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Committee Secretary
Senate Standing Committees on Environment and Communications
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Friday 2 November 2018

Re: Inquiry into the impact of feral deer, pigs and goats in Australia

Dear Committee Secretary,

The Nature Conservation Society of South Australia (NCSSA) appreciates the opportunity to provide a submission to the Senate Standing Committee's Inquiry into the impact of feral deer, pigs and goats in Australia. Since 1962, the NCSSA has been a strong advocate for the protection of native vegetation and biodiversity in South Australia with particular attention being paid to nationally and state listed threatened plants, animals and ecological communities and management of protected areas.

NCSSA endorses and strongly supports the Invasive Species Council's (ISC) submission to this Inquiry. We concur that the combined impact of feral deer, goats and pigs imperils hundreds of threatened plant and animal species and ecological communities across Australia, and causes extensive landscape degradation. We also concur that unless containment and control efforts substantially improve, this damage will escalate as populations spread and densities increase.

NCSSA would like to re-emphasise key points from the ISC submission, and also add further commentary, as follows:

Enforcement is key

We support the ISC's call for the development of a strong national policy to prevent the further spread these three animals and to reduce their impacts on biodiversity, land health and agricultural productivity, to be implemented in partnership with states and territories. However, we note that the legislative and policy mechanisms for effective pest control exist in most jurisdictions (excluding where they are protected as 'game species'), but that they are not effective. This is due to a number of reasons including the lack of funding to implement co-ordinated control programs, the limited requirement for monitoring and a lack of resources for compliance activity. We suggest a review of barriers to effective legislative and policy enforcement in each jurisdiction needs to be undertaken.

Commercial farming is not the answer

Goat farming in the pastoral regions of South Australia is not permitted, and we support this approach. A long-standing and successful feral goat control program in the Flinders Ranges, South Australia (part of BounceBack[1])

[1] https://www.naturalresources.sa.gov.au/aridlands/plants-and-animals/native-plants-and-animals/bounceback

has maintained densities between 5 – 9 goat/km². Conversely, in western New South Wales where goat farming is permitted, rangeland goat densities are as high as 50 goats/km².

Further support for the Centre for Invasive Species Solutions

NCSSA supports the work of The Centre for Invasive Species Solutions, and notes that a number of relevant research and extension projects relating to deer control are currently underway[2]. The Committee may wish to consider how this research could be best extended and built upon.

Enhancing sporting shooter involvement

NCSSA does not support recreational hunting on public lands. We do, however, support the strategic use of volunteer shooters in coordinated pest control programs.

Measure impact, not just numbers

For all pest control programs, effectiveness should be measured in terms of the reduction of impact (such as reduction in damage to the environment or production), not simply the number of animals killed or removed.

NCSSA is particularly concerned that dingoes are not being managed according to the best available science, and calls for specific resources to be directed toward investigating the impact of dingoes (and wild dogs) on feral goat numbers, to quantify the potential benefit in retaining dingoes in the landscape in reducing feral goat numbers.

NCSSA wishes to refer the Committee to these successful pest control case studies from South Australia:

- Fleurieu Feral Deer Program[3]
- South East Deer Control Program[4]
- Feral goat control program in the Flinders Ranges, as part of Bounceback[5]

Please find further comments against the Terms of Reference for the inquiry on the following pages. If you would like to clarify or discuss any of the points raised please contact me on (08) 7127 4633 or via email at julia.peacock@ncssa.asn.au.

Yours sincerely,

Julia Peacock
Nature Advocate

[2] https://invasives.com.au/wp-content/uploads/2018/10/180511_doc_PortfolioOneprojectlist_distribution.pdf
[3] https://www.naturalresources.sa.gov.au/adelaidemtloftyranges/news/170522-feral-deer-program
[4] https://www.naturalresources.sa.gov.au/southeast/news/170918-Landholders_key_to_feral_deer_fight
[5] https://www.naturalresources.sa.gov.au/aridlands/plants-and-animals/native-plants-and-animals/bounceback

The impact of feral deer, pigs and goats in Australia, and national priorities to prevent the problems worsening for the natural environment, community and farmers, including:

(a) the current and potential occurrence of feral deer, pigs and goats across Australia;

Of the three species being investigated as part of this inquiry, feral goats and deer are currently having the greatest impact on the natural environment in South Australia. In 2011 there were an estimated 322,000 goats in South Australia (see below). There is also an unknown but increasing number of Fallow and Red Deer in South Australia, particularly escapes from deer farms and possible deliberate releases.

Goats

Feral goats are widespread across the rangelands in SA with numbers assessed annually through aerial surveys conducted by the Department for the Environment and Water across the commercial harvest area for the 3 dominant kangaroo species. Most surveys have involved counting goats in 100m or 200m strip transects surveyed by fixed-wing aircraft, which are then corrected for visibility bias.

