

# FERAL HORSES

EVIDENCE BRIEF

OCTOBER 2021



## INTRODUCTION

Kosciuszko National Park is part of the Snowy Mountains region of New South Wales, established as a protected area preserved in the public interest. It is an area of scientific uniqueness, with diverse native flora and fauna rich with endemic species, and distinctive geology and hydrology. It is an area of active research in geology, hydrology, climate science, ecology and other disciplines.<sup>1</sup>

The Australian Academy of Science hosted *Feral Horse Impacts: The Kosciuszko Science Conference* in 2018 to showcase and communicate the science of feral horse impacts in Kosciuszko National Park.<sup>2</sup> The conference was a response to the New South Wales *Kosciuszko Wild Horse Heritage Act 2018*, which downgraded the scientific advice mechanisms and established a new Community Advisory Panel that did not require scientific representation as part of its legislated membership.

The Kosciuszko Science Conference, and the special edition of the scientific journal *Ecological Management and Restoration* published in parallel,<sup>3,4</sup> established that feral horses have substantial impacts on the environmental values of Kosciuszko National Park, including its unique landscape, vegetation, fauna, soils and hydrology. These impacts have led the Academy to support a policy position of removing horses from Kosciuszko National Park.<sup>5,6</sup> However, supporters of the *Kosciuszko Wild Horse Heritage Act 2018* argue that the cultural significance of these horses are integral to the heritage values of the National Park.<sup>7,8</sup>

This evidence brief summarises research on Kosciuszko National Park since 2018 and developments in science policy. Social and political developments are also discussed briefly to provide context.

The issues raised in 2018 with feral horses in the national parks are still present. Management strategies have been insufficient in alleviating the impacts of feral horses. The vulnerability of Kosciuszko National Park to feral horse impacts was exacerbated by the extreme bushfires of the 2019–20 season, which burned a large proportion of the park. Horse removals are very slow compared with the rate of population increase, so the extent of impact continues to grow.

## NEW SOUTH WALES NATIONAL PARKS MANAGEMENT

The *Kosciuszko National Park draft wild horse heritage management plan* (the draft management plan) was released by the NSW Department of Planning, Industry and Environment on 1 October 2021 for a one-month consultation period.<sup>9</sup> Released at the same time were the reports of the Scientific Advisory Panel<sup>10</sup> and Community Advisory Panel,<sup>11</sup> and the *Aboriginal cultural values report*.<sup>12</sup> The draft management plan recognises the need to protect the environmental values of the national park, citing scientific evidence that ‘shows that the distribution and abundance of wild horses in the park is causing significant negative impact on the environmental values of the park’. The draft management plan establishes three management zones in Kosciuszko National Park: wild horse prevention areas, where no horses currently exist and from which horses are to be excluded; wild horse removal areas, where horses are present and from which horses are to be removed; and wild horse retention areas, where horses are present and in which horse populations are to be reduced to manageable levels (around 3,000 head). The draft management plan discusses capture and control methods available for use in the park.

The final report of the Scientific Advisory Panel,<sup>10</sup> while acknowledging the impacts of the feral horses on the environmental and scientific values of the park, acknowledges that ‘precise quantitative relationships between horse density and negative impact are not fully understood’. For this reason, a target population size is *not* recommended in the Scientific Advisory Panel report, which instead recommends an adaptive management strategy of ‘continual monitoring of performance against objectives and adjustment of actions depending on feedback from monitoring’. The Scientific Advisory Panel recommends systematically planned management with specific, evidence-based targets. Crucially, the panel recommends active, frequent and ongoing monitoring of horse populations, environmental impacts and Aboriginal heritage sites, while the draft management plan requires only that the June 2027 review of the plan should ‘take into account any monitoring and research data that is available at that time’.

## CURRENT RESEARCH

### Horse numbers

A recent (2019) report on horse numbers in the Australian Alps found an increase from around 3,000 in the North Kosciuszko area in 2014 to around 16,000 in 2019.<sup>13</sup> These numbers are estimates, and precision is difficult given the nature of the surveys and the wide area.

While the Scientific Advisory Panel endorsed the methodology of these surveys, it recommended against basing environmental management decisions on park-wide population estimates. Rather, it recommended environmental impact monitoring, coupled with more precise, smaller scale surveys, as this would provide more reliable data about the relationship between horse density and environmental impact. This relationship will be

different for the varied ecosystems within the park, and may change with time and conditions. Moreover, it is likely that some ecosystems will suffer damage even at small horse populations.

An additional survey on horse numbers in Kosciuszko National Park in 2020 – after the bushfires – provided an estimated population of around 14,400 horses in the park.<sup>14</sup>

### Horse impacts

A recent meta-analysis shows feral horse activity reduces environmental quality in ecosystems globally.<sup>15</sup> The study shows that after accounting for other factors, wild horses negatively affect the ecosystem values of the natural places they inhabit.

Recent studies have also demonstrated that feral horses increase suspended sediment in subalpine streams,<sup>16</sup> and that feral horses act as reservoirs for disease, with *Clostridioides difficile*<sup>17</sup> and *Strongylus vulgaris*<sup>18</sup> detected in wild horse faeces.

### Fire impacts

The 2019–20 Australian megafires impacted fauna habitat in much of southern and eastern Australia,<sup>19</sup> including Kosciuszko National Park.<sup>20</sup> There were huge impacts on native plants,<sup>21</sup> invertebrates,<sup>22</sup> vertebrates<sup>23</sup> and ecosystems.<sup>24</sup>

An analysis of the area burned with respect to feral horse ranges showed that areas with high horse populations were not burned heavily or at all, suggesting that the fires are unlikely to have substantially reduced horse numbers.<sup>20</sup> Unburned areas are now the chief source of food and shelter for surviving native wildlife, with feral horse populations likely to exacerbate the impacts of the bushfires in both burned and unburned areas by impairing natural regeneration.



Carrolls Creek, in the northern section of Kosciuszko National Park, where high horse activity has severely degraded the streambank with high levels of erosion.  
CREDIT: PHOTO BY ZAC WALKER

## Analyses by species

Some analyses of horse impacts relate to individual species. The following recent analyses have been identified.

A study using horse exclusion areas to determine the impacts of feral horses on the habitat of the critically endangered corroboree frog (*Pseudophryne pengilleyi*) found that horses severely compacted pool-edge litter at the edge of corroboree frog habitats. This likely reduced the availability and quality of breeding sites.<sup>25</sup>

Feral horse activity is known to impact the range and habitat of the vulnerable broad-toothed rat (*Mastacomys fuscus*).<sup>26</sup> This species' range has also been affected by severe fire and by frequently recurring fire. Each of these factors operates independently, but the cumulative impact on the broad-toothed rat is likely to be severe. With grazing by horses likely to slow or prevent recovery of dense grass tussocks after fire, the overall outlook is for ongoing population loss, reductions in population size and isolation of remaining populations (D. Driscoll, pers. comm.).

The critically endangered fish, the stocky galaxias (*Galaxias tintangara*), had more than half its range burned in January 2020. Fire severity was variable, and impacts on the species were not catastrophic, although as a precaution an off-site population has been established.<sup>27,28</sup> The construction by NSW National Parks and Wildlife Service of two horse exclusion fences, initially scheduled for early 2020 to protect approximately 720m of the most vulnerable horse-impacted stream habitat, was delayed due to the fires but was completed in late March 2021 (M. Lintermans, pers. comm.).

Assessment of the impacts of the 2020 bushfires on the threatened Rieks spiny crayfish (*Euastacus rieki*) in northern Kosciuszko National Park noted the significant impact that horse trampling was having on stream edges and burrows (M. Lintermans, pers. comm.).

## Economic benefits

An economic analysis by Frontier Economics found the economic benefits of feral horse control in Kosciuszko National Park would be significant – from \$19 million to \$50 million per year. Benefits would be generated from improved recreation and use of the park, improvements to river environments and water quality, and reduced vehicle crashes involving horses.<sup>29</sup>

## Legal developments

In 2020, Judge O'Bryan of the Federal Court of Australia heard a case brought by the Australian Brumbies Alliance (ABA), concerning the heritage values of the horses in the Bogong High Plains and Eastern Alps within Alpine National Park in Victoria.<sup>7</sup>

The respondent, Parks Victoria, proposed to trap and remove feral horses from these regions, as set out in *Protection of the Alpine National Park: Feral Horse Strategic Action Plan 2018–2021*.<sup>30</sup> Alpine National Park is part of the Australian Alps National Parks that are National Heritage Listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The EPBC Act also obliges the Australian Government under Article 8 of the Convention on Biological Diversity to protect biodiversity in an area that is listed. The ABA contended that Parks Victoria had an obligation to seek approval of the Federal Minister to remove the horses, citing the genetic biodiversity of the horses and their cultural values.

Judge O'Bryan found against the ABA and dismissed the case.

Judge O'Bryan considered the scientific and cultural values of the national park, whether removing the horses would be likely to have a significant impact on the national heritage values of the Australian Alps, and whether Park Victoria's action would be allowable under the Convention on Biological Diversity. The judge found that the cultural values did not stand alone in reference to Australia's obligations under the convention. He found that biological diversity itself has cultural and aesthetic value, and it is this quality that is protected under the convention. The convention is not concerned with conservation of cultural or social values per se but as an intrinsic part of obligations to protect ecosystems, habitats and species, and communities.

In considering the science, Judge O'Bryan found that the ABA did not establish that there are unique genetic features in the populations of brumbies on the Bogong High Plains, and that the arguments they presented 'do not rise above conjecture'. The evidence from the ABA's expert witness on the impacts of horses in the national park 'was not supported by scientific studies and was not persuasive'; his opinions were 'idiosyncratic and relied on conjecture'. In contrast, Park Victoria's expert witnesses' report was highly influential in Judge O'Bryan's thinking, as was the depth and quality of the science it reflected and relied on.

## CONCLUSION

Between the ongoing impacts of feral horses and the impacts of the 2019–20 bushfires, it is likely that the condition of Kosciuszko National Park has deteriorated from the state it was in at the time of the Kosciuszko Science Conference in 2018. Critical decisions, such as those taken by the recently released management plan, will prove significant for the ongoing care of Kosciuszko National Park.

