



AUSTRALIAN ALPS NATIONAL PARKS

2019 Australian Alps Feral Horse Aerial Survey:

Summary Report

This document summarises the key findings of the 2019 Australian Alps Feral Horse Aerial Survey. It is a supporting document and for further detail see the full technical report – *Feral Horses in the Australian Alps: The Analysis of Aerial Surveys Conducted in April-May 2014 and April-May 2019, (Cairns S, 2019)*

Key Points

- Feral horses (*Equus caballus*) also known as ‘wild horses’ or ‘brumbies’ occur in three large and currently separate distribution areas of the Australian Alps National Parks (AANP) and adjoining State Forest areas. The Australian Alps National Parks Co-operative Management Program have co-ordinated surveys to determine population densities and size estimates in 2001, 2003, 2009, 2014 and 2019.
- In the last five years, the estimated population of feral horses within the Australian Alps National Parks Survey area has more than doubled.
- The combined population estimate for the three blocks surveyed across the Alps has increased from 9,187 in 2014 to 25,318 in 2019. This is an increase of 23% per annum.
- The 2019 survey replicated the design and methodology of the 2014 survey allowing direct comparison of results to determine population trends. The Distance Sampling method used in this survey is widely accepted and known to produce robust and credible results for large areas, see FAQs for more information.
- 2690kms of aerial transects were flown surveying an area of 7,443km² in three separate survey blocks of known feral horse distribution across the Australian Alps. A biostatistician analysed the data using Distance Program software to determine horse densities and estimate the wild horse population.
- The results show that over the past five years, the population of feral horses in the Australian Alps survey area has increased substantially, from an estimate of 9,187 horses in 2014 to 25,318 in 2019. The nature of these changes varies among survey blocks and may have been influenced by not only biological and environmental factors of birth rates, survivability and death rates but factors of immigration and emigration of horses from the individual survey block areas.

