



National Parks Association of the ACT Inc.

conservation education protection

The Project Team,
Kosciuszko National Park Wild Horse Heritage Management Plan
NSW National Parks and Wildlife Service
Via npws.submissions@environment.nsw.gov.au

Submission on the 2023 Draft Amending Plan for the 2021 Kosciuszko National Park Wild Horse Heritage Management Plan

Thank you for the opportunity to comment on the *2023 Draft Amending Plan* for the *Kosciuszko National Park Wild Horse Heritage Management Plan* (the Horse Plan) originally released in November 2021.

The National Parks Association of the ACT (NPA ACT) is a community-based conservation organisation with more than 60 years of experience in helping to protect the natural environment. We have an active interest in the management of Australia's high country. We have been keen participants in the debates over the management of feral horses in the Australian Alps.

Some of the following text repeats parts of our submission on the Draft Horse Plan, in which we also supported the use of aerial control. To be clear, no aspect of our comment, or our support for aerial control, should be construed as support for either the NSW *Kosciuszko Wild Horse Heritage Act* (2018) or for the deliberate retention of 3,000 horses in Kosciuszko National Park (KNP).

Summary

In this submission, the NPA ACT strongly advises that the management of pest plants and animals, especially the management of animal welfare, should be based on evidence. This includes the management of feral horses in KNP.

Therefore, we advocate the use of helicopter shooting as the primary method for removal of feral horses in KNP because it is normally more humane than ground shooting. We also reiterate our advice for the NSW Government to '*introduce a program to improve community understanding of the benefits of this method*'.

Terminology

Rather than referring to 'aerial control' we prefer 'helicopter shooting' which is more specific and seems to be preferable for public relations reasons. 'Aerial control' could potentially be mistaken with other things, such as the use of fixed wing aircraft (used in WA to control dingoes, foxes and feral cats); the aerial delivery of toxic baits (used in NSW to control dingoes and feral pigs); or the shooting from aircraft of animals in the air (used in New Zealand to control feral black swans).

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There are legal, ecological and ethical imperatives to reduce feral horse abundance

For legal reasons there is no option other than swift reduction of horse population size. The NSW *Kosciuszko Wild Horse Heritage Act* (2018) requires a horse management plan which recognises and protects wild horse heritage values in KNP and enables active management of the wild horse population to reduce its impact on the park's fragile environment. Consequently, the Minister for Energy and Environment adopted the Kosciuszko National Park Wild Horse Heritage Management Plan (the Horse Plan) on 24 November 2021. The Horse Plan, a binding legal instrument, requires the current horse population, estimated to be ~19,000 in 2022 (Cairns 2022) to be reduced to 3,000 by 30 June 2027.

A further requirement for horse population management has been established by the listing of 'habitat degradation and loss by feral horses' as a Key Threatening Process in Schedule 4 of the NSW *Biodiversity Conservation Act* (2016). The NSW government is thereby required to ameliorate the biodiversity threat where possible.

Scientists have estimated the size of the feral horse population in KNP nine times. The first was in the late 1980s by Dyring (1990). Eight estimates since 2001 all used Helicopter Line Transect Distance Sampling. For years, the exponential increase of the horse population has been plainly evident to anyone who has been interested in the counts (Figure 1 and Appendix Table).