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## REFERENCES

- Slattery, D. & Worboys, G. L. *Kosciuszko: A Great National Park*. (Envirobooks, 2020).
- Worboys, G. L., Driscoll, D. & Crabb, P. *Feral Horse Impacts: The Kosciuszko Science Conference - Conference Abstracts*. (Australian Academy of Science, The Australian National University and Deakin University, 2018).
- Driscoll, D., Scheele, B. & McDonald, T. Feral horses in the Australian Alps: an introduction to the special issue. *Ecol. Manag. Restor.* 20, 3–3 (2019).
- Driscoll, D. A. *et al.* Impacts of feral horses in the Australian Alps and evidence-based solutions. *Ecol. Manag. Restor.* 20, 63–72 (2019).
- Australian Academy of Science. Letter - Kosciuszko Wild Horse Heritage Bill 2018. <https://www.science.org.au/files/userfiles/support/documents/letter-aas-jb-re-kosciuszko-wild-horse-heritage-bill-2018.pdf> (2018) [Accessed 8 September 2021].
- Australian Academy of Science. Scientists call on NSW Premier to inspect feral horse damage in Kosciuszko. <https://www.science.org.au/news-and-events/news-and-media-releases/scientists-call-nsw-premier-inspect-feral-horse-damage> (2019) [Accessed 8 September 2021].
- Federal Court of Australia. *Australian Brumby Alliance Inc v Parks Victoria Inc [2020] FCA 605 - BarNet Jade - BarNet Jade*. (2020).
- Australian Brumby Alliance. About Us. <https://australianbrumbyalliance.org.au/about/> [Accessed 8 September 2021].
- NSW National Parks & Wildlife Service. *Kosciuszko National Park Draft Wild Horse Heritage Management Plan*. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Parks-management-other/kosciuszko-national-park-draft-wild-horse-heritage-management-plan-210347.pdf> (2021).
- Kosciuszko Wild Horse Scientific Advisory Panel (SAP). *Final Report of the Kosciuszko Wild Horse Scientific Advisory Panel*. (2020).
- Kosciuszko Wild Horse Community Advice Panel. *Final report of the Kosciuszko Wild Horse Community Advisory Panel*. <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Pests-and-weeds/Kosciuszko-wild-horses/kosciuszko-national-park-wild-horse-community-advisory-panel-report.pdf>.
- Donaldson, S. & Feary, S. *Aboriginal cultural values report: investigating Aboriginal people's associations with wild horses in Kosciuszko National Park*. NSW. (2021).
- Cairns, S. *Feral Horses in the Australian Alps: the analysis of aerial surveys conducted in April-May, 2014 and April-May 2019*. (2019).
- Cairns, S. *The results of a survey of the wild horse populations in the Kosciuszko National Park*. (2020).
- Eldridge, D. J., Ding, J. & Travers, S. K. Feral horse activity reduces environmental quality in ecosystems globally. *Biol. Conserv.* 241, (2020).
- Scanes, P. R. *et al.* Feral horses (*Equus caballus*) increase suspended sediment in subalpine streams. *Mar. Freshw. Res.* 72, 1290–1302 (2021).
- Hain-Saunders, N., Harvey, A. & Riley, T. Wild horses and horse manure as reservoirs for *Clostridioides difficile* in Australia. *Int. J. Infect. Dis.* 101, 400 (2020).
- Harvey, A. *et al.* Wild horse populations in south-east Australia have a high prevalence of *Strongylus vulgaris* and may act as a reservoir of infection for domestic horses. *Int. J. Parasitol. Parasites Wildl.* 8, 156–163 (2019).
- Ward, M. *et al.* Impact of 2019–2020 mega-fires on Australian fauna habitat. *Nat. Ecol. Evol.* 2020 410 4, 1321–1326 (2020).
- Invasive Species Council. *Bushfire impacts on Kosciuszko feral horse populations*. (2020)
- Gallagher, R. V. *et al.* High fire frequency and the impact of the 2019–2020 megafires on Australian plant diversity. *Divers. Distrib.* 27, 1166–1179 (2021).
- Hyman, I. T. *et al.* Impacts of the 2019–2020 bushfires on New South Wales biodiversity: a rapid assessment of distribution data for selected invertebrate taxa. *Tech. Reports Aust. Museum* 32, 1–17 (2020).
- Dickman, C. R. Ecological consequences of Australia's 'Black Summer' bushfires: Managing for recovery. *Integr. Environ. Assess. Manag.* (2021) doi:10.1002/IEAM.4496.
- Collins, L. *et al.* The 2019/2020 mega-fires exposed Australian ecosystems to an unprecedented extent of high-severity fire. *Environ. Res. Lett.* 16, 044029 (2021).
- Foster, C. N. & Scheele, B. C. Feral-horse impacts on corroboree frog habitat in the Australian Alps. <https://doi.org/10.1071/WR18093> 46, 184–190 (2019).
- Eldridge, D. J., Travers, S. K., Val, J., Zaja, A. & Veblen, K. E. Horse Activity is Associated with Degraded Subalpine Grassland Structure and Reduced Habitat for a Threatened Rodent. *Rangel. Ecol. Manag.* 72, 467–473 (2019).
- Lintermans, M. Double trouble: this plucky little fish survived Black Summer, but there's worse to come. *The Conversation* (2020).
- Allan, H., Duncan, R. P., Unmack, P., White, D. & Lintermans, M. Reproductive ecology of a critically endangered alpine galaxiid. *J. Fish Biol.* 98, 622–633 (2021).
- Frontier Economics Pty Ltd. *Reining in feral horses in Kosciuszko National Park*. <https://invasives.org.au/wp-content/uploads/2021/01/Reining-in-feral-horses-in-Kosciuszko-National-Park-2021.pdf> (2021).
- Parks Victoria. *Protection of the Alpine National Park: Feral Horse Strategic Action Plan 2018-2021*. (2017).