

STATUS OF THE VANCOUVER ISLAND MARMOT (Marmota vancouverensis) IN CANADAA. ABSTRACT

1978

W. T. Munro
BC Fish and
Wildlife Branch

The Vancouver Island marmot is a naturally rare species endemic to Vancouver Island, British Columbia. It lives in small colonies in alpine and subalpine meadows and is only active for a few months each summer. It probably never was an abundant species but is now restricted to a few locations. Proposed and existing developments (skiing, logging) threaten some of its current habitat and recreationists (hikers, photographers, hunters) may unintentionally or otherwise harass certain colonies to the point where reproduction is affected. Much is unknown about the Vancouver Island marmot in terms of inventory, reproductive success, compatibility with development, etc., and its future is uncertain. The best way to maintain the species is to secure the best habitat, maintain buffer zones around all colonies and to re-introduce the species to good habitat where it no longer exists.

B. DISTRIBUTION

The Vancouver Island marmot occurs only in alpine and subalpine areas on Vancouver Island. It does not appear to be as widespread in suitable habitat on the Island as in historic times. Present and former distribution are shown in Figures 1 and 2.

C. PROTECTION

The species is protected under the B.C. Wildlife Act and regulations.

D. POPULATION SIZE AND TREND

Vancouver Island marmots live in small colonies (8+ animals not including young of the year) isolated geographically and socially. It is unknown how

many such colonies still exist on Vancouver Island but our best guess is 6 colonies on four different mountains. The total number of individuals is probably between 50 and 100. Historically there are records of marmots on about twelve different mountains. Although the marmot has always been of limited distribution there has obviously been a decrease in distribution and a decline in numbers. Although unknown it is possible the decline is continuing. An inventory of all existing potential habitat to determine numbers, distribution and potential transplant sites is urgently needed.

E. HABITAT

Marmot habitat is in alpine and subalpine areas characterized by steep slopes, talus debris and open meadows. Steep slopes appear necessary to provide early foraging in the spring due to snow clearance via avalanches while the avalanches maintain herbaceous communities by inhibiting or preventing tree growth. Such habitat is localized on the higher mountains on Vancouver Island. An inventory of the available habitat has not been done.

The trend in quantity of available habitat has not been measured but ski developments have removed some, and there are plans which will remove more. Logging adjacent to some habitats may have rendered them unsuitable for marmots but such has not been proven. Given the restricted amount of habitat any loss must be viewed as significant. Any changes that may have taken place in the quality of the habitat are unknown although it is probable that some former sites have gradually become overgrown with trees which would make them unsuitable for marmot.

Much of the critical habitat is in Crown ownership, although some of that has been leased for recreational purposes (skiing). Some of the privately owned habitat has been protected by logging companies with buffer zones left between logging areas and the colonies. However, until the critical habitat is publicly dedicated as "marmot reserves" the protection is not likely adequate. Crown owned habitat should be designated as Wildlife Management Areas for marmots.

The species is specialized in that its habitat is limited to steep subalpine areas with few trees. It is dependant upon snowfall and consequent avalanches to keep areas clear of trees and yet a portion of the colony must be clear of snow early in the spring.

F. GENERAL BIOLOGY

Based on studies of closely related species, the hoary marmot (Marmota caligata) and the Olympic marmot (Marmota olympus) the Vancouver Island marmot likely does not breed until its third year and biennially thereafter. The average litter size after the young have emerged above ground is three. One known colony consisted of two adult females, 2 adult males, one unsexed adult, two two year olds and three yearlings. The marmots likely breed in April or May and young are born about a month later. Although a group of animals forms a colony adults appear to be paired within the colony. Based on limited studies at two colonies the reproductive rate appears to be normal. However, reproductive information is needed for all colonies.

Marmots are basically sedentary all year, there is some movement between colonies on the same mountain and limited movement between colonies on one mountain and colonies on another mountain. Therefore growth of the

overall population is dependant upon the growth of each group of colonies. When a group[†] of colonies is at or near carrying capacity it is unknown what regulates numbers. It would likely be possible to remove some two year olds in such cases without harming the population.

Little is known about the marmots tolerance to human disturbance. One can arrive at a colony and after fifteen minutes the marmots seemingly carry on their normal activities. However, what affect continual passage of humans may have is unknown. As they are found only in specialized habitats it is likely that the species is not adaptable to change.

G. LIMITING FACTORS

Because of its specialized and limited habitat the Vancouver Island marmot has probably always been a rare species. However it is known that certain areas that were once occupied by the species now have no animals. Some of the decline might have been natural due to invasion of trees, but it is likely the bulk of it has been due to man, either through wanton killing or excessive disturbance through development. There does not appear to be any species which competes with the marmot for habitat. Predators may be a factor in some areas, as the cougar, black bear, wolf, Golden Eagle and Bald Eagle are all present on Vancouver Island and have been known to prey on marmots elsewhere. Dogs may be a factor in colonies near popular summer recreation areas.

The limited quantity of suitable habitat is the ultimate factor limiting the population size of the Vancouver Island marmot. In addition, the isolation of groups of colonies restricts interchange between sub-populations on different mountains. Thus, once marmots are removed from a mountain it is unlikely that they will repopulate it on their own even if there are

surplus animals elsewhere. It is also possible that on those mountains where only one colony exists inbreeding may become a threat.

In brief, declines have taken place, inroads have been made on some habitats, other habitats are vacant, but there are still a few known viable colonies. There are some potential areas which have not been examined which may have viable colonies.

H. SPECIAL SIGNIFICANCE OF SPECIES

The Vancouver Island marmot is found only on Vancouver Island. It is considered a separate species from, but closely related to, both the hoary marmot and Olympic marmot. It is of special significance to Canada because it is one of the few mammalian species unique to Canada. It has not yet attracted widespread public interest, both because its endangered status has not been publicized and because it has never been common. As its status becomes more generally known and pictures are published public interest will rapidly increase.

I. RECOMMENDATIONS

The first requirement is to ensure the complete protection of the habitat of colonies known to be active and to protect the animals from undue human harassment. The second requirement is for an inventory of all habitat where marmots have been recorded in the past or which look likely from aerial photographs to determine the amount and location and the number of animals, if any, using each area. The third requirement if few occupied habitats are found is to determine if some animals could be removed from existing colonies without seriously affecting them and transplanted to vacant habitats elsewhere. To ensure survival of the species

there should probably be not less than two viable colonies in each of at least six different locations (mountains). Studies need to be initiated to determine the reproductive and mortality rates of existing colonies and to determine methods of judging carrying capacity of each area of habitat.

J. EVALUATION

The probable reasons for decline are human related; wanton killing in the past and more recently disturbance by developments. Protection of existing habitat and population coupled with possible transplants to formerly occupied habitats will likely reverse the decline.

K. REFERENCES

Authorities on Vancouver Island marmots

- D. Heard - worked on them for a MSc thesis under Dr. I. McT. Cowan.
G. Smith - B.C. Fish & Wildlife Branch, Nanaimo has kept many records over the years.

BIBLIOGRAPHY

- Barash, D.P. 1973. The social biology of the Olympic marmot.
Anim. Behav. Mangr. 6:171-245
- Barash, D.P. 1974. Social behaviour of the hoary marmot (Marmota caligata) Anim. Behav. 22:446-448
- Carl, G.C. 1944. The Vancouver Island marmot. Vict. Nat. 1:77-78
- Hardy, G.A. 1955. The natural history of the Forbidden Plateau area on Vancouver Island, British Columbia. B.C. Prov. Mus. Nat. Hist. Anthropol. Report 1954: B24-B63
- Heard, D.C. 1977. The Behaviour of Vancouver Island marmots (Marmota vancouverensis) MSc thesis, U.B.C.

