



14 September 2023

Committee Secretary
Senate Environment and Communications References Committee
PO Box 6100
Parliament House
Canberra ACT 2600

Impacts and management of feral horses in the Australian Alps

Questions taken on notice

Dear Secretary,

I write to provide a response to the two questions taken on notice on 7 September 2023 as a witness for public hearing into the **Impacts and management of feral horses in the Australian Alps**.

Senator DAVID POCOCK: On threatened species, what is the understanding of the numbers of southern and northern corroboree frogs in the alpine areas at the moment, and how are they at risk due to horses?

The Southern Corroboree Frog, *Pseudophryne corroboree*, is one of Australia's most critically endangered frog species. Kosciuszko National Park contains all of the species' natural habitat. Currently, all known Southern Corroboree Frog individuals in Kosciuszko National Park are at reintroduction sites. Based on the results of the January 2023 monitoring undertaken by the NSW Government 'Saving our Species' (SoS) program, there are fewer than 30 adults in the wild outside of the quarantine field enclosures. There are approximately 200 adults in the quarantine field enclosures. As there are no horses in areas where reintroductions are being undertaken, these individuals are not at risk from feral horses. The key threat limiting population recovery is disease caused by infection with the amphibian chytrid fungus.

The Northern Corroboree Frog, *Pseudophryne pengilleyi*, occurs in Kosciuszko National Park and adjacent State Forest areas. Based on the results of the February and March 2023 monitoring undertaken by the NSW Government SoS program and Forestry Corporation of NSW, there are estimated to be fewer than 1000 adults remaining in the wild. All populations are in an ongoing state of decline, which is primarily due to disease caused by infection with the amphibian chytrid fungus, and recent wildfire impacts. The majority of

extant Northern Corroboree Frog populations in Kosciuszko National Park are in areas that are currently not occupied by feral horses. However, habitat degradation caused by feral horses has contributed to the historic range contraction of this species and will limit capacity for the species to recover if ongoing horse impacts are not mitigated. If feral horses expand further into the Bogong Peaks Wilderness Area, they will likely threaten and hastened the decline of all remaining Northern Corroboree Frog populations. One extant population in Kosciuszko National Park with more than ten adult frogs, and which is being significantly impacted by feral horses, is in the process of being protected via the installation of horse exclusion fencing.

In state forest areas adjacent to Kosciuszko National Park, feral horses are present at all remaining Northern Corroboree Frog sites/populations. Feral horse impacts on the breeding habitat at these populations ranges from relatively minor to heavy, and feral horses are undoubtedly contributing to the ongoing decline of Northern Corroboree Frogs and their habitat quality on state forest lands. Based on historic and ongoing impacts, feral horses have been listed as a key threat to the Northern Corroboree Frog in the NSW SoS Program, and the Australian Governments 'Conservation Advice' for this species.

Cattle and horse grazing have led to significant reductions in the extent and quality of montane and sub-alpine peat-bog systems that Corroboree Frogs use as breeding habitat. A study using replicated horse exclosures to investigate the effects of feral horses on Northern Corroboree Frog breeding habitat in the Australian Alps showed that feral horses significantly degrade Corroboree Frog breeding habitat. The results showed that the pool-edge litter was 1.9 times deeper in areas without horses than in areas accessible to horses. Because a loss of breeding habitat can lead to population decline and local extinction, feral horses should be removed from historic and potential breeding habitat to prevent further declines and support the species' persistence in the wild.

The Southern Corroboree Frog and Northern Corroboree Frog are iconic species listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999*. As such, management of all key threats should be undertaken where possible. While both species have experienced severe population declines associated the amphibian chytrid fungus, grazing and climate change also present key threats to the species' future. However, the management options for chytrid fungus and climate change are limited or long-term, whereas the removal of feral horses can be implemented immediately for prevention of further degradation and to enable habitat restoration.

Key references:

Department of Climate Change, Energy, the Environment, and Water: Conservation Advice for *Pseudophryne corroboree* (southern corroboree frog) and *Pseudophryne pengilleyi* (northern corroboree frog). Downloaded from: http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1915

Dr David Hunter, NSW Dept. Planning and Environment, pers. comm. (population numbers and threats)

Dr Rohan Bilney, Forestry Corporation of NSW, pers comm. (population numbers and threats)

Foster, C. and Scheele, B. C. (2019). Feral-horse impacts on corroboree frog habitat in the Australian Alps. *Wildlife Research*, East Melbourne, 46(2), 184–190. <https://doi.org/10.1071/WR18093>

Hunter, D., Osborne, W., Smith, M. and McDougall, K. (2009) Breeding habitat use and the future management of the critically endangered Southern Corroboree Frog. *Ecological Management & Restoration*, **10**, S103–S109. doi:10.1111/j.1442-8903.2009.00461.x

NSW Saving our Species Program: Northern Corroboree Frog
(<https://www.environment.nsw.gov.au/savingourspeciesapp/project.aspx?ProfileID=10694>)

Senator DAVID POCKOCK: In some of the submissions there was concern about horses, but, post removal, the need for restoration work. I note that you refer to the development of a master plan for restoration priorities. Could you elaborate on that recommendation?