NCSSA refers the Inquiry to a report by Pople and Froese (2012) for detailed information about the distribution, abundance and harvesting of feral goats in the Australian rangelands. This report states that in South Australia, fixed-wing surveys have been conducted annually since 1989 across a core area of 290,000 km^2, but an area of ~490,000 km^2 was covered by all survey years combined. Goats are common in four bioregions, but particularly in the Flinders Lofty Block, Gawler Craton and Murray Darling Depression. In 2011, there were an estimated 322,000 feral goats in South Australia. There is no obvious long-term trend in numbers, although all four regions have seen an increase since 2004, after numbers had declined following drought in the early 2000s. Over the study period between 1984 and 2011, this report found an average increase of 3-4% per year in Gawler Craton, Broken Hill Complex and Flinders Lofty Block, but little change in the Murray Darling Depression (see Appendix 1 for graphs).

Pople & Froese (2012) describe a feral goat population in Australia that has grown from 1.4 million in 1997 to 4.1 million in 2008 and state that in 2010, there were an estimated 3.3 million feral goats in the rangelands of Australia.

Deer

Although estimates of deer numbers in South Australia are not available, the anecdotal evidence is that Fallow and Red Deer are increasing in numbers across the Adelaide Mount Lofty Ranges and Northern and Yorke Natural Resource Management Regions. These same deer species have increased by 30% and 16% per year respectively in the South East Natural Resource Management region (Lethbridge and Andrews 2016). The increase in deer numbers is thought to be due to escapes from the increasing number of deer farms and possible deliberate releases.

Pigs

Feral pig numbers in South Australia are currently thought to be low (3,000-6,000 animals) but they can breed rapidly and may spread quickly in the future. The prevention and early response to incursions is a cost-effective alternative to long-term control of established feral pig populations.

(b) the likely and potential biosecurity risks and impacts of feral deer, pigs and goats on the environment, agriculture, community safety and other values;

NCSSA is particularly concerned about the grazing impact that feral deer and goats have on native vegetation, particularly in areas that provide habitat for threatened species and ecological communities.

Goats

'Competition and land degradation by unmanaged goats' is listed as a key threatening process under the *Environment Protection and Biodiversity Act 1999*. The threat abatement plan lists the impacts as:

- a general reduction in vegetation cover
- an increase in the amount of bare ground, changes in the composition of perennial and annual vegetation selecting against palatable species (Landsberg et al. 1997, Ludwig et al. 1997)
- loss of soil nutrients (Sparrow et al. 2003)
- changes in the density and composition of the seed bank (Landsberg et al. 1997, Kinloch and Friedel 2005)
- decreased seed production (Letnic 2004)
- increased soil erosion (Wasson and Galloway 1986), and
- the disruption of microbiotic soil crusts that play an important role in nutrient cycling (Eldridge and Greene 1994).

The threat abatement plan lists unmanaged goats as a threat to 8 species of birds, 3 mammals, 1 insect and 44 plant species. In the South Australian pastoral lands, this includes species such as thick-billed grasswren, malleefowl, yellow-footed rock wallaby, spidery wattle, Menzel's wattle, salt pipewort, superb groundsel, slender darling pea and Corunna daisy.

In terms of biosecurity risks feral goats carry footrot and can infect or reinfect sheep through contact. They could also carry exotic diseases such as foot-and-mouth disease, should there be an outbreak in Australia.

Deer

The impacts of deer are mentioned in the 'Novel biota and their impact on biodiversity' key threatening process listed under the *Environment Protection and Biodiversity Act 1999*. As the 2010 South Australian Deer Policy states, their impact on biodiversity is not well understood[5]. In 2016/17, NCSSA supported research into the diet of feral deer, which found that they consume a wide range of plants: native, naturalised, and agricultural crops and weeds[6].

Pigs

'Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs' is listed as a key threatening process under the *Environment Protection and Biodiversity Act 1999*. As identified in this listing, feral pigs prey on native animals and plants, dig up large expanses of soil and vegetation in search of food and foul fresh water, and will eat many things including small mammals, birds, reptiles, frogs, crayfish, eggs, earthworms and other invertebrates, and all parts of plants including the fruit, seeds, roots, tubers, bulbs and foliage. In South Australia, the impact of pigs is most notable on the western end of Kangaroo Island and along the Cooper Creek around Innamincka in the far north of the state where they pose a threat to the Ramsar listed Coongie Lakes system.

In terms of biosecurity risks feral pigs can be hosts or vectors of a number of endemic parasites and diseases, some of which can affect other animals or people. Feral pigs are hosts for pathogens such as brucellosis and leptospirosis and could also carry diseases such as foot-and-mouth disease, African swine fever and rabies, should those diseases be accidentally introduced into Australia.

(c) the effectiveness of current state and national laws, policies and practices in limiting spread and mitigating impacts of feral deer, pigs and goats;

[5] http://www.pir.sa.gov.au/__data/assets/pdf_file/0011/232040/deer_policy_21st_December_2010.pdf
[6] http://www.ncssa.asn.au/files/xanthopus/XanthSummerAutumn2018.pdf

NCSSA supports the ISC submission in highlighting that the current state and national laws, policies and practices are ineffective in limiting the spread and mitigating impacts of feral deer, pigs and goats. We support the call for the development of a strong national policy to prevent the further spread these three animals and to reduce their impacts on biodiversity, land health and agricultural productivity, which is to be implemented in partnership with states and territories.

