Bombus suckleyi (Suckley's Cuckoo Bumble Bee)
Conservation Status Rank Summary

June 19, 2025

For details on assessment and ranking methodology, see: *Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species*

Rarity and Trends

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Rarity					
Range Extent	2025-06-19	Y: 380530.8 km²	4.710	MTNHP Range Maps	None
Area of Occupancy			-		Factor not used in ranking.
Number of Occurrences			-		Factor not used in ranking.
Population Size			-		Factor not used in ranking.
# of Occurrences in Good Condition			-		Factor not used in ranking.
% of Area Occupied in Good Condition			-		Factor not used in ranking.
Environmental Specificity	2025-06-10	Narrow	1.830	Expert Opinion (Xerces, 2025)	None
Rarity is calculated by averaging weighted factor scores: **((4.71 × 1) + (1.83 × 1)) / 2 = 3.27**					
Trends					
Short-term Trend	2025-06-19		-0.500	MTNHP Data	Historic declines appear to be continuing. The last time the species was reported in Montana was 2015 on the Canadian border.
Long-term Trend	2025-06-19		-0.400	USFWS 2024	80-83% decline in regions overlapping montana
Trends score is calculated by summing weighted short and long-term trend scores: **((-0.50 × 2) + (-0.40 × 1)) = -1.40**					

Threats

Rank Factor	Date Assessed	Value	Score	Data Source	Comments
Threats					
Overall Threat Impact		Very high - high	[0.000, 1.830]		None
Intrinsic Vulnerability	2025-06-10	Highly vulnerable	-	Expert Opinion (Xerces, 2025)	**Factor not used in ranking.** Proposed for ESA listing as "Endangered" as of December 2024
Threat score is calculated from Overall Threat Impact when available or Intrinsic Vulnerability if not: **([0.00, 1.83]) = [0.00, 1.83]**					

Individual Threats Data

Threat Category	Date Assessed	Impact Score	Scope	Severity	Immediacy	Comments
Agriculture & Aquaculture	None	High - Medium	Large	Serious-Moderate	High	Multiple Level 2 threats - see Additional Threat Details below.
Natural System Modifications	None	High - Medium	Pervasive	Serious-Moderate	High	Multiple Level 2 threats - see Additional Threat Details below.
Invasive & Other Problematic Species, Genes & Diseases	2025-06-10	High - Medium	Large	Serious-Moderate	High	The microsporidian pathogen Vairimorpha bombi has been detected in B. suckleyi, although sample sizes were small due to the species' rarity. V. bombi is also widespread in Bombus occidentalis, B. suckleyi's primary host, which appears particularly susceptible to infection and shows higher prevalence than other bumble bee species (Cordes 2010; Koch and Strange 2012; Cameron et al. 2016). This pathogen negatively affects bumble bee fitness by reducing colony size and shortening individual lifespans (Koch and Strange 2012; Cameron and Sadd 2019).
Other Threats	2025-06-10	High - Medium	Pervasive	Serious-Moderate	High	Loss of mutualism: As an obligate nest parasite, the main threat to Bombus suckleyi appears to be the decline of its primary host species (Hatfield et al. 2015), Bombus occidentalis. Any decline in B. occidentalis threatens B. suckleyi's reproductive success and genetic diversity. B. occidentalis has experienced a 57% decline in occupancy across its range (Janousek et al. 2023) and has lower genetic diversity compared to other Bombus species (Cameron et al. 2011). With limited genetic diversity, this increases the susceptibility for inbreeding

						(Suhonen et al. 2019). Alternative hosts include Bombus nevadensis, Bombus terricola, Bombus rufocinctus, Bombus fervidus, and Bombus appositus, many of which have documented declines in the last century (U.S. Fish and Wildlife Service 2020). The combination of host loss and ongoing habitat degradation may further accelerate the decline of B. suckleyi.
Threat Tally: 0 - Very High, [0,4] - High, [0,4] - Medium, 0 - Low Overall Threat Impact* = Very high - high						

*See Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species for calculation of Overall Threat Impact based on the number and impact of individual threats.

Conservation Status Rank Calculation

Raw score

Rarity: (3.27 × 70%) + Threats: ([0.00, 1.83] × 30%) + Trends: (-1.40) = [0.89, 1.44]

Calculated Rank: S1

Accepted Rank	S1
Date Approved	2025-06-24
Approval Authority	Montana Natural Heritage Program Staff
Rank Justification	Species was once found across much of Montana. It has not been observed in Montana since 2015 and may be extirpated in the state. If it has persisted in the state, it faces high levels of threats from habitat loss, disease, and declines of host species.

