

Flora & Fauna Guarantee Action Statement

#2

This Action Statement was first published in 1991 and remains current. This version has been prepared for web publication. It retains the original text of the action statement, although contact information, the distribution map and the illustration may have been updated.

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Mountain Pygmy-possum *Burramys parvus*



Mountain Pygmy-possum (*Burramys parvus*)
(Illustration by Trish Hart)



Distribution in Victoria (DSE 2002)

Description and Distribution

The Mountain Pygmy-possum (*Burramys parvus* Broom 1895) is the largest of five species of pygmy-possum in Australia; its other common name is Burramys. It is the only Australian mammal restricted to the alpine-subalpine zone above 1400 m; it is restricted to Mountain Plum Pine (*Podocarpus lawrencei*) heathland growing over rock screes.

Burramys is a small omnivore weighing about 45 g; the Bogong Moth (*Agrotis infusa*) is its main food in Victoria. It is the longest-lived small terrestrial mammal known (12+ years). One litter of two, three or four young is born annually in October or November; the young are independent by January. During the non-breeding season, males live outside the female habitat (Broome & Mansergh 1990). Burramys hibernates from May to September.

The total breeding population is about 2300. There are three isolated populations

in Victoria: between Mt Loch and Mt Higginbotham (850 individuals); Mt Bogong (20); and Bogong High Plains (150). The only other population is in Kosciusko National Park (1300).

Land use and management conflicts have arisen over conservation of Burramys. The most important area for the conservation and scientific study of the species is the area between Mt Loch and Mt Higginbotham. About 70% of that area is within the Bogong National Park, which is managed by the Department of Conservation and Environment, and about 30% is within the Mt Hotham Alpine Resort, which is managed by the Alpine Resorts Commission. Except for 0.2 ha on private property, the entire range of the species is on public land. There are detailed maps of the species distribution in the Management Strategy and Guidelines (Mansergh et al. 1989).

Conservation Status

Current status

Wildlife Act 1975	Notable
Baker-Gabb (1990)	Vulnerable

Burrarmys has received the Scientific Advisory Committee's preliminary recommendation for listing as a threatened taxon in Schedule 2 of the Flora and Fauna Guarantee Act 1988.

Reasons for Conservation Status

Population boundaries have been contracting up the mountains since the last ice age, and isolated remnant populations are now small. The total area of habitat available in Victoria is about 2 km².

The densities of breeding animals differ markedly between sites; the greatest density (up to 72 females/ha) is on Mt Higginbotham, where 40% of the total population is concentrated. Elsewhere, densities may be less than 4 female/ha. Thus, relatively small areas of habitat may be vital.

At present, the main threat to the species is habitat destruction and fragmentation from human activities associated with skiing and alpine resort development. These include absolute destruction, weed invasion, erosion, soil deposition, and interruption of the breeding cycle and hibernation.

Dogs (*Canis familiaris*) and Red Foxes (*Vulpes vulpes*) prey on Burrarmys (1% of dog and fox scats in Burrarmys habitat contain Burrarmys remains). There is no evidence of cat predation, but feral Cats (*Felis catus*) are common, and they hunt and breed in the habitat. It is unlikely that these predators have replaced native predators. Rather, they are probably an additional pressure on the populations. Fire can destroy the Mountain Plum Pine heathland, and in the alps it would take many decades to recover. There is a high risk of inappropriate fires being lit by humans near important habitat areas.

Habitat and populations could be eliminated by the warming of the climate caused by the enhanced greenhouse effect. Weeds may invade the habitat and Burrarmys may lose its present competitive advantage over other small mammals, such as the Bush Rat (*Rattus fuscipes*).

In its preliminary recommendation the Scientific Advisory Committee determined that Burrarmys is:

- significantly prone to future threats likely to result in extinction.
- very rare in terms of abundance and distribution

Major Conservation Objective

The major conservation objective is to maintain and enhance the present natural distribution and free-ranging populations of the species in Victoria, specifically to maintain the current annual average population of about 1000 animals over the three subpopulations. It is particularly important to maintain the habitat and population between Mt Loch and Mt Higginbotham.

Management Issues

The Management Strategy and Guidelines canvassed all the major management issues (Mansergh et al. 1989). Most of the habitat occurs in National Parks, and a Burrarmys management zone has been identified for each habitat in Victoria, and site specific constraints have been documented. The critical management issue is conservation of the possum in the Mt Hotham Alpine Resort; the most contentious area is 'Blue Ribbon' run, where the skiing area is serviced by a single lift.

