling or damage to plants or soils, but the effects are infrequent and would happen only in a small part of the local population. As well, the effects may be reversible if the plants can recolonize the disturbed ground. Still, trampling and soil disturbance may reduce the number of Showy Goldenrod, Boreal population plants over a period of time.

### IUCN Threat 7. Natural system modifications

#### 7.2 Dams and water management/use

Water levels in the Winnipeg River are controlled by upstream dams (Martin, pers. comm. 2017). Some plants near the shoreline may be inundated during periodic high water levels or at risk of being washed away. In 2014, some plants were lost when soil was eroded by high water levels although some held fast in the current and remained rooted (Martin, pers. comm. 2017). These high water events are assumed to be infrequent, but their timing is unknown. Changes in water levels may not be exclusively related to water management; they could also be the result of natural cycles, possibly exacerbated by climate change.

## 4. Population and Distribution Objectives

The population and distribution objective established by ECCC for the Showy Goldenrod, Boreal population is to:

- Maintain the current abundance and distribution of the known, local population, and any newly discovered local populations of the Showy Goldenrod, Boreal population in Canada.

Showy Goldenrod, Boreal population has probably always been rare in Ontario, where it occurs in a single known location at the northern edge of its known range. It was assessed as Threatened by COSEWIC due to its small population size (COSEWIC 2010). Current estimated abundance is based on data from a single survey in 2009, when the Canadian population consisted of about 1,100 plants. While several hundred plants (both flowering and non-flowering) were observed at the same location in 2018 (Korol pers. comm. 2018), a systematic survey was not performed and there is no information available on population trends. The index area of occupancy<sup>7</sup> (IAO) for this species is 4 km<sup>2</sup>, based on a standard 2x2 km grid, but the actual area of habitat occupied is less than 1 ha (COSEWIC 2010). Small and geographically restricted populations such as these are potentially subject to chance events which can significantly reduce the population or result in extirpation (COSEWIC 2010). Due to its restricted distribution and small population size, unless additional local populations are discovered, it is probable that Showy Goldenrod, Boreal population will always be considered rare in Canada.

Due to the restricted distribution of this species within Canada, maintaining the lone extant local population is considered essential to ensure that the species persists in Canada. Given the lack of information about the historical distribution or abundance of Showy Goldenrod, Boreal population, together with its current limited distribution and apparent rarity, it would be inappropriate to focus recovery efforts on expanding the species beyond the known range. However, if the species naturally expands, or if previously established populations are discovered, they would be specifically included in the population and distribution objective. Since little is known about the current status of, or population trends of, Showy Goldenrod, Boreal population, or the potential impact that various threats may have on the species, recovery efforts should include species-specific and broader habitat surveys to update the estimate of population abundance, survey for potential presence at additional sites, and monitor trends over time. Maintaining the existing population will primarily require habitat protection, as well as identification and mitigation or removal of threats as they occur.

This federal population and distribution objective is consistent with the province of Ontario's Government Response Statement developed under the provincial *Endangered Species Act*, which outlines the provincial government's goal for the recovery of the species and summarizes the prioritized actions the government intends

---

<sup>7</sup> an estimate of the number of grid squares occupied by extant populations

to take and support (see Part 3 for more information). The government of Ontario's goal for the recovery of the Showy Goldenrod, Boreal population is to maintain the existing abundance and distribution of Showy Goldenrod in Ontario.

## **5. Broad Strategies and General Approaches to Meet Objectives**

The government-led and government-supported actions tables from the *Showy Goldenrod – Boreal population - Ontario Government Response Statement (Part 3)* are adopted as the broad strategies and general approaches to meet the population and distribution objective. ECCC is not adopting the approaches identified in section 2 of the provincial recovery strategy.

## **6. Critical Habitat**

### **6.1 Identification of the Species' Critical Habitat**

Section 41(1)(c) of SARA requires that recovery strategies include an identification of the species' critical habitat, to the extent possible, as well activities that are likely to result in its destruction. Under section 2(1) of SARA, critical habitat is "the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species".

Critical habitat for Showy Goldenrod, Boreal population in Canada is identified as the extent of biophysical attributes (see Section 6.1.2) wherever they occur within the areas containing critical habitat described in Section 6.1.1 (Figure 1). Detailed critical habitat mapping is not presented in the document owing to the risk of trampling and soil erosion to the species and the habitat on which it depends, which may result from increased interest in the area from the public, if the detailed mapping is made available.

Critical habitat is identified for the only known local population of Showy Goldenrod, Boreal population in Canada, and is considered sufficient to achieve the population and distribution objectives; therefore, no schedule of studies has been developed. If new or additional information becomes available, refinements to current critical habitat, or additional critical habitat may be identified in an amendment to this recovery strategy. For more information on critical habitat identification, contact ECCC – Canadian Wildlife Service at: [ec.planificationduretablissement-recoveryplanning.ec@canada.ca](mailto:ec.planificationduretablissement-recoveryplanning.ec@canada.ca)

### **6.1.1 Area Containing Critical Habitat**

In Canada, the presence and persistence of the Showy Goldenrod, Boreal population depends on an area greater than that occupied by individual plants. This species requires ecological and landscape features that promote and maintain biophysical attributes<sup>8</sup> which support the plant's life processes (e.g., reproduction and dispersal).

At the known location, Showy Goldenrod, Boreal population is found in open habitat adjacent to the shoreline. As detailed habitat mapping identifying this open habitat is not currently available, the area containing critical habitat is based on a 50 m distance inland from the shoreline as well as 50 m along the shoreline beyond of known observations<sup>9</sup> of Showy Goldenrod, Boreal population. This 50 m distance is intended to capture the location of the plants and surrounding open habitat, taking into account error in available observations and mapping information.

### **6.1.2 Biophysical Attributes of Critical Habitat**

The biophysical attributes of critical habitat include the characteristics described below.

- Open, herb-dominated community characterized by the following:
  - Sparse tree canopy cover, generally less than 10%, but in places up to 35%.
  - The presence of graminoids<sup>10</sup> such as Porcupine Grass
  - Shallow mineral soil over rock

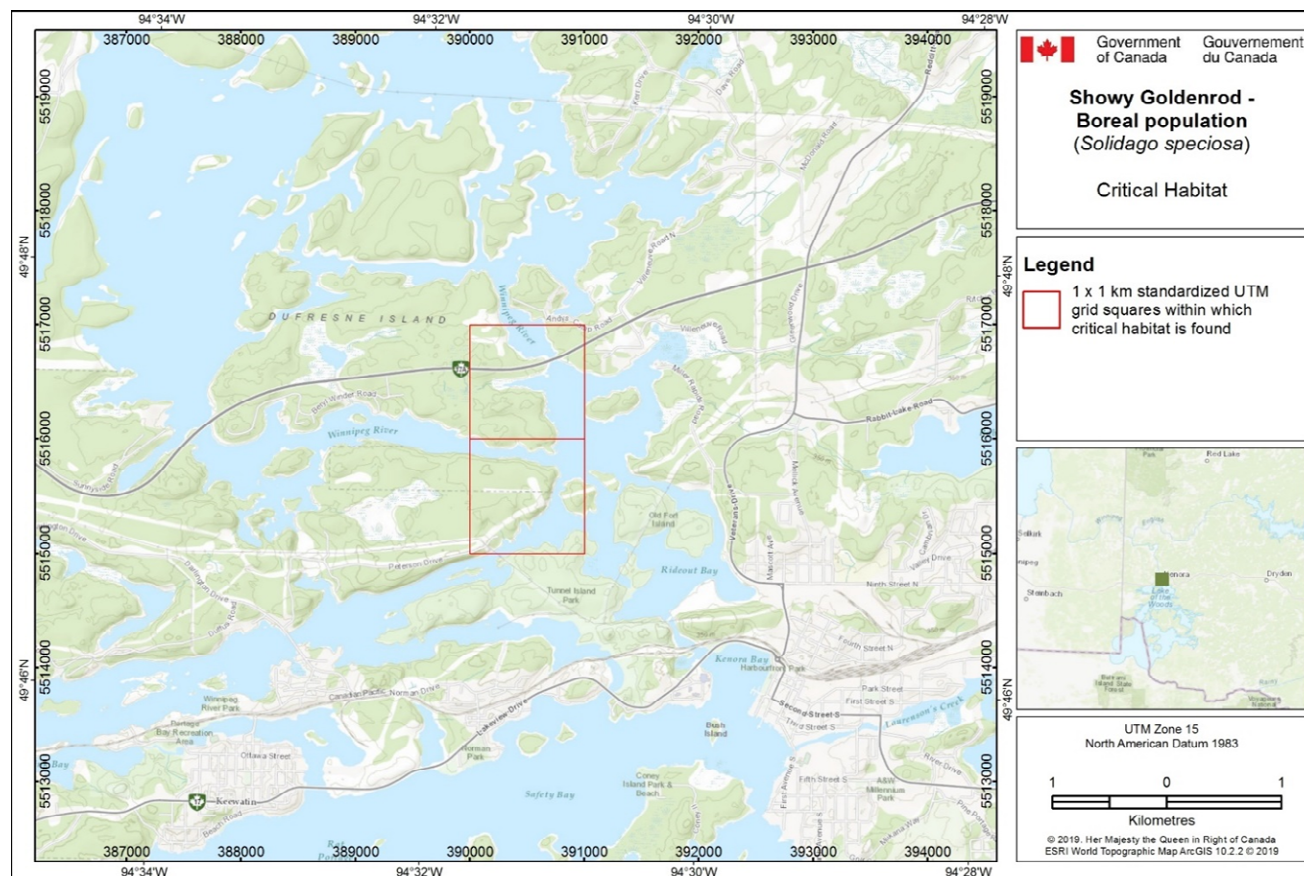
---

<sup>8</sup> Suitable biophysical attributes are those habitat features (e.g. soil and moisture conditions, light penetration, plant community composition and species interactions) that provide individuals of the species the necessary conditions to carry out essential life processes.

<sup>9</sup> Based on data available to ECCC as of February 2019

<sup>10</sup> Grass-like plants such as grasses, sedges and rushes





**Figure 1. Critical Habitat for Showy Goldenrod, Boreal Population, in Canada.**

Critical habitat for the Showy Goldenrod, Boreal population occurs where the criteria and biophysical attributes set out in section 6.1 are met. The 1 km x 1 km UTM grid overlay (red outline) shown in this figure is a standardized national grid system used to indicate the general geographic area within which critical habitat is found. Detailed critical habitat mapping is not shown.

## 6.2 Activities Likely to Result in the Destruction of Critical Habitat

Understanding what constitutes destruction of critical habitat is necessary for the protection and management of critical habitat. Destruction is determined on a case by case basis. Destruction would result if part of the critical habitat was degraded, either permanently or temporarily, such that it would not serve its function when needed by the species. Destruction may result from a single activity or multiple activities at one point in time or from the cumulative effects of one or more activities over time. It should be noted that not all activities that occur in or near critical habitat are likely to cause its destruction. Activities described in Table 3 are examples of those likely to cause destruction of critical habitat for the species; however, destructive activities are not necessarily limited to those listed.

Recognizing that Showy Goldenrod, Boreal population may be able to establish following disturbance, activities that result in a temporary disturbance of critical habitat

(e.g., brush cutting and prescribed burns) have the potential to contribute to the future supply of critical habitat, given proper management. Some disturbance to Showy Goldenrod, Boreal population habitat may be beneficial to the species by opening up the canopy and suitable bare ground within a given site.

**Table 3. Activities Likely to Result in the Destruction of Critical Habitat**

Description of activity	Descriptions of effect in relation to function loss	Details of effect
Recreational activities to the extent that attributes of critical habitat including soils, are negatively impacted or destroyed	Disturbance and/or erosion of soils changes habitat and results in the direct loss of critical habitat upon which the species relies for successful seed germination, seedling establishment, growth and survival.	When this activity occurs within the bounds of critical habitat, when the ground is not frozen, the effects will be direct, and are likely to result in the permanent destruction of critical habitat and damage to plants. There are no thresholds for this activity, especially since the soils at this site are so thin. Recreational activities restricted to the substrates of adjacent forests and beaches would likely not result in the destruction of critical habitat.
Activities that result in the alteration of local surface water flows (e.g., large volume water holdbacks or releases from dams)	Changes to surface water flows on this riparian site may disrupt the ecological function of critical habitat, which may reduce habitat suitability for the Showy Goldenrod, Boreal population while increasing the competitive ability of other species.	When this activity occurs within or outside critical habitat at any time of year, the effects are likely to be direct and/or cumulative. For example, flooding may erode rooting substrate, wash away plants or drown roots and rhizomes. Casual effect thresholds, with respect to prolonged water level increases (above natural water level fluctuations) are not known.

## **7. Measuring Progress**

The performance indicator presented below provides a way to define and measure progress toward achieving the population and distribution objective. Every five years, success of recovery strategy implementation will be measured against the following performance indicator:

- The abundance (estimated at 1 110 plants in 2009; Bowles 2014) and distribution (IAO of 4 km<sup>2</sup>; COSEWIC 2010) of the known, local population of Showy Goldenrod, Boreal population, as well as any newly discovered local populations, in Canada have been maintained

## **8. Statement on Action Plans**

One or more action plans will be completed for the Showy Goldenrod, Boreal population and posted on the Species at Risk Public Registry by 2026.

## 9. References

- Bakowsky, W., pers. comm. 2019. *Correspondence with B. Korol*. 2019. Community Ecologist, Government of Ontario.
- Bowles, J.M. 2014. Recovery strategy for the Showy Goldenrod (*Solidago speciosa*) – Boreal population in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. v + 14 pp.
- Brinker, S., pers. comm. 2018. *Correspondence with B. Korol*. April 2018. Project Botanist, Government of Ontario.
- COSEWIC. 2010. COSEWIC assessment and status report on the Showy Goldenrod *Solidago speciosa* (Great Lakes and Boreal Populations) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 23 pp.
- Korol, B., pers comm. 2018. *Email correspondence with K. Fitzgerald*. August 2018. Species at Risk Biologist, Environment and Climate Change Canada.
- Martin, C., pers comm. 2017. *Verbal communication to CWS.*, December 2017. Management Biologist, Ontario Ministry of Natural Resources and Forestry, Kenora.
- Master, L. L., D. Faber-Langendoen, R. Bittman, G.A. Hammerson, B. Heidel, L. Ramsay, K. Snow, A. Teucher, and A. Tomaino. 2012. NatureServe Conservation Status Assessments: Factors for Evaluating Species and Ecosystem Risk. NatureServe, Arlington, VA. Website: [http://www.natureserve.org/sites/default/files/publications/files/natureserveconservationstatusfactors\\_apr12.pdf](http://www.natureserve.org/sites/default/files/publications/files/natureserveconservationstatusfactors_apr12.pdf) [accessed February 2019].
- NatureServe. 2019. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, VA. U.S.A. Website: <http://explorer.natureserve.org>. [accessed: 11 February 2019].
- Oldham, M., pers comm. 2019. Email correspondence with B. Korol. March 2019. Provincial Botanist, Government of Ontario.
- Semple, J.C. and R.E. Cook. 2006. *Solidago*. In *Flora of North America* Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*. 12 + vols. New York and Oxford. Vol. 20, pp107-156.
- Semple, J.C., L. Tong, M.J. Oldham and W.D. Bakowsky. 2012. *Solidago pallida* new to Ontario and Canada. *Phytoneuron* 2012-106.
- Semple, J.C., L. Tong, and Y.A. Chong. 2017. Multivariate studies of *Solidago* subsect. *Squarrosae*. I. The *Solidago speciosa* complex (Asteraceae: Astereae). *Phytoneuron* 2017-18: 1–23.

## Appendix A: National and Subnational Conservation Status Ranks of Showy Goldenrod (*Solidago speciosa*) in North America

Country (N Rank)	State or Province (S Rank)
Canada (N1)	Ontario (S1)
United States (N4)	Colorado (SNR), Nebraska (S1), New Mexico (SNR), Oklahoma (SNR), South Dakota (SNR), Wyoming (S2)

Source: NatureServe (2018)

### Definitions of National (N) and Subnational (S) Conservation Status Ranks (Master et al. 2012)

Rank	Definition
N1 S1	Critically Imperiled— 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.
N2 S2	Imperiled— At high risk of extirpation in the jurisdiction due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
G3 N3 S3	Vulnerable— At moderate risk of extinction or elimination (G3), or extirpation in the jurisdiction (N3, S3), due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
G4 N4 S4	Apparently Secure— At a fairly low risk of extinction or elimination (G4), or extirpation in the jurisdiction (N4, S4), 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.
N5 S5	Secure— 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.
N#N# S#S#	Range Rank— A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem. Ranges cannot skip more than two ranks (e.g., SU is used rather than S1S4).

## Appendix B: Effects on the Environment and Other Species

A strategic environmental assessment (SEA) is conducted on all SARA recovery planning documents, in accordance with the [Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals](#)<sup>11</sup>. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect any component of the environment or any of the [Federal Sustainable Development Strategy](#)'s<sup>12</sup> (FSDS) goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the strategy itself, but are also summarized below in this statement.

In general, protecting the habitat of Showy Goldenrod, Boreal population and the habitats within which it is found will benefit other species and ecosystem functions within the Ontario Shield Ecozone in northwestern Ontario. The species shares the range and preferred habitat characteristics of other rare plants on the Canadian Shield including: Slick-seed Wild Bean (*Strophostyles leiosperma*) which is both ranked S1 in Ontario.

The potential for this recovery strategy to inadvertently lead to adverse effects on other species was considered. In general, most proposed recovery activities, including habitat protection and securement will benefit native plant and animal species. The SEA concluded that this strategy will benefit the environment and will not entail any significant adverse effects that cannot be avoided or mitigated.

---

<sup>11</sup> [www.canada.ca/en/environmental-assessment-agency/programs/strategic-environmental-assessment/cabinet-directive-environmental-assessment-policy-plan-program-proposals.html](http://www.canada.ca/en/environmental-assessment-agency/programs/strategic-environmental-assessment/cabinet-directive-environmental-assessment-policy-plan-program-proposals.html)

<sup>12</sup> [www.fsds-sfdd.ca/index.html#/en/goals/](http://www.fsds-sfdd.ca/index.html#/en/goals/)

**Part 2 – *Recovery strategy for the Showy Goldenrod*  
(*Solidago speciosa*) – *Boreal population in Ontario*, prepared  
by Jane M. Bowles for the Ontario Ministry of Natural  
Resources and Forestry**

# Showy Goldenrod

*(Solidago speciosa)*

Boreal population in Ontario

## Ontario Recovery Strategy Series

Recovery strategy prepared under the *Endangered Species Act, 2007*

2014

*Natural. Valued. Protected.*



# About the Ontario Recovery Strategy Series

This series presents the collection of recovery strategies that are prepared or adopted as advice to the Province of Ontario on the recommended approach to recover species at risk. The Province ensures the preparation of recovery strategies to meet its commitments to recover species at risk under the Endangered Species Act (ESA) and the Accord for the Protection of Species at Risk in Canada.

## What is recovery?

Recovery of species at risk is the process by which the decline of an endangered, threatened, or extirpated species is arrested or reversed, and threats are removed or reduced to improve the likelihood of a species' persistence in the wild.

## What is a recovery strategy?

Under the ESA a recovery strategy provides the best available scientific knowledge on what is required to achieve recovery of a species. A recovery strategy outlines the habitat needs and the threats to the survival and recovery of the species. It also makes recommendations on the objectives for protection and recovery, the approaches to achieve those objectives, and the area that should be considered in the development of a habitat regulation. Sections 11 to 15 of the ESA outline the required content and timelines for developing recovery strategies published in this series.

Recovery strategies are required to be prepared for endangered and threatened species within one or two years respectively of the species being added to the Species at Risk in Ontario list. There was a transition period of five years (until June 30, 2013) to develop recovery strategies for those species listed as endangered or threatened in the schedules of the ESA. Recovery strategies are required to be prepared for extirpated species only if reintroduction is considered feasible.

## What's next?

Nine months after the completion of a recovery strategy a government response statement will be published which summarizes the actions that the Government of Ontario intends to take in response to the strategy. The implementation of recovery strategies depends on the continued cooperation and actions of government agencies, individuals, communities, land users, and conservationists.

## For more information

To learn more about species at risk recovery in Ontario, please visit the Ministry of Natural Resources and Forestry Species at Risk webpage at: [www.ontario.ca/speciesatrisk](http://www.ontario.ca/speciesatrisk)

## RECOMMENDED CITATION

Bowles, J.M. 2014. Recovery strategy for the Showy Goldenrod (*Solidago speciosa*) – Boreal population in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. v + 14 pp.

**Cover illustration:** Photo by Jane M. Bowles

© Queen's Printer for Ontario, 2014  
ISBN 978-1-4606-3085-3 (PDF)

*Content (excluding the cover illustration) may be used without permission, with appropriate credit to the source.*

*Cette publication hautement spécialisée « Recovery strategies prepared under the Endangered Species Act, 2007 », n'est disponible qu'en Anglais en vertu du Règlement 411/97 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec Michelle Collins au ministère des Richesses naturelles et des Forêts au 705-755-5673.*

## **AUTHORS**

Jane M. Bowles (deceased) – Department of Biology, University of Western Ontario

## **ACKNOWLEDGMENTS**

The Ministry gratefully acknowledges the passion and excellent work of the late Jane Bowles, who regrettably passed away on July 27, 2013.

