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Committee Secretary
Senate Standing Committees on Environment and Communications
PO Box 6100
Parliament House
Canberra ACT 2600
Submitted via email to: ec.sen@aph.gov.au

RE: Submission to Senate Inquiry - Impact of feral deer, pigs and goats in Australia

Dear Committee Secretary,

Thank you for the opportunity to provide a submission to the Senate Inquiry on the impact of feral deer, pigs and goats in Australia.

The NQ NRM Alliance (the 'Alliance') represents the three northern Natural Resource Management (NRM) regions in Queensland and was established in 2016 by Cape York NRM, Terrain NRM and Northern Gulf Resource Management Group. The Alliance structure enables member organisations to bid for a broad range of projects, particularly those that require cross-regional collaboration. The Alliance and currently coordinates the $16+million Australian Government Regional Land Partnerships investment into Far North Queensland, through a service agreement with the Department of Agriculture, Water and the Environment.

Within the Alliance, each NRM organisation delivers on ground projects and programs through regional, community based NRM plans, supporting people and communities in their area to work together to sustainably manage land and sea country. We have strong community linkages and work with a broad range of partners including land managers, producers, community groups, Landcare groups, industry, NGOs, local communities, and all levels of government.

This regional integrated management approach ensures prioritized actions and investment at a local level is aligned with priorities both vertically (national, State to local level) and horizontally (across

tenures, land-types and land-uses). Regional NRM organisations leverage investment from a range of sources, at least matching every dollar of government funds. