

**Revisiting Observations of Pest Horse
Impacts in the Australian Alps, March 2020**

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<https://theaustralionalps.files.wordpress.com/2020/05/revisiting-pest-horse-impacts-to-australian-alps-catchments-2020.pdf>

Important notice

This supplementary “Observations” report is provided as an update to a report by Worboys and Pulsford in 2013 (Worboys, G.L. and Pulsford, I. 2013).

This report is produced for general information and is a record of personal observations made by the authors for the Mt Pilot area of Kosciuszko National Park in 2013 that were revisited in March 2020. It has been prepared within the context of the authors participating in inspections of this area over a period of 47 years from 1973 to 2020 and should be read in conjunction with the 2013 report. Responsibility for the report contents rests with the authors. The authors were accompanied on their inspection by former NSW Environment Minister and Board Chair designate of the Colong Foundation for Wilderness, Bob Debus AM.

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Cover photo:

Photo of a Cowombat Flat feral horse exclusion plot established in 1999, Alpine National Park Victoria showing a 21 year non grazed area within the exclusion area (photo-left) with all other areas accessible to feral horse grazing, pugging, compression and erosion of soil and destruction of native vegetation, 3 Mar 2020 (Source: Ian Pulsford).

Revisiting 2013 Observations of Pest Horse Impacts in the Australian Alps in March 2020

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INTRODUCTION

We made observations arising from an inspection on 22 and 23 March 2013 of the upper Thredbo River Big Boggy, Cascade Creek, Ingegoodbee River, Tin Mine Creek and Murray River headwater catchments, Kosciuszko National Park (Worboys and Pulsford 2013). We identified unprecedented, pervasive and destructive feral horse impacts for over 43 kilometres of treeless drainage lines especially in Commonwealth-listed Alpine Sphagnum Bogs and Associated Fens Endangered Ecological Communities which occur in the high headwater catchments of the Australian Alps. We reported that “these impacts were the worst ever observed in 40 years of personal inspections of the Dead Horse Gap to Tin Mines section of the Pilot Wilderness of Kosciuszko National Park in New South Wales and at Cowombat Flat area of the Victorian Alpine National Park. Both of these parks form part of the Australian Alps national parks”.

On 3 and 4 March 2020 we repeated our observations of many of the same sites to evaluate if any changes in impacts had occurred since our last visit 7 years ago. Our conclusion is that the condition of wetland bogs on creek flats and creek banks in treeless drainage lines has continued to deteriorate due to the continued presence of large feral horse populations. Since our last observations in 2013 feral horse population management ceased in 2015 in the Pilot area and 99 horses were removed from Blue Water Holes in the spring of 2019 in the northern end of the Park (DPIE 2019). In addition, there has been a recent rapid increase in populations of deer as well as some pigs that were recorded by the NPWS during aerial surveys (Cairns 2019, NPWS 2019). We had intended to also revisit sites along and near the Ingegoodbee Trail, however this was not possible due to introduction of COVID-19 travel restrictions. We saw no evidence of recovery at the sites we revisited and in many areas damage to wetlands and bogs along river flats were more extensive.

Conditions were much drier than during our 2013 inspection due to the prolonged severe drought. The areas we revisited were not directly affected by the mega-fires that burnt large areas of eastern Australia in January and February 2020. However, parts of the nearby western fall of the upper Murray and Geehi Rivers and slopes of the western fall of the Kosciuszko Main Range up to Dead Horse Gap on the Alpine Way were severely burnt.

HORSE POPULATION ESTIMATES

Since our first observations over the last 40 years and our 2013 report of feral horses impacts in the Pilot Wilderness Area south of Thredbo (Worboys and Pulsford 2013), horse populations have continued to increase substantially in many areas of the Australian Alps. In 1990 researcher Jenny Dyring made population estimates of several hundred horses in the Big Boggy, Cascades Creek, Ingeegoodbee River and Cowombat Flat area south of Thredbo (Dyring 1990). Michelle Dawson nee Walter conducted an aerial survey in 2001 (Walter 2002) that estimated populations of 2 horses per square kilometre in the Big Boggy and 6.4 horses per square kilometre in the Cowombat population of (Dawson 2005).