The following people have helped with the development of the recovery strategy by providing help and information: Clint Jacobs, Walpole Island Heritage Centre; John C. Semple, University of Waterloo; Michael Oldham, Natural Heritage Information Centre; Wasyl Bakowsky, Natural Heritage Information Centre; Christine Debruyne, Ontario Ministry of Natural Resources and Forestry.

## **DECLARATION**

The recovery strategy for the Showy Goldenrod – Boreal population was developed in accordance with the requirements of the *Endangered Species Act, 2007* (ESA). This recovery strategy has been prepared as advice to the Government of Ontario, other responsible jurisdictions and the many different constituencies that may be involved in recovering the species.

The recovery strategy does not necessarily represent the views of all of the individuals who provided advice or contributed to its preparation, or the official positions of the organizations with which the individuals are associated.

The goals, objectives and recovery approaches identified in the strategy are based on the best available knowledge and are subject to revision as new information becomes available. Implementation of this strategy is subject to appropriations, priorities and budgetary constraints of the participating jurisdictions and organizations.

Success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions set out in this strategy.

## **RESPONSIBLE JURISDICTIONS**

Ontario Ministry of Natural Resources and Forestry  
Environment Canada – Canadian Wildlife Service, Ontario

## EXECUTIVE SUMMARY

Showy Goldenrod – Boreal population is a member of the Asteraceae (Sunflower family). It is a perennial plant with lance-shaped, pale green leaves with long stalks growing in a group at the base of the plant. At flowering time the stem elongates up to 80 cm. The inflorescence consists of many small, bright yellow compound flower heads containing a number of tiny flowers. The branches of the inflorescence are more or less erect, not curving downwards like those of other large goldenrods. Flowering begins in August to early September. Seeds are yellowish brown achenes about 1.5 to 2 mm long with a spreading tuft of hairs, about 2 to 3 mm long, at one end.

Showy Goldenrod – Boreal population is known to occur at one site in Canada, on Dufresne Island, near Kenora, Ontario. It is listed as Threatened in Canada because it occurs in a single small population that consists of only about 1,000 individuals. Such geographically restricted and small populations are potentially subject to negative chance events. There are no known current or immediate threats to its survival. A proposal to develop the site was halted after the population was discovered.

The recovery goal for Showy Goldenrod – Boreal population is to maintain the existing population as well as any newly discovered populations, and protect the habitat within the area of occupancy and the contiguous areas of the same habitat. Protection and recovery objectives are to:

1. protect and manage the habitat at known sites in Ontario;
2. design and implement a standardized long-term monitoring program to determine the quality of the site, health of the population and population trends;
3. address key knowledge gaps relating to habitat requirements, demographics, breeding biology and minimum viable population size; and
4. examine the necessity and feasibility of increasing the viability of Showy Goldenrod – Boreal population in Ontario by introducing the plant to new sites with similar habitat, and/or establishing *ex situ* population(s) in cultivation.

Highlights of recommended recovery actions include ensuring that the property remains as Crown Land; preventing incompatible use of the site such as all-terrain vehicle (ATV) trails and boat landings; designing and implementing long term monitoring protocols for population and habitat; conducting research to fill knowledge gaps; and determining the need for and feasibility of establishing additional populations.

It is recommended that areas on the south shore of Dufresne Island that support open Oak-Pine woodland and have current occurrences of Showy Goldenrod – Boreal population, plus contiguous areas with similar habitat, be considered in the development of a habitat regulation.

## TABLE OF CONTENTS

RECOMMENDED CITATION.....	i
AUTHORS.....	ii
ACKNOWLEDGMENTS.....	ii
DECLARATION.....	iii
RESPONSIBLE JURISDICTIONS .....	iii
EXECUTIVE SUMMARY.....	iv
TABLE OF CONTENTS .....	v
1.0 BACKGROUND INFORMATION.....	1
1.1 Species Assessment and Classification.....	1
1.2 Species Description and Biology.....	1
1.3 Distribution, Abundance and Population Trends .....	2
1.4 Habitat Needs .....	4
1.5 Limiting Factors.....	4
1.6 Threats to Survival and Recovery .....	4
1.7 Knowledge Gaps.....	5
1.8 Recovery Actions Completed or Underway.....	5
2.0 RECOVERY .....	6
2.1 Recovery Goal .....	6
2.2 Protection and Recovery Objectives .....	6
2.3 Approaches to Recovery.....	7
2.4 Performance Measures.....	9
2.5 Area for Consideration in Developing a Habitat Regulation .....	9
GLOSSARY .....	11
REFERENCES.....	14

### LIST OF FIGURES

Figure 1. Historical and current distribution of Showy Goldenrod – Boreal population in Ontario .....	3
---	---

### LIST OF TABLES

Table 1. Protection and recovery objectives.....	6
Table 2. Approaches to recovery of the Showy Goldenrod – Boreal population in Ontario .....	7
Table 3: Performance Measures for Showy Goldenrod – Boreal population recovery in Ontario .....	9

## 1.0 BACKGROUND INFORMATION

### 1.1 Species Assessment and Classification

COMMON NAME (population): Showy Goldenrod (Boreal population)

SCIENTIFIC NAME: *Solidago speciosa*

SARO List Classification: Threatened

SARO List History:

Showy Goldenrod – Boreal population: Threatened (2011)

Showy Goldenrod: Endangered (2008), Endangered – Not Regulated (2004)

COSEWIC Assessment History:

Showy Goldenrod – Boreal population: Threatened (2010)

Showy Goldenrod: Endangered (2000, 1999)

SARA Schedule 1: No Schedule, No Status

CONSERVATION STATUS RANKINGS:

GRANK: G5

NRANK: N1

SRANK: S1

The glossary provides definitions for technical terms, including the abbreviations above.

The above nomenclature and classification follows the SARO List, which is based on currently accepted taxonomy published in Semple (2006). However, Semple et al. (2012) re-examined the Showy Goldenrod complex and came to the conclusion that the several subspecies and varieties should be raised to species rank and the complex split into four species. The Showy Goldenrod – Boreal population was determined to belong to the species *Solidago pallida* (Pale Showy Goldenrod). The Dufresne Island population is the only record of this species in Canada (Semple et al. 2012). This population is referred to as the “Showy Goldenrod – Boreal population” in this document, but general information on the species is referred to Pale Showy Goldenrod.

### 1.2 Species Description and Biology

#### Species Description

Showy Goldenrod – Boreal population is a member of the Asteraceae (Sunflower family). The Showy Goldenrod complex includes perennial plants that have both fibrous roots and short rhizomes with a stout woody crown (caudex) developing in older plants (Semple and Cook 2006). Leaves are lance-shaped and stalked and grow in a basal rosette until the stems elongate at flowering time. Each plant may have 1 to 30 unbranched stems up to two metres tall. The inflorescence is a large and showy panicle up to 30 cm long. It consists of many small bright yellow compound flower

heads. The panicle branches are more or less erect, not curving downwards like those of other large goldenrods. Each compound flower head is about four to six mm tall and three to four mm across, consisting of 4 to 10 strap-shaped ray florets surrounding 7 to 10 disc florets (Hilty 2008). The ray florets are often irregularly spaced or open sequentially, giving the flower head an irregular appearance. Flowering begins in August to early September and continues into mid-October. Seeds are yellowish brown achenes about 1.5 to 2 mm long with a spreading tuft of pappus hairs about two to three mm long.