We recommend that a Restoration Master Plan be prepared for the Australian alpine catchments to establish restoration priorities and milestones. Development of an Australian Alps Restoration Master Plan could meet several federal government commitments, such as implementing cross-jurisdictional regional planning to protect Matters of National Environmental Significance, and delivering outcomes at a landscape scale under the Nature Positive Plan.

Scientific and technical publications on restoration of Australian alpine catchments provide a strong foundation to plan and implement restoration actions once feral horses have been removed (see key references below). Further, information from current and historic restoration programs undertaken in the Australian Alps, such as the Former Snowy Scheme Rehabilitation Program (a program undertaken by the NSW National Parks & Wildlife Service with corporatisation offset funding from Snowy Hydro under a confidentiality agreement, for reasons that have not been explained), should also be made available for review and to direct successful and cost-effective management actions.

The Restoration Master Plan would include:

- Restoration of waterbodies. By restoring incised wetlands, downstream flows will be buffered from the effects of extreme storms. A continuous, sponge-like mat of vegetation needs to be re-established along streambanks and wetlands, to filter and hold water, to make these systems resistant to fire and to support fauna. In addition to the removal of feral horses, infrastructure, such as rock gabions or straw bales, may be needed to bank up water, rehydrate the valley floors and enable regrowth of sphagnum moss and other wetland plants. Threatened flora and fauna species, such as the Northern Corroboree Frog and Stocky Galaxias (fish), will benefit from improved breeding habitat that is critical to their long-term persistence.

- Restoration of grasslands and ground storey vegetation. This will provide improved habitat for ground-dwelling species that rely on dense ground storey vegetation, such as the Vulnerable Broad-toothed Rat (*Mastacomys fuscus*) and Endangered Alpine She-oak Skink (*Cyclodomorphus praealtus*), for which a considerable area of habitat has become degraded due to feral horses.
- Restoration of canopy species. Forests and snowgum woodlands increase water yield by more than 10% by intercepting moisture in the air and affecting surface run-off and evaporation losses. The extent of snowgums has declined due to historic pastoral burning, grazing by exotic herbivores (including feral horses) and, more recently, dieback. Water yield may be improved through strategic re-planting of snowgums in the subalpine zones.

We consider the priorities to include the lower Snowy River and Murrumbidgee River catchments (due to their highly degraded condition), and high mountain catchments (due to their sensitivity to disturbance).

Further, a restoration program could provide employment and training for Indigenous and other regional workers. This investment also directly benefits the Snowy Mountains Scheme and Snowy 2.0 through improved water flow and quality and reduced evaporation.

The rationale for this recommendation is based on (i) the Australian Alps Catchments Technical Report (Worboys et al. 2011) prepared for the Australian Alps Liaison Committee (Federal and state governments), which identified the condition and trend in condition of Kosciuszko's catchments, with consideration to climate change, and (ii) presentations by scientists at the 2018 "Feral Horse Impacts: Kosciuszko Science Conference", which identified the landscape scale impacts of feral horses and disturbance to wetlands and streams.

Key references:

Costin, A.B. and Wimbush D.J. (1961) Studies in catchment hydrology in the Australian Alps. IV. Interception by trees of rain, cloud and fog. CSIRO Plant Industry, Melbourne

Costin, A.B., Wimbush, D.J. and Cromer, R.N. (1964) Studies in catchment hydrology in the Australian Alps. V. Soil moisture characteristics and evapotranspiration. CSIRO Plant Industry, Melbourne

Driscoll, D.A., Worboys, G.L., Allan, H., Banks, S.C., Beeton, N.J., Cherubin, R.C., Doherty, T.S., Finlayson, C.M., Green, K., Hartley, R., Hope, G., Johnson, C.N., Lintermans, M., Mackey, B., Paull, D.J., Pittock, J., Porfirio, L.L., Ritchie, E.G., Sato, C.F., Scheele, B.C., Slattery, D.A., Venn, S., Watson, D., Watson, M. and Williams, R.M. (2019) Impacts of feral horses in the Australian Alps and evidence-based solutions. *Ecological Management & Restoration*, **20**, 63-72.

Hartley, R., Blanchard, W., Schroder, M., Lindenmayer, D.B., Sato, C., Scheele, B.C. (2022a). Exotic herbivores dominate Australian high-elevation grasslands. *Conservation Science and Practice*, **4**, e601

Worboys, G.L., Good, R.B. and Spate, A.P. (2011) *Caring for Our Australian Alps Catchments, Technical Report*, Australian Alps Liaison Committee, Canberra

Worboys, G.L., Driscoll, D. A., and Crabb, P. (2018). *Feral Horse Impacts: The Kosciuszko Science Conference - Conference Abstracts*, Australian Academy of Science, The Australian National University and Deakin University, Canberra

Sincerely

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