Suckley's Cuckoo Bumble Bee

Ontario Government Response Statement

Protecting and Recovering Species at Risk in Ontario

Species at risk recovery is a key part of protecting Ontario's biodiversity. The *Endangered Species Act, 2007* (ESA) is the Ontario government's legislative commitment to protecting and recovering species at risk and their habitats.

Under the ESA, the government 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.

Generally, within nine months after a recovery strategy is prepared, the ESA requires the government to publish a statement summarizing the government's intended actions and priorities in response to the recovery strategy. The response statement is the government's policy response to the scientific advice provided in the recovery strategy. In addition to the strategy, the government response statement considers (where available) input from Indigenous communities and organizations, stakeholders, other jurisdictions, and members of the public. It reflects the best available local and scientific knowledge, including Indigenous Knowledge where it has been shared by communities and Knowledge Holders, as appropriate, and may be adapted if new information becomes available. In implementing the actions in the response statement, the ESA allows the government to determine what is feasible, taking into account social, cultural and economic factors.

The Recovery Strategy for the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) in Ontario was completed on January 16, 2024.

Suckley's Cuckoo Bumble Bee is a medium-sized bumble bee. Females are slightly larger than males and have an abdomen with shiny black segments and yellow hairs near the tip. Male Suckley's Cuckoo Bumble Bees are similar in appearance but have more yellow hair on the abdomen. Unlike nest-building bumble bees, female cuckoo bumble bees do not possess a pollen basket on the hind leg, as they do not collect pollen for their offspring.

Protecting and Recovering Suckley's Cuckoo Bumble Bee

Suckley's Cuckoo Bumble Bee is listed as an endangered species under the ESA, which protects both the animal and its habitat. The ESA prohibits harm or harassment of the species and damage or destruction of its habitat without authorization or complying with the requirements of a regulatory exemption.

Suckley's Cuckoo Bumble Bee is widely distributed across Canada and the United States from Alaska south to northern California and east to Colorado, Manitoba and South Dakota. While most Canadian records of Suckley's Cuckoo Bumble Bee are recorded in British Columbia, Alberta, Saskatchewan, and Manitoba, it has been recorded in every province and territory except for Nunavut.

Records of Suckley's Cuckoo Bumble Bee's in Ontario are disjunct (separated geographically), with observations of the species from western Ontario near the Manitoba border, southern Ontario, eastern Ontario near the Ottawa area, and northern Ontario near Moosonee. The disjunct distribution of records is likely due to the lower abundance of this species in eastern Canada and differences in search effort in different parts of the province - rather than a reflection of the species' actual distribution in the province. Despite high search effort in southern Ontario over the past twenty years, the most recent confirmed record of Suckley's Cuckoo Bumble Bee in Ontario is from 1971. Recent bumble bee surveys in Pukaskwa National Park indicate that Suckley's Cuckoo Bumble Bee may have been observed in spring 2018; however, there are no photos or specimens available to confirm the accuracy of these sightings.

Suckley's Cuckoo Bumble Bee is a nest parasite of nest-building bumble bees in the subgenus *Bombus* in North America. In the spring, mated female Suckley's Cuckoo Bumble Bees invade the nests of its host species and displace the resident queen by either killing or injuring her. The workers of the host queen are then used to rear the offspring of the Suckley's Cuckoo Bumble Bee. In Ontario, the presumed host is the Yellow-Banded Bumble Bee (*Bombus terricola*, special concern) and possibly the Rusty-patched Bumble Bee (*Bombus affinis*, endangered), though neither has been confirmed. The last sighting of the Rusty-patched Bumble Bee in Ontario was in 2009 at Pinery Provincial Park in Lambton County. In southern Ontario, the Yellow-banded Bumble Bee is still observed but is less common than it was historically. The distribution and abundance of Yellow-banded Bumble Bee in central and northern Ontario is not fully understood as these areas of the province have not been adequately surveyed in recent years.