Aerial surveys in the Australian Alps national parks estimated a population of 5,200 in 2001; 2,369 in 2003; and 7,679 horses in 2009, a 21.65% per annum increase since the previous estimate in 2003 (Dawson 2009). In April-May 2014 and April-May 2019 the NSW National Parks and Wildlife Service (NPWS) conducted repeat systematic aerial surveys across three blocks covering the entire distribution of feral horses in the Australian Alps (Kosciuszko National Park and adjacent state forest areas in New South Wales and the Alpine and Snowy River National Parks in Victoria). These surveys were designed and analyzed by Stuart Cairns. The horse populations increased in these blocks from 9,187 in 2014 to 25,318 in 2019, an average increase of 23% per annum (Cairns 2019), (Figure 1). The population in the Byadbo-Victoria (Snowy River and Alpine National Park) survey block, which included the Pilot Wilderness area, increased by 15% from 4,316 to 8,518 (Cairns 2019).

Other large introduced herbivores including deer, cattle, goats and pigs were also observed during these aerial surveys. The most numerous of these other species sighted were introduced deer. In 2014 the estimated population of deer was 2,280 which increased to 7,630 in 2019. This equated to an annual rate of population increase in the deer population of 27%. This rate of increase was much higher than the rate of increase for the horse population in Byadbo-Victorian block. Population estimate results from these aerial surveys indicate that horse populations still exceed feral deer populations within the survey block. The surveys also recorded goats and pigs but they were far less numerous and were not observed in numbers that allowed analysis to provide statistically robust population estimates (Cairns 2019).

At the time of our last visit to the area in 2013 the NPWS conducted ongoing limited capture and removal of wild horses from the area. Removal of horses from the Pilot Wilderness area in 2015 ceased prior to commencement of community consultation and exhibition of the draft Kosciuszko Wild Horse Management Plan in 2016 (OEH 2016). In 2019 99 horses were removed from the Blue Water Holes area in the northern section of the Park after the commencement of the *Kosciuszko Wild Horse Heritage Act 2018* (R. Gibbs pers. comm.).

The NPWS also conducted a separate series of 9 aerial surveys between 2006 and 2019 to estimate the number of horses in 3,500 ha of subalpine ecosystems in the Big Boggy area of the Pilot Wilderness south of Thredbo (Figure 2). The May 2019 survey recorded 202 horses. Nine repeat surveys carried out at the same time of year from 2006 to 2019 indicated that the population density has increased from 2.7 to 6.28 horses/km² respectively (NPWS 2019). The Mt Pilot – Cascades Creek and Tin Mines area that we investigated is contiguous with the upper Thredbo River “Big Boggy” and consists of subalpine woodland, treeless drainage lines and montane forests on the watershed of the Great Dividing Range.

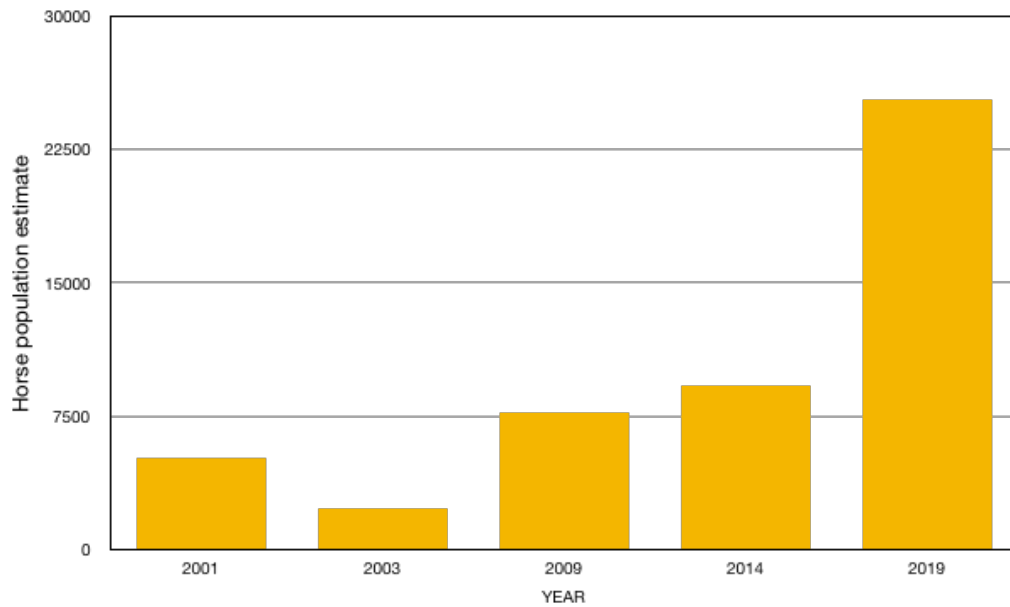


Figure 1 Horse population estimates in the Australian Alps, 2001-2009 (after Dawson 2009) and 2014-2019 (after Cairns 2019). See Dawson 2009 and Cairns 2019 for survey design and respective areas sampled.

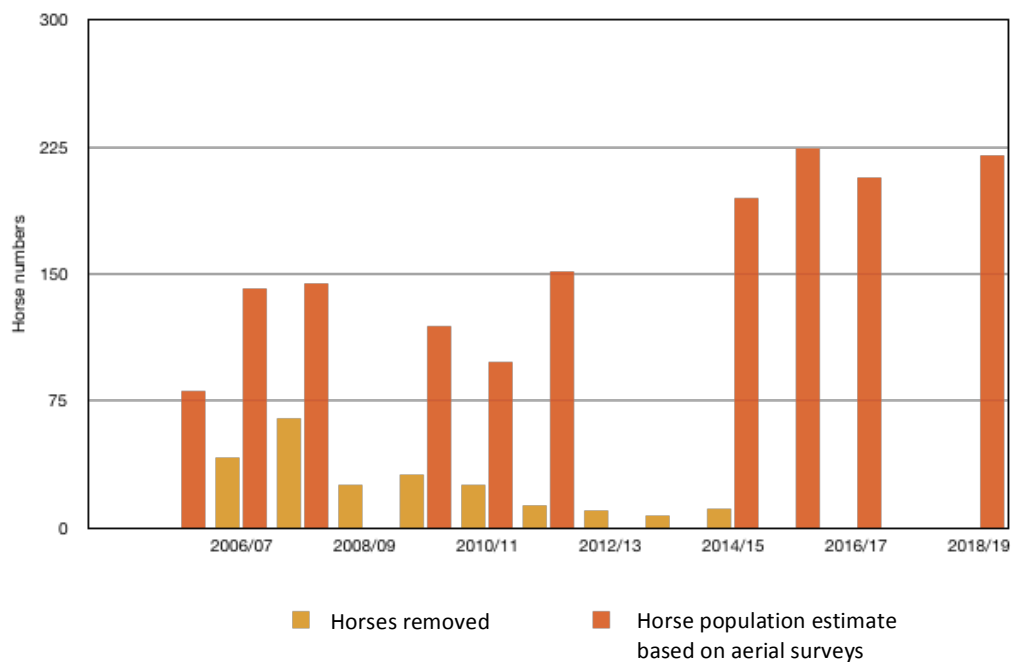


Figure 2. Comparison of horses trapped and removed from survey area and population estimates from annual aerial surveys in the 3,500 ha upper Thredbo River “Big Boggy” study area south of Thredbo (after NPWS 2019).

VEGETATION DESTRUCTION

In 2013 we reported that excessive numbers of pest horses were observed to be directly destroying subalpine native vegetation and this was best illustrated in 2013 at exclosure plots established at Cowombat Flat Alpine National Park in 1999. These four exclosures are 21 years old and are located in the upper headwater stream of Australia's longest and most economically important river, the Murray, just a few kilometres from its source. The impacts were visually very clear in 2013 and the images below demonstrate that the condition of the vegetation has continued to decline as a result of grazing by large numbers of horses and deer and drought. We observed relatively little disturbance by pigs.

A study of impacts of herbivore grazing in nearby lower elevation white cypress pine – white box communities along the lower Snowy River Valley within the Pilot Wilderness was investigated by Jessica Ward-Jones and colleagues in 2018. In 2013 and 2017/2018 fenced exclosure and paired grazed plots which had been constructed 1984 were surveyed to assess the severity of impacts on vegetation, soil and invertebrates using a range of techniques including Landscape Function Analysis. Dung counts conducted in 1987 and 2018 were used to assess the relative presence of herbivores. There was four times more dung recorded in 2018 than in 1987 (total dry weight). Horse and deer dung was absent in 1987, but dominated in 2018. Dung transect data collected in the grazed plots and adjacent grazed landscape showed that 84% of dung was from horses, 13% from deer, 2% from macropods and 1% from rabbits. The herbivore exclusion plots, fenced for 34 years, exhibited significantly higher soil and vegetation condition than the grazed plots, as well as invertebrate abundance. Vegetation structure and composition, and soil stability and function within the plots was improving, whereas soils outside the plots were bare and eroding in broad sheets across slopes and in gullies. Dense networks of tracks and tramping by horses were most evident with damage to steep creek banks caused by deer (Ward-Jones *et al.* 2019).

In 2015 the most extensive study to assess the impacts of horses throughout public land in the Australian Alps was undertaken by Robertson *et al.* (2015). Their study demonstrated that feral horses are having a significant impact on the condition of drainage lines across this range. Almost all sites assessed within the broad horse distribution showed evidence of horse presence, and all of the sites in poorest condition were occupied by horses. They found that on average, about 28 metres of the streambed in each 50m site they measured had a moderate to high sediment load in horse present sites, compared to horse free sites where banks were stable due to the presence of undisturbed fringing vegetation. They concluded the loss of stability, modification of stream banks and vegetation structure have significant impacts on the conservation of fauna including a range of listed threatened and other species including Alpine Bog Skink *Pseudemoia cryodroma*, Alpine She-oak Skink *Cyclodomorphus praealtus* and Alpine Tree Frog *Litoria verreauxii alpina*. As a consequence this has led to the listing of "Degradation and loss of habitats caused by feral Horses (*Equus caballus*)" as a potentially threatening process under the Victorian *Flora and Fauna Guarantee Act* 1988. On 30 Nov 2018 the NSW Threatened Species Scientific Committee listed "habitat degradation and loss by Feral Horses (brumbies, wild horses)" as a key threatening process under the NSW *Biodiversity Conservation Act*, 2016.

Consistent with our own observations in the Mt Pilot area, Robertson *et al.* (2015) concluded that the most critical impact of feral horses in the Alps is the damage they cause to Alpine

Sphagnum Bogs and Associated Fens along treeless drainage lines. This is an endangered ecological community listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999. We found that that these habitats have continued to decline to an alarming degree. This highly endangered community provides habitat critical for the preservation of endangered species and as well as importantly filtering large quantities of clean water which is released slowly into streams enhancing catchment value and preventing soil erosion. See photos below.

The photographs below clearly illustrate the extent of the damage to native vegetation along treeless drainage lines of the upper Thredbo River Big Boggy, Cascade Creek, Ingegongbee River, Tin Mine Creek and Murray River headwater catchments, Kosciuszko National Park from feral horses.

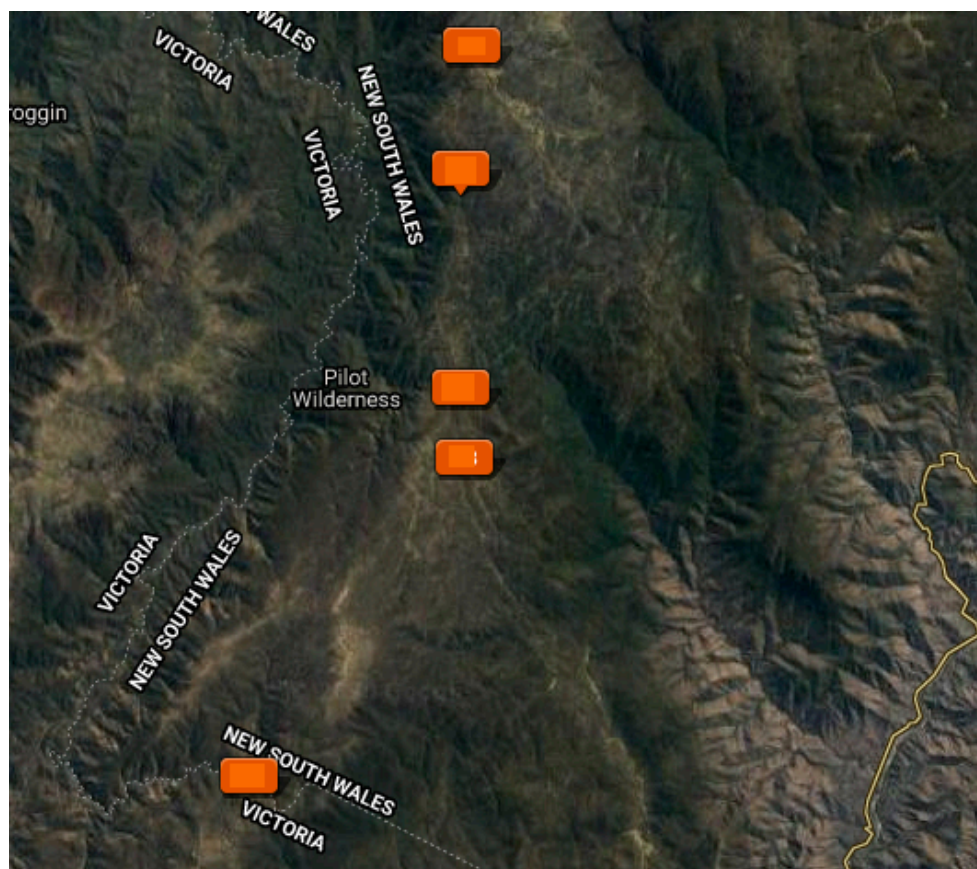


Figure 3. Location of observations in the Mt Pilot area of Kosciuszko National Park and Alpine National Park in the Australian Alps 22 and 23 March 2020. (Source: Google Maps: TerraMetrics 2020 Imagery).



Horse impacted vegetation surrounding a 1999 exclosure plot with its protected sward of sedges and grasses, Cowombat Flat, Victorian Alpine National Park, near the NSW border, 23 March 2013 (Source: Graeme L. Worboys).



Horse impacted vegetation surrounding exposing bare trampled and compacted soil at the same exclosure that was constructed in 1999 with its protected sward of sedges and grasses, Cowombat Flat, Victorian Alpine National Park, 3 March 2020 (Source: Ian Pulsford).



Exclosure plot fence constructed in 1999 with protected (left) and unprotected sedge and grass vegetation, Cowombat Flat, Victorian Alpine National Park, 23 March 2013. (Source: Graeme L. Worboys).



Exclosure plot fence constructed in 1999 with protected (left) and unprotected sedge and grass wetland, Cowombat Flat, Victorian Alpine National Park, 3 March 2020 (Source: Ian Pulsford).



Murray River headwater stream impacted by horses as it emerges from dense protected sward of sedges and grasses habitat within a 1999 exclusion plot at Cowombat Flat, March 23 2013. (Source: Ian Pulsford).



Murray River headwaters stream impacted by horses as it emerges from dense protected sward of sedges and grasses within an exclusion plot constructed in 1999 at Cowombat Flat in Alpine National Park. Note compaction, bank disturbance and erosion have increased, vegetation cover is lower and vegetation structure is less complex than inside the same exclosures, 3 March 2020. Grazing impacts at these plots have been described by Prober and Thiele (2007) and Wild and Poll (2012) (Source: Ian Pulsford).



Horse trampling impacts to stream banks and stream bank collapse, headwaters of the Ingeegoodbee River near Tin Mines Hut, Kosciuszko National Park, 22 March 2013 (Source: Graeme L. Worboys).



Horse trampling impacts to the same stream banks, headwaters of the Ingeegoodbee River near Tin Mines Hut, Kosciuszko National Park, 3 March 2020 (Source: Ian Pulsford).



Horse trampling incision of stream banks and bank collapse, headwaters of the Ingeegoodbee River near Tin Mines (Carters) Hut, Kosciuszko National Park, 23 March 2013 (Source: Graeme L. Worboys).



Horse trampling and incision of stream banks causing bank collapse, headwaters of the Ingeegoodbee River near Tin Mines (Carters) Hut, Kosciuszko National Park, 3 March 2020 (Source: Ian Pulsford).



Former subalpine riparian bog trampled and transformed into a large mud pan by horses in the upper headwaters of the Ingeegoodbee River, 23 March 2013 (Source: Ian Pulsford).
We were unable to revisit this site due to heavy rain.



Trampling impacts to a subalpine bog near Tin Mines Hut, Kosciuszko National Park, 23 March 2013 (Source: Graeme L. Worboys).



Trampling impacts to a former wet heath and subalpine bog between Cascades Hut and Tin Mines Hut, Kosciuszko National Park, 22 March 2013 (Source: Graeme L. Worboys).



Trampling impacts to the same site of subalpine bog an wet heath and between Cascades Hut and Tin Mines (Carters) Hut, Kosciuszko National Park, 3 March 2020 (Source: Ian Pulsford).



Trampling impacts to a wetland bog at Tin Mines Hut, Kosciuszko National Park, 23 March 2013 with remnant soil pedestal (Source: Ian Pulsford).



Trampling and pugging impacts by horses to a wetland bog near Tin Mines (Carters) Hut surrounded by compacted closely cropped grasses, Kosciuszko National Park, 4 March 2020 with remnant grassy covered soil pedestal, centre. (Source: Ian Pulsford).



Horse dust bath, Cowombat Flat, Victoria, 100 metres south and east of the NSW border. Note hard compacted ground and very short-cropped grasses due to grazing by horses, 23 March 2013. (Source: Graeme L. Worboys).



The pugged and broken edges of the banks of the upper Murray River headwater stream form a muddy eroding pool trampled by horses near its headwaters. This is the same pool seen in the above photo. Cowombat Flat, Victoria 30 metres south and east of the NSW border, 3 March 2020. (Source: Ian Pulsford).



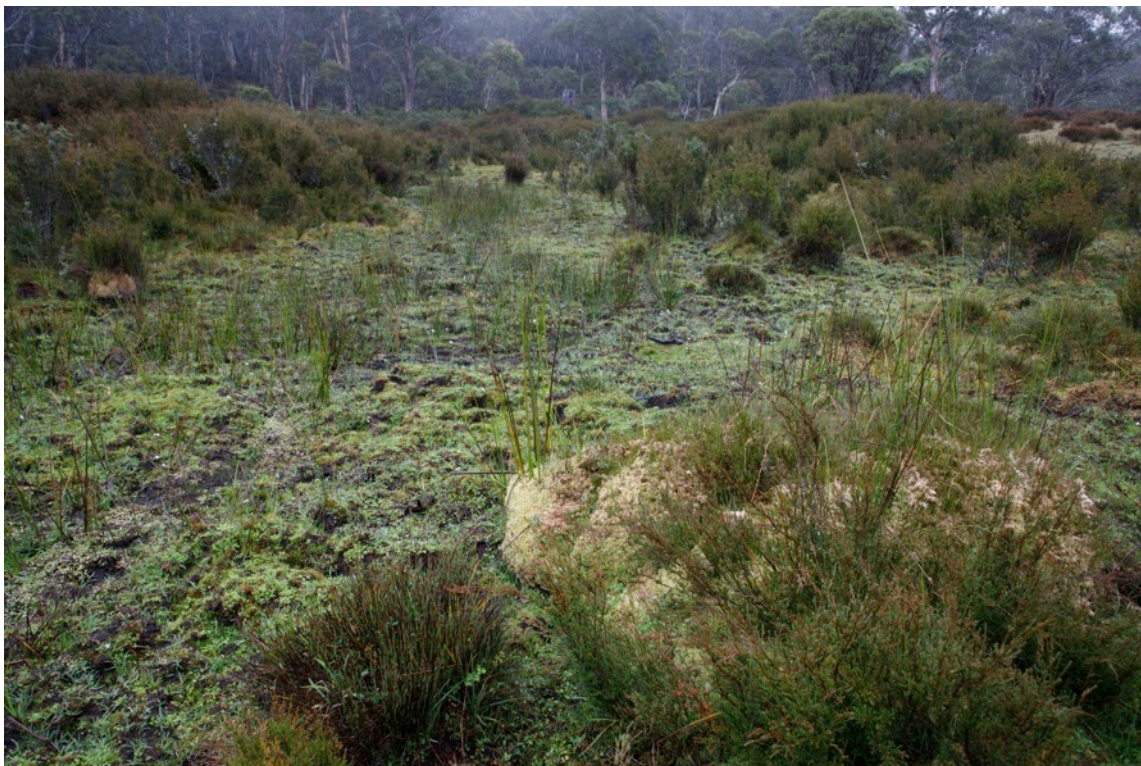
Horses trampling, tracking and grazing through shrubby wet heath and sphagnum bog near the Cascade Fire Trail 1.5 km south west of the upper Thredbo River. Note the horse tracks throughout the dissected vegetation, 3 March 2020 (Source: Ian Pulsford).



Small *Sphagnum* and *Carex* bog destroyed by horses trampling and grazing exposing and pugging peat and soil, Cascade Creek flats near Cascade Fire trail, 3 March 2020 (Source: Ian Pulsford)



Small *Sphagnum* and *Carex* bog destroyed by horses tramping and grazing exposing and pugging peat and soil, Cascade Creek flats near Cascade Fire trail, 3 March 2020. (Source: Ian Pulsford).



