

BC's Coast Region: Species & Ecosystems of Conservation Concern

Mountain Beaver *rufa* and *rainieri* subspecies (*Aplodontia rufa rufa* & *A. r. rainieri*)

Global: G5T4? Provincial: S3, COSEWIC: SC, BC List: Blue



SCCP Species Profile – 2012 Version

Notes on *Aplodontia rufa*: A member of the family Aplodontiidae (“mountain beaver”) it is the only existing member of its genus and family. Considered the most primitive rodent, the name suggests a more aquatic species. However it is neither directly related to, or similar in habits to, American Beaver. This species is also referred to as “Aplodontia,” “Boomer,” “Ground Bear,” or “Giant Mole.” Information regarding respective subspecies biology is derived from the species as a whole.

Description

Length: Adults 24-28 cm (*rainieri* ssp slightly larger). Mountain Beaver resemble large, overgrown hamsters or tailless muskrats. While rodents, this primitive genus are not really beavers, but earned the name from the manner in which they gnaw bark and prune vegetation. The ears and eyes are small, the compact round body has a short, rudimentary tail. The large, curved front claws are used for digging, grasping, and climbing. The coat is short and dense, more like that of muskrat than beaver. Colour ranges from grey to brown to a light “blonde” in some individuals.

Diet

Mountain Beaver forage above ground for a wide variety of vegetation. Summer diet includes species of fern, grasses, and the bark and leaves of deciduous plants. Winter diet may include needles, buds and twigs of evergreen species. Food such as dried grasses and ferns are also cached, often in piles at the entrance to burrows. Proximity of permanent, uncontaminated freshwater is especially important to this mammal which has rudimentary, inefficient kidneys and requires 1/3 of its body weight in water every day to flush toxins and remain hydrated.

Look's Like?

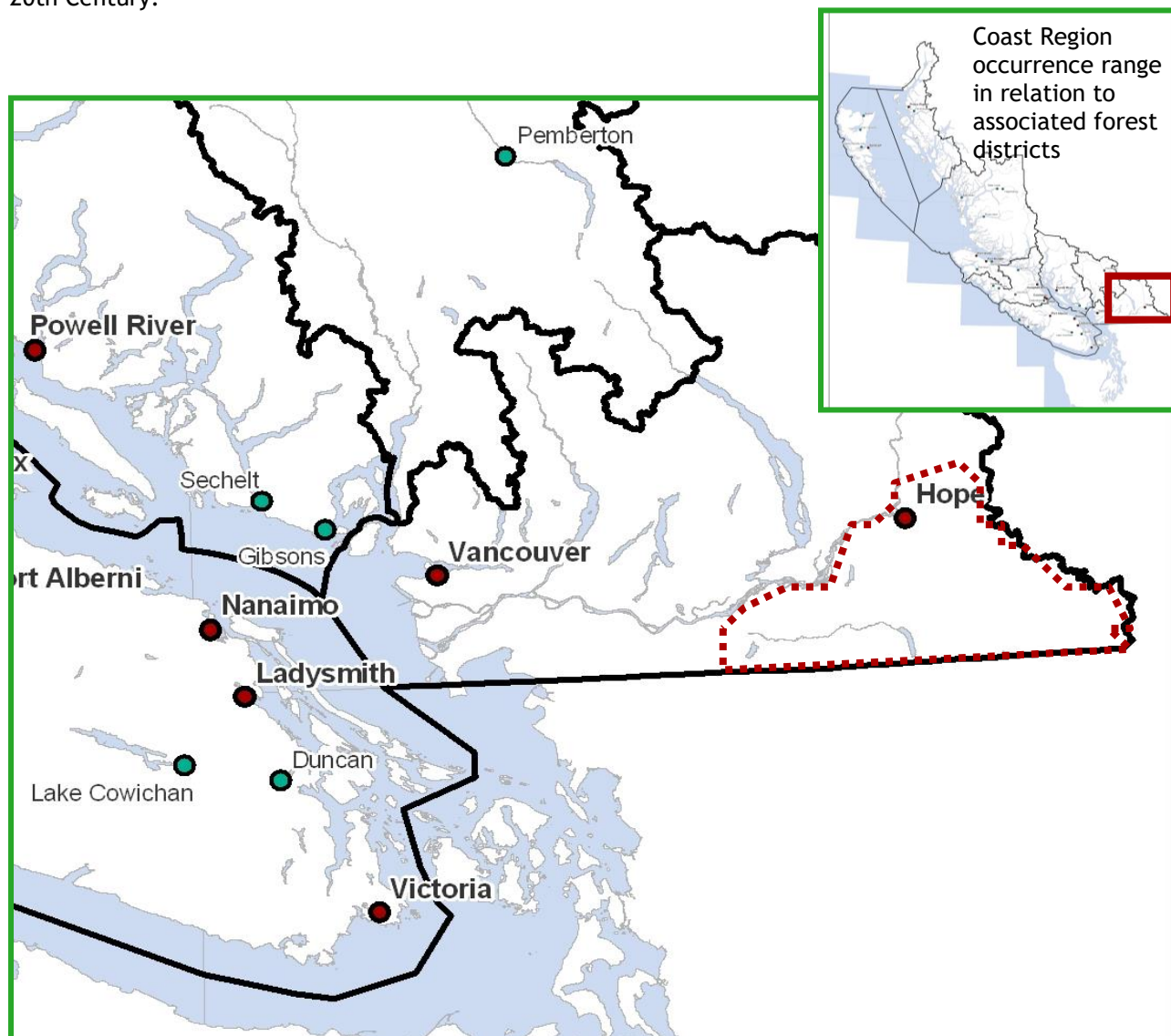
Given this species unique characteristics and habitat associations it is unlikely to be mistaken for any other small mammal. The *rainieri* subspecies which occurs in the Fraser Canyon area does occupy habitats downslope of areas where species like Hoary Marmot, a much larger ground squirrel species may also occur.