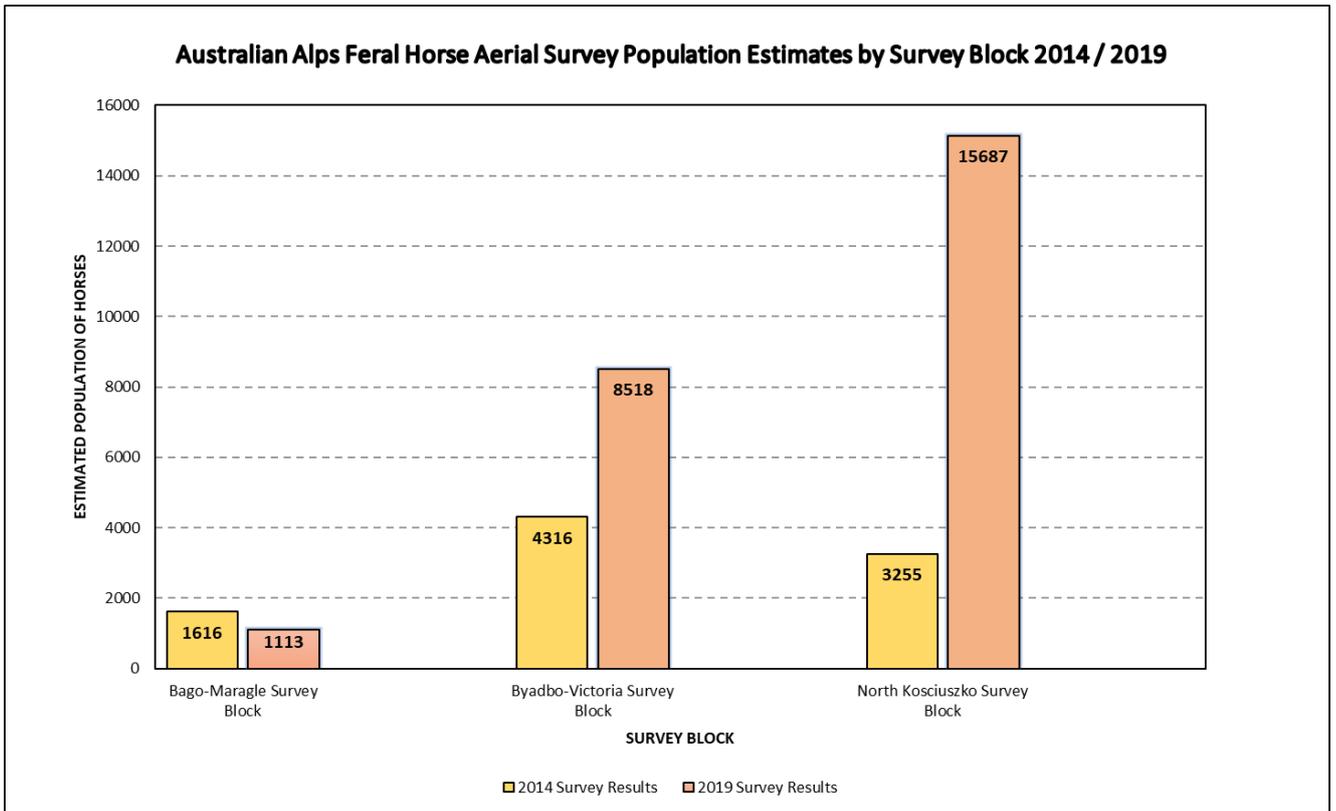


Figure 1: Changes in the estimated populations in each of the three survey blocks between 2014 and 2019.

