

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

Vancouver Island Marmot (*Marmota vancouverensis*)

Global: G1 Provincial: S1 COSEWIC: E BC List: Red, Identified Wildlife



Notes on *Marmota vancouverensis*: The largest member of the family Sciuridae (“squirrels”), there are 14 marmot species recognized globally, of which five occur in Canada, four of those in BC (Hoary, Yellow Bellied, Vancouver Island and Woodchuck). Closely related, and only recently divergent as a distinct species from Hoary and Olympic Marmot (a US species), Vancouver Island Marmot differs mainly in its pelage (fur) colour. Analysis of historic population distribution, including the discovery of remains of a colony from 1000-1200 years ago on Mount Heather on Vancouver Island, indicate this species was likely more abundant and widely distributed in previous centuries.

Description

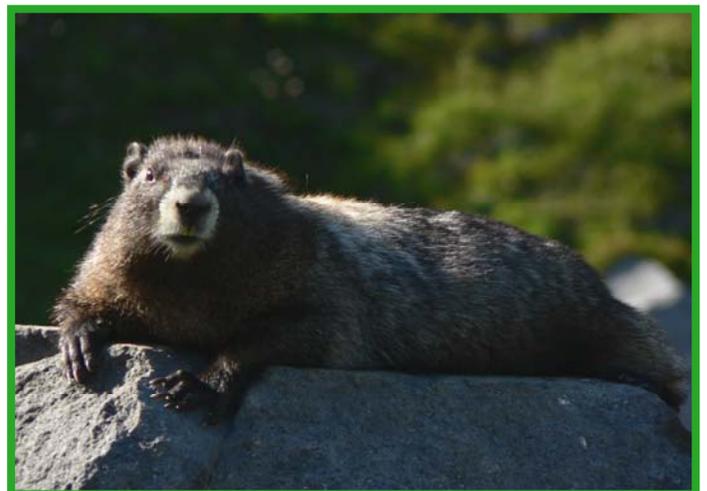
Length: 63-72 cm (including a 19-30 cm tail), **Weight:** 3-7 kg. The pelage is the chief diagnostic for this large ground squirrel. The coat is a lustrous chocolate brown to dark ebony. Fading and lightening to a rufous or walnut colour occurs in the summer due to bleaching from sunbathing, a characteristic activity of most marmot species. Contrasting patches of white occur on the snout, chin, forehead, chest and belly. Adults do not go through a full annual molt and can be distinguished from pups and yearlings in July by a mottled appearance. Pups (young-of-the-year) have uniformly dark, almost black, coats. By early summer, yearlings are typically a faded rusty colour which changes to the characteristic chocolate in their second year. As a burrowing mammal, marmots have powerful shoulder and leg muscles and sharp claws. Weight varies by sex and time of year (marmots lose about one-third of their body mass during winter hibernation). An adult female weighing an average 3 kg emerging from hibernation can increase to 4.5-5.5 kg by onset of next hibernation. Adult males are generally larger reaching weights of up to 7 kg.

Diet

Vancouver Island Marmot, as with other marmot species are herbivorous. Seasonal preferences are subalpine meadow plants ranging from grasses and sedges in early spring to leafy plants in summer and fall. Wildflowers such as spreading phlox are important in early summer, with broadleaf lupine and woolly sunflower appearing to be especially important in late summer and fall. This marmot species will also exploit high elevation meadows created through logging activities, or ski hill runs. In these habitats plant species such as grasses, strawberry and colonizing species such as pearly everlasting and fireweed are consumed.

Look's Like?