Plants of Showy Goldenrod – Boreal population in Ontario differ from other taxa of the complex in eastern North America in having sparsely hairy fruit and basal leaves that are pale green or somewhat glaucous and are persistent at flowering time. The plants are also smaller (up to 80 cm tall), and the inflorescence is comparatively longer, up to half the length of the shoot (Semple and Cook 2006).

### Species Biology

Like all goldenrods, Showy Goldenrod – Boreal population is a perennial that reproduces primarily by seed (Semple and Cook 2006). Longevity of the plant is unknown. Plants vary in size, producing one to a few flowering shoots (J. M. Bowles, pers. obs. 2009). Little is published about its reproductive biology, but like related goldenrods it is probably pollinated by insects. The pollen of goldenrods is heavy and sticky and may be carried by a wide variety of insects (Semple and Ringius 1983). The caterpillars of many moths feed on various parts of goldenrods. Additional insect feeders probably include various leafhoppers, lace bugs, plant bugs, and beetles (Hilty 2008).

Showy Goldenrod – Boreal population in Canada begins to flower in August (M. J. Oldham, pers. comm. 2012). The achenes have a pappus of hairs, which presumably assists in wind dispersal. The function of the hairs on the achenes is not reported.

Habitat limitations and physiological tolerances in Canada are unknown.

## **1.3 Distribution, Abundance and Population Trends**

Over its global range, Pale Showy Goldenrod is a plant of the eastern woodland-prairie relics and is found in the Black Hills of South Dakota and adjacent Wyoming, in the front range of eastern Colorado and southeast to the Oklahoma border (Cronquist 1947, Taylor and Taylor 1986). It is ranked as N4 in the United States, S2 in Wyoming, S5 in Nebraska and is not ranked in the other States where it occurs (NatureServe 2012).

The Showy Goldenrod – Boreal population of Pale Showy Goldenrod is known to occur at a single location in one site in Canada (Figure 1). It was discovered by Wasyl Bakowsky and Michael Oldham in 2005 in open Oak-Pine woodland on Dufresne Island in the Winnipeg River, just northwest of Kenora, Ontario (COSEWIC, 2010). Although this population was discovered only recently, it occurs in a natural habitat with no weedy



species present and is not near a road. Considering the size of this population, it is inferred to have been present for some time. There is no evidence to suggest that it is not native.

The site occupies a single two by two km grid square and thus has an Index of Area of Occupancy (IAO) of four km<sup>2</sup>. The Extent of Occurrence is the same as the Area of Occupancy and is less than one square kilometre based on a convex polygon drawn around the stand.

The Ontario population is disjunct from the main distribution of the species. The stand is confined to a small area and plants have not been found in other, apparently suitable habitat in the Kenora region despite a number of searches by staff from the Natural Heritage Information Centre (M. J. Oldham, W. D. Bakowsky and S. R. Brinker) and others (W. D. Bakowsky, pers. comm. 2008).

There is no information on habitat trends because the population was discovered only recently. A census was conducted in 2009 by M. J. Oldham and J. M. Bowles when approximately 1,110 vegetative and flowering plants were counted.



Figure 1. Historical and current distribution of Showy Goldenrod – Boreal population in Ontario. Map base from WorksheetWorks.com.

## 1.4 Habitat Needs

Herbarium records of Pale Showy Goldenrod from throughout its range suggest it grows on well drained sites (dry gravelly soil, in sand accumulated on risers in sandstone ledges, in road cuts through sandstone and steep road embankments) in Ponderosa Pine (*Pinus ponderosa*) glades, with some Douglas-fir (*Pseudotsuga menziesii*) (J. C. Semple, pers. comm. 2012).

The Showy Goldenrod – Boreal population of Pale Showy Goldenrod grows on Dufresne Island in northern Ontario. It occurs in an open Bur Oak (*Quercus macrocarpa*) – Jack Pine (*Pinus banksiana*) woodland on a south-facing slope with Porcupine Grass (*Hesperostipa spartea*) and Big Bluestem (*Andropogon gerardii*) in the understory (W. D. Bakowsky, pers. comm. 2008, COSEWIC 2010). The site occupied by Showy Goldenrod – Boreal population has shallow soil interspersed with rocks and is steep, sloping down to Palmerston's Channel of the Winnipeg River. Other abundant or occasional associated vascular plant species include: Pennsylvania Sedge (*Carex pennsylvanica*); Poverty Grass (*Danthonia spicata*); Prairie Onion (*Allium stellatum*) and Beard-tongue (*Penstemon gracilis*). Less abundant species include Tickle Grass (*Agrostis scabra*), Bastard Toadflax (*Commandra umbellata*), Rusty Woodsia (*Woodsia ilvensis*), vetch (*Vicia* sp.) and euphorbia (*Chamaesyce* sp.) (M. J. Oldham, pers. comm. 2012). Haircap moss (*Polytrichum* sp.) is also common.

The extent of apparently suitable habitat in the region is much greater than the area actually occupied by the single known population in Ontario.

## 1.5 Limiting Factors

The main probable limiting factors for Showy Goldenrod – Boreal population are the small population (of about 1,000 or fewer mature individuals) and the extreme isolation of the population, which appears to be several hundred kilometers from the next nearest population in the United States. This is the only known population of the taxon in Canada. Small isolated populations may be subject to decline, for example through inbreeding depression, and could be eliminated through stochastic events. Because of the single location the degree of habitat specificity is difficult to assess, but this type of habitat is not uncommon in the region.

Other possible limiting factors, such as pollinators, are unknown.

## 1.6 Threats to Survival and Recovery

No current, immediate or direct threats to the Showy Goldenrod – Boreal population are known.

The population is located on provincial Crown Land. Previous attempts to have the land ceded to the local township for development purposes were halted once the population was discovered on the property (W. D. Bakowsky, pers. comm. 2008, COSEWIC 2010). Increased use of the land for recreation or change of land ownership could pose a threat if they were to occur.

## **1.7 Knowledge Gaps**

Very little is known about this population of Showy Goldenrod or the ecology of Pale Showy Goldenrod in general. The population on Dufresne Island is the only known site for this species in Canada and is a long way from the next nearest known populations of the taxon. Disjunct populations of this kind are often genetically distinct from populations in the main range of the species.

The population was discovered only in 2005 and although a census was conducted in 2009, no trends in population size or performance have been measured. Nothing is known about longevity, physiological tolerances, habitat specificity, herbivory, pollination biology, seed set, dispersal or recruitment except what can be inferred from other closely related taxa.

## **1.8 Recovery Actions Completed or Underway**

There have been no recovery actions for this species. A proposal for development of the site was halted once the species was discovered. No further actions have been taken (C. A. Debruyne, pers. comm. 2012).