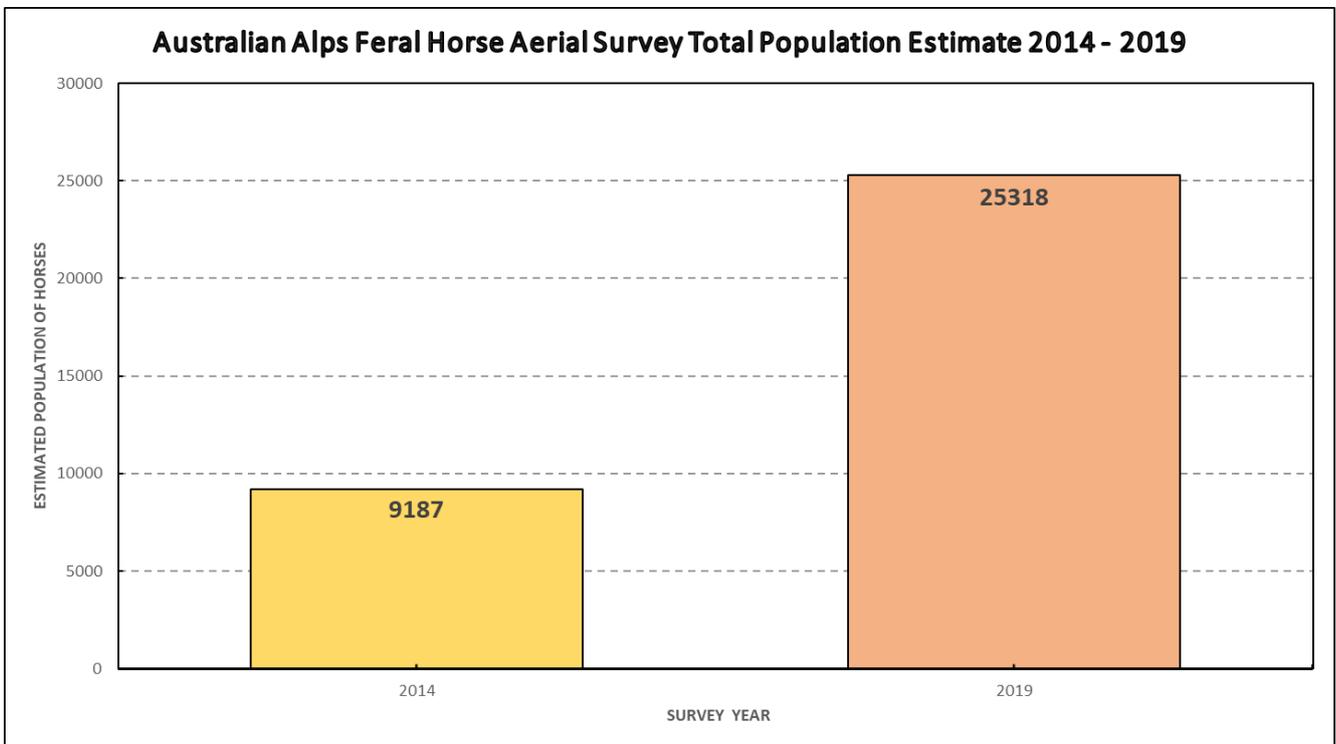


Figure 2: Combined estimated population from 2014 and 2019 aerial surveys

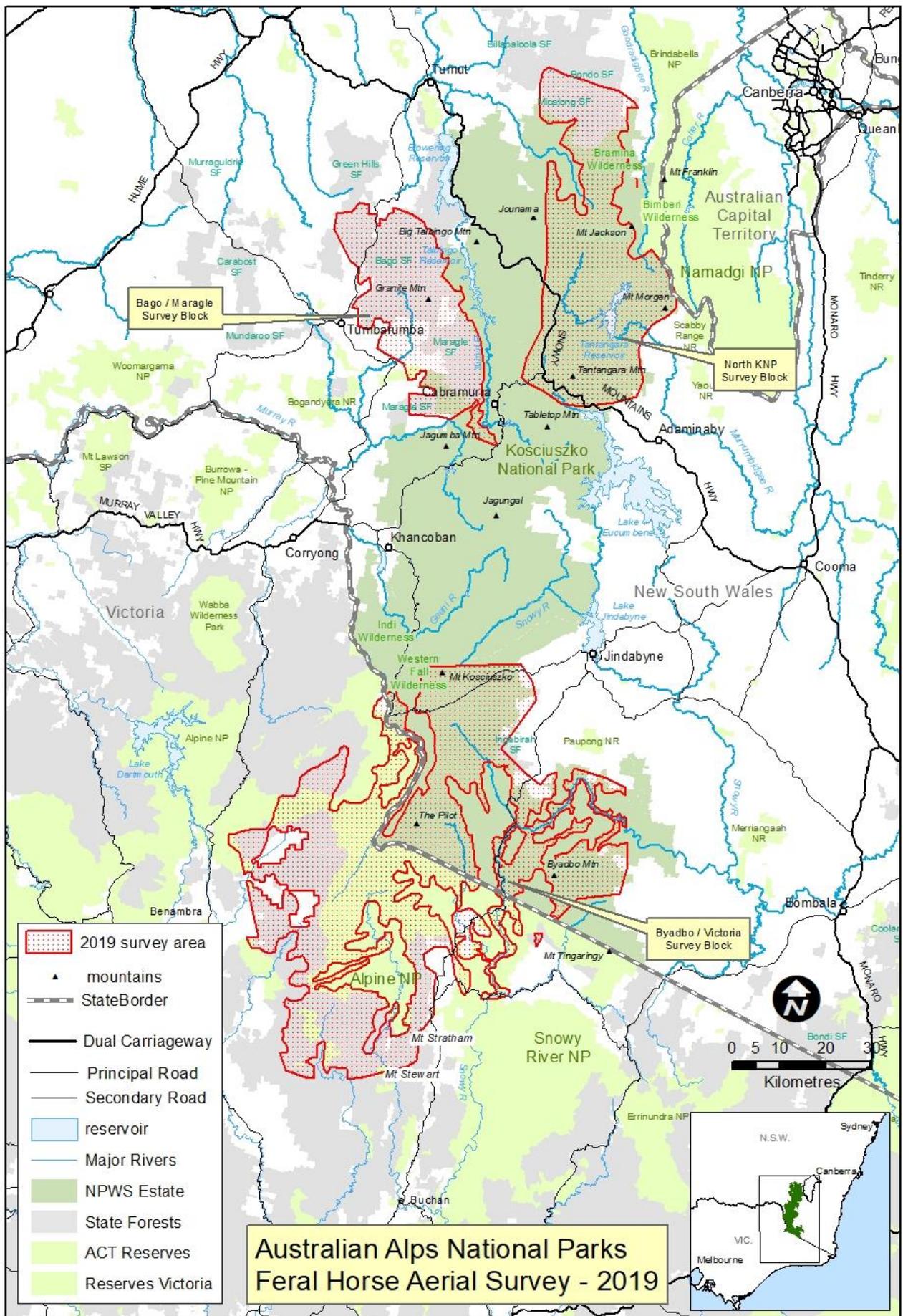


Figure 3: Location of the three survey blocks

Answers to frequently asked questions

These FAQs were collected following the 2014 survey and they remain relevant for the 2019 survey



Why was a feral horse survey in the Alps done?

The Australian Alps Program has supported aerial surveys of feral horses in the alps since 2001. Understanding the size of a population and how it is changing over time is critical for good management. Feral horse populations across the Alps are increasing. Feral horses damage fragile alpine, sub-alpine and other environments and ecosystems within the parks. It is vital that park management agencies manage the horse populations to reduce impacts and protect the unique native species and ecosystems of the Alps.

Did you record any other animals?

The focus of the survey was feral horses. The survey concentrated on areas of the Alps where horses occur, however other species including deer and pigs were recorded whenever they were seen during the survey. Information on deer population estimates achieved for one of the survey blocks can be found in the full report at the [Australian Alps National Parks](http://www.australianalpsnationalparks.gov.au) website.

Where was the survey conducted?

The survey covered three large blocks across the Australian Alps, Figure 3. The blocks encompassed the areas occupied by the three largest (and currently separate) populations of feral horses in the Alps. They covered a total area of around 7,443 km² in the Kosciuszko, Snowy River and Alpine National Parks and adjoining State Forest areas in both NSW and Victoria.

Why did you only survey those areas on the map? Why not the whole Alps?