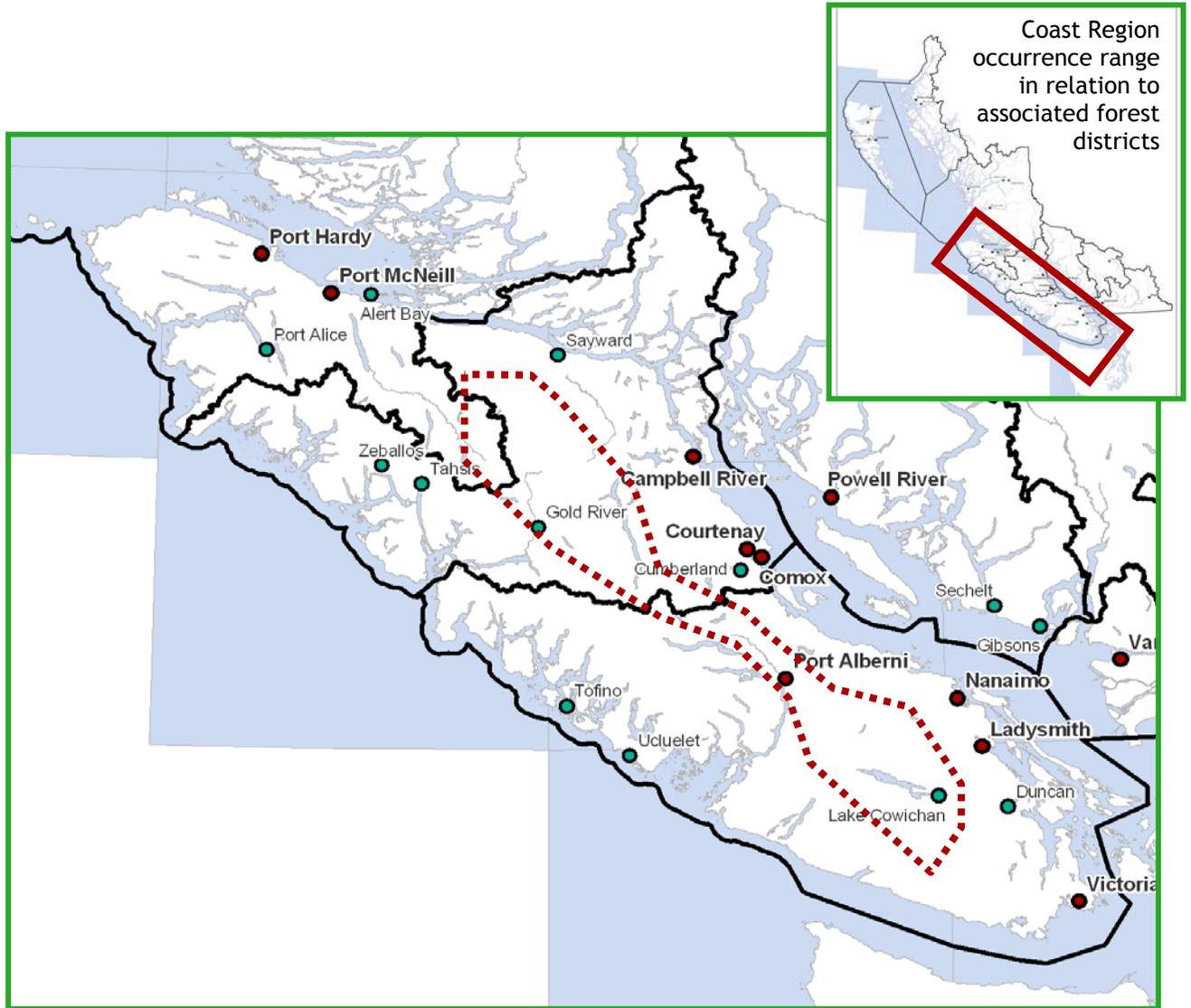
While closely related to Hoary Marmot, Vancouver Island Marmot is the only marmot species on Vancouver Island.



Hoary Marmot

Distribution

Elevations: 800-1600 m (natural colonies), 700-1200 m (clearcuts). This species was originally described from specimens shot in 1910 on Douglas Peak and Mount McQuillan in central Vancouver Island and is presently restricted to the alpine and subalpine headwater areas of five peaks in the Nanaimo Lakes Region (including the Nanaimo, Chemainus, Nitinat, Cameron and Cowichan Rivers). One small isolated colony occurs on Mount Washington in east-central Vancouver Island. Recent captive breeding program releases (2007) have occurred at Strathcona Provincial Park and Mount Cain.



Vancouver Island Marmot (*Marmota vancouverensis*), known occurrence range for the Coast Region

Habitat Preferences Vancouver Island Marmot live in colonies in association with alpine and upper sub-alpine meadows supporting a variety of preferred food plants, deep loose soil accumulations for burrow construction (including hibernacula underneath the frost layer), and suitable lookout spots. Burrows provide protection against inclement weather and predators, and are reused year after year.