However, we note that the legislative and policy mechanisms for effective pest control (excluding where they are protected as 'game species') exist in most jurisdictions; for example, NCSSA recently provided comment on revisions to the feral deer and pig policies in South Australia, and all three animals are declared under the South Australian *Natural Resources Management Act 2004*. Unfortunately, these legislative and policy mechanisms are not effective. This is due to a number of reasons including the lack of funding to implement co-ordinated control programs, limited requirement for monitoring and reporting progress about the outcomes of control efforts and their benefits to biodiversity and a lack of resources for compliance activity. We suggest a review of barriers to effective legislative and policy enforcement in each jurisdiction needs to be undertaken.

(d) the efficacy and welfare implications of currently available control and containment tools and methods, and the potential for new control and containment tools and methods;

Goats

Goat control as part of the Bounceback program has effectively reduced feral goat numbers on public and private land in the Flinders, Gawler and Olary Ranges. The Bounceback goat control program aims to achieve long-term suppression of goat numbers to reduce browse pressure on native vegetation across the ranges. It began in 1992 and was one of the first programs to operate at a landscape scale across several properties.

Thousands of goats were mustered and removed from reserves in the early years by the Sporting Shooters Association of Australia (Hunting & Conservation Branch), rangers and contractors. Aerial control began in the mid-1990s and expanded to include the Gawler and Olary Ranges in 2002. Aerial control can operate in steep and inaccessible terrain, where 'hotspots' can be targeted, and covers large areas in a short time with minimal impacts on tourist and pastoral activities. The aerial program complements ground control by Sporting Shooters and ranger staff. The combination of ground-based shooting and mustering with follow-up aerial control has proven to be very effective in reducing goat numbers, however, as with any pest animal control program, ongoing effort is required to prevent reinfestation of areas where goat numbers have been reduced. This is particularly the case for highly mobile animals such as goats that can rapidly reinvade treated areas. The program now operates on national park reserves, Aboriginal owned and managed lands, private sanctuaries, and pastoral lands.

The ability of volunteer shooters to complement park staff ground shooting, and commercial feral removal operations should not be underestimated. In South Australia over a ten-year period, the Sporting Shooters Association of Australia (SA) volunteers removed 8% of the feral goat population within the Flinders Ranges National Park (Lethbridge et al. 2014). Between 2012 and 2016, Sporting Shooters Association of Australia (Victoria) removed on average 13% of all feral goats in the Murray-Sunset National Park per annum (Parks Victoria 2017). At first glance these figures may not seem substantial, however, the latter study predicted that the involvement of volunteer shooters could conservatively save Parks Victoria $0.5 million.

Therefore, whilst NCSSA does not support recreational hunting on public lands, we do support the strategic use of volunteer shooters in coordinated pest control programs

(e) priority research questions;

NCCSA strongly suggests that the effectiveness of pest animal control programs should be measured in terms of the reduction of impact (such as reduction in damage to the environment or production), not simply the number of animals killed or removed (Fisher et al. 2004a, b, Norris and Low 2005).

The effectiveness of natural resource management projects can only be evaluated if clear objectives and assessment criteria are set up front (Noss 1990, Caro and O'Doherty 1999, Hilty and Merenlender 2000, Thackway et al. 2006). Monitoring feral animal abundance, density or the number of removals, without investigating changes in their impacts may give a misleading result of achievement of the management goals. If the objective of the program is to reduce the impact of a feral species, then it follows that impact is a pivotal measure of the success of program (Fisher et al. 2004a, b, Norris and Low 2005).

Of these three pest species being investigated by this Inquiry, arguably more research is required in relation to deer, particularly in relation to their diet, impact on biodiversity as well as further options for humane control.

NCSSA advocates for the management of dingos (and wild dogs) to be based on scientific evidence and for their role in Australia's ecosystems as a keystone wildlife species with important and legitimate ecological and cultural roles to be recognised. Outside the Dog Fence, we call for research into the ecological and production benefits provided by dingoes through their control of pest animals such as goats, and native herbivores such a kangaroos, to be undertaken.

(f) the benefits of developing and fully implementing national threat abatement plans for feral deer, pigs and goats; and

NCSSA supports the recommendation of the ISC submission that a threat abatement plan for feral deer (as well as other high priority invasive species encompassed by the novel biota KTP listing) be prepared that prioritises the prevention of further spread of all species of feral deer and the development of effective control methods.

NCSSA also supports the updating of the threat abatement plan for feral goats, noting that the 2013 review of the 2008 TAP for feral goats was highly critical, concluding that the TAP 'has not achieved the goal of minimising the impacts of feral goats' and that the problem is complex and increasing. There had been no significant development in management techniques, and monitoring techniques to measure impacts on key native species were not well developed.

NCSSA supports the recent (2017) feral pig TAP and calls for its full implementation, including monitoring of the impacts of control for biodiversity conservation.

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Appendix 1

The chart below shows changes in the number of goats based in 4 bioregions (Broken Hill Complex, Flinders Lofty Block, Gawler Ranges and Murray Darling Depression) in SA based on aerial survey data (Pople & Froese, 2012).