Earlier surveys (2001, 2003, 2009) covered only a portion of the areas of the Alps known to be occupied by feral horses. In 2014 the survey was expanded to include most of the areas of the Alps where feral horses occur to provide a more comprehensive understanding of the size of horse population within each of the blocks they occupy across the Alps. The 2019 survey covered the same areas as those surveyed in 2014 except the Snowy Plains block, which was not re-surveyed in 2019. The approach used enable direct comparison of results from 2014 and 2019 on a block by block basis. There is anecdotal evidence suggesting that in recent years the distribution of feral horses in the Alps has expanded to areas outside those surveyed and the 2019 survey results may underestimate the size of the population.

How was the survey conducted?

The 2019 and the 2014 survey used the same design and methodology. Helicopters and highly experienced air observers flew along pre-determined transects at a set height and speed and recorded what they saw. A biostatistician then analysed the data to estimate the wild horse population. The survey method is called Distance Sampling and is used worldwide to estimate the size of a wide range of animal populations. It is known to produce very accurate and precise results. (Thomas L, et.al., 2010)

So how many horses are there in the Australian Alps?

The results from 2019 survey estimate the feral horse population across the areas surveyed to be 25,318 horses. It is not possible to know the exact size of the population. Instead, wildlife biologists rely on rigorous and well-proven methods involving sampling and statistical analysis to estimate the size of the population. This approach gives an estimate of the number of horses that occur in each of the survey blocks, as well as 95% confidence intervals. These intervals tell us the range that the estimate would occur within 95% of the time if we repeated the survey many times. As a result, the Australian Alps Combined Survey Area Total Population Estimate = 25,318 horses.

