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MAMMAL CONSERVATION: THE MOUNTAIN PYGMY-POSSUM

INDIRECT IMPACTS OF THE FERAL HORSE ON THE MOUNTAIN PYGMY-POSSUM

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The Mountain Pygmy-possum (*Burramys parvus*) is a small, ground-dwelling possum, which occurs in patches of boulder-field habitat in Kosciuszko National Park and the Victorian Alps at elevations above 1,200 m (Broome et al. 2012; Broome, pers. comm., September 2018). It is the only member of its genus and the only Australian mammal limited in its distribution to the alpine/sub-alpine environment. It is the only marsupial that hibernates beneath snow cover during winter, waking in spring to feast on migratory bogong moths, which occupy the boulder-fields soon after snowmelt. Heathland shrubs surrounding the boulder-fields provide additional dietary items, including a variety of arthropods, nectar, fruits and seeds (Gibson et al. 2018). The shrubs also promote a sub-nivean space during winter, which is used by possums during their short arousal periods throughout the hibernation period (Broome and Geiser 1995) and they provide protection from predatory feral cats and foxes after snow melts. Adult weights in spring are around 35–45 g, but body weight may double, reaching over 80 g in autumn (Heinze et al. 2004).

The species is listed as ‘Endangered’ under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and the *Biodiversity Conservation Act 2016* (NSW). It is ‘Threatened’ under the *Flora and Fauna Guarantee Act 1988* (Vic), and ‘Critically Endangered’ on the 2008 IUCN Red List of Threatened Species. The total population is estimated at around 3,050 adults (1,015 in NSW; 2,035 in Victoria) (Broome et al. 2012; Broome, pers. comm., September 2018).

Two populations of Mountain Pygmy-possums occur in Kosciuszko National Park, scattered in small colonies between Dead Horse Gap and Gungartan Pass in the south and from Snow Ridge to Happy Jacks Valley in the northern region (Broome et al. 2013; Bates and Broome, unpublished data). Major threats include predation from feral cats and foxes, loss of habitat from developments and impacts of feral herbivores, drying and siltation of boulder streams, and loss of snow cover from climate change (Bates 2017).

Feral horses are currently not abundant around areas of Mountain Pygmy-possum habitat. However, they have been seen grazing among boulder-fields and feeding on sedges in lakes on the western fall of Mt Kosciuszko, on the Summit Road habitat site 2 km from Charlotte Pass and at Dead Horse Gap. Horse presence (dung heaps) is evident around the Rough Creek habitat site in Northern Kosciuszko

National Park (Broome, pers. comm., September 2018). Expansion of horse numbers throughout the alpine area and parts of the Jagungal Wilderness Area (e.g. Gungartan) can be expected without effective control, particularly with continuing climate change-induced droughts. Resulting impacts include trampling of alpine shrubs and sedimentation of streams, evident where horses are currently abundant. This is likely to cause loss of food resources and enhancement of feral predator impacts through reduced cover and creation of trails in summer and disruption of the sub-nivean space in winter. Increased sedimentation of streams, which run into boulder-field habitats, is likely to decrease their depth, a key predictor of high-quality habitat (Broome et al. 2013; Broome, pers. comm., September 2018).

References

- Bates, H. L. (2017) *Assessing Environmental Correlates of Populations of the Endangered Mountain Pygmy-possum (Burrhamys parvus) in Kosciuszko National Park, New South Wales*. PhD thesis, University of New South Wales, Sydney.
- Broome, L., Archer, M., Bates, H., Shi, H., Geiser, F., McAllan, B., Heinze, D., Hand, S., Evans, T. and Jackson, S. (2012) A Brief Review of the Life History of, and Threats to, *Burrhamys parvus* with a Pre-history Based Proposal for Ensuring that it has a Future. In D. Lunney and P. Hutchings (eds), *Wildlife and Climate Change: Towards Robust Conservation Strategies for Australian Fauna*, pp. 114–126. Royal Zoological Society of NSW, Mosman, NSW.
- Broome, L., Ford, F., Dawson, M., Green, K., Little, D. and McElhinney, N. (2013) Re-assessment of Mountain Pygmy-possum *Burrhamys parvus* Population Size and Distribution of Habitat in Kosciuszko National Park. *Australian Zoologist* 30(4): 381–403. doi.org/10.7882/AZ.2013.
- Broome, L. S. and Geiser F. (1995) Hibernation in Free-living Mountain Pygmy-possums, *Burrhamys parvus* (Marsupialia: Burramyidae). *Australian Journal of Zoology* 43: 373–379.
- Gibson, R. K., Broome, L. and Hutchison, M. F. (2018) Susceptibility to Climate Change via Effects on Food Resources: The Feeding Ecology of the Endangered Mountain Pygmy-possum (*Burrhamys parvus*). *Wildlife Research* 45(6): 539–550. https://doi.org/10.1071/WR17186.
- Heinze, D., Broome, L. and Mansergh, I. (2004) A Review of the Ecology and Conservation of the Mountain Pygmy-possum *Burrhamys parvus*. In R. L. Goldingay and S. M. Jackson (eds), *The Biology of Australian Possums and Gliders*, pp. 254–267. Surrey Beatty & Sons, Chipping Norton, NSW.
- Shi, H., Paull, D., Broome, L. and Bates, H. (2015) Microhabitat Use by Mountain Pygmy-possum (*Burrhamys parvus*): Implications for the Conservation of Small Mammals in Alpine Environments. *Australian Ecology* 40: 528–536. http://dx.doi.org/10.1111/aec.12220.



Mountain Pygmy-possum eating Mountain Plum-pine seed.

Source: Linda Broome.



Feral horses grazing near Mountain Pygmy-possum habitat on the western side of Mt Kosciuszko, December 2013.

Source: Linda Broome.