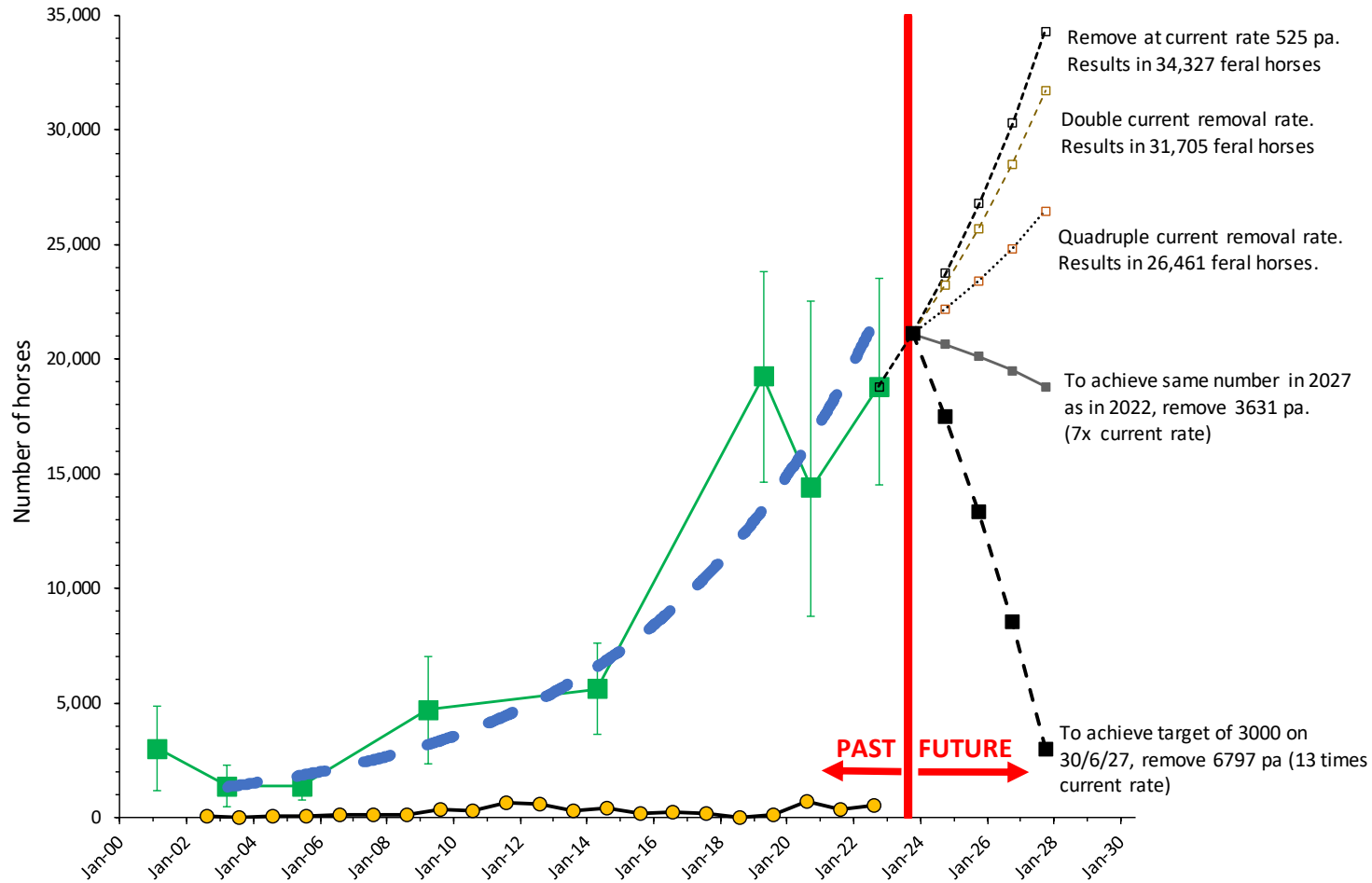
Other evidence of exponential growth is provided by the annual helicopter index of feral horse abundance (HIFHA), carried out by KNP staff counting all horses detected in clearings on the northern plains (FOI information obtained by Invasive Species Council). The first of these counts was 75 feral horses in 1998 and the latest count we are privy to recorded 3,110 horses in 2019. (More and better analysis could occur if the counting and culling data were managed transparently).

From the HIFHA data, the average annual increase of the horse population in that area is 13.8%. This is disappointingly close to the 15% long term average annual increase calculated from the 2003 to 2022 population estimates (Figure 1 and Appendix Table). We say 'disappointing' because it would be hoped that the highest population growth rates would be observed at the advancing edge of horse distribution and that these would be offset by negative or near zero rates where horses have been present longest. The observation of a 13.8% annual population growth rate on the northern plains where horses have been present for many decades suggests the KNP horse population has the potential to increase greatly before food limitation begins to limit its number.

As well as increased abundance, also it is a common observation that the distribution of feral horses has been expanding (e.g. Dawson 2009).

It is the nature of exponential population growth to seem slow for a long time while the population is relatively small, then to seem to increase rapidly when the population is larger. Thus, the risk to native Australian species of animals and plants has become more acute in the last few years now that the horse population is large, increasing rapidly and invading new areas. It is important to recognise that, as a result, although the first horses entered the area more than 150 years ago, in 2023 many plants and animals in the park will be encountering horses for the first time. Others will be experiencing high levels of horse impact for the first time. Thus, there is potential for horse control to save threatened species populations if the removal rate is of sufficient magnitude to prevent further increase in the abundance and distribution of horses.