Survey Block	Population Estimate	95% Confidence Interval
Bago-Maragle:	1,113	(463 -2,364)
North Kosciuszko:	15,687	(10,598 – 20,569)
Byadbo-Victoria:	8,518	(6,321 – 12,464)
<i>Alps Survey Combined Total</i>	25,318	

Table 1: 2019 Population estimates for each of the blocks with 95% confidence intervals

Why don't you just count every single horse in the Alps to get a true census of the horse population?

It is not possible to count every individual in a large population of wild animals across a large and rugged landscape. There are many thousands of horses across the Alps and they occupy vast areas of often rugged terrain. Their distribution and density vary with habitat type and availability of resources such as food, water and shelter. Many areas where horses occur are extremely difficult to access and includes treeless areas, areas of thick vegetation and forests in often steep and rugged terrain. Many horses in the Alps are difficult to tell apart without close and detailed observation which is not possible across the vast and rugged landscapes of the Alps. Horses in the Alps move in and out of different areas over time and seasons with all these factors combining making it impossible to achieve a complete census of the population.

What is Distance Sampling?

Distance sampling is a survey method used by wildlife biologists and land managers all around the world to estimate the size and density of wildlife populations. It gets its name from the way data are recorded during the survey. In the case of the Australian Alps feral horse survey, observers travel via helicopter along survey transects and record the perpendicular distance from the transect line of all horses observed within the defined transect area.

The strength of Distance Sampling and analysis is that it allows for imperfect detection by estimating the probability of detecting a species of interest (e.g. horse) at differing distances from the transect line and using this probability to estimate the density of the species of interest across the survey area.

Data analysis can be done using different software packages. For the Australian Alps feral horse survey, Distance (Version 7.3) was used. This software provides a range of models that have been proven to perform well in the analysis of distance data. More information about Distance Sampling and the Distance software package is available for free online on the Distance home page at: [Distance Project Home Page](#) and [What is distance sampling?](#) as well as the [Distance sampling online course](#)

How do these results compare to the 2014 survey?

The three blocks surveyed in 2019 were also assessed in 2014 and the data re-analysed. The methods and areas surveyed were the same in each of these two years. This means it is possible to directly compare changes in the size of the feral horse population over the past five years in each of these three blocks.

Block	Survey Area (km ²)	2014 Survey		2019 Survey	
		Estimated population size	95% Confidence Interval	Estimated population size	95% Confidence Interval
Bago-Maragle	948	1,616	782 – 2,574	1,113	463 – 2,364
North Kosciuszko	1549	3,255	1,846 - 5,900	15,687	10,598 – 20,569
Byadbo – Victoria	4946	4,316	3,316 – 6,577	8,518	6,321 – 12,464
<i>Australian Alps Total</i>	7,443	9,187		25,318	

Table 2: Comparison of results from the 2014 and 2019 surveys

Some people claim that the Australian Alps National Park Feral Horse Aerial survey and its methodology and results are flawed. What is your response to that?

The methods used for the Australian Alps feral horse survey are rigorous and used by expert wildlife biologists and land managers around the world to estimate the density and size of wild populations of animals. They are widely accepted as providing robust and credible results. Studies using these methods have been published widely in peer-reviewed international scientific literature. (Thomas et.al., 2010) [Distance sampling bibliography](#)

Further background and information on the basics of population survey and assessment techniques and the statistical analysis of data from these surveys as well as information on Distance Sampling can be found at:

[Wildlife Research: Volume 35 Number 4 2008: Aerial Surveys of Wildlife: Theory and Applications](#)

[Estimating Wildlife Populations - North Carolina State University -Wildlife Management Course Notes](#)

[Counting Wildlife Manual - World Wildlife Fund, 2004](#)

[Distance software: design and analysis of distance sampling surveys for estimating population size - Thomas - 2010 - Journal of Applied Ecology - Wiley Online Library](#)

The survey design, methodology and analysis for the Australian Alps Feral Horse Survey 2019 has been independently peer reviewed by external experts from St Andrews University, Scotland who are international experts in the application of Distance sampling survey techniques and CSIRO Australia to verify that the survey, analysis and reported results are scientifically rigorous and robust.