## 2.0 RECOVERY

### 2.1 Recovery Goal

The recovery goal for Showy Goldenrod – Boreal population is to maintain the existing population as well as any newly discovered populations, and to protect the habitat within the area of occupancy and the contiguous areas of the same habitat.

### 2.2 Protection and Recovery Objectives

Table 1. Protection and recovery objectives

No.	Protection or Recovery Objective
1	Protect and manage the habitat at known sites in Ontario.
2	Design and implement a standardized long-term monitoring program to determine the quality of the site, health of the population and population trends.
3	Address key knowledge gaps relating to habitat requirements, demographics, breeding biology and minimum viable population size.
4	Examine the necessity and feasibility of increasing the viability of Showy Goldenrod – Boreal population in Ontario by introducing the plant to new sites with similar habitat, and/or establishing <i>ex situ</i> population(s) in cultivation.

## 2.3 Approaches to Recovery

Table 2. Approaches to recovery of the Showy Goldenrod – Boreal population in Ontario

Relative Priority	Relative Timeframe	Recovery Theme	Approach to Recovery	Threats or Knowledge Gaps Addressed
<b>1. Protect and manage the habitat at known sites in Ontario.</b>				
Necessary	Long-term	Protection	<b>1.1</b> Ensure property remains as Crown Land and is not ceded or sold for development.	<ul style="list-style-type: none"> <li>• Habitat loss</li> </ul>
Necessary	Long-term	Management, Outreach, Communications and Stewardship	<b>1.2</b> Prevent incompatible use of the site such as ATV trails, boat landings through: <ul style="list-style-type: none"> <li>– developing a land use plan;</li> <li>– installing signs;</li> <li>– monitoring for incompatible activities; and</li> <li>– stewardship and information to neighbours.</li> </ul>	<ul style="list-style-type: none"> <li>• Habitat loss</li> </ul>
<b>2. Design and implement a standardized long-term monitoring program to determine the quality of the site, health of the population and population trends.</b>				
Necessary	Short-term	Inventory	<b>2.1</b> Design long-term monitoring protocols for population and habitat. <ul style="list-style-type: none"> <li>– Establish baseline data for future monitoring.</li> <li>– Make detailed baseline habitat descriptions.</li> </ul>	<ul style="list-style-type: none"> <li>• Populations and habitat trends</li> </ul>
Beneficial	Long-term	Monitoring and Assessment	<b>2.2</b> Implement long-term monitoring protocols.	<ul style="list-style-type: none"> <li>• Populations and habitat trends</li> </ul>

Recovery Strategy for the Showy Goldenrod – Boreal population in Ontario

<b>3. Address key knowledge gaps relating to habitat requirements, demographics, breeding biology and minimum viable population size.</b>				
Necessary	Long-term and short-term	Research	<b>3.1</b> Establish research projects that examine: <ul style="list-style-type: none"> <li>– habitat requirements;</li> <li>– breeding biology and pollination; and</li> <li>– demographics.</li> </ul>	<ul style="list-style-type: none"> <li>• Species biology and ecology</li> </ul>
<b>4. Examine the necessity and feasibility of increasing the viability of Showy Goldenrod – Boreal population in Ontario by introducing the plant to new sites with similar habitat, and/or establishing <i>ex situ</i> population(s) in cultivation.</b>				
Beneficial	Long-term	Research and Management	<b>4.1</b> Determine the need for and feasibility of establishing additional populations. <ul style="list-style-type: none"> <li>– Determine populations viability (Obj. 3).</li> <li>– Test plant performance in <i>ex situ</i> populations.</li> <li>– Determine sites for plant introductions if deemed desirable.</li> </ul>	<ul style="list-style-type: none"> <li>• Small population</li> <li>• Stochastic events</li> </ul>

## 2.4 Performance Measures

Table 3: Performance Measures for Showy Goldenrod – Boreal population recovery in Ontario

Objective	Performance Measures
1. Protect and manage the habitat at known sites in Ontario.	<ul style="list-style-type: none"> <li>Population location remains as Crown Land and is protected.</li> </ul>
2. Design and implement a standardized long-term monitoring program to determine the quality of the site, health of the population and population trends.	<ul style="list-style-type: none"> <li>Monitoring protocol is established.</li> <li>Database of habitat characteristic and plant census is established.</li> </ul>
3. Address key knowledge gaps relating to habitat requirements, demographics, breeding biology and minimum viable population size of the population.	<ul style="list-style-type: none"> <li>Studies on plant ecology and breeding biology underway.</li> <li>Papers on species ecology published in peer-reviewed literature.</li> <li>Population viability analysis completed.</li> </ul>
4. Examine the necessity and feasibility of increasing the viability of Showy Goldenrod – Boreal population in Ontario by introducing the plant to new sites with similar habitat, and/or establishing <i>ex situ</i> population(s) in cultivation.	<ul style="list-style-type: none"> <li>Experimental <i>ex situ</i> population established if deemed necessary.</li> </ul>

## 2.5 Area for Consideration in Developing a Habitat Regulation

*Under the ESA, a recovery strategy must include a recommendation to the Minister of Natural Resources and Forestry on the area that should be considered in developing a habitat regulation. A habitat regulation is a legal instrument that prescribes an area that will be protected as the habitat of the species. The recommendation provided below by the author will be one of many sources considered by the Minister when developing the habitat regulation for this species.*

Showy Goldenrod – Boreal population is a perennial species known from only one site in Ontario. The habitat is described as open Bur Oak (*Quercus macrocarpa*) – Jack Pine (*Pinus banksiana*) woodland on a south-facing slope with shallow soil over rock. The extent of the habitat can be defined by the area occupied by the population of Showy Goldenrod and the contiguous areas of similar habitat type. This habitat extends inland not more than 100 m from the shoreline.

It is recommended that areas with current occurrences and the extent of the contiguous surrounding areas with appropriate habitat for Showy Goldenrod – Boreal population be considered in the development of a habitat regulation. The specific boundary of this area may be refined at the site-specific level. The minimum area that should be considered in developing a habitat regulation is the extent of the open Oak-Pine

woodland habitat along the south shore of Dufresne Island, extending inland for 100 m from the high water mark.



## GLOSSARY

**Achene:** A small, dry, one-seeded fruit with a thin wall that does not split to release the seed. The fruit of members of the sunflower family such as sunflower “seeds” are achenes.

**Basal rosette:** Leaves that are grouped in a circle (or rosette) at the base of the stem.

**Committee on the Status of Endangered Wildlife in Canada (COSEWIC):** The committee established under section 14 of the Species at Risk Act that is responsible for assessing and classifying species at risk in Canada.

**Committee on the Status of Species at Risk in Ontario (COSSARO):** The committee established under section 3 of the *Endangered Species Act, 2007* that is responsible for assessing and classifying species at risk in Ontario.

**Complex (taxonomic complex):** A group of closely related taxa (q.v.) with various levels of relationship.

**Compound flower head:** A flower head appearing as a single bloom but made up of many small flowers (florets). Compound flower heads are characteristic of the Asteraceae (sunflower Family) to which Showy Goldenrod belongs.