Figure 1: The KNP horse population since 2001, and five future alternatives to 2027. **PAST:** Eight solid green squares (■) are scientific estimates of horse population size in Kosciuszko National Park from 2001 to 2022, with error bars indicating 95% Confidence Intervals (also see Appendix). The blue dashed line (— —) represents 15% annual increase since the 2003 bush fire. Gold circles (●) are previous horse removals. **FUTURE:** The effect of 15% increase and five alternative horse removal rates (stated beside each scenario) is represented as the predicted annual horse population estimates in October. Only one scenario (— ■ —) allows the statutory target to be achieved, i.e. 3,000 feral horses on 30 June 2027, obtained by removing ~6,800 horses per year.



Kosciuszko is home to numerous endemic species, a few of which are also among the 15 threatened (EPBC listed) plants, 13 threatened animals and two endangered communities recognised to be directly threatened by feral horses (plus there would be others unrecognised as threatened species). Scientists have been pointing to the increasing threat to biodiversity associated with the increasing horse abundance and distribution since Alec Costin did so 70 years ago in 1953, including recently with the Kosciuszko Science Accord, signed by a large body of high-country scientists (Driscoll 2019). But now it has become worse than a threat, with actual loss of populations having occurred due to horse activity, e.g. populations of the threatened toarrana (*Mastacomys fuscus*) have been lost (Driscoll *et al.* 2019; Eldridge *et al.* 2019; Schulz *et al.* 2019) most likely through reduction of ground layer vegetation which is essential for this threatened native rodent to persist (Cherubin *et al.* 2019).

National and international studies have found that even low numbers of horses lead to environmental degradation (Driscoll 2018; Eldridge 2020). Therefore, even the reduction to the mandatory target will still leave considerable pressure on KNP's ecosystems.

Thus, as well as the legal imperatives requiring management of the feral horse population, there are clear ecological imperatives to act. Consequently, there is an ethical requirement also not to allow preventable losses to biodiversity.

Because of this legal, ecological and ethical context, reduction of the horse population to 3,000 by 30/6/27 is mandatory.

The current removal rate appears ineffective (Figure 1). The use of helicopter shooting is essential to achieve the seven-fold increase estimated as necessary to hold the feral horse population to its current size, or the 13-fold increase needed to achieve the target of 3,000 feral horses on 30/6/27.

Figure 1 illustrates the consequences of applying five alternative annual horse removal rates. For example, if the current removal rate was increased fourfold (i.e., quadrupled), by 30/6/27 the horse population would be more than 26,000, i.e., approximately nine times more than the statutory requirement of 3,000. To meet its target by 30/6/27, the NSW Government must remove an estimated 6,800 feral horses per year for the remaining four years. This can also be expressed as the removal of 1.9 horses per square kilometer (1.9 horses km⁻²). (The calculation is based on the statement in the Horse Plan that feral horses occupy 53 % of the 6,900 km² KNP, i.e., 3,657 km²). Therefore, a method is needed which can achieve a mean annual removal rate of at least 1.9 horses km⁻² for four successive years.

Viable alternative methods of achieving this reduction (~7k horses pa or 1.9 horses km⁻² pa)

In the literature on control of large vertebrate pests (e.g., Hone 2007, 2012) there are only two methods which have ever achieved the required annual removal rate over an area the size of KNP, i.e., poison baiting and helicopter shooting. Poison baiting is currently inapplicable for feral horses SCAAHC (1991) because there is no known combination of humane toxin and delivery method which would be sufficiently target specific. Thus, helicopter shooting is essential, because of the legal, ecological and ethical imperatives.

Relative humaneness of ground shooting and helicopter shooting

The requirements for humane shooting of feral livestock are stipulated in various documents particularly SCAAHC 1991; FAAST 2003 and Sharp 2011.

