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Environment Select Committee
Herds of National Significance Bill
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SUBMITTER DETAILS

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Introduction

1. The New Zealand Plant Conservation Network thanks the Environment Select Committee for the opportunity to make a submission on the Game Animal Council (Herds of Special Interest) Amendment Bill (hereafter referred to as the Bill).

2. ***Rōpū hononga Koiora Taiao ki Aotearoa* the New Zealand Plant Conservation Network (NZPCN) was established in April 2003 and now has >950 members.** The NZPCN's vision is that "the rich, diverse and unique plant life of New Zealand is recognised, cherished and restored." We work to provide accurate, easily accessible information about plants (including their identification) and to foster conservation best practice. Our full strategy can be accessed here. Our primary means of advocacy is via our website which contains factsheets describing both the introduced and native flora of Aotearoa New Zealand. Our website holds comprehensive information on plants and receives 1.8 million page views per year.

3. **The NZPCN strongly opposes the Bill.**

Main submission

4. **National Parks are for the preservation and protection of native species.**
   4.1. National Parks are the highest level of environmental protection for Aotearoa New Zealand's landscapes, ecosystems and species. Aotearoa New Zealand was a pioneer adopter of National Parks with Tongariro National Park being one of the earliest established National Parks worldwide.

4.2. National Parks should not be for the protection of introduced species like ungulates that are known to cause significant damage to species and ecosystems (see point 5. Below).

4.3. Allowing herds of special interest to exist in National Parks means that a key purpose of National Parks will not be met, namely that they are to exist in their natural state. Maintenance of this natural state is not possible with ungulate species present as they are detrimental to the existence of indigenous plants and some animals.

5. **Ungulates (deer, pigs, chamois, goats and tahr) are known to contribute to or cause the decline of indigenous species and ecosystems. Appendices 1 and 2 show examples of ungulate damage to ecosystems and species.**

5.1. Deer and other ungulates can cause extensive damage to whole ecosystems.

5.1.1. In 1900 red deer (*Cervus elaphus*) were released into the Ruahine Range; 20 years later the forests were unrecognisable with the removal of the understorey through browsing[1].

5.1.2. Today ungulates have caused immense damage to the Raukumara Range[2]. Browse has removed the forest understory meaning there are no juvenile trees to replace the canopy trees as they naturally age and fall. The sharp hooves of ungulates have damaged the moss carpets that used to cover the forest floor. Together the loss of juvenile plants, moss carpets, and other forest floor plants has reduced the ability of the forest to absorb water during rainfall events. Previously the moss carpets and understory plants acted as a giant sponge, taking in the water during storm events and slowing releasing it. Now there is no sponge, so the water runs off the hills immediately causing slips to the Raukumara Range and swollen, sediment clogged rivers downstream.

5.1.3. Himalayan tahr cause immense damage to alpine ecosystems. A long-term study published in 2017 concluded that tahr needed to be controlled to lower levels to ensure a reduction in their impacts on montane grasslands[3].

5.1.4. A 1980 study comparing the growth of plants on a deer free island near Rakiura Stewart Island with the forests of mainland Rakiura that contain the introduced white-tailed deer (*Odocoileus virginianus*) found wheki tree fern (*Dicksonia squarrosa*) to be 'severely impeded' by browse[4]. The same study also noted the empty understory of Rakiura Stewart Island forests as compared to the deer free Bench Island. You can see this for yourself today if you visit the pest free Ulva Island with a magnificent understory and compare it to the forests of Rakiura Stewart Island.

5.1.5. Mark and Baylis (1982) illustrate the impacts of deer on the forest ecosystem of Secretary Island in Fiordland National Park[5]. Their paper includes photographs showing the starkly empty understory following an increase in deer numbers on the island. They also document the selective pressure ungulates initially exert when they preferentially browse palatable species like mountain five-finger (*Pseudopanax colensoi* var. *colensoi*).

5.1.6. Exclosure plots (fenced areas created to keep out ungulates to measure their impact when compared to unfenced areas) have shown the damage ungulates have on

[1] Cunningham A. 1979. A century of change in the forests of the Ruahine Range, North Island, New Zealand 1870-1970. New Zealand Journal of Ecology 2: 11-21.

[2] https://www.raukumara.org.nz/post/how-to-fix-the-rauk%C5%ABmara

[3] Cruz J, Thomson C, Parkes JP, Gruner I, Forsyth DM. 2017. Long-term impacts of an introduced ungulate in native grasslands: Himalayan tahr (*Hemitragus jemlahicus*) in New Zealand's Southern Alps. Biological Invasions 19: 339-349.

[4] Veblen TT, Stewart GH. 1980. Comparison of forest structure and regeneration on Bench and Stewart Islands, New Zealand. New Zealand Journal of Ecology 3: 50-68.

[5] Mark AF, Baylis GTS. 1982. Further studies on the impact of deer on Secretary Island, Fiordland, New Zealand. New Zealand Journal of Ecology 5: 67-75.

indigenous species and ecosystems (Appendix 1). One such study in Te Urewera forests found significant increases in non-palatable species like horopito (*Pseudoewintera colorata*) in the unfenced areas and significant decreases in palatable species like māhoe (*Melicytus ramifolorus* subsp. *ramiflorus*), karamū (*Coprosma lucida*), and hangehange (*Geniostoma ligustrifolium* var. *ligustrifolium*). When browse pressure like this is sustained over time, ungulates can change the structure of our indigenous forests by removing palatable species and preventing the recruitment of canopy trees.

5.1.7. A study from Wakatipu beech forests found deer density needs to be close to zero for regeneration of palatable plant species to occur[6].

5.2. Many plant species are directly threatened because of ungulates.[7] Illustrations of ungulate damage on ecosystems and species are included in Appendix 2. Pictures of species threatened directly by ungulates are included in Appendix 3.

5.2.1. Many alpine plant species are detrimentally affected by ungulates. Graham's buttercup (*Ranunculus grahamii*) is one of Aotearoa New Zealand's highest altitude species and has recently moved conservation statuses from At Risk - Naturally Uncommon to Threatened - Nationally Vulnerable because of browse from Himalayan tahr (*Hemitragus jemlahicus*)[7]. Graham's buttercup is almost entirely found within Aoraki Mount Cook National Park (Appendix 3). The Fiordland mountain daisy (*Celmisia holosericea*) is At Risk - Declining because of browse from deer (Appendix 3). The Mount Peel edelweiss (*Leucogenes tarahoa*) is now listed as Threatened - Nationally Endangered because of ungulate browse (Appendix 3).

5.2.2. Pitpat (*Pittosporum patulum*) is an attractive small tree that is sometimes grown as a garden plant. In the wild, it is threatened by ungulate browse. This threat is reflected in a change in conservation status in 2024 to Threatened - Nationally Endangered[7] (Appendix 3).

5.2.3. Maire (*Mida salifolia*) has become At Risk - Declining because of ungulate browse

5.2.4. *Coriaria pottsiana*, now Threatened - Nationally Critical, is a species endemic to the East Cape (predominantly the Raukumara Range) where it is seriously threatened by deer browse[7]. Interestingly, this is despite *Coriaria* species being one of the most toxic plants in Aotearoa New Zealand

5.3. Ungulates can also directly impact fauna species too. For example, whitetail deer on Rakiura Stewart Island are known to eat the eggs of the Threatened - Nationally Critical pukunui/southern dotterel[8].

6. **Predator free NZ goals could be lost if birds and other critters don't have habitat to live in because of lack of ungulate control leading to ecosystem loss.**

6.1. All terrestrial birds, reptiles, bats, and invertebrates rely on plants. These plants form both their habitat and their food source. For example, tree fuchsia (*Fuchsia excorticata*) is an

[6] Husheer SW, Frampton CM. 2005. Fallow deer impacts on Wakatipu beech forest. New Zealand Journal of Ecology 29(1): 83-94.