Supplementary Information

Montana Natural Heritage Program. 2021. Conservation Status Assessment Definitions, Process, Rank Factors, and Calculation of State Ranks for Montana Species. 18 p.
https://mtnhp.mt.gov/docs/Montana_State_Rank_Criteria_20211201.pdf

Montana Field Guide Species Account:
https://fieldguide.mt.gov/speciesDetail.aspx?elcode=IIHYM24350

Predicted Suitable Habitat Model:
https://mtnhp.mt.gov/resources/models/?elcode=IIHYM24350

Information Needs

Information needs are assessed by considering the availability of factors used to assess species status as well as the quality of these assessments. Current information availability and quality to inform Conservation Status Rank for this species are highlighted.

Rank Factor	Assessment Category	Value	Criteria
General Status	Status Quality	Adequate	Calculated rank has low uncertainty and is represented by a single rank (e.g. S3); accepted rank may be adjusted to a range rank (e.g. S2S3)
		Poor	Rank assessed as SU or calculated rank has notable uncertainty and corresponds to a range rank with 2 or more values (e.g. S2?, S1S3, or S4S5)
Rarity	Range Quality	Adequate	Range polygon adequately represents area of probable occupancy and does not include substantial unoccupied areas; range may be adequately defined and still include areas of unsuitable habitat (e.g. mountain ranges for plains species)
		Marginal	Range polygon defined, but may include or exclude notable areas where the species may or may not occur on the landscape
		Poor	Range polygon not defined
	Habitat Quality	Adequate	Species-habitat relationship is well-defined (e.g. relevant literature or robust habitat model available)
		Marginal	Understanding of species-habitat relationship is adequate among some but not all habitats (e.g. literature covers similar habitats outside of Montana or habitat model performance is only somewhat adequate)
		Poor	Species-habitat relationship is not well understood
Threats	Threat Quality	Adequate	Threat Impact is a single value (including "Unthreatened")
		Marginal	Threat Impact assessed at more than one value (e.g. "High - Medium")
		Poor	Threat Impact is Unknown but Intrinsic Vulnerability is assessed
		Unknown	Threat Impact is Unknown and Intrinsic Vulnerability is not assessed
Trends	Recency	Current	Short-term Trend assessment date less than 10 years old
		Out of Date but Adequate	Short-term Trend assessment date is more than 10 years old or Unknown, but species is Unthreatened
		Out of Date	Short-term Trend assessment date more than 10 years old
		Not Available	Short-term Trend data are not available
	Trend Quality	Sufficient	Short-term Trend assessed at a single value or multiple values with a minimum trend greater than -10% (stable or increasing)
		Unknown but Sufficient	Short-term Trend is Unknown, but species is Unthreatened
		Poor	Short-term Trend is less than -10% (in decline) with two or more values selected
		Unknown	Short-term Trend is Unknown

Summary of Information Availability

Information is available to calculate a robust rank.

Summary of Information Needs

Confirmation of species presence in the state is the highest need for the species as it may now be extirpated

Additional Threat Details

The table below contains the complete threats assessment for this species. While the Conservation Status Rank Calculation is based on cumulative, broadly categorized (Level 1) threats data, threats are assessed and tracked for more specifically categorized (Level 2) threats when available.

Threat Category	Date Assessed	Assessed By	Data Source	Scope	Severity	Imme-diacy	Comments
Agriculture & Aquaculture - 2.1 - Annual & Perennial Non-Timber Crops	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Restricted	Moderate	High	Agricultural intensification poses a threat to Bombus suckleyi by reducing floral resources and increasing pesticide exposure. In 2015, B. suckleyi was detected in areas in Montana that had experienced notable increases in cultivated cropland, by 44% in Daniels County and 33% in Glacier County (USDA NASS 2019). Expanding agricultural areas reduce the natural and semi-natural habitats required by B. suckleyi and its host species to meet their nutritional needs. While monoculture crops such as alfalfa, canola, and peas provide nectar and pollen, they do not support the nutritional requirements necessary for bumble bee reproduction (Westphal et al. 2009). Historically, B. suckleyi inhabited regions that are now dominated by agriculture, such as the Bitterroot Valley, where it hasn't been observed since 1980.
Agriculture & Aquaculture - 2.3 - Livestock Farming & Ranching	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Large	Serious-Moderate	High	Approximately 70% of Montana consists of rangelands and pasturelands, spanning both privately owned and public lands (USDA 2024). Livestock grazing can alter plant communities by reducing the diversity and abundance of floral resources through direct removal of flowering plants that bumble bees rely on (Hatfield & LeBuhn 2007; Black et al. 2011, Cane 2011, Kimoto et al. 2012, Debano et al. 2016; Davidson et al. 2020) and through the spread of invasive grasses, which outcompete many native forbs (Mack 1981). These changes reduce the availability of pollen and nectar sources required by B. suckleyi. Since the primary host species, B. occidentalis, often nests in abandoned rodent burrows, livestock grazing can disturb soil and destroy or damage bumble bee colonies and potential nesting sites (Sugden 1985). However, Léger and Mitchell (2021) suggest that grazing timed after peak bloom and managed at moderate intensities has no adverse effects on the abundance or species richness of native bees, indicating that careful grazing management may help reduce negative impacts on native pollinators such as B. suckleyi. More specific investigation of the impacts of different grazing regimes to B.

							suckleyi should be conducted before implementing any specific grazing management plan and/or a grazing management plan should be implemented in an adaptive management framework with sufficient monitoring to detect the effects of different grazing activities.
Natural System Modifications - 7.1 - Fire & Fire Suppression	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Restricted	Slight	Moderate	Bombus suckleyi is impacted by the threat of fire suppression on its host, Bombus occidentalis. An increase in forested area corresponded with higher occupancy of B. occidentalis, indicating that forests and forest structure are an important component of B. occidentalis habitat (Janousek et al. 2023), and thereby B. suckleyi habitat. Fire suppression has altered forest structure and composition throughout the Rocky Mountains (Keane et al. 2002). Fires can enhance habitat heterogeneity within forest landscapes, which is known to positively influence bumble bee abundance (Galbraith et al. 2019). One of the consequences of excluding fire in forest management has been an increase in woody plant encroachment, leading to a decrease in small forest openings, which provide the availability of understory flowering resources (Janousek et al. 2023; Galbraith et al. 2019).
Natural System Modifications - 7.3 - Other Ecosystem Modifications	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Pervasive	Serious-Moderate	High	Honey bees (Apis mellifera) can threaten wild bees by competing for limited floral resources (Goulson 2003; Thomson 2006). Bumble bees can also experience nectar scarcity when competing with honey bees, prompting colonies of some species to shift foragers from collecting pollen to nectar, reducing larval development rates (Thomson 2004). Montana has around 270,000 registered honey bee colonies, and beekeeping is the 10th largest agricultural industry in Montana (Etzler et al. 2022). Honey bee detections in Montana overlap with the range of B. suckleyi (Montana Natural Heritage Program 2025).
Invasive & Other Problematic Species, Genes & Diseases - 8.4 - Problematic Species/Diseases of Unknown Origin	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Large	Serious-Moderate	High	The microsporidian pathogen Vairimorpha bombi has been detected in B. suckleyi, although sample sizes were small due to the species' rarity. V. bombi is also widespread in Bombus occidentalis, B. suckleyi's primary host, which appears particularly susceptible to infection and shows higher prevalence than other bumble bee species (Cordes 2010; Koch and Strange 2012; Cameron et al. 2016). This pathogen negatively affects bumble bee fitness by reducing colony size and shortening individual lifespans (Koch and Strange 2012; Cameron and Sadd 2019).
Other Threats - 12.1 - Other Threat	2025-06-10	Xerces (Michelle Toshack)	Review of published literature	Pervasive	Serious-Moderate	High	Loss of mutualism: As an obligate nest parasite, the main threat to Bombus suckleyi appears to be the decline of its primary host species (Hatfield et al. 2015), Bombus occidentalis. Any decline in B.

							occidentalis threatens B. suckleyi's reproductive success and genetic diversity. B. occidentalis has experienced a 57% decline in occupancy across its range (Janousek et al. 2023) and has lower genetic diversity compared to other Bombus species (Cameron et al. 2011). With limited genetic diversity, this increases the susceptibility for inbreeding (Suhonen et al. 2019). Alternative hosts include Bombus nevadensis, Bombus terricola, Bombus rufocinctus, Bombus fervidus, and Bombus appositus, many of which have documented declines in the last century (U.S. Fish and Wildlife Service 2020). The combination of host loss and ongoing habitat degradation may further accelerate the decline of B. suckleyi.