It is rarely understood by the public that the range at which shooters generally operate is much less in helicopter shooting than ground shooting. As well as placing the helicopter close to the target group of animals, the pilot approximately matches their speed and direction of movement, thereby minimising the relative movement of the target animals. Thus, the shooting demands are

considerably less than some people imagine. Therefore, the better shooters are capable of consistently achieving brain shots rather than the usual heart – lung shots. Multiple shots are applied in case the first shot was inaccurate, in order to ensure a humane kill (SCAAHC 1991; FAAST 2003). Wounded animals can often be dealt with immediately by additional shots (semi-automatic firearms are mandatory) but if a wounded animal managed to run away, in a helicopter it could be followed, something that is generally impossible with ground shooting. It is recommended practice to fly back overshot animals, shooting them again where necessary to ensure they are all dead.

The humaneness of aerial shooting has been evaluated during shooting operations and by subsequent postmortem of hundreds of carcasses and found to be satisfactory. Skill of individual shooters was the most important determinant of animal welfare (Hampton *et al.* 2014, 2017)

Ground shooting enables well aimed shots and high levels of accuracy are possible at greater range, but wounded animals cannot be followed. Much lower kill rates are observed.

Best practice Thermally Assisted Helicopter Shooting (TAHS)

Current best practice integrates horse control with the control of other species. For example, all large exotic vertebrates are shot in the same TAHS operation in the ACT, including Fallow Deer, Sambar, feral pigs, feral horses, and feral goats (Pulsford *et al.* 2023, Elford pers comm.). The process starts with an operator inspecting an image on a computer monitor that is fed from a sensitive thermal camera, a GPS, and other equipment mounted on a helicopter. When the operator sees animals of any of the target species, they use verbal instructions and a laser that is collinear with the camera, to help the pilot and shooters find the nearest of the target animals.

Is NPWS likely to be capable of delivering a high-quality program of helicopter shooting?

- We are aware of the high standard of helicopter shooting required and achieved by the *Feral Animal Aerial Shooting Team (FAAST)* training program developed many years ago in the NSW Department of Primary Industry and the NPWS which has involved a growing body of NPWS staff in recent decades (FAAST 2003).
- We also note that the helicopter shooting method is being applied by NPWS in a wide variety of vegetation and terrain across NSW, because the NPWS web page *Feral Animal Aerial Shooting Team (FAAST) training* lists 51 parks related to this program, presumably meaning parks where helicopter shooting operations are undertaken. (We suspect this count to be an underestimate because e.g., KNP is not included although we are aware of numerous helicopter-shooting operations there to target all large vertebrate pests except feral horses). Experience in this wide variety of terrain and vegetation will improve expertise in relation to individual programs, including the required program at KNP.
- We are aware that a wide variety of exotic and native species are being killed in NSW using helicopter shooting, including several deer species, feral pigs, feral goats, native dingoes, and feral horses outside NPWS areas, and consider this will bring increased expertise to the KNP program.
- We are aware that NPWS staff not only perform leadership roles in the FAAST system but also have been involved in ballistics and animal welfare research published in leading international journals (e.g., Hampton *et al.* 2021a, 2021b).

Therefore, we believe that helicopter shooting of feral horses in KNP, if it is allowed to take place, and if it is adequately funded, could potentially be based on a deep body of expertise equal to the best international standards, if the appropriate staff are selected for the relevant roles. This should enable high standards of safety and animal welfare to be achieved.

The need for public education to maintain social licence

There have been numerous wildlife controversies in the world including some in which management agencies were ultimately prevented from completing wildlife management programs due to erosion of their social licence (Hampton and Teh-White 2019). In modern times increasingly, the critical issue is perceived or actual problems with animal welfare. Even as long ago as the 1970s, the unsustainable harvests of the great whale species were closed down not because of overharvesting but due to animal welfare issues (Hampton and Teh-White 2019). It is possible this could happen with helicopter shooting of feral horses in KNP, especially if no plan is put in place to reduce the risk of it.

Our submission on the Draft Horse Plan advocated the commencement of a public education program about helicopter shooting, pointing out that:

... ‘during the process for the preparation of the 2016 Wild Horse Management Plan, surveys were conducted that showed that, once presented with all the facts, members of the general public recognised aerial shooting as an appropriate method of control. This further supports the appropriateness of raising community awareness of the benefits of aerial shooting.’

We now repeat that advice, but the requirement is more urgent.

Public education about aerial control is not part of the Draft Amending Plan so our advice can be taken as referring to general operations of the NPWS. We also advise the government to organise greater coverage of the environmental impacts of feral horses in a wide variety of media as well as news media.