[7] de Lange PJ, Gosden J, Courtney SP, Fergus AJ, Barkla JW, Beadel SM, Champion PD, Hindmarsh-Walls R, Makan T, Michel P. 2024. Conservation status of vascular plants in Aotearoa New Zealand, 2023. New Zealand Threat Classification Series 43. Department of Conservation, Wellington.

[8] https://www.doc.govt.nz/nature/native-animals/birds/birds-a-z/nz-dotterel-tuturiwhatu/southern-new-zealand-dotterel/

important food source for indigenous birds[9], but is a preferred food for introduced ungulates[10].

6.2. If ungulates are not controlled, then the food source and habitat for our indigenous terrestrial fauna will be depleted so that even if we are able to eradicate the predators of our indigenous fauna it will be to no avail if our fauna has no habitat.

6.3. A study looking at whether browsing mammals created impoverished habitat for kōkako found that red deer contributed to a reduction in availability of preferred kōkako food[11].

6.4. Diverse vegetative ecosystems are important for our indigenous fauna as plants have different flowering and fruiting seasons. Diversity ensures a year-round food source for indigenous fauna. Ungulates prefer some plant species over others[10], and sustained browsing pressure removes these species creating less diverse ecosystems.

6.5. DOC have reduced their deer control operations over the last decade, now just averaging around 300,000 ha over five years. In contrast, control of rats, possums, and mustelids (stoats, ferrets, and weasels) averaged around 850,000 ha[12]. Yet, ungulates do enormous damage to our ecosystems and indigenous species which is why they should be removed to zero density inside National Parks, our most highly protected areas.

7. **Control of deer and other ungulates could enhance our forest's ability to absorb carbon.**

7.1. Ungulate populations were higher in forest and shrubland sites than in non-forested sites (e.g., dryland grasslands and alpine areas) in a study monitoring numbers across public conservation land from 2012 to 2018[16]. This means that our forests and shrublands face higher detrimental effects of ungulates and it is our forests that have the greatest potential for carbon accumulation.

7.2. Reducing ungulate numbers would allow Aotearoa New Zealand's forests to accumulate more carbon[13,14], thus assisting us to meet our international commitments on greenhouse gas reduction.

8. Dropping protections within National Parks creates a precedent for relaxing protections across other areas of Public Conservation Land.

8.1. National Parks are supposed to offer the highest protections to landscapes, ecosystems, and species in Aotearoa New Zealand. We are concerned that erosion of protections at the top will lead to even worse outcomes for less stringently protected areas.

8.2. If herds of significant interest are created inside National Parks, will even greater 'protections' of introduced animals be given to herds outside of National Parks?

9. We are concerned about increasing ungulate numbers throughout Aotearoa New Zealand.

9.1. We hold this concern because many threatened ecosystems and plants are found outside of National Parks, including on private land. For example, most ephemeral wetlands (a naturally

[9] Robertson AW, Ladley JJ, Kelly D, McNutt KL, Peterson PG, Merrett MF, Karl BJ. 2008. Assessing pollination and fruit dispersal in *Fuchsia excorticata* (Onagraceae). New Zealand Journal of Botany 43(3): 299-314.

[10] Forsyth DM, Coomes DA, Nugent G, Hall GMJ. 2002. Diet and diet preferences of introduced ungulates (Order: Artiodactyla) in New Zealand. New Zealand Journal of Zoology 29(4): 323-343.

[11] Leathwick JR, Hay JR, Fitzgerald AE. 1983 The influence of browsing by introduced mammals on the decline of North Island kōkako. New Zealand Journal of Ecology 6: 55-70.

[12] Leathwick JR, Byrom AE. 2023. The rise and rise of predator control: a panacea, or a distraction from conservation goals? New Zealand Journal of Ecology. 47(1): 3515.

[13] Holdaway RJ, Burrows LE, Carswell FE, Marburg AE. 2012. Potential for invasive mammalian herbivore control to result in measurable carbon gains. New Zealand Journal of Ecology 36(2): 252-264.