**Conservation status rank:** A rank assigned to a species or ecological community that primarily conveys the degree of rarity of the species or community at the global (G), national (N) or subnational (S) level. These ranks, termed G-rank, N-rank and S-rank, are not legal designations. The conservation status of a species or ecosystem is designated by a number from 1 to 5, preceded by the letter G, N or S reflecting the appropriate geographic scale of the assessment. The numbers mean the following:

- 1 = critically imperilled
- 2 = imperilled
- 3 = vulnerable
- 4 = apparently secure
- 5 = secure

**Disjunct:** Discontinuous; when referring to the distributions of natural populations, having gaps or interruptions in space.

**Elongate:** As a verb, to make something longer in relation to its width. As an adjective, to be long in relation to width.

**Endangered Species Act, 2007 (ESA):** The provincial legislation that provides protection to species at risk in Ontario.

**Extent of Occurrence:** The area contained within the shortest continuous imaginary boundary that encompasses all the known occurrence of a taxon.

**Floret:** Diminutive of flower; a small or reduced flower in that may be part of a compound flower head or tight group of flowers.

**Glaucous:** Appearing to be covered with a greyish or whitish waxy coating.

**Herbivory:** The consumption of plants by animals.

**Index of Area of Occupancy:** The area of occupancy is the area which is occupied by a taxon. The Index of Area of Occupancy is the area measured by the number of two by two km grid squares occupied, so the minimum IAO for any species is four km<sup>2</sup>.

**Inflorescence:** The part of the plant that contains the flowers and the flower stalks.

**Infraspecific:** Occurring within a species.

**Panicle:** A branched cluster of flowers in which the branches have stalked flowers or flower heads arranged singly along an elongated axis.

**Pappus:** A ring of scales or hairs (often feathery) on the achene (q.v.) in plants of the Asteraceae (Sunflower Family). Often aids in the dispersal of the achene by wind.

**Perennial:** Refers to a plant that lives for three or more seasons, producing new growth each season.

**Persistent:** Existing or remaining for an indefinite time; enduring. Lasting past maturity without falling off.

**Physiological tolerance:** The capacity of an organism to tolerate stress. In plants physiological stress might include freezing, heat load, water deficit, shade, soil contaminants and so on.

**Rhizome:** A specialized stem of plants, usually underground; also called a rootstock. Buds on the rhizome develop as new shoots or roots.

**Species at Risk Act (SARA):** The federal legislation that provides protection to species at risk in Canada. This act establishes Schedule 1 as the legal list of wildlife species at risk. Schedules 2 and 3 contain lists of species that at the time the Act came into force needed to be reassessed. After species on Schedule 2 and 3 are reassessed and found to be at risk, they undergo the SARA listing process to be included in Schedule 1.

Species at Risk in Ontario (SARO) List: The regulation made under section 7 of the *Endangered Species Act, 2007* that provides the official status classification of species at risk in Ontario. This list was first published in 2004 as a policy and became a regulation in 2008.

Taxon (plural taxa): A taxonomic unit or entity in a biological system of classification for example: a family, genus, species, sub-species or variety.

Woodland: A vegetation community with trees generally forming more than 35 percent, but less than 60 percent, canopy cover.

## REFERENCES

- Bakowsky, W.D., pers. comm. 2008. *Email correspondence to Jane M. Bowles*. March 2008. Community Ecologist, Natural Heritage Information Centre, Peterborough, Ontario.
- COSEWIC. 2010. COSEWIC assessment and status report on the Showy Goldenrod *Solidago speciosa* (Great Lakes Plains and Boreal Populations) in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xiv + 23 pp.
- Cronquist, A. 1947. Notes on the Compositae of Northeastern United States IV. *Solidago*. *Rhodora* 49:69–79.
- Debruyne, C.A., pers. comm. 2012. *Email correspondence to Jane M. Bowles*. November 2012. Species at Risk Intern, Ministry of Natural Resources and Forestry, Thunder Bay, Ontario.
- Hilty, J. 2008. Prairie Wildflowers of Illinois. Web site: [http://www.illinoiswildflowers.info/prairie/plantx/shw\\_goldenrodx.htm](http://www.illinoiswildflowers.info/prairie/plantx/shw_goldenrodx.htm) [accessed 2012].
- NatureServe, 2012. An Online Encyclopedia of Life. *Solidago speciosa* var. *pallida*. Web site: <http://www.natureserve.org/> [accessed 2013].
- Oldham, M.J., pers. comm. 2012. *Email correspondence to Jane M. Bowles*. November 2012. Botanist, Natural Heritage Information Centre, Peterborough Ontario.
- Semple, J.C., pers. comm. 2012. *Email correspondence to Jane M. Bowles*. November 2012. Professor Emeritus, Waterloo University, Ontario.
- Semple, J.C. and R.E. Cook. 2006. *Solidago*. in: Flora of North America Editorial Committee, eds. 1993+. Flora of North America North of Mexico. 12+ vols. New York and Oxford. Vol. 20, pp. 107–156.
- Semple, J.C. and G.S. Ringius. 1983. The Goldenrods of Ontario: *Solidago* L. and *Euthamia* Nutt. University of Waterloo Biology Series No. 26. 84 pp.
- Semple, J.C., L. Tong, M.J. Oldham, and W.D. Bakowsky. 2012. *Solidago pallida* new to Ontario and Canada. *Phytoneuron* 2012-106:1–5.
- Taylor, C.E.S., and R.J. Taylor. 1986. *Solidago* (Asteraceae) of Limited Distribution in the Central United States. *SIDA: Contributions to Botany* 11(3):334–339.

**Part 3 – *Showy Goldenrod – Boreal population* – Ontario  
Government Response Statement, prepared by the  
Ontario Ministry of Natural Resources and Forestry**

# Showy Goldenrod – Boreal Population

## Ontario Government Response Statement



Photo: Jane M. Bowles

### PROTECTING AND RECOVERING SPECIES AT RISK IN ONTARIO

Species at risk recovery is a key part of protecting Ontario's biodiversity. Biodiversity – the variety of living organisms on Earth – provides us with clean air and water, food, fibre, medicine and other resources that we need to survive.

The *Endangered Species Act, 2007* (ESA) is the Government of Ontario's legislative commitment to protecting and recovering species at risk and their habitats. As soon as a species is listed as extirpated, endangered or threatened under the ESA, it is automatically protected from harm or harassment. Also, immediately upon listing, the habitats of endangered and threatened species are protected from damage or destruction.

Under the ESA, the Ministry of Natural Resources and Forestry (the Ministry) must ensure that a recovery strategy is prepared for each species that is listed as endangered or threatened. A recovery strategy provides science-based advice to government on what is required to achieve recovery of a species.

### GOVERNMENT RESPONSE STATEMENTS

Within nine months after a recovery strategy is prepared, the ESA requires the Ministry to publish a statement summarizing the government's intended actions and priorities in response to the recovery strategy. The recovery strategy for the Showy Goldenrod – Boreal population (*Solidago speciosa*), was completed on August 13, 2014 ([http://files.ontario.ca/environment-and-energy/species-at-risk/mnr\\_sar\\_rs\\_sh\\_gnrd\\_b\\_en.pdf](http://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_rs_sh_gnrd_b_en.pdf)).