L. ACKNOWLEDGEMENTS

Lead agency - B.C. Fish and Wildlife Branch

Author - W. T. Munro, B.C. Fish and Wildlife Branch

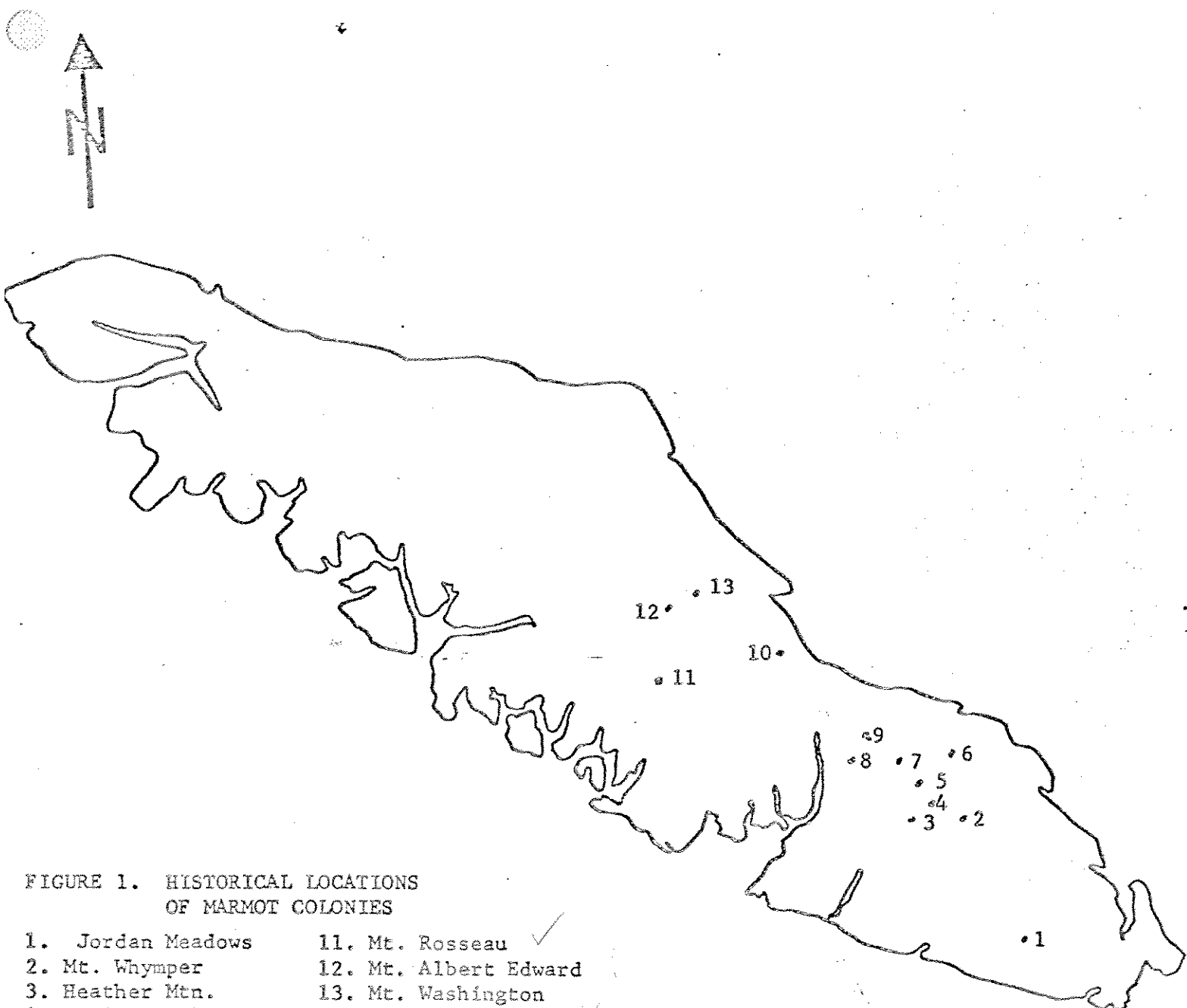


FIGURE 1. HISTORICAL LOCATIONS OF MARMOT COLONIES

- | | |
|--------------------|-----------------------|
| 1. Jordan Meadows | 11. Mt. Rosseau ✓ |
| 2. Mt. Whympers | 12. Mt. Albert Edward |
| 3. Heather Mtn. | 13. Mt. Washington ✓ |
| 4. Butler Peak | |
| 5. Green Mtn. | |
| 6. Mt. De Cosmos | |
| 7. Mt. Moriarty | |
| 8. Mt. Douglas | |
| 9. Mt. Arrowsmith | |
| 10. Beaufort Range | |