[14] Hackwell K, Robinson M. 2021. Protecting our natural ecosystems' carbon sinks. Report for Forest & Bird. 50 pp.

rare ecosystem that has become threatened[15]) are found on Stewardship Land. High numbers of deer or other ungulates create pugging problems in wetlands.

9.2. As outlined above, ungulates can cause declines or collapse of species and ecosystems.

9.3. Ungulate populations are increasing throughout Aotearoa New Zealand from low numbers in the 1980s following big reductions in government control and commercial hunting[16]. Increasing populations will result in greater damage to indigenous plants and ecosystems.

10. Community groups can add value to conservation work in Aotearoa New Zealand, but they are not a replacement for properly funding the Department of Conservation to undertake pest animal control.

10.1. We believe that properly funding the Department of Conservation to control ungulates would lead to better outcomes for indigenous species and ecosystems.

10.2. Creating HOSI will not lead to better outcomes for indigenous species and ecosystems in National Parks (or other places) as it is incentivising the retention of introduced animals that are known to have damaging effects on indigenous species and ecosystems.

11. We are concerned that if herds of special interest are created inside National Parks then these will not have minimum herd sizes that allow the existence of palatable species and prevent ecosystem damage and potential collapse.

11.1. Himalayan tahr have a dedicated control plan that sets a limit of 10,000 animals inside a specified range. However, aerial surveys between 2016 and 2019 estimated 34 478 tahr, well over the legislated limit[17]. Furthermore, Himalayan tahr are also found outside the specified range. What safeguards are in place to ensure that allowing herds of special interest inside National Parks does not escalate further prioritisation of introduced animals that are known to be damaging to indigenous species and ecosystems?

12. Aotearoa New Zealand is in a biodiversity crisis.

12.1. 46% of vascular plants (i.e., ferns, flowering plants, and conifers) are threatened with extinction or at risk of becoming so. Additionally, 19% of hornworts and liverworts and 14% of lichens are threatened with extinction or at risk of becoming so[18].

12.2. 82% of our indigenous birds are threatened with extinction or at risk of becoming so. As are 94% of our reptiles and 80% of our bat species[18]. Many of these birds and all the reptiles and bats rely on plants for their existence.

12.3. Now is not the time to be elevating the status of introduced animals at the expense of indigenous species and ecosystems.

13. Climate change is already threatening alpine ecosystems, and allowing increased ungulate pressure could be a tipping point too far for some species.

14. Aotearoa New Zealand plants evolved without browse pressure from mammals.

14.1. Therefore, our plants are susceptible to damage from deer and other ungulates.

14.2. The most palatable species are eaten first, including the seedlings and saplings of forests trees. Without seedlings and saplings our forests cannot recruit new canopy trees,

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[15] Holdaway RJ, Wiser SK, Williams PA. 2012. Status assessment of New Zealand's naturally uncommon ecosystems. Conservation Biology 26: 619-629.

[16] Moloney PD, Forsyth DM, Ramsey DSL, Perry M, McKay M, Gormley AM, Kappers B, Wright EF. 2021. Occupancy and relative abundances of introduced ungulates on New Zealand Conservation land 2012-2018. New Zealand Journal of Ecology 45(1): 3437.

[17] Ramsey DSL., Forsyth DM. 2019. Estimates of Himalayan tahr (*Hemitragus jemlahicus*) abundance in New Zealand: results from aerial surveys. Unpublished client report for the New Zealand Department of Conservation. Arthur Rylah Institute for Environmental Research, Department of Environment, Land, Water and Planning, Heidelberg, Victoria

[18] https://www.stats.govt.nz/indicators/extinction-threat-to-indigenous-species/

eventually leading to ecosystem collapse. Removal of ungulates allows the recovery of out forest ecosystems (Appendix 1).

14.3. Our plants did evolve with browse pressure from moa, but ungulates are not a replacement for moa[19] and have a devastating impact on our indigenous species and ecosystems.