Could you explain why there has been an increase in the reported Feral Horse populations in the Australian Alps?

Populations of wild animals including feral horses are often regulated by availability of and through competition for resources (e.g. food, water and shelter) and sources of mortality (e.g. predation, disease or exposure). These factors can and do change over time. Populations increase because births are greater than deaths. Immigration, emigration and changes in distribution of horses between the survey periods are also likely to have an influence on the reported population growth or decline rates for each of the survey blocks. Despite localised conditions and impacts of drought, the conditions across the Alps have allowed for overall feral horse population growth.

When is the next Australian Alps Aerial Survey due to be conducted?

The next Australian Alps wide feral horse survey is due in five years (2024). Advances in technology and survey techniques may see alterations in the design and approach of future surveys. Each park management agency is likely to continue their localised surveys on an annual basis as they have in the past. The Australian Alps Program has also been working for several years with researchers to develop feral horse population survey and estimation methods which are economical and easily achieved yet retain scientific and statistical rigour of the current survey approach.

What do these survey results mean for horse management in the Australian Alps?

These scientifically based surveys, analysis and resulting estimates from both the 2014 and 2019 Australian Alps Feral Horse Aerial Survey indicate that the overall Australian Alps feral horse population is large, widespread and continues to increase in size.

It is likely that the impacts of feral horses on alpine and sub-alpine and other communities (particularly wetlands, karst areas and peatlands) will become more widespread and more intense without a substantial reduction in the number of feral horses in the Australian Alps. Agencies responsible for managing the Australian Alps national parks operate under park and threatened species legislation that require the intrinsic natural values to be protected.

Each of the management agencies for the national parks of the Australian Alps has specific management programs to attempt to reduce the population of feral horses, and subsequently reduce the damage being caused to natural environments (ACT Parks, Conservation and Lands (2007); NSW National Parks and Wildlife Service (2008); Pascoe and Foster (2004)).

Further information about how each of the Australian Alps National Parks Co-operative Management Program partner agencies are currently responding to feral horse management issues can be found at:

Commonwealth Government:

[Feral horse \(*Equus caballus*\) and feral donkey \(*Equus asinus*\) - Invasive species fact sheet](#)

ACT Parks and Conservation Service:

[Feral Horse Management - Environment, Planning and Sustainable Development Directorate - Environment](#)

NSW National Parks and Wildlife Service:

[Wild horses | NSW Environment, Energy and Science](#)

Parks Victoria:

[Alpine National Park - Feral Horse Strategic Action Plan](#)

Why focus on horses? What about all the other threats to the Australian Alps National Parks?

The Australian Alps national parks face many threats, including impacts of climate change, inappropriate fire regimes, unregulated or inappropriate visitor or recreation use, and introduced plants and animals. Each state and territory park management agency have a range of plans, strategies and programs in place to try to address and help mitigate these threats. Feral horses are only one of the many introduced plants and animals that are impacting the Australian Alps natural and cultural values. A broad range of control programs and methods are used to manage deer, pigs, rabbits, foxes, cats and wild dog populations across the Alps

Further information about how each of the Park agencies in NSW, Victoria and the ACT are managing their respective sections of the Australian Alps national parks can be found at:

NSW National Parks and Wildlife Service:

[Kosciuszko National Park Plan of Management | NSW Environment, Energy and Science](#)

Parks Victoria:

[Alpine National Park](#)

ACT Parks and Conservation Service:

[Reserve Management Plans - Environment, Planning and Sustainable Development Directorate - Environment](#)

The Australian Alps Liaison Committee

For more information: [Australian Alps National Parks Co-operative Management Program website](#)