Suckley's Cuckoo Bumble Bee occurs in diverse natural habitats such as prairie grasslands, savannahs, sand dunes, fallow fields and woodlands (i.e., coniferous, deciduous and mixed-wood) and can also make use of areas in human dominated landscapes such as farmlands, croplands, urban areas (i.e., parks and gardens) and anthropogenic structures (e.g., abandoned barns). It relies on the nests of its host - which are usually made in abandoned underground rodent burrows in Ontario - rather than building its own. The species is a generalist nectar feeder and feeds on the pollen and nectar from a variety of flowering plant species. Male Suckley's Cuckoo Bumble Bees die after the onset of frost, while females are thought to overwinter in decomposing vegetation, mulch and rotting logs near nesting sites.

Key threats to Suckley's Cuckoo Bumble Bee in Ontario are thought to include the continued decline of its host bumble bee species, habitat loss, fragmentation and degradation, pesticides (particularly neonicotinoids which are harmful to bees even in very low concentrations), pathogens (infectious viruses, bacteria, fungi or parasites which cause diseases) from managed bee colonies and climate change. Managed bumble bee colonies may introduce new pathogens to wild populations or increase pathogens which naturally occur in lower abundance. Many of the above threats also apply to Suckley's Cuckoo Bumble Bee's host species.

As Suckley's Cuckoo Bumble Bees depend on other bumble bee species to rear their young, populations of this species are limited by host abundance and nest densities. Stable populations of their host species - thought to be Yellow-banded and Rusty-patched Bumble Bee in Ontario - will be required to sustain populations of the Suckley's Cuckoo Bumble Bee. Focusing recovery actions on areas where the host species are found will also benefit Suckley's Cuckoo Bumble Bee.

Given inadequate survey effort in parts of Ontario and uncertainties about the distribution of this species, its current population size in the province is not known. In addition, many knowledge gaps on the species' biology and threats must be addressed in order to understand the most significant threats to this species' survival and inform recovery planning. Surveys in under-sampled areas and ongoing monitoring and research are needed to fill these knowledge gaps. In the meantime, focusing recovery and stewardship efforts in areas of historical Suckley's Cuckoo Bumble Bee populations and areas with known extant populations of Rusty-patched Bumble Bee and Yellow-banded Bumble Bee may help minimize further declines. Given that significant search effort in southern Ontario in recent years has failed to detect the species, additional research and recovery efforts may be needed to maintain the persistence of species in Ontario.

The biological and technical feasibility of reintroducing or augmenting Suckley's Cuckoo Bumble Bee is unknown. Further research is needed to determine whether reintroduction or augmentation are necessary and feasible to support the recovery of the species. In determining whether reintroduction or augmentation are necessary and feasible, social and economic factors, the likelihood of success, long-term contribution to species recovery, and the resources required may be considered, at the appropriate scale, in addition to biological and technical feasibility.

Government's Recovery Goal

The government's goal for the recovery of Suckley's Cuckoo Bumble Bee is to increase knowledge of the species and its hosts and, if the species is confirmed to be extant in Ontario, to maintain and support its long-term persistence in the province.

Actions

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 government 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 Suckley's Cuckoo Bumble Bee, the government will directly undertake the following actions:

- Continue to protect Suckley's Cuckoo Bumble Bee and its habitat through the ESA.
- Undertake communications and outreach to increase public awareness of species at risk in Ontario (e.g., through Ontario Parks Discovery Program, where appropriate).
- Continue to monitor populations and mitigate threats to the species and its habitat in provincially protected areas, where feasible and appropriate.

- Educate other agencies and authorities involved in planning and environmental assessment processes on the protection requirements under the ESA.

- Encourage the submission of Suckley's Cuckoo Bumble Bee data to Ontario's central repository through the NHIC (Rare species of Ontario) project in iNaturalist or directly through the Natural Heritage Information Centre.

- Continue to support conservation, agency, municipal and industry partners, and Indigenous communities and organizations to undertake activities to protect and recover Suckley's Cuckoo Bumble Bee. Support will be provided where appropriate through funding, agreements, permits and/or advisory services.

- Work with partners and stakeholders to support beneficial insects in Ontario through actions such as education and promoting integrated pest management and best management practices.