14.4. Furthermore, ungulate hooves are sharp and cut the ground like a chisel causing damage to the substrate, whereas moa had a more flexible foot that caused little or no cutting damage[20]. The cutting damage of ungulate hooves has contributed to the loss of the moss carpets in the Raukumara Range.

15. Giving power to the Minister of Hunting and Fishing regarding the creation and presence of herds of special interest inside National Parks undermines the role of the New Zealand Conservation Authority (NZCA).

16. Large numbers of tourists visit Aotearoa New Zealand every year to see our landscapes.

16.1. Aotearoa New Zealand's magnificent landscapes look the way they do because of the plants that cloak our lowlands and mountains. Ungulates cause significant damage to these plants.

Recommendations

Foremost, we strongly recommend that the status of ungulates as pests inside National Parks should remain – i.e., <u>this bill should not proceed any further.</u>

If the Bill is to proceed, then we recommend the following conditions are added:

- Herd of special interest status for any herd or species is subject to review and is not permanently conferred.
- Outcomes of allowing a herd of special interest inside a National Park requires robust monitoring to ensure detrimental effects of ungulates are not causing harm to species or ecosystems. Robust monitoring needs to include counts of wild animals, permanent plot measurements of vegetation, monitoring of threatened and palatable species, and accurate reporting of how many animals are killed within National Parks annually. Monitoring should include flowering effort and seedling recruitment as often ungulates browse flowers so while the plant populations look okay, they may not be replacing themselves. Monitoring of flowering and recruitment is especially important in the alpine as the plants here can be very slow growing over multiple short summers.
- All results of monitoring must be transparent and publicly available within a year of monitoring occurring.
- Herd of special interest status should not interfere with proper conservation management of other pest species. For example, 1080 use should continue as required to manage predator outbreaks following mast events. The Department of Conservation should not be expected to pay for deer repellent.
- If plant species that have their strongholds inside National Parks are known to be declining due to ungulate browse pressure (e.g., *Ranunculus grahamii* in Aoraki Mount Cook National

[19] Forsyth DM, Wilmshurst JM, Allen RB, Coomes DA. 2010. Impacts of introduced deer and extinct moa on New Zealand ecosystems. New Zealand Journal of Ecology 34(1): 48-65.

[20] Duncan K, Holdaway R. 1989. Footprint pressures and locomotion of moas and ungulates and their effects on the New Zealand indigenous biota through trampling. New Zealand Journal of Ecology 12: 97-101.

Park (Appendix 3)) then their protection should take precedence over creating a herd of special interest.

- Herd of special interest status should not limit other recreational users of National Parks at any time.

Appendices

Appendix 1. Examples of deer damage to ecosystems

A monitoring plot in the beech forests of Mount Aspiring National Park in 1970, established after deer control in the late 1960s.

The same monitoring plot as directly above 29 years later in 1999 after deer control initiated in the late 1960s and subsequently sustained, radically reduced deer numbers in Mount Aspiring National Park.

Deer damage to pōkākā forest. Note how depauperate the understory is with a lack of woody seedlings, instead it is dominated by ferns. Photo: Jesse Bythell.

Seemingly healthy-looking forest in Rakiura National Park. However, the forest floor is dominated by crown fern (*Lomaria discolor*) with very few seedlings and saplings of the canopy tree species present because of deer browse. Photo: Hamish Graham.

