



Suckley's Cuckoo Bumble Bee



Photo: © Cory Sheffield

Scientific Name

Bombus suckleyi

Taxon

Arthropods

COSEWIC Status

Threatened

Canadian Range

Yukon, Northwest Territories, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland (Island only, no species confirmed in Labrador)

Reason for designation

This bumble bee is a nest parasite of other bumble bees and depends on its hosts to rear its young. It is found in all provinces and territories except Nunavut. It is more frequent in the west than in the east and always much less frequent than its hosts. Despite significantly increased search effort for bumble bees in Canada over the last two decades, fewer individuals of this species have been encountered than in the past. There has been a decline of more than 30% in relative abundance compared to all bumble bees (indicating a population decline) and a decline in area of occupancy. The decline has been particularly severe in areas where the species was historically more frequent, in British Columbia and Alberta. The primary threat is the steep decline of the host bumble bee species,

again in British Columbia and Alberta. The major threats to the hosts are the escape of pathogen-infected bumble bees from managed colonies in commercial greenhouses, pesticide use (particularly neonicotinoids), and climate change.

Wildlife Species Descriptions and Significance

Suckley's Cuckoo Bumble Bee is one of six true cuckoo bumble bee species occurring in North America. Both sexes are medium-sized (15–25 mm length). Females are slightly larger than males and have an abdomen with shiny black terga (dorsal abdominal segments) and yellow hairs near the tip; males have a similar colour pattern, but with more yellow hair on the abdomen. Unlike nest-building bumble bees, female cuckoo bumble bees do not possess a corbicula (pollen basket) on the hind leg as they do not collect pollen for their offspring.

Suckley's Cuckoo Bumble Bee can be distinguished from the similar Gypsy Cuckoo Bumble Bee by the prominent triangular ridges on the underside of the last segment of the abdomen. Males also typically have more yellow hairs on the body than Gypsy Cuckoo Bumble Bee.

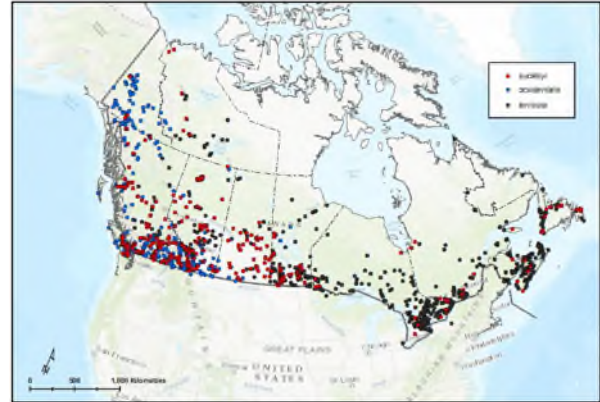
Suckley's Cuckoo Bumble Bee is an obligate social parasite of nest-building bumble bees of the subgenus *Bombus*. Of the four species in this subgenus in Canada, Western Bumble Bee is the only confirmed host in western Canada, while Yellow-banded Bumble Bee is the suspected host in eastern Canada due to co-occurrence of the two species in much of its eastern range of Suckley's Cuckoo Bumble Bee. Additional suspected hosts include Rusty-patched Bumble Bee (Ontario and Québec) and Cryptic Bumble Bee (northwestern Canada) because they are also in subgenus *Bombus* (like the confirmed host) and co-occur in the range of Suckley's Cuckoo Bumble Bee. However, there is no direct evidence that either of these are hosts.

Three of the host and probable host species have been assessed at risk in Canada by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Western Bumble Bee *occidentalis* subspecies (Threatened) and *mckayi* subspecies (Special Concern), Yellow-banded Bumble Bee (Special Concern) and Rusty-patched Bumble Bee (Endangered). Cryptic Bumble Bee, a Holarctic species and potential host, has not been assessed by COSEWIC and has a conservation status of Secure.

Distribution

Suckley's Cuckoo Bumble Bee has an extensive distribution from the southern United States to the subarctic regions of Canada (Yukon) and east to the island of Newfoundland (not confirmed from Labrador). In Canada, the species has been recorded in all provinces and territories except Nunavut. The species is more abundant in western Canada, and most collection sites are from west of Manitoba.

Canadian records of Suckley's Cuckoo Bumble Bee date from 1897 (British Columbia) and 1901 (Ontario) to 2019 (Saskatchewan and Yukon). Additional records within the last ten years are from Alberta (2018), British Columbia (2013) and the island of Newfoundland (2010). The distribution of Suckley's Cuckoo Bumble Bee is limited by the distribution, and presumably abundance, of its host bumble bee species, although other factors appear to be important because it has not been collected evenly throughout its hosts' range.



Spatial distribution of Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) databased records in Canada.

Source : COSEWIC. 2019. COSEWIC assessment and status report on the Suckley's Cuckoo Bumble Bee *Bombus suckleyi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 70 pp.

Habitat

Suckley's Cuckoo Bumble Bee occurs in diverse habitats including open meadows and prairies, farms and croplands, urban areas, boreal forest, and montane meadows. Records are from sea level to 1200 m although the species could potentially occur at higher elevations where its host(s) occur. In the early spring, hosts typically establish nests in abandoned underground rodent burrows or other dry natural hollows; because Suckley's Cuckoo Bumble Bee is a nest parasite these same host residence sites also serve as its habitat. Adults have been recorded feeding on pollen and nectar from many flowers.

Biology

Suckley's Cuckoo Bumble Bee is an obligatory social parasite of nest-building bumble bees, and therefore does not produce a eusocial colony with distinct castes (i.e. no workers). The species has an annual life cycle. Mated females emerge in the spring, slightly later than host nest-building species (e.g., hosts emerge March – April and cuckoos emerge April – June, sometimes later in higher latitudes and/or elevations) and begin to search for potential host nests. Successful nest parasitism by female cuckoos occurs after hosts have established colonies with some workers, but

only if the host nest is not so large that the host workers can defend the colony and drive out the cuckoo. Once a host nest is found, the female cuckoo subdues (or kills) the host queen, and ultimately takes over egg laying in the nest; the workers of the original host queen care for the cuckoo's offspring. Cuckoos emerge throughout the summer and with higher numbers produced in late summer and early autumn. New female and male cuckoos produced in the host nest emerge to feed on nectar, and then mate. Mated females ultimately select an overwintering site, presumably near nest-building host species. Males and the original egg-laying female die at the onset of cold weather.

Population Sizes and Trends

Limited information on the Canadian on global population size and trends for Suckley's Cuckoo Bumble Bee is available. Most bumble bee surveys target all *Bombus* and do not specifically target cuckoo bumble bees. Historically, surveys have included all bumble bees and have mostly been conducted haphazardly or by wandering transects through suitable habitat, and have focused on recording new subpopulations, natural history and habitat information of bumble bees in general. Within the past 20 years, there have been extensive bumble bee surveys and academic research focused on pollinators, including bumble bees, and Suckley's Cuckoo Bumble Bee has been recorded during this work. The species is inherently less abundant than other bumble bees because it does not produce a worker caste and is less common than its hosts.

Historical data show Suckley's Cuckoo Bumble Bee appears to have always been more common in western Canada than in eastern Canada. The species has not been recorded from southern Ontario since the 1970s despite extensive search effort in the past twenty years. However, throughout other parts of its range the species remains present, albeit uncommon, where hosts occur.

Threats and Limiting Factors

The major threat to Suckley's Cuckoo Bumble Bee is the decline of its host species: Western Bumble Bee, in western Canada, and likely Yellow-banded Bumble Bee in eastern Canada. Both Western Bumble Bee and Yellow-banded Bumble Bee were once more common and widespread, and subpopulations have been declining through much of their range, likely due to pesticide use (including neonicotinoids), pathogen spillover (specifically within high intensity agricultural areas), and floral resource and habitat loss from agricultural intensification and natural systems modifications (e.g., fire suppression, natural shrub encroachment into open areas).

Protection, Status and Ranks

Suckley's Cuckoo Bumble Bee has no legal status and is not protected in Canada by any federal or provincial legislation. The species is globally ranked as Critically Imperilled (G1) and nationally in Canada as Vulnerable (N3) (NatureServe 2018). The species is assessed as Critically Endangered (CR) by the International Union for the Conservation of Nature (IUCN) Red List of Threatened Species. Western Bumble Bee *occidentalis* (Threatened) and *mckayi* subspecies (Special Concern) have been assessed by COSEWIC but not listed under SARA. Yellow-banded Bumble Bee (Special Concern) has been assessed by COSEWIC and listed under SARA. Rusty-patched Bumble Bee has been assessed as Endangered by COSEWIC and listed under SARA.

Source : COSEWIC. 2019. COSEWIC assessment and status report on the Suckley's Cuckoo Bumble Bee *Bombus suckleyi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 70 pp.

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