- Conduct a review of progress toward the protection and recovery of Suckley's Cuckoo Bumble Bee within ten years of the publication of this document.

Government-supported Actions

The government endorses the following actions as being necessary for the protection and recovery of Suckley's Cuckoo Bumble Bee. Actions identified as "high" may be given priority consideration for funding under the Species at Risk Stewardship Program. 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.

Focus Area:	**Research**
Objective:	Improve knowledge of the Suckley's Cuckoo Bumble Bee and its host species and the threats impacting them.

The only confirmed host of the Suckley's Cuckoo Bumble Bee in Canada is the Western Bumble Bee which occurs in western Canada. In Ontario, the presumed host is Yellow-banded Bumble Bee and possibly Rusty-patched Bumble Bee. Confirming the host species in Ontario is a priority research need as it has cascading effects on other recovery actions such as survey prioritization, threat management and habitat creation.

It is likely that there are multiple direct and indirect threats that are having a combined impact on Suckley's Cuckoo Bumble Bee. The significance and severity of these threats

are largely unknown. Research is required to understand the causal factors and the magnitude of threats causing the decline. As well, investigating the species' response to various stressors will also help focus recovery efforts on actions that will have the most benefit for the species. Addressing these knowledge gaps will provide information to determine the species' ability to maintain self-sustaining populations. Further research and investigation into the feasibility and necessity of reintroducing or augmenting populations will inform future recovery efforts for Suckley's Cuckoo Bumble Bee in Ontario.

Actions:

1. **(High)** Undertake research to confirm host species in Ontario and determine how Suckley's Cuckoo Bumble Bee find host colonies.
2. Conduct research to improve knowledge on Suckley's Cuckoo Bumble Bee biology and ecology, such as foraging requirements/behaviour, overwintering requirements, mating behaviour, population dynamics and nesting requirements.
3. Investigate the necessity and feasibility of reintroducing or augmenting Suckley's Cuckoo Bumble Bee and its host species populations through captive breeding and release or translocation. Assessments of feasibility should consider the International Union for the Conservation of Nature Guidelines for Reintroductions and Other Conservation Translocations and any other available ministry policy guidance. Actions could include:
    i. determining the minimum viable population size and minimum required host abundance to maintain a sustainable Suckley's Cuckoo Bumble Bee population
    ii. determining habitat requirements and the minimum habitat area required to maintain a sustainable population
    iii. developing disease screening methods
    iv. evaluating whether threats can be effectively mitigated at potential recovery sites
    v. developing best practices for bumble bee translocation and captive-rearing
4. Determine the impacts of stressors and combinations of them on Suckley's Cuckoo Bumble Bee and/or its host species, such as climate change, pesticides (including insecticides, fungicides and herbicides), honey bees and managed bumble bees and disease.

5. As appropriate, encourage the recording, sharing and transfer of Traditional Ecological Knowledge on Suckley's Cuckoo Bumble Bee, where it has been shared by communities, to increase knowledge of the species and support future recovery efforts.

Focus Area:	**Inventory and Monitoring**
Objective:	Increase knowledge of the distribution and abundance of the Suckley's Cuckoo Bumble Bee and its host species.

Suckley's Cuckoo Bumble Bee has not been confirmed in Ontario since 1971 but has the potential to be recorded across the province wherever its host species are found. The distribution of Suckley's Cuckoo Bumble Bee in Ontario is determined primarily by the distribution and abundance of its presumed host bumble bee species, the Yellow-banded Bumble Bee and Rusty-patched Bumble Bee. While Rusty-patched Bumble Bee is increasingly rare, there are still numerous, small populations of Yellow-banded Bumble Bee. Confirming the presence or absence of Suckley's Cuckoo Bumble Bee at locations where hosts are known to exist, as well as at historic locations where Suckley's Cuckoo Bumble Bee were observed in the past, will help determine where recovery efforts are best focused.

