# BUSHFIRE IMPACTS ON KOSCIUSZKO FERAL HORSE POPULATIONS

## Bushfire & horse data analysis 2020

invasive species council

**Cover page image:** A mob of feral horses grazing on bushfire regrowth at the southern end of Long Plain where fire intensity was low. More than three-quarters of Long Plain was unaffected by the summer bushfires. 14 January 2020. Photo: L Groom.

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# Data analysis of the 2019-20 bushfires – their severity and impacts on the feral horse population within Kosciuszko National Park.

The Invasive Species Council commissioned a GIS analyst to review areas of Kosciuszko National Park burnt during the 2019-20 summer bushfires and available horse population data.

The intent of the analysis was to determine the likelihood of a reduction of growing feral horse numbers in the park due to the fires.

The analysis started with the area within Kosciuszko National Park surveyed in 2014 and 2019 for feral horses. This represents the most reliable information in gauging areas of high horse concentration in the park. Horses in lower numbers are found in the national park, but outside of this area.

The horse survey area was overlaid with mapping of fire severity and extent mapping prepared by the NSW Department of Planning, Industry and Environment. This is the most reliable data available that shows where the summer 2019-20 bushfires burnt and their severity.

The fire intensity is rated in the following categories:

- Unburnt surface with green canopy
- Burnt surface with unburnt canopy
- Partial canopy scorch
- Full canopy scorch (+/- partial canopy consumption)
- Full canopy consumption

This fire intensity data is supplemented by data from the NSW National Parks and Wildlife Service and the Rural Fire Service. These areas are categorised as 'Non-FESM burnt area'.

A surviving red-necked wallaby in Kosciuszko National Park near the Snowy Mountains Highway, its feet injured by the bushfires. Photo: L Groom.

## BUSHFIRE IMPACTS ON THE PARK

When large and uncontrolled bushfires entered Kosciuszko National Park from adjoining private and public land in early January 2020, there were concerns about how much of Kosciuszko would be impacted.

On 4 January 2020, a very hot and dry day, a strong westerly wind blew the 'Dunns Road' fire across extensive areas of cleared farmland and state forest, deep into Kosciuszko National Park. Record low soil moisture and relative humidity levels with average fuel loads gave rise to intense and unpredictable wildfire behaviour.

The path taken by the fire was dictated by the direction of the strong winds. Despite claims to the contrary, the fire path and its intensity did not appear to be influenced by whether the area was grazed by horses or not.

Major infrastructure was lost – parts of Cabramurra township, Mt Selwyn ski resort and the historic Kiandra courthouse as well as numerous alpine huts were lost.

Blackened wetlands and alpine grasslands and forests were destroyed. Alpine ash and snow gums, badly affected by the 2003 bushfires, were burnt again. The native animals that survived the fires were left without nesting hollows, feed and were exposed to predators such as foxes and feral cats. Native fish and platypus habitat was smothered in ash and erosion.

In all 32% of Kosciuszko National Park was burnt in the fires and relatively milder weather after 4 January 2020 greatly reduced fire intensity. However, damage to the park in the burnt areas was still extreme in parts.

Despite the wildfire intensity, the park's feral horse population appeared to be largely unscathed, with just a handful of dead horse bodies discovered.

The areas within Kosciuszko National Park that escaped the fires are now the primary food source for native animals. If feral horses largely escaped the bushfires they will now be competing for scarce food with the park's native animals.

Heavily burnt wetland at Rocky Plains Creek, Kosciuszko National Park, 6km southeast of Kiandra. 14 January 2020. Photo: L Groom.

This analysis will help park managers better understand where the 2019-20 bushfires burnt hottest and how this impacted on areas with the highest concentrations of feral horses.

## BUSHFIRE IMPACT ZONES

The bushfires burnt approximately 240,000 hectares of Kosciuszko National Park. That's roughly a third of the 690,000 hectare park.

Of those areas within the national park that have high horse numbers, about 70,000 hectares, or 30%, of this area was burnt.

However, only about half of the burnt area suffered extreme or high severity fire. The intensity of the fire in the remainder of the burnt areas was moderate or low.

The most intense fires occurred when the fire first moved into the park from the west, burning uphill while the wind was strong. As the fire slowed, the intensity reduced.

Horses are highly mobile and well suited to outrunning slow-moving fire.

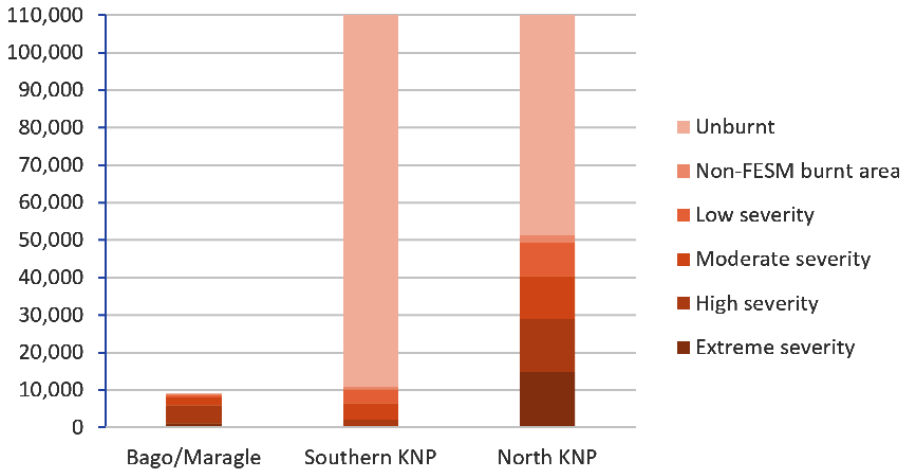



**Figure 1:** Bushfire intensity (ha) for each of the three areas within Kosciuszko National Park with high numbers of feral horses.

### Bago/Meragle area

The worst fire-affected area occupied by high numbers of horses in the park was part of a larger area called Bago/Meragle, named after the two state forests where most of the horses in this area are found. A small part of this area lies within the Kosciuszko National Park, near its western boundary to the west of Cabramurra. In 2019, this area had the lowest horse density of all the areas surveyed at just over 1 horse per km$^2$.

Within the national park two-thirds of the area burnt with severe intensity (extreme or high) and no part of this area was unburnt.

### Northern Kosciuszko

The population of horses in the northern end of Kosciuszko National Park is


The Australian Defence Force flew frog experts to remote Kosciuszko National Park sites to assess wildfire impacts on the critically endangered southern corroboree frogs. Three of the four corroboree frog sites in the national park were burned by the summer fires. Photo: NSW Department of Planning, Industry and Environment.

**Table 1: Fire intensity based on fire severity and extent mapping for each area of high horse concentration within Kosciuszko National Park.**

| Survey area | Extreme severity | High severity | Moderate severity | Low severity | Non-FESM burnt area | Unburnt |
|---|---|---|---|---|---|---|
| Bago/Maragle | 13% | 54% | 24% | 8% | 1% | 0% |
| Southern Kosciuszko | 0% | 2% | 4% | 3% | 1% | 90% |
| Northern Kosciuszko | 13% | 12% | 10% | 8% | 2% | 56% |
| **Total** | **7%** | **9%** | **7%** | **6%** | **1%** | **70%** |

centred around Tantangara Reservoir. In 2019, this area had the highest horse density within the Australian Alps at more than 10 horses per km$^2$.

The area closest to the Snowy Mountains Highway burnt most intensely, but overall most (56%) of the area was unburnt. Most heavily impacted were Kiandra, Wild Horse and Nungar plains. Of the 25% of the area that burnt intensely, 13% was of extreme severity, while 12% was high severity. The remaining 19% burnt at moderate or low intensity.

### Southern Kosciuszko

The areas with high horse numbers in the southern part of Kosciuszko National Park was little affected by fires. Around 10% was burnt, including 2% affected by very severe fires, with the balance affected by moderate or low intensity fires. Horses in this area would not have been directly impacted by the fires.

## DID GRAZING REDUCE BLAZING?

Vegetation structure and fuel loads were of little influence to summer's catastrophic bushfires. The combination of drought stress and catastrophic fire conditions meant little could be done to prevent the spread of the fire.