Hoary Marmot

Distribution

Elevation 0-3000 m. Both subspecies of Mountain Beaver inhabit the southern Cascade Mountains and parts of the Fraser Lowlands in British Columbia. The boundaries of the *rufa* subspecies are tentatively considered to extend from Langley east to Silverhope Creek, the Klesilkwa River, and the western edge of the Skagit Valley Recreational Area. The known distribution on the Coast Region includes upland areas in Aldergrove and Langley, as well as slopes around Cultus and Chilliwack Lake and the Chilliwack, Silverhope and Skagit River Valleys. The *rainieri* subspecies is presently considered restricted upland slopes in the Hope area. There are no known occurrences for either subspecies on the north side of the Fraser River. Historically, Mountain Beaver in BC were distributed well into lowland areas however these are now predominantly converted to agricultural lands. Though unconfirmed, accounts also suggest Mountain Beaver were much more widely distributed in the western portion of the Fraser Lowlands but these populations were extirpated in the early 20th Century.



Mountain Beaver (*Aplodontia rufa rufa* & *rainieri* subspecies), potential occurrence range for the Coast Region

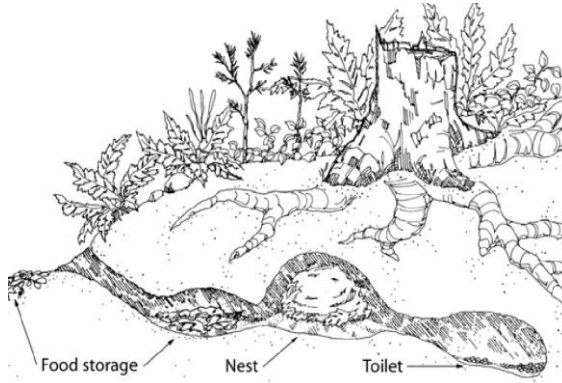
Habitat Preferences

Mountain Beaver are primarily a fossorial (sub-surface oriented) rodent that lives in burrows in and near moist riparian forest communities from near sea level to the timberline. Most burrow colonies are in areas with proximity to a water source, well-developed, firm soils, and abundant vegetation e.g. shrub and herbaceous understories associates with canopy openings. In the U.S. Mountain Beaver have demonstrated some adaptability to human settlements and is actually known to forage in backyard gardens.

Critical Features

Mountain Beaver dig tunnels 12.0 to 16.0 cm in diameter. Burrow systems, are

located in or near thick vegetation in compact soils. Tunnels tend to radiate out from a nest site. Tunnels range from <1.2 to 2.7 meters deep. Burrow systems may contain ten or more exits and special chambers for nesting, feeding, storing food and storing droppings. Abandoned burrow systems benefit a range of small mammals and amphibians.



Forested areas with high levels of moisture and close proximity to water are critical for this species. Typical burrow entrance with food cache (top left).

Home range size varies and often overlaps between males and females, usually in association with burrow networks.

Seasonal Life Cycle

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Courtship / Breeding										
		Pups born									
Active all year, juveniles leave den late summer											

Threats

- ◆ Knowledge gaps in sub-speciation, occurrence, population, and abundance contribute to ongoing conservation and management challenges.
- ◆ Distribution coincides with areas under significant pressure from development, land use conversion and forestry activities.
- ◆ Roadways that cut through core habitat areas and lack of wildlife passage structures increase vehicle mortality impacts and population fragmentation.
- ◆ Though naturally prey to other carnivores as well as raptors, predation by feral or free ranging domestic pets (e.g. dogs and cats) may impact local populations in urban/rural interface areas.
- ◆ Proliferation of non-native invasive plant cover (especially ground and shrub cover) may reduce availability of preferred seasonal forage foods.
- ◆ Females have a naturally low reproductive rate and dispersal rates are limited in adults and juveniles (e.g. <1km) reducing the potential for 'backup' populations in the event of local population declines.

Conservation & Management Objectives

- ◆ Apply conservation and management objectives as set out in the "Best Management Practices Guidelines for Mountain Beaver in Urban and Rural Areas of BC" (working draft). Investigate recovery recommendations developed for the US *nigra* subspecies as found in "Recovery Plan for the Point Arena Mountain Beaver *Aplodontia rufa nigra*".