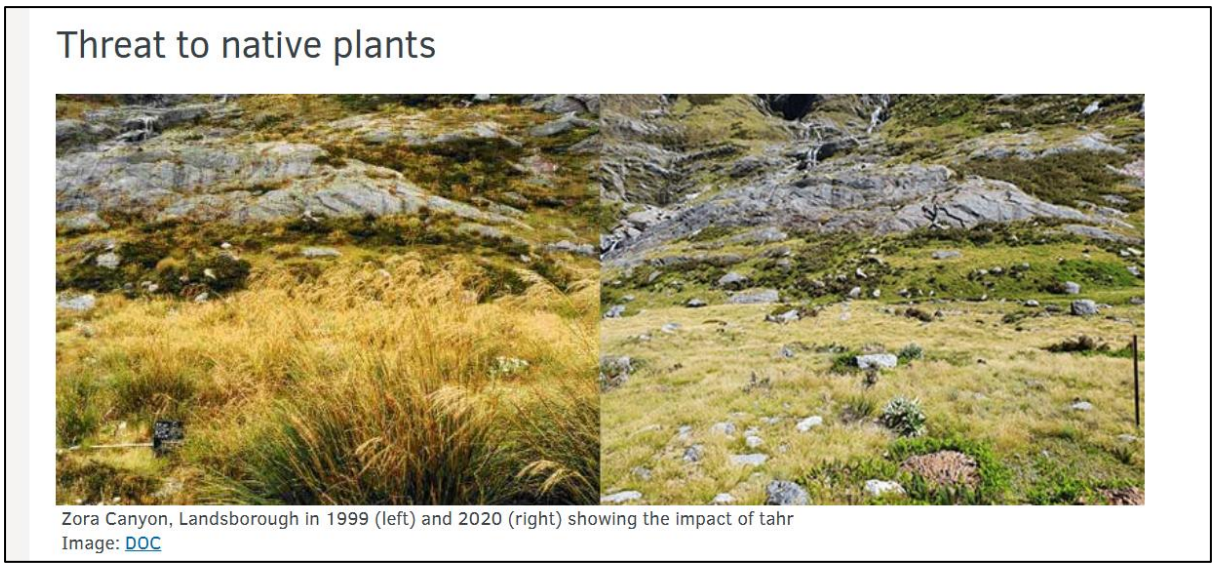
A large red deer herd in alpine tussock grassland. Herds like this do substantial damage to indigenous grasslands. The photo also illustrates that deer numbers are already high in many parts of the backcountry. Photo: John Barkla.

Both photos above, show ungulate damage to tree fuchsia and the forest understory . Photo: Jesse Bythell.

Pig rooting damage to alpine grasslands. The disturbance of these grasslands from the pig rooting can facilitate invasion by weeds alongside the initial damage to indigenous species. Photo: John Barkla.

Heavily browsed forest understory.

An exclosure plot on Rakiura Stewart Island. Note how dense the vegetation growth is inside the plot (right) in comparison to the bare understory outside (left).



A screenshot from the Department of Conservation website showing complete removal of tall tussock grasslands by tahr in South Westland. Photos: DOC[21]

Appendix 2. Examples ungulate damage to plants.

Deer browse on Mount Cook buttercup (*Ranunculus lyallii*, Not Threatened), with an unbrowsed plant on the right. Photos: Jesse Bythell (left) and John Sawyer (right), taken from www.nzpcn.org.nz.

21 https://www.doc.govt.nz/parks-and-recreation/things-to-do/hunting/what-to-hunt/tahr/tahr-and-conservation/

Flowerhead ungulate browse damage on *Celmisia macmahonii* var. *hadfieldii*. Sustained browse pressure on the flowerheads of alpines species like this *Celmisia* will eventually result in species declines as populations fail to recruit new individuals. Photo: Jane Gosden.

Pig damage to golden speargrass (*Aciphylla aurea*). Pigs root up and eat the taproot of speargrass species killing the plant. In areas with large pig populations speargrass can disappear from the ecosystem. Photo: John Barkla.

A dead golden speargrass on the outside edge of an exclosure plot where it was accessible to pigs. Photo: Jane Gosden.

Red deer bark rubbing damage on pōkākā (*Elaeocarpus hookerianus*). Photo: Jesse Bythell.