The importance of ongoing control and its design

A population is like a pool in a river, with constant inflow and outflow. Any artificial reduction in population size (pool depth) is temporary. The duration of any reduction is shorter the greater the rate of inflow. So frequent maintenance is essential. For example, to reduce a feral horse population that has been increasing at 15% per year, to 3,000 animals, including a conservative allowance of 3% for the usual increase in population growth rate following reductions, it is necessary to reduce the population to 2,752 so at the end of the year it will be 3,248, thus correctly providing the average size of 3,000 that year.

The preceding calculation assumes the proportion of breeding females and average fecundity remain unchanged. Just as farmers alter the sex ratio of managed livestock populations to increase production of juveniles, a wise manager of such a population as the 3,000 feral horses in KNP would wish to alter the sex ratio and age structure so as to reduce the population growth rate and thereby reduce the size of annual culls that she or he needed to conduct in order to maintain that population size. It is unclear to us what degree of manipulation will prove possible in view of the challenges of determining the gender and estimating the maturity of horses during a helicopter shooting operation.

Managing to a lower number than 3,000

The 2023 Draft Amending Plan does not propose any change to the number of horses to be retained after 30/6/27, currently 3,000. That is probably a wise concession to the political situation at present in NSW, but NPA ACT will continue to be guided by scientific research that suggests even small numbers of horses can have significant impacts and will continue to lobby in the conservation interests of KNP. In future, either the Horse Plan could be amended accordingly, or the *Kosciuszko Wild Horse Heritage Act* (2018) could be repealed, or both could occur.

Several ecologists have expressed the opinion that feral horses are impossible to eradicate from KNP. We are aware that other megafauna were exterminated by humans armed only with spears and

a lot of time (e.g., thousands of years). Considering the extent of modern technology, such as use of helicopters, thermal cameras, call playback, and Judas animals, the time required for eradication of horses could instead be measured in decades or years.

That is for future consideration, but if it is achieved, the costs of managing feral horses would be infinitely reduced.

CONCLUSION

There is a strong case for helicopter shooting to become the primary method for reduction of the horse population in KNP because it is both more humane and more efficient than alternative control methods. Therefore, we support the 2023 *Draft Amending Plan* for the *Kosciuszko National Park Wild Horse Heritage Management Plan*.

In addition to amending the Horse Plan, we strongly recommend the commencement of public education about helicopter shooting.

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APPENDIX: Horse population estimates in Kosciuszko NP and how calculated

Date	Area surveyed	Size of area surveyed (sq km)	Horse Popn estimate	Lower 95% Conf Limit	Upper 95%Conf Limit	Horse Popn in KNP (calc from AANP survey as needed)	Upper 95%CI for KNP	Lower 95% CI for KNP	How KNP portion calculated
Mar-01	AANP	2,789	5,200	1,979	8,421	3,000	1,858	1,858	Kosciuszko NP component estimated by Walter (2005)
Apr-03	AANP	2,717	2,369	3,937	3,937	1,367	905	905	Same proportional adjustment as above (0.58)
Jun-05	KNP	1,052	1,357	759	1,955	1,357	598	598	No change necessary
Apr-09	AANP	2,860	7,679			4,684	2,332	2,332	Adjusted by the proportion of horse groups counted in Kosciuszko NP, given in Dawson (2009 Table 1), ie 0.61.
May-14	AANP	7,443	9,187	7,484	11,595	5,604	1,984	1,984	Adjusted by the proportion of horse groups counted in Kosciuszko NP, given in Cairns (2019 Table 3), ie 0.61 excluding the Bago Maragle block and half of the Byadbo-Victoria count.
May-19	AANP	7,443	25,318			19,242	4,581	4,581	Adjusted by the proportion of horse groups counted in Kosciuszko NP, given in Cairns (2019 Table 3), ie 0.76 excluding the Bago Maragle block and half of the Byadbo-Victoria count. Confidence Limits estimated from CV.
Oct-20	KNP	2,673	14,380	8,798	22,555	14,380	8,175	5,582	No change necessary
Oct-22	KNP	2,675	18,814	4,721	4,313	18,814	4,721	4,313	No change necessary
AANP = Australian Alps National Parks; KNP = Kosciuszko National Park									

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