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MAMMALS: IMPACTS OF FERAL HORSES – THE BROAD-TOOTHED RAT

THE BROAD-TOOTHED RAT (*MASTACOMYS FUSCUS*) AND FERAL HORSE IMPACTS

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Feral horse impacts are directly influencing the occurrence of the small native mammal the Broad-toothed Rat (*Mastacomys fuscus*) within parts of its range. Its habitat is being impacted from browsing and trampling associated with the expansion of feral horse populations. This rodent has a fragmented distribution, being mainly endemic to the alpine and sub-alpine regions of South Eastern Australia (Happold 2008). It is sometimes described as an ‘old endemic’, having had a wider distribution in the Pleistocene than today, and is one of a number of Australian native mice that have no really close relatives anywhere else. It is listed as endangered in Victoria (Department of Sustainability and Environment 2013), vulnerable in NSW (Office of Environment and Heritage 2018) and the mainland population is listed as vulnerable by the Commonwealth (Department of the Environment and Energy 2018). Populations are known from Victoria, the ACT and in NSW at Kosciuszko National Park and adjacent lands on both Crown land and private tenure. There is also a disjunct population (separated by 450 km of unsuitable habitat) in the Barrington Tops National Park (O’Brien et al. 2008). These locations vary in altitude and vegetation, but are similar in having high rainfall, cool summers and cold winters, and a dense ground cover of grasses, sedges and shrubs (Green and Osborne 2003). Its presence is readily ascertained by its distinctive olive-green scats (Happold 1998; Triggs 2004). Individuals produce 200 to 400 pellets each day, which last many months (Happold 1998), thereby confirming the presence or absence of the species at a site (O’Brien et al. 2008; Green and Osborne 2003).

Sites supporting vegetation communities known to provide prime habitat for this native species (Green and Osborne 2003) were investigated for its presence in relation to the impacts of feral horses. There were 180 sites assessed. The study was conducted in the North Eastern Wild Horse Area (Office of Environment and Heritage 2016) in Northern Kosciuszko National Park, as well as some adjacent areas such as Happy Jacks Plain, between November 2016 and April 2017. The distinctive scats of the Broad-toothed Rat were found in 74% of sites investigated. This study found a significant negative relationship between the presence of the Broad-toothed Rat and the increasing impacts of feral horses. Consequently, no native rat scats were located in sites severely impacted by feral horses. As the impacts of feral horses declined, the presence and abundance of the Broad-toothed Rat increased. Locations with no evidence of feral horses, including all Happy Jacks Plain sites, had a high incidence of Broad-toothed Rat presence.

In moderate impact sites there was a high proportion of sites with no evidence of native rats (over 35%), while the remainder of sites only supported low abundances of the species. In contrast, sites with no feral horse or low feral horse impacts had much greater numbers of *Mastacomys*.

In 88% of sites with low impacts and 78% of sites with moderate impacts, greater feral horse impacts were recorded on adjacent slopes or parts of the flats further away from watercourses. Because high-impact levels generally indicate that Broad-toothed Rats will be absent or at low abundance, high feral horse damage adjacent to watercourses suggest that the Broad-toothed Rat is likely restricted to habitat refuges. However, as the feral horse population increases and suitable habitat becomes more widely dispersed in the landscape, populations are likely to become smaller and increasingly isolated. Consequently, the overall range of the species will be expected to contract and become increasingly restricted within Kosciuszko National Park.

Extensive corridors of tussock grassland traverse large sections of the North Eastern Wild Horse Area in valleys heavily impacted by feral horses, notably the Eucumbene and Murrumbidgee Rivers and Tantangara Creek. Such corridors provide important remnant habitat for the Broad-toothed Rat; however, with increasing horse numbers, such remnant habitat is likely to diminish. It is recommended that, where breaks in the dense vegetation along such watercourse systems occur, these are rehabilitated to further increase the importance of such corridors for the long-term persistence of the Broad-toothed Rat in this section of the Park.

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The Broad-toothed Rat captured at Horse Camp, Kosciuszko National Park.

Source: Martin Schulz.



Severe feral horse impacts along Tantangara Creek, North Kosciuszko National Park.

Source: Martin Schulz.



Pugging—severe feral horse impacts, Pigeon Square Creek.

Source: Martin Schulz.



No feral horse impacts along Happy Jacks Creek.

Source: Martin Schulz.

Right: Guthega Skink (*Liopholis guthega*)—An endangered species.

Source: Mel Schroder.