Ecological Issues Specific to the Taxon

The distribution, abundance and life history of the species are well known. The populations need to be monitored because they rely on land which is intensively managed for recreation, and because of the susceptibility of habitat to chance events such as fire and storm-induced erosion and deposition.

Breeding females occupy resource-rich habitats, and in the non-breeding season males and some of the young are forced into habitats that support much lower densities. These habitat types must remain linked in order to maintain the natural densities and structure of the Burrarmys population (Mansergh & Scotts 1989).

Red Foxes and feral Cats may obtain food and extra warmth around resorts over winter, thus maintaining artificially high numbers in the natural environment over summer.

At present, the introduced House Mouse (*Mus musculus*) inhabits resorts. Although not a major problem, it could adversely affect Burrarmys populations by competing for food and changing the predator-prey balance.

Wider Conservation Implications

The Burrarmys population on Mt Higginbotham is possibly the best-known small mammal population in Australia, as 12 years of ecological data have been collected. Scientifically, this population provides a data base of national importance for studies on the dynamics of small mammal populations, genetic conservation/island biogeography, and the enhanced greenhouse effect.

The results of previous studies on the species have led to an increasing awareness of the need for improving environmental management in alpine areas, particularly in the ski resorts. More effort is needed in developing techniques and codes of practice for developments in the ski resorts-particularly ski runs, road and track works, drainage-and the use of local native plants in all revegetation programs.

Social and Economic Issues

A socio-economic assessment in 1988 identified very high intangible benefits from the conservation of Burrarmys (Grace 1988). As of 1990, the major costs that have been identified (apart from the increased management and monitoring costs of DCE) were opportunity costs to the Alpine Resorts Commission, one lift company, and one property owner, associated with developments for downhill snow skiing. A recent strategy for the development of Mt Hotham (Kinhill 1989) proposed large-scale resort developments, yet recognised many of the environmental constraints. This strategy remains under review; some reports indicate that maximum

development within the Mt Hotham Alpine Resort is unlikely to proceed (e.g. Elias 1990).

The present owner of the only private property inhabited by *Burrhamys* recognised in his submission to the Draft Management Strategy and Guidelines that the 0.2 ha of habitat is steep, rocky and unsuitable for development (personal communication from Mr Clarke, Director of Farrow Corporation).

The Alpine Resorts Commission is required to promote summer usage of the Victorian alpine resorts. A public display on *Burrhamys* is in the Mt Hotham Alpine Resort, but there may be more scope for increasing the interest of summer tourists in *Burrhamys*.

Management Action

Previous Management Actions

- Between 1979 and 1991 there was intensive research into the biology, ecology and conservation of the species, and 21 papers have been published.
- The Management Strategy and Guidelines prepared by Mansergh et al. (1989) are now being implemented. Each area of known habitat is included in a *Burrhamys* management zone which has site-specific constraints. Appropriate recommendations and guidelines have been included in management plans for the Alpine National Park: Bogong Planning Unit (DCE 1989).
- An extension was made to the Bogong National Park to include vital habitat on the western slopes of Mt Higginbotham (National Parks Amendment Act 1983).
- An artificial corridor and tunnel was constructed under Alpine Way, restoring the habitat and the social organisation of the population on Mt Higginbotham (Mansergh & Scotts 1989). Data from the *Burrhamys* program have been used in strategies and techniques for ski slope development.
- Ongoing co-operative management with other land management agencies (Alpine Resorts Commission and State Electricity Commission) has defined allowable works and mechanisms for consultation. On Mt Higginbotham, vital habitat has been adequately protected through agreements between the Alpine Resorts Commission and the Department that define allowable works and mechanisms for consultation. A captive breeding colony has been established, and is housed at Healesville Sanctuary for education, display and scientific study (e.g. study of hibernation).
- The re-introduction of captive-bred animals to the wild was investigated, but was rejected because of an absence of suitable vacant habitat and because experimental results suggested that animals bred in captivity may be less able to hibernate (Geiser 1990).
- A public awareness campaign concerning the conservation of the possum has continued over several years. For example, 9000 *Burrhamys* posters have been distributed, and the study of this pygmy-possum is included in a Year 10 geography text (Lower et al. 1990). A predator control program in the Mt Hotham Alpine Resort began in 1989.