Critical Features Burrow entrances (30-45 cm diameter), are usually found underneath a boulder or tree root. Those used for hibernation or birth sites usually have some dirt mounded on the low side of the entrance. Hibernacula can be identified either by grass and mud “plugs” found at tunnel entrances in late autumn, or by emergence tunnels through the snowpack in May or early June. Lounging spots include boulders, logs and stumps, which are identified by mud stains.

Specialists of alpine and high elevation habitats, like other marmot species, *M. vancouverensis* forms colonies and can be seen basking on exposed rock outcroppings.

Seasonal Life Cycle

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
			Breeding occurs shortly after emergence from hibernation. Gestation ~31 days, average 3-4 pups per litter.									
Hibernation			Bulk of litters emerge from burrows end of June - early July				Hibernation					

This species does not reach sexual maturity until approximately the fourth year and litters are often produced only every other year.

Threats

- ◆ This species has narrow habitat preferences (i.e. subalpine meadows) with specific forage requirements which are limited and highly fragmented on Vancouver Island.
- ◆ Climate change may further reduce or impact subalpine habitats along with associated forage plants.
- ◆ Distribution coincides with areas undergoing pressures from forestry as well as expanded recreational land use (ski hill development). While this species has demonstrated some success in colonizing clearcuts or habitats created by these land uses, colonies in these areas do not generally fair as well as those in naturally evolved subalpine meadows.
- ◆ Logging roads and clearcuts provide increased access for predators as well as supporting higher densities of other prey species (e.g. Columbia Black-tailed Deer) that further attract predators to areas around marmot colonies.
- ◆ Small population size and vulnerability to inbreeding make this species highly vulnerable to local extirpation. Females have a naturally low reproductive rate, with first litters only occurring into the fourth year and then only after every other year. As well young demonstrate limited dispersal rates (<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 “Recovery Strategy for the Vancouver Island Marmot (*Marmota vancouverensis*) in British Columbia. Integrate complimentary best practices and guidelines as set out in the Accounts and Measures for Managing Identified Wildlife - Accounts V. 2004 Vancouver Island Marmot *Marmota vancouverensis*.
- ◆ Inventory and monitor using standardized methods found in Resource Information Standards Committee # #29: Inventory Methods for Pikas and Sciurids: Pikas, Marmots, Woodchuck, Chipmunks and Squirrels Version 2.0.

Specific activities should include:

- ◆ Consider fire management regimes and their relationship and relevance to maintenance of historic and future marmot habitat and forage plant communities.
- ◆ Maintain connectivity and protect areas around current or historic colony occurrences where habitat still exists or can be restored. This species has a wide dispersal capability but requires appropriate sites with sufficient attributes and forage resources to establish new colonies with a high likelihood for persistence.
- ◆ Further study is required to determine causes and trends in population distribution, structure and reproductive capacity including reasons for historic extirpations, genetics, role of diet and nutrition availability and potential changes from climate change.
- ◆ A better understanding of this species behavior and seasonal habitat needs is required. While captive breeding programs and recolonization have shown some success, survival rates are low for captive bred individuals.

This species is listed under the federal Species at Risk Act (SARA), is Identified Wildlife under the BC Forest and Range Practices Act 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

- B.C. Conservation Data Centre. 2010. [Internet] [Updated February 28 2005] Conservation Status Report: *Marmota vancouverensis* B.C. Minist. of Environment.
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- Ministry of Environment. 1998. [Internet] Inventory Methods for Pikas and Sciurids: Pikas, Marmots, Woodchuck, Chipmunks and Squirrels Version 2.0. Standards for Components of British Columbia's Biodiversity No.29
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- Vancouver Island Marmot Recovery Team. 2008. [Internet] Recovery Strategy for the Vancouver Island Marmot (*Marmota vancouverensis*) in British Columbia. Prepared for the B.C. Ministry of Environment, Victoria, BC. 25 pp.

Prepared by: Pamela Zevit of Adamah Consultants 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 August 2010.

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