The Dunn's Road fire was believed to have originated in a private pine plantation 30 km west of Kosciuszko National Park. Before entering Kosciuszko National Park, the fire moved through

heavily grazed pastures and scattered timber, destroying scores of properties in Batlow and surrounding areas and killing hundreds of livestock. One man lost his life defending his Batlow property.

Wind direction determined the areas of Kosciuszko National Park that were burnt. During these severe bushfire conditions there is no evidence that the January 2020 bushfire behaved differently in areas grazed heavily by horses.

The question whether 'alpine grazing reduces blazing' has been subjected to much scientific scrutiny. The bushfires that burnt extensive areas of the Australian Alps in the 2003 summer bushfires burnt about 70% of areas with high horse numbers, reducing the Alps horse population by about half (Walter 2003). A detailed examination of fire and grazing patterns in Victoria's Alpine National Park following these fires found that livestock grazing did not reduce fire occurrence or severity across the landscape (Williams 2006).

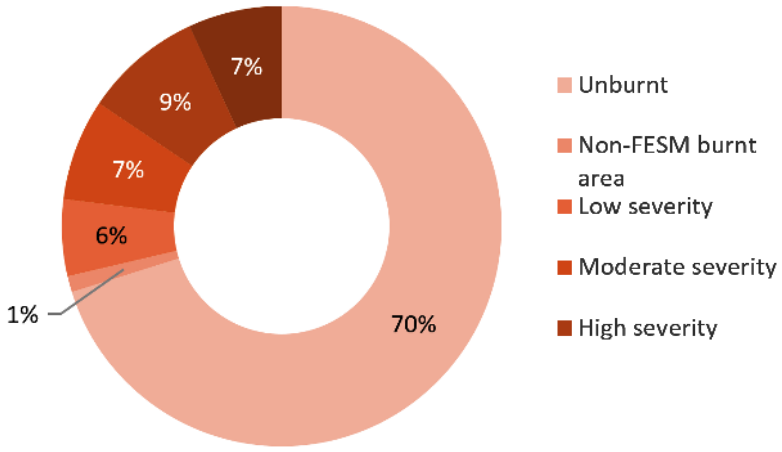



**Figure 2:** Fire severity (%) of areas within Kosciuszko National Park with high numbers of feral horses.

## CONCLUSION

The 2020 summer bushfires were devastating to the native plants and animals of Kosciuszko National Park. More than a third of the park burnt and of that, about a fifth burnt very intensely. Recovery will be slow and surviving wildlife will have limited food and shelter in unburnt areas and will compete with or be predated on by feral animals.

The data suggests that a majority of the areas within Kosciuszko National Park that are home to high numbers of feral horses were unburnt. Most areas that burnt did not suffer severe intense fires. Some smaller areas with horses did suffer intense fires. Horses would have had the opportunity to escape the fires.

It is now critical that horses are removed from recovering burnt areas within Kosciuszko National Park and from those unburnt areas where horses moved in to escape the fires and that are now critical to the survival of surviving native animals seeking food, shelter and water.

In June 2020, the NSW government restarted trapping efforts after a two-year hiatus, but is only targeting three areas, two of which were burnt severely – the Kiandra/Boggy plains and Nungar Plains – and the largely unburnt but sensitive Cooleman Plains.

### Did many horses perish from the bushfires?

The latest reliable population estimate of the number of horses in Kosciuszko National Park suggests that in April-May 2019 there were approximately 20,000 horses.

Horse advocates claim, without evidence, that many horses in Kosciuszko National Park perished in the fires. They argue that because horse numbers have been reduced there is now no need to remove them.

However, there is no evidence that large numbers of horses died in the fires. Witnesses who have frequently flown over the burnt areas of the park have found only individual horse carcasses in a handful of locations.

This analysis shows that more than two-thirds of the area with horses escaped the fires and that about 16% of the area with high horse numbers burnt at high or extreme severity.