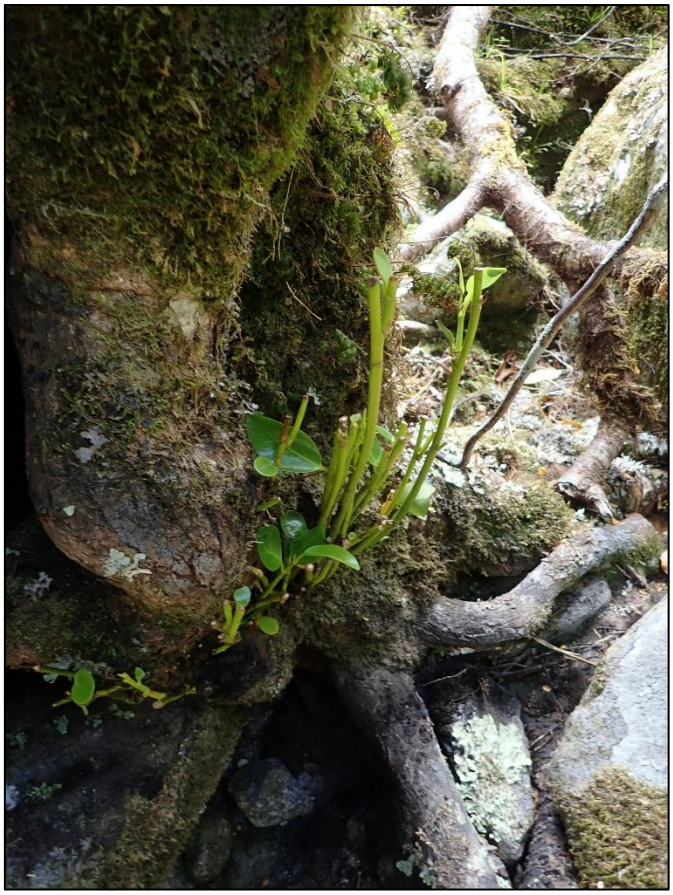
Deer damage from bark rubbing to mountain five-finger (*Pseudopanax colensoi*). Photo: Jesse Bythell.

Deer damage to five-finger (*Pseudopanax arboreus*). Photo: Melissa Hutchison.

Deer damage to rimu (*Dacrydium cupressinum*). Photo: Jesse Bythell.

Pitpat (*Pittosporum patulum*), Threatened – Nationally Endangered, that has been killed by deer antler rubbing. Photo: John Barkla.

Pimelea gnidia (Not Threatened) showing substantial deer browse. Photo: Joe Dillon.



Deer browse on broadleaf (*Griselinia littoralis*, Not Threatened) from Fiordland National Park.

Deer browse on kiekie (*Freycinetia banksia*, Not Threatened) in Fiordland National Park.

Browsed wheki tree ferns (*Dicksonia squarrosa*).

Appendix 3. Examples of plant species in decline because of ungulate browse

Pittosporum patulum, Threatened - Nationally Endangered. Highly palatable to ungulates. Photo: John Barkla taken from www.nzpcn.org.nz

Ranunculus grahamii, Threatened – Nationally Vulnerable. Tahr and Chamois browse is causing declines in populations of *R. grahamii* a species which is almost entirely found within Aoraki Mount Cook National Park. Photo: Hamish Brown taken from www.inaturalist.nz

Celmisia holosericea, At Risk - Declining. Declines in this species are caused by deer and chamois browse.

Leucogenes tarahoa, Threatened - Nationally Endangered. A species endemic to Mount Peel that is threatened from ungulate and hare browse. Photo: Melissa Hutchison, taken from www.nzpcn.org.nz

Mida salicifolia, At Risk – Declining. *Mida salicifolia* is a small tree that is only found in Aotearoa New Zealand, it is declining because of ungulate browse pressure. Photo: Jane Gosden, taken from www.inaturalist.nz

Coriaria pottsiana, Threatened - Nationally Critical. *Coriaria pottsiana* is a species endemic to the East Cape where it is seriously threatened by deer browse despite *Coriaria* species being one of the most toxic plants in Aotearoa New Zealand. Photo: Daniel Papworth, taken from www.inaturalist.nz