The response statement is the government's policy response to the scientific advice provided in the recovery strategy. All recommendations provided in the recovery strategy were considered and this response statement identifies those that are considered to be appropriate and necessary for the protection and recovery of the species. In addition to the strategy, the response statement is based on input from stakeholders, other jurisdictions, Aboriginal communities and members of the public. It reflects the best available traditional, local and scientific knowledge at this time and may be adapted if new information becomes available. In implementing the actions in the response statement, the ESA allows the Ministry to determine what is feasible, taking into account social and economic factors.

Showy Goldenrod – Boreal population is a perennial plant that can grow up to two metres tall. It has several stalks with pale green lance-shaped leaves, and small bright yellow flowers. The only known Canadian occurrence of Showy Goldenrod – Boreal population is on Dufresne Island, near Kenora, Ontario.

## MOVING FORWARD TO PROTECT AND RECOVER SHOWY GOLDENROD

The Showy Goldenrod – Boreal population is listed as a threatened species under the ESA, which protects both the plant and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization. Such authorization would require that conditions established by the Ministry be met.

The only known Canadian occurrence of Showy Goldenrod – Boreal population is found on the southeastern shore of Dufresne Island near Kenora, Ontario. The next closest known population is located several hundred kilometres away, in South Dakota.

There are no known immediate or direct threats to the Showy Goldenrod – Boreal population. The population does, however, exist in a small, isolated area. Due to the small size of the population, the species may be vulnerable to random negative events such as insect infestation or drought that could put the population at risk of extirpation. This population is also potentially vulnerable to the negative effects of inbreeding as there are no other known populations nearby. It is unusual for a species' population with a relatively small number of individuals to be located such a far distance from any other known populations. Little is known about the short and long-term changes to the size and age of the population; however, it may have unique adaptations or circumstances that have allowed it to persist in Ontario. Because the population might be susceptible to random negative events and the effects of inbreeding, recovery efforts should include monitoring the species' population size, age and health dynamics, and long-term trends, to gain a better understanding of the stability of this population.

Showy Goldenrod – Boreal population may be susceptible to inadvertent trampling by hikers. It is therefore beneficial to educate local members of the public on the presence of Showy Goldenrod and activities that may result in inadvertent harm to the species and damage or destruction of its habitat.

The open woodland habitat occupied by Showy Goldenrod – Boreal population is generally self-maintaining and is not likely to require maintenance such as mechanical thinning or prescribed burns to ensure the habitat remains suitable. The habitat is likely kept open due to the shallow soils over bedrock along the shore and a lack of long-term canopy closure due to the inability of large trees to take root.

Very little is known about this population in Ontario, including habitat requirements, breeding biology, and population trends. At this time, recovery actions for this species will focus on filling knowledge gaps and maintaining the existing population. The current and only known Ontario population of Showy Goldenrod – Boreal population is located within a small area of Crown land that also contains significant wildlife habitat. Maintaining this population in its current abundance and distribution is considered feasible.

**The government's goal for the recovery of the Showy Goldenrod – Boreal population is to maintain the existing abundance and distribution of Showy Goldenrod in Ontario.**

Protecting and recovering species at risk is a shared responsibility. No single agency or organization has the knowledge, authority or financial resources to protect and recover all of Ontario's species at risk. Successful recovery requires inter-governmental co-operation and the involvement of many individuals, organizations and communities.

In developing the government response statement, the Ministry considered what actions are feasible for the government to lead directly and what actions are feasible for the government to support its conservation partners to undertake.

### GOVERNMENT-LED ACTIONS

To help protect and recover the Showy Goldenrod – Boreal population, the government will directly undertake the following actions:

- Continue to conduct surveys for Showy Goldenrod – Boreal population in areas that are considered to be suitable habitat.
- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.
- Encourage the submission of Showy Goldenrod – Boreal population data to the Ministry's central repository at the *Natural Heritage Information Centre*.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario.
- Protect the Showy Goldenrod – Boreal population and its habitat through the ESA.
- Support conservation, agency, municipal and industry partners, and Aboriginal communities and organizations to undertake activities to protect and recover the Showy Goldenrod – Boreal population. Support will be provided where appropriate through funding, agreements, permits (including conditions) and/or advisory services.
- Encourage collaboration, and establish and communicate annual priority actions for government support in order to reduce duplication of efforts.

### GOVERNMENT-SUPPORTED ACTIONS

The government endorses the following actions as being necessary for the protection and recovery of the Showy Goldenrod – Boreal population. Actions identified as "high" will be given priority consideration for funding under the ESA. Where reasonable, the government will also consider the priority assigned to these actions when reviewing and issuing authorizations under the ESA. Other organizations are encouraged to consider these priorities when developing projects or mitigation plans related to species at risk. The government will focus its support on these high-priority actions over the next five years.

**Focus Area:** **Monitoring and Research**

**Objective:** Improve understanding of the species' habitat requirements and population dynamics, health, and trends.

**Actions:**

1. **(HIGH)** Design and implement a long-term population and habitat monitoring protocol to identify the baseline habitat conditions and monitor population size, health, and trends.



2. Investigate long and short-term changes in the size, age, and composition of the population and the factors that affect these changes (population dynamics).
3. Investigate knowledge gaps relating to the species' habitat requirements, pollination and reproduction, and demographics to better understand the factors that allow the species to persist in northern Ontario.

**Focus Area:** Awareness

**Objective:** Educate the public about potential threats to Showy Goldenrod – Boreal population resulting from human-caused disturbances.

**Actions:**

4. Increase awareness about Showy Goldenrod – Boreal population and its protection under the ESA among nearby landowners and key stakeholders. Education and outreach efforts may include distributing information and installing signage to minimize the risk of trampling by use of all-terrain vehicles, trails, and boat landings.

## IMPLEMENTING ACTIONS

Financial support for the implementation of actions may be available through the Species at Risk Stewardship Fund, Species at Risk Research Fund for Ontario, or the Species at Risk Farm Incentive Program. Conservation partners are encouraged to discuss project proposals related to the actions in this response statement with the Ministry. The Ministry can also advise if any authorizations under the ESA or other legislation may be required to undertake the project.

Implementation of the actions may be subject to changing priorities across the multitude of species at risk, available resources and the capacity of partners to undertake recovery activities. Where appropriate, the implementation of actions for multiple species will be coordinated across government response statements.

## REVIEWING PROGRESS

The ESA requires the Ministry to conduct a review of progress towards protecting and recovering a species not later than five years from the publication of this response statement. The review will help identify if adjustments are needed to achieve the protection and recovery of the Showy Goldenrod.

## ACKNOWLEDGEMENT

We would like to thank all those who participated in the development of the "Recovery Strategy for Showy Goldenrod (*Solidago speciosa*) – Boreal population in Ontario" for their dedication to protecting and recovering species at risk.

### **For additional information:**

Visit the species at risk website at [ontario.ca/speciesatrisk](http://ontario.ca/speciesatrisk)

Contact your MNRF district office

Contact the Natural Resources Information Centre

1-800-667-1940

TTY 1-866-686-6072

[mnr.nric.mnr@ontario.ca](mailto:mnr.nric.mnr@ontario.ca)

[ontario.ca/mnrf](http://ontario.ca/mnrf)