Intended Management Actions

Monitoring

Annual monitoring of populations and habitat condition on Mt Higginbotham is required for at least five years. The population monitoring involves trapping in both the national park (which is the control area) and the Mt Hotham Alpine Resort to ensure that population declines or disturbances are recorded and that ameliorative action is taken. Other populations will be monitored every two to four years. The spread of weeds in the management zones and the damage to habitat will be monitored.

Predator and Pest Control

Predators will be controlled in the Mt Hotham Alpine Resort and other areas, and regulations about pets in the Alpine Resorts will be enforced. There is a need for low-level monitoring of the House Mouse and Black Rat (*Rattus rattus*), and remedial action will be undertaken if required.

Habitat Security

The security of the small area of private land containing habitat will be increased by including it in the public estate or by providing permanent protection under the planning provisions of the Alpine Resorts Act 1983.

Resort Planning

There will be ongoing (conservation) input into the strategic planning for the resorts; specifically, development of more environmentally sound techniques for resort development, slope grooming and maintenance. Permissible activities within the *Burrhamys* management zone will be monitored (e.g. type and extent of skiing development in the 'Blue Ribbon' area, use of over-snow vehicles). Within the resort there is some capacity for enhancing the habitat and creating corridors; this should be done in the context of the overall plan of the resort.

Legal Provisions

The *Burrhamys* management zone will be formally recognised as environmentally significant and sensitive under the Alpine Resorts Act 1983. The critical habitat for the species will be determined under the Flora and Fauna Guarantee Act 1988.

Extension

Extension activities, principally in the alpine resorts, will be used to demonstrate the conservation requirements of *Burrhamys* and the ways that the public can help control the spread of weeds and rubbish, and help the public to understand the need for predator control and revegetation with native plants.

Other Desirable Management Actions

- Investigate problems in genetic conservation, using the Burramys population as a basis.
- Extend the captive colony to include another zoological institution either in Australia or overseas.
- Investigate the desirability of having the Mountain Plum Pine listed as protected flora under section 42 of the Flora and Fauna Guarantee Act 1988.

Legislative Powers Operating

Legislation

In addition to recognition under the legislation noted previously:

- Alpine Resorts Act 1983-areas of environmental significance and sensitivity (section 9).
- State Electricity Commission Act 1958 and Kiewa Works Protection Regulations (Mt McKay only).
- Flora and Fauna Guarantee Act 1988

Licence or Permit Conditions

A permit for live trapping must be obtained from the Director, Flora and Fauna Division; each permit would require animals to be released at the point of capture. No permits will be issued unless the proposed work is within the broad parameters of the conservation program. To modify areas in Burramys management zones within alpine resorts, the agreement of the Department and the Alpine Resorts Commission is required. The Commission is the responsible planning authority within alpine resorts; elsewhere, the areas of habitat are managed as national parks. Under the Alpine Resorts Act, the Commission has recognized the importance of Burramys habitat and the management zones.

Consultation and Community Participation

There has been extensive consultation with interested parties, and the Draft Management Strategy and Guidelines were available for public comment for six months. Submissions were received from all relevant government agencies, the owner of land containing habitat, ski clubs at Mt Hotham, the Victorian Ski Association, and conservation groups. The adopted Management Strategy and Guidelines have been operating since 1989.

Implementation, Evaluation and Review

The conservation status of the species and the effectiveness of management actions in this Action Statement should be reviewed five years after publication.

Contacts

Species Management

R. Patrick (Deputy Regional Manager) and G. Johnson (Flora & Fauna Guarantee Officer) North-East Region, DCE
Paul Kelly (Senior Wildlife Planner) Bairnsdale Region, DCE

Biology

I. Mansergh, Flora & Fauna Guarantee Unit, Melbourne/Arthur Rylah Institute for Environmental Research

Extension

Bookshop, Department of Conservation & Environment, 240 Victoria Parade, East Melbourne.

Prepared By

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FURTHER INFORMATION

Department of Natural Resources & Environment
Threatened Flora and Fauna Program
P.O. Box 41, East Melbourne, Vic, 3002
(03) 9412 4175
or Regional Offices

Compilers

Ian Mansergh, Paul Kelly,
Glen Johnson

Further information

Further information can be obtained from Department of Sustainability and Environment Customer Service Centre on 136 186.

Flora and Fauna Guarantee Action Statements are available from the Department of Sustainability and Environment website: <http://www.dse.vic.gov.au>

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A full bibliography is provided in Mansergh et al. (1989).

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