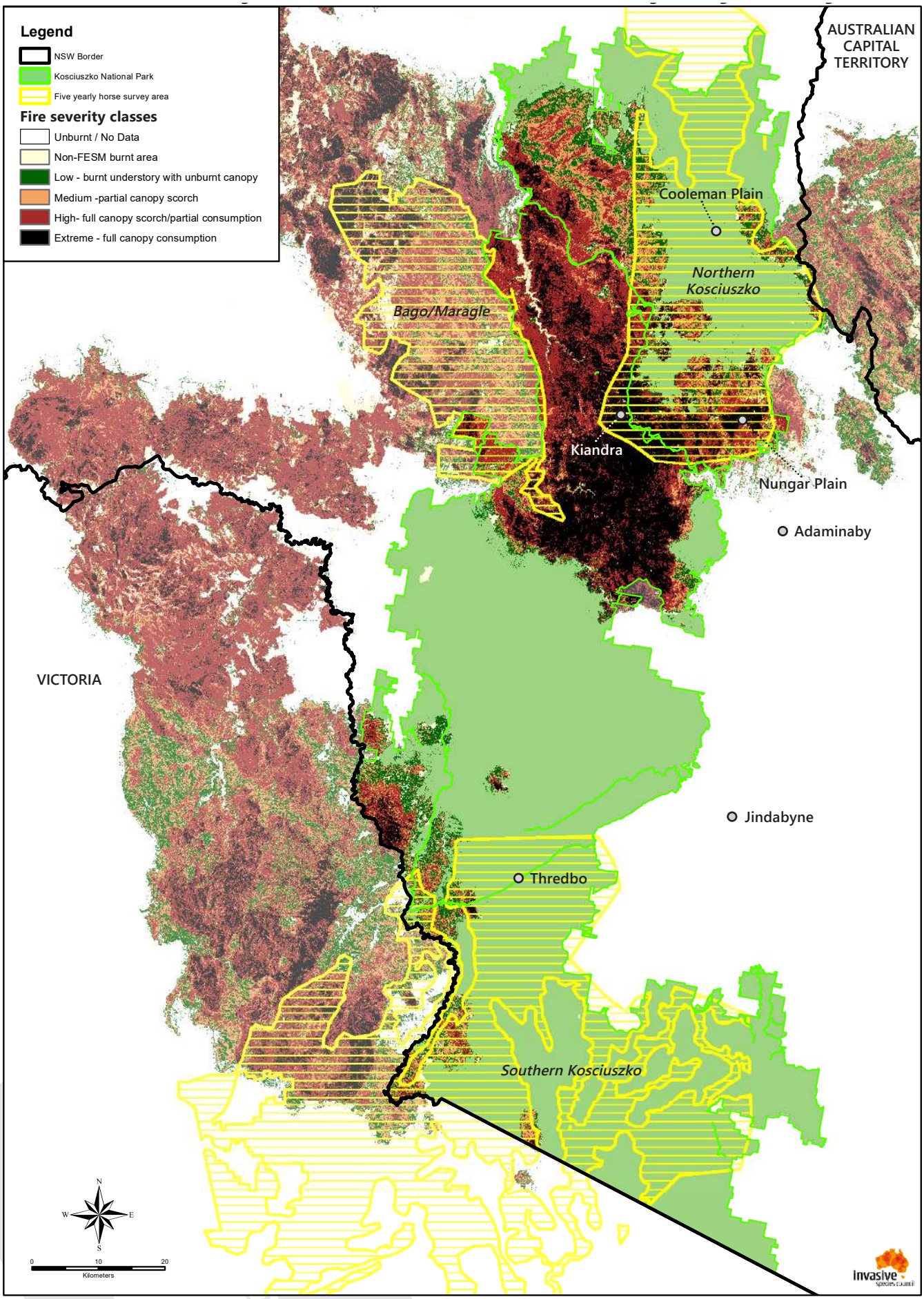
Ground and aerial observations in the months after the fires revealed large numbers of horses in most if not all of these areas.

This analysis confirms that the area subject to intense severity fires is relatively small and that the horse population in Kosciuszko National Park is likely to be little changed from the 2019 population estimate of the order of 20,000 horses.