Subalpine bog Spreading Rope Rush *Empodisma minus* and Sphagnum Moss *Sphagnum cristatum* hummock (foreground right) and surrounding habitat destroyed by horses tramping and grazing in a drainage line near Tin Mines (Carters Hut), 3 March 2020. (Source: Ian Pulsford).



Large area of compacted hard pan soil surface which was once a sphagnum moss bog that has been destroyed by tramping and grazing south west of Tin Mines (Carters) Hut on the crest of the Great Divide. Wetlands here drain into either the Murray River or Snowy River. There are many large bare patches like this along headwaters and creek flats in this area, 4 March 2020 (Source: Ian Pulsford).



Horse dung piles on “mowed” snow grasses and boggy vegetation (background) destroyed by horse grazing and trampling south west of Tin Mines (Carters) Hut, 4 March 2020 (Source: Ian Pulsford).



Hard compacted vegetation (left) compared to Bog Snow-grass *Poa costiniana* that was protected from grazing by horses by an exclosure fence constructed by the NPWS in Nov 2011 (R. Gibbs pers. comm.) south west of Tin Mines (Carters) Hut. Note the strip within the exclosure grazed by horses reaching into the plot, 4 March 2020 (Source: Ian Pulsford).



A 1.8 m tall hummock of Spreading Rope-rush *Empodisma minus*, Mountain Cord-rush *Baloskion australe* and Sphagnum Moss (*Sphagnum cristatum*) protected from grazing inside another section of the same exclosure south west of Tin Mines (Carters) Hut. The exclosure fence was constructed in Nov 2011 provides important evidence of the almost complete loss of subalpine sphagnum bog vegetation outside the plot and which has occurred along subalpine creek lines in the area due to grazing and trampling mostly by horses and the more recently reported increase in deer populations, 4 March 2020 (Source: Ian Pulsford).

CONCLUSIONS

Wild horses and deer species populations on surveyed areas of public lands in the Australian Alps have grown rapidly since 2013 (Cairns 2019) due to a combination of factors including: (1) natural population increase (2) lack of natural predators or diseases, (3) cessation of horse control operations in 2015 and only limited control of rapidly increasing deer populations in many surveyed areas since 2015. This is in spite of three years of record drought. However drought was clearly less severe in the Mt Pilot area than elsewhere in eastern Australia due to its relatively high elevation, ruggedness, cooler and moister conditions.

Uncontrolled and increasing numbers of wild horses and deer have reached record levels. As a consequence the conditions of treeless drainage line areas that we observed in 2013 have continued to decline. We observed that the growth in horse population and the more recently observed rapid increase in deer populations and drought have all contributed to the further continuing decline in catchment condition. We saw no wetland habitats in treeless drainage lines that exhibited signs of recovery since our last observation in 2013. Any recovery of catchment condition is not possible until effective long-term measures are implemented to remove or very significantly reduce the numbers of pest species especially horses and deer.

The damaging impacts of stock grazing, which was ended by the three visionary policy decisions by government and great leaders which banned grazing in 1944, 1957 and 1969 (Costin 2018) has been replaced by the uncontrolled growth of wild horse (Driscoll *et al.* 2019) and recent rapid expansion of deer populations.

Based on the research by Wimbush and Costin (1979) on the recovery of subalpine vegetation from impacts of grazing, even if horse and deer numbers are very significantly reduced, it will take a long time for these communities to recover and many of these plant communities may remain in a sub-climax state after initial recovery. Rehabilitation work is urgently needed. This cannot commence until introduced herbivore populations are removed or significantly reduced. In the meantime the condition of the headwater catchments of Australia's most economically important rivers that provide water vital for irrigation and electricity will continue to degrade.

End Note

The authors have the highest regard for horses and appreciate and support their place in most areas of Australia such as farms, towns and sporting tracks. We understand, appreciate and share the delight and companionship horses bring to many people. This report is not an attack on horses per se. Rather, it is about raising awareness of too many horses and the unacceptable and excessive impacts in one of Australia's most important conservation areas, the Australian Alps national parks.

Acknowledgements.

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Subalpine bog on Cascade Creek grazed and trampled mostly horses, 650 m north of Cascade Hut, 3 March 2020. (Source Ian Pulsford).