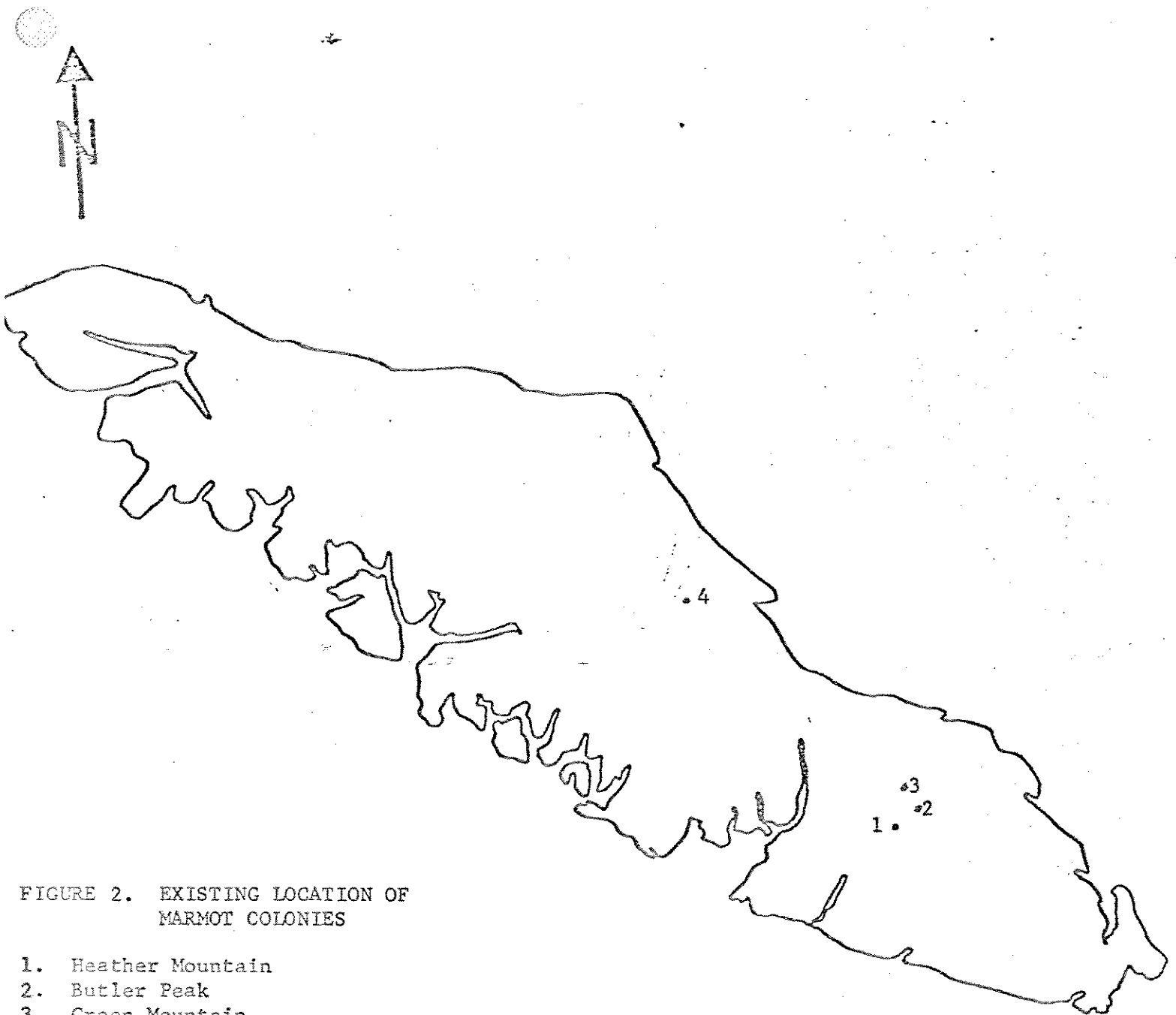


FIGURE 2. EXISTING LOCATION OF MARMOT COLONIES

- 1. Heather Mountain
- 2. Butler Peak
- 3. Green Mountain
- 4. Mt. Washington.