- ◆ Assess, inventory and monitor using methodology set out in the RISC standards #27, Inventory Methods for Mountain Beaver, Bushy-tailed Woodrat & Porcupine (Version 2.0).

Specific activities should include:

- ◆ Current inventory and population information is inadequate. Determination of current population status (with Sumas and Chilliwack areas being high priorities for inventory and management) is critical as these areas are under significant development pressure.
- ◆ Taxonomic research regarding subspecies status and distribution is needed to resolve the subspecies question between *A. r. rufa* and *A. r. rainieri*.
- ◆ Minimum, permanent buffers, 500 meters from burrows with structurally intact habitat features and those similar for Pacific Water Shrew (100m on either side from top of the bank of a waterbody) may be necessary around water features and especially in areas under development pressure. Riparian buffers imposed to protect fish habitat are likely insufficient for protecting the complete range of foraging and refugia requirements for Mountain Beaver.
- ◆ Mountain Beaver should be considered for inclusion as Identified Wildlife in BC under the Forest and Range Practices Act. Work with forestry sectors more fully incorporate management and conservation planning for these subspecies into silviculture and harvesting plans in BC. Networks of uncut stands should be left for foraging areas after forestry activities occur to maintain and restore habitat connectivity.
- ◆ Wildlife underpasses are preferred and should be installed at appropriate intervals where high road densities and potential for vehicle interactions occur. Clear-span crossings are preferred. Culvert crossings should be a minimum 2 m diameter with open bottoms with natural substrate, no longer than 30 m and should not have large drops that would impede small mammal (or fish) movement. On long culverts that are dark in the middle, consider the use of grates that will allow light and rain to enter.
- ◆ Education and outreach regarding free ranging and feral domestic pet impacts should form part of overall conservation approaches.

These subspecies of Mountain Beaver are listed under the Federal Species At Risk Act (SARA) and subject to protections and prohibitions under the BC Wildlife Act. Habitat for this species may also be governed under provincial and federal regulations including the Fish Protection Act and Federal Fisheries Act as well as Regional and local municipal bylaws.

Content for this Factsheet has been derived from the following sources

Arjo, Wendy M. [Internet] 2007. Mountain Beaver: A Primitive Fossorial Rodent. USDA National Wildlife Research Center - Staff Publications. Paper 675.

B.C. Conservation Data Centre. 2010. [Internet] [Updated February 27 2005] Conservation Status Report: *Aplodontia rufa rufa* & *A.r.rainieri*. B.C. MoE.

Extension - Wildlife Damage Management. 2010. [Internet] [Updated February 18 2008]. Mountain Beavers.

Letai, Sylvia, and Josh Malt. 2008. [Internet] Develop with Care - Mountain Beaver Factsheet. Environmental Guidelines for Urban and Rural Land Development in British Columbia. BC Ministry of Environment.

Link, Russell, 2005. [Internet] "Living with Wildlife in the Pacific Northwest" Mountain Beavers. Washington Department of Fish and Wildlife.

Ministry of Environment, Lands and Parks Resources Inventory Branch. 1998. [Internet]. Inventory Methods for Mountain Beaver, Bushy-tailed Woodrat & Porcupine (Version 2.0) Inventory Methods for Standards for Components of British Columbia's Biodiversity. No. 27.

Nagorsen, D.W. 2002. [Internet] An identification manual to the small mammals of British Columbia. B.C. Minist. Sustainable Resour. Manage., and Minist. Water, Land and Air Prot., and Royal B.C. Mus., 153pp.

Piaggio, Antoinette J. et al. [Internet] Development of 10 Polymorphic Microsatellite Loci Isolated From The Mountain Beaver, *Aplodontia rufa rufa* (Rafinesque). USDA National Wildlife Research Center - Staff Publications. Paper 952.

Steele Dale T. and L Litman. 1998. [Internet] Recovery Plan for the Point Arena Mountain Beaver *Aplodontia rufa nigra* (Rafinesque). US Fish and Wildlife Service Oregon.

Zielinski, William J. et al. 2010 [Internet] Habitat Characteristics at Den Sites of the Point Arena Mountain Beaver (*Aplodontia rufa nigra*). Northwest Science, Vol. 84, No. 2, 2010 pg 119-130.

Prepared by: Pamela Zevit of Adamah Consultants with contributions from Pontus Lindgren for the South Coast Conservation Program (SCCP) in partnership with: International Forest Products (Interfor), Capacity Forestry (CapFor) and the BC Ministry of Environment (BC MoE), E-Flora and E-Fauna the Electronic Atlas of the Flora and Fauna of BC, Species at Risk & Local Government: A Primer for BC. Funding for this factsheet was made possible through the Sustainable Forestry Initiative (SFI): <http://www.sfiprogram.org/>

Every effort has been made to ensure content accuracy. Comments or corrections should be directed to the South Coast Conservation Program: info@sccp.ca. Content updated May 2012.

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