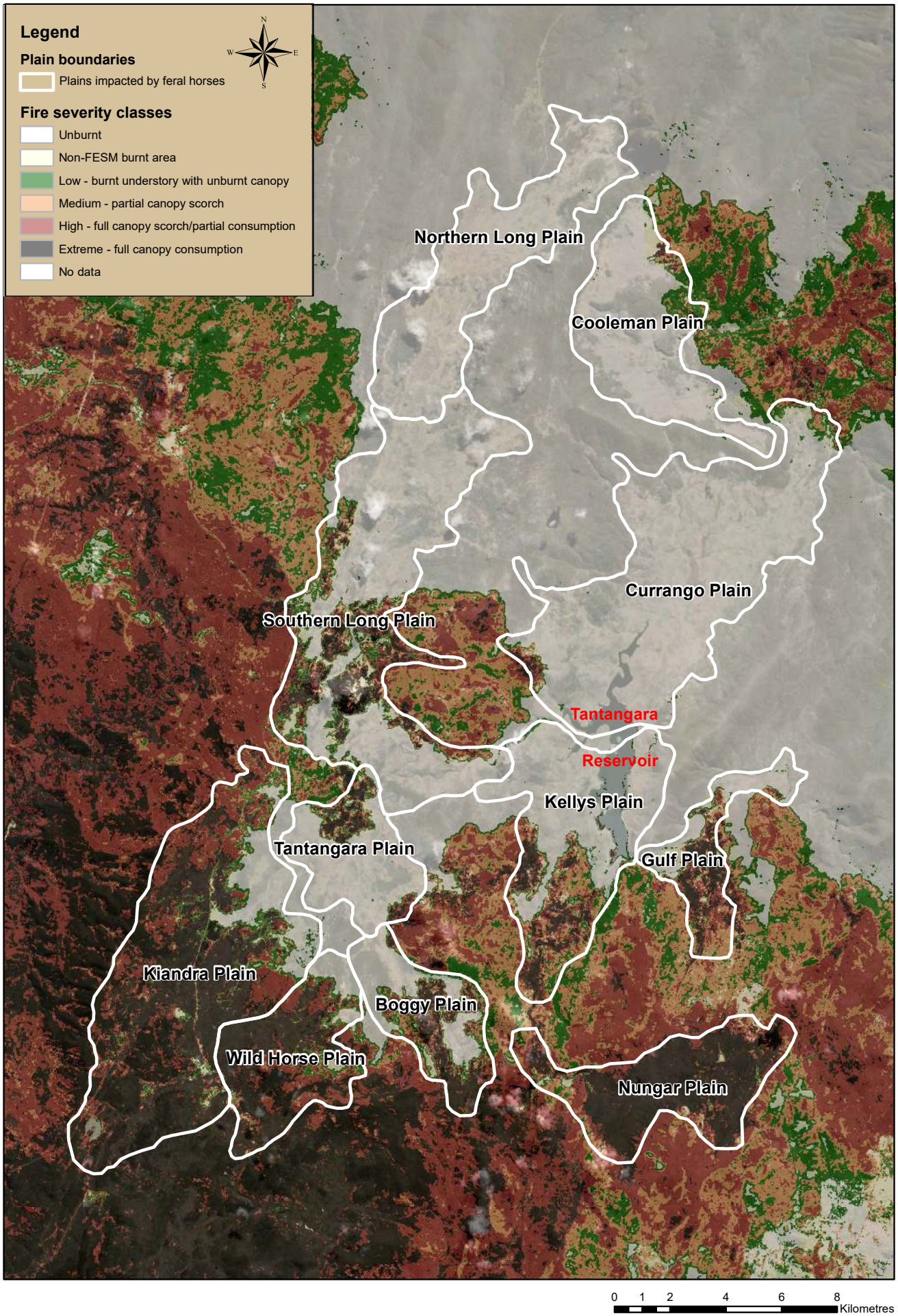
**References**

- Walter, M 2003, *The effect of fire on wild horses in the Australian Alps National Parks*, Report for Australian Alps Liaison Committee.
- Williams, RJ, Wahren, CH, Bradstock, RA, Muller WJ 2006, 'Does alpine grazing reduce blazing? A landscape test of a widely-held hypothesis', *Austral Ecology*, vol. 31, pp. 925-936, DOI 10.1111/j.1442-9993.2006.01655.x

## Map of 2020 bushfire severity and areas with high horse numbers surveyed in 2019



## Map of 2020 bushfire severity and horse impacted plains, northern Kosciuszko NP



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