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HIGH MOUNTAIN CATCHMENT IMPACTS

IMPACTS OF FERAL HORSES ON TREELESS DRAINAGE LINES IN NATIONAL PARKS AND STATE FORESTS OF THE AUSTRALIAN ALPS

Dr John Wright,¹ Daniel Brown,² Kally Yuen³ and Dr David Tongway⁴

¹Science and Management Effectiveness Branch, Parks Victoria; ²Regional Planning, Eastern Region, Parks Victoria; ³Australian Mathematical Sciences Institute, University of Melbourne; ⁴The Australian National University, Canberra, and University of Newcastle

Feral horses are widespread across the Australian Alps, including national parks and state forests, and have been present in the landscape since the 1890s (Dyring 1990). They degrade alpine and sub-alpine ecosystems and damage habitat of a range of threatened species. Concerns about their impacts across the Alps have existed since at least the 1950s (Costin 1954, 1957). Impacts on riparian and wetland ecosystems, especially those impacts associated with erosion and damage to streams, are of particular concern. These ecosystems include the Commonwealth-listed Alpine Sphagnum Bogs and Associated Fens Endangered Ecological Community, and synonymous communities listed under NSW and Victorian state legislation. They also provide important habitat for a range of Commonwealth- and/or state-listed threatened species, including the Alpine She-oak Skink (Clemann 2001), Alpine Water Skink (Meredith et al. 2003; Steane et al. 2005), Alpine Bog Skink (Clemann et al. 2001) and Guthega Skink (Green and Osborne 2012).

Despite concerns about impacts on natural values and increasing feral horse abundance (Dawson 2009; Cairns 2014), there has been little research to quantify the impacts of feral horses on natural values of the Alps. Furthermore, studies examining feral horse impacts have generally focused on localised areas. These studies are useful for understanding the nature of impacts at a site-scale; however, developing effective management strategies across the Australian Alps national parks and state forests requires an understanding of how widespread these impacts are.

Our study attempted to address this knowledge gap by investigating impacts of feral horses on treeless drainage lines across the Alps. The study included 186 sites across Namadgi National Park in the ACT, Kosciuszko National Park and Bago and Maragale state forests in NSW, and the Alpine National Park in Victoria. We assessed nine variables related to soil and stream stability and vegetation cover, which in turn influence ecosystem function and habitat quality. These variables include damage to streambanks, soil and vegetation disturbance, sedimentation, erosion and projected foliage cover. We also recorded evidence of the presence of horses, wombats, macropods, feral goats, rabbits, feral

pigs and deer. In addition, we noted any evidence of a site being burnt and whether it contained the Alpine Sphagnum Bogs and Associated Fens Endangered Ecological Community listed under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).

We found significant differences among feral horse-occupied and feral horse-free sites for all soil and stream stability variables assessed. For all variables assessed, the average score (and hence, condition) was lower in horse-occupied areas. No significant differences were detected among horse-present and horse-free sites for projected foliage cover and the proportion of foliage cover that is native.

To remove the potential influence of grazing and browsing mammals other than feral horses, data were re-analysed excluding sites where evidence of the presence of any of these other species was detected. Mean scores were very similar to those for the full dataset, suggesting that the influence of other grazers and browsers is minor.

Separate analyses were done considering only sites classified as the Alpine Sphagnum Bogs and Associated Fens Endangered Ecological Community. Seventy-eight sites were included in this analysis (46 horse-present; 32 horse-free). Results were similar to those for the full dataset, providing clear evidence that horses degrade this threatened community.

The sites in poorest condition were occupied by horses, and even some sites in extremely remote areas were degraded. Damage included heavily grazed vegetation, pugging damage, large areas of exposed soil and streambank collapse. Left unchecked, this degradation will continue. Active management is necessary to reduce the impacts of feral horses and allow the ecosystem to recover. Even with active management, feral horse impacts may persist for a long time (Wimbush and Costin 1979, 1983). However, when the pressure of feral horses is reduced sufficiently, recovery can occur (Prober and Thiele 2007; Wild and Poll 2012). The next major step is to see whether recovery seen at a localised scale can be achieved across wider areas of the landscape, and how the techniques available to land managers can best achieve this. Adaptive management offers an efficient way to address this challenge.

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Wetland damage near the Tin Mines Trail, Pilot Wilderness, Kosciuszko National Park, 2013.

Source: Graeme L. Worboys.