

COSEWIC
Rapid Review of Classification

on the

Mountain Beaver
Aplodontia rufa

in Canada

SPECIAL CONCERN
2022

COSEWIC
Committee on the Status
of Endangered Wildlife
in Canada



COSEPAC
Comité sur la situation
des espèces en péril
au Canada

The Rapid Review of Classification process is used by COSEWIC for wildlife species that have not changed status since the previous COSEWIC assessment. Readily available information from the previous status report or status appraisal summary, recovery documents, recovery teams, jurisdictions, conservation data centres, and species experts was initially reviewed by the relevant Species Specialist Subcommittees before being reviewed by COSEWIC. The following is a summary of the relevant information.

COSEWIC Rapid Review of Classification are working documents used in assigning the status of wildlife species suspected of being at risk in Canada. This document may be cited as follows:

COSEWIC. 2022. COSEWIC Rapid Review of Classification on the Mountain Beaver *Aplodontia rufa* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi pp. (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>).

Production note:

COSEWIC acknowledges Dr. Chris Johnson for writing the rapid review of classification on the Mountain Beaver, *Aplodontia rufa*, in Canada. Dr. Johnson is a Co-chair of the COSEWIC Terrestrial Mammals Specialist Subcommittee.

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Également disponible en français sous le titre Examen rapide de la classification du COSEPAC sur le Castor de montagne (*Aplodontia rufa*) au Canada.



COSEWIC Assessment Summary

Assessment Summary – December 2022

Common name

Mountain Beaver

Scientific name

Aplodontia rufa

Status

Special Concern

Reason for designation

This burrowing rodent has a limited distribution in southwestern British Columbia. Historically, the range has contracted, and population declines were known for some subpopulations. There is no recent evidence of continued decline although the species is not well monitored. Habitat loss from forestry and urban development continues, and soil compaction caused by heavy machinery associated with forestry, road building, and pipeline installation further limits the use of otherwise suitable habitat. This species may be particularly sensitive to climate change, as it requires humid microclimates and low ambient temperatures. The potential for rescue is limited by its short dispersal distance and unsuitable habitat between populations in Canada and the United States. The species is assessed as Special Concern, but it may become Threatened if threats are neither reversed nor managed effectively.

Occurrence

British Columbia

Status history

Designated Not at Risk in April 1984. Status re-examined and designated Special Concern in April 1999. Status re-examined and confirmed in November 2001, May 2012, and December 2022.



COSEWIC Rapid Review of Classification

PREFACE

There are five subpopulations of Mountain Beaver, all found in southwestern British Columbia. There is a minimum of 1,500 Mountain Beaver dens, or occupied sites where at least one den is assumed to occur. The total population size is unknown, but is estimated to be >10,000 mature animals, as extrapolated from densities in known occupied areas and total amount of potential habitat in the range.

There are seven new confirmed occurrences and one unconfirmed occurrence of Mountain Beaver (Smith 2016; Welstead, pers. comm. 2021). The confirmed records represent independent burrow systems at one site (Hunter Creek, British Columbia). The new records do not appreciably extend the previously reported range (EOO) or area of occupancy of the species (IAO; COSEWIC 2012; Environment Canada 2015). There are no new data suggesting further declines in distribution or abundance of the species.

Threats identified in the 2015 management plan remain and likely have not accelerated. The most significant historical threat was land-use change associated with agriculture and housing development. Forestry and associated soil compaction is the most important contemporary threat. Additional threats include soil compaction and other disturbances resulting from road and pipeline construction. Because of its physiological requirements, the Mountain Beaver must live in humid microclimates and consume large amounts of water (Environment Canada 2015). Although not formally documented, climate warming or drying may be a new or increasing threat.

Status History

Designated Not at Risk in April 1984. Status re-examined and designated Special Concern in April 1999. Status re-examined and confirmed in November 2001, May 2012, and December 2022.

Updated map

Required Not required

Explanation / updated map provided

No known change in extent of occurrence or area of occupancy for the species. See previous assessment and management plan (COSEWIC 2012; Environment Canada 2015).

TECHNICAL SUMMARY

Aplodontia rufa

Mountain Beaver

Castor de montagne

Range of occurrence in Canada (province/territory/ocean): British Columbia

Demographic Information

Generation time (usually average age of parents in the population; indicate if another method of estimating generation time indicated in the IUCN guidelines (2011) is being used)	4 years
Is there an [observed, inferred, or projected] continuing decline in number of mature individuals?	Inferred decline given continuing loss of habitat
Estimated percent of continuing decline in total number of mature individuals within [5 years or 2 generations, whichever is longer up to a maximum of 100 years]	Unknown; very little monitoring of this species
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over the last [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].	Unknown; very little monitoring of this species
[Projected or suspected] percent [reduction or increase] in total number of mature individuals over the next [10 years, or 3 generations, whichever is longer up to a maximum of 100 years].	Unknown; very little monitoring of this species
[Observed, estimated, inferred, or suspected] percent [reduction or increase] in total number of mature individuals over any period [10 years, or 3 generations, whichever is longer up to a maximum of 100 years], including both the past and the future.	Unknown; very little monitoring of this species
Are the causes of the decline a. clearly reversible and b. understood and c. ceased?	a. No b. Yes c. No
Are there extreme fluctuations in number of mature individuals?	Unknown; very little monitoring of this species

Extent and Occupancy Information

Estimated extent of occurrence (EOO)	12,990 km ² as reported in Environment Canada (2015)
Index of area of occupancy (IAO) (Always report 2x2 grid value)	3,496 km ² as reported in COSEWIC (2012)

Is the population “severely fragmented” i.e., is >50% of its total area of occupancy in habitat patches that are (a) smaller than would be required to support a viable population, and (b) separated from other habitat patches by a distance larger than the species can be expected to disperse?	a. No b. Yes
Number of “locations”* (use plausible range to reflect uncertainty if appropriate)	>10
Is there an [observed, inferred, or projected] decline in extent of occurrence?	Unknown, but possible given continuing loss of habitat
Is there an [observed, inferred, or projected] decline in index of area of occupancy?	Unknown, but possible given continuing loss of habitat
Is there an [observed, inferred, or projected] decline in number of subpopulations?	Unknown
Is there an [observed, inferred, or projected] decline in number of “locations”**?	Unknown
Is there an [observed, inferred, or projected] decline in [area, extent and/or quality] of habitat?	Inferred decline in habitat given continuing threats
Are there extreme fluctuations in number of subpopulations?	Unknown
Are there extreme fluctuations in number of “locations”**?	Unknown
Are there extreme fluctuations in extent of occurrence?	No
Are there extreme fluctuations in index of area of occupancy?	No

Number of Mature Individuals (in each subpopulation)

Subpopulations (give plausible ranges)	N Mature Individuals
Number of mature individuals not estimated for subpopulations	
Total	>10,000

Quantitative Analysis

Is the probability of extinction in the wild at least [20% within 20 years or 5 generations whichever is longer up to a maximum of 100 years, or 10% within 100 years]?	not calculated
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* See Definitions and Abbreviations on [COSEWIC website](#) for more information on this term.

Threats (direct, from highest impact to least, as per IUCN Threats Calculator)

Was a threats calculator completed for this species? No

See Management Plan for an assessment of threats (Environment Canada 2015). The principal threat to this species was Logging and Wood Harvesting (5.3) primarily in the form of soil compaction that crushes existing dens or creates soil conditions that are difficult to excavate for new dens. The impact of this threat was categorized as medium. Other threats such as Housing and Urban Areas (1.1), Mining and Quarrying (3.2), Roads and Railroads (4.1), and Utility and Service Lines (4.2) were categorized as low. The overall Threat Impact was High. Although not formally documented, climate warming or drying may be a new or increasing threat.

Rescue Effect (immigration from outside Canada)

Status of outside population(s) most likely to provide immigrants to Canada.	Washington State: Secure (S5)
Is immigration known or possible?	Unlikely
Would immigrants be adapted to survive in Canada?	Yes
Is there sufficient habitat for immigrants in Canada?	Unknown
Are conditions deteriorating in Canada?+	Yes
Are conditions for the source (i.e., outside) population deteriorating?+	No
Is the Canadian population considered to be a sink?+	Unknown
Is rescue from outside populations likely?	Possibility of limited rescue. However, the species does not have a large dispersal distance (Max. recorded = 570 m).

Data Sensitive Species

Is this a data sensitive species?	No
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Status History

COSEWIC Status History:
 Designated Not at Risk in April 1984. Status re-examined and designated Special Concern in April 1999. Status re-examined and confirmed in November 2001, May 2012, and December 2022.

Status and Reasons for Designation:

Status: Special Concern	Alpha-numeric codes: Not applicable
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+ See [Table 3](#) (Guidelines for modifying status assessment based on rescue effect).

Reasons for designation:

This burrowing rodent has a limited distribution in southwestern British Columbia. Historically, the range has contracted, and population declines were known for some subpopulations. There is no recent evidence of continued decline although the species is not well monitored. Habitat loss from forestry and urban development continues, and soil compaction caused by heavy machinery associated with forestry, road building, and pipeline installation further limits the use of otherwise suitable habitat. This species may be particularly sensitive to climate change, as it requires humid microclimates and low ambient temperatures. The potential for rescue is limited by its short dispersal distance and unsuitable habitat between populations in Canada and the United States. The species is assessed as Special Concern, but it may become Threatened if threats are neither reversed nor managed effectively.

Applicability of Criteria

Criterion A (Decline in Total Number of Mature Individuals): Not applicable. Insufficient data to reliably infer, project, or suspect population trends.

Criterion B (Small Distribution Range and Decline or Fluctuation): Not applicable. The species is near to qualifying for Threatened because EOO (12,990 km²) is below the threshold, but the population is not severely fragmented and likely occurs at >10 locations.

Criterion C (Small and Declining Number of Mature Individuals): Not applicable. Insufficient data to reliably infer, project, or suspect population trends.

Criterion D (Very Small or Restricted Population): Not applicable. Number of mature individuals and vulnerability to rapid and substantial population decline are unknown.

Criterion E (Quantitative Analysis): Not applicable. Analysis not conducted.

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AUTHORITIES CONTACTED

- Kym Welstead, BC Ministry of Forests, Lands, Natural Resources Operations and Rural Development
- David Fraser, Consultant
- Doug Ransome, BC Institute of Technology
- Purnima Govindarajulu, BC Ministry of Environment and Climate Change Strategies

INFORMATION SOURCES

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- Smith A. 2016. Mountain Beaver - Trapping and Relocation - Hunter Creek - Lower Mainland Region. EDI Consultants. 11p.
- Welstead, K., pers. comm. 2021. *Email correspondence to C. Johnson*. July 2021. Species at Risk Biologist, BC Ministry of Forests, Lands, Natural Resources Operations and Rural Development.

Writer of Rapid Review of Classification:

- Chris Johnson is a Professor at the University of Northern British Columbia and the Co-chair of the Terrestrial Mammals Species Specialist Subcommittee.

RAMAS text output:

- Not required.



COSEWIC HISTORY

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) was created in 1977 as a result of a recommendation at the Federal-Provincial Wildlife Conference held in 1976. It arose from the need for a single, official, scientifically sound, national listing of wildlife species at risk. In 1978, COSEWIC designated its first species and produced its first list of Canadian species at risk. Species designated at meetings of the full committee are added to the list. On June 5, 2003, the *Species at Risk Act* (SARA) was proclaimed. SARA establishes COSEWIC as an advisory body ensuring that species will continue to be assessed under a rigorous and independent scientific process.

COSEWIC MANDATE

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses the national status of wild species, subspecies, varieties, or other designatable units that are considered to be at risk in Canada. Designations are made on native species for the following taxonomic groups: mammals, birds, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, mosses, and lichens.

COSEWIC MEMBERSHIP

COSEWIC comprises members from each provincial and territorial government wildlife agency, four federal entities (Canadian Wildlife Service, Parks Canada Agency, Department of Fisheries and Oceans, and the Federal Biodiversity Information Partnership, chaired by the Canadian Museum of Nature), three non-government science members and the co-chairs of the species specialist subcommittees and the Aboriginal Traditional Knowledge subcommittee. The Committee meets to consider status reports on candidate species.

DEFINITIONS (2022)

Wildlife Species	A species, subspecies, variety, or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and is either native to Canada or has extended its range into Canada without human intervention and has been present in Canada for at least 50 years.
Extinct (X)	A wildlife species that no longer exists.
Extirpated (XT)	A wildlife species no longer existing in the wild in Canada, but occurring elsewhere.
Endangered (E)	A wildlife species facing imminent extirpation or extinction.
Threatened (T)	A wildlife species likely to become endangered if limiting factors are not reversed.
Special Concern (SC)*	A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Not at Risk (NAR)**	A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.
Data Deficient (DD)***	A category that applies when the available information is insufficient (a) to resolve a species' eligibility for assessment or (b) to permit an assessment of the species' risk of extinction.

* Formerly described as "Vulnerable" from 1990 to 1999, or "Rare" prior to 1990.

** Formerly described as "Not In Any Category", or "No Designation Required."

*** Formerly described as "Indeterminate" from 1994 to 1999 or "ISIBD" (insufficient scientific information on which to base a designation) prior to 1994. Definition of the (DD) category revised in 2006.



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Canada

The Canadian Wildlife Service, Environment and Climate Change Canada, provides full administrative and financial support to the COSEWIC Secretariat.