Actions:

6. **(High)** Develop and implement a standardized survey program for Suckley's Cuckoo Bumble Bee and its host species, prioritizing surveys in under-sampled areas, historical or potential Suckley's Cuckoo Bumble Bee sites and areas with known extant host populations (i.e., Rusty-patched Bumble Bee and Yellow-banded Bumble Bee).
7. Develop and make available Suckley's Cuckoo Bumble Bee identification material (e.g., photo-based field guide) including how to distinguish it from similar species, to facilitate reporting of observations through formal monitoring programs or other sightings.
8. Engage volunteers throughout the province to participate in citizen science survey and monitoring efforts for native bumble bees, including Suckley's Cuckoo Bumble Bee (i.e., BumbleBeeWatch, iNaturalist).
9. At locations where Suckley's Cuckoo Bumble Bee or its host species are found to be present, develop and implement a monitoring program that includes identification and monitoring of habitat conditions and site-specific threats.

Focus Area:	**Habitat and Threat Management**
Objective:	Maintain or improve habitat and reduce threats to Suckley's Cuckoo Bumble Bee and its host species.

Bumble bees (including the Suckley's Cuckoo Bumble Bee) are vulnerable to environmental stressors such as pesticide use (e.g., neonicotinoids), habitat loss and degradation, disease and parasite dynamics, and climate change. These factors may impact the Suckley's Cuckoo Bumble Bee directly or cause declines of its host species. Collaborative efforts amongst individuals, organizations, industries and Indigenous communities and organizations in areas where the species exist will support effective recovery implementation. Developing and promoting actions that individuals, farmers and greenhouse managers can undertake to minimize potential threats, such as the impact of exposure to harmful pesticides, will help support the protection and recovery of Suckley's Cuckoo Bumble Bee and its host species. Promoting beneficial actions that individuals can take proactively to enhance habitat of the host species is also encouraged.

Actions:

10. **(High)** Develop, promote and implement best management practices for landowners, farmers, greenhouse managers and beekeepers to reduce potential threats, such as the spread of pathogens and the effects of harmful pesticides or herbicides. Actions may include:
    - i. minimizing the use of pesticides (e.g., neonicotinoids) and minimizing the impact of herbicides on potential pollen/nectar sources
    - ii. preventing escape of managed bees (e.g., sealing of gaps in greenhouses, freezing colonies before dispersal)
    - iii. monitoring disease and parasite occurrences
    - iv. minimizing the possibility of managed bees foraging at sites occupied by Suckley's Cuckoo Bumble Bee or its host species
    - v. developing guidance on how to assess possible impacts to native pollinators when considering the use of herbicides and pesticides
    - vi. promoting buffer zones according to pesticide label statements

11. Initiate or continue habitat management efforts within suitable habitat where Suckley's Cuckoo Bumble Bee and its hosts have been found (e.g., ensure blooming plants are available from early spring to late autumn, develop habitat management plans to reduce threats and improve habitat suitability, increase the amount of suitable nesting habitat for host species).

Implementing Actions

Financial support for the implementation of actions may be available through the Species at Risk Stewardship Program. Conservation partners are encouraged to discuss project proposals related to the actions in this response statement with Ministry of the Environment, Conservation and Parks staff. The Ontario government can also provide guidance about the requirements of the ESA, whether an authorization or regulatory exemption may be required for the project and, if so, the authorization types and/or conditional exemptions for which the activity may be eligible. 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 co-ordinated across government response statements.

Performance Measures

Progress towards achieving the government's goal for the recovery of Suckley's Cuckoo Bumble Bee will be measured against the following performance measures:

- By 2034 targeted surveys have been conducted in Ontario to determine whether the species is present in the province.
- If one or more extant subpopulations are discovered, the distribution of Suckley's Cuckoo Bumble Bee is maintained or increased by 2039.

Reviewing Progress

The ESA requires the Ontario government to conduct a review of progress towards protecting and recovering a species no later than the time specified in the species' government response statement, which has been identified as five years. The review will help identify if adjustments are needed to achieve the protection and recovery of Suckley's Cuckoo Bumble Bee.

Acknowledgement

We would like to thank all those who participated in the development of the Recovery Strategy and Government Response Statement for the Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) 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
Contact the Ministry of the Environment, Conservation and Parks
1-800-565-4923
TTY 1-855-515-2759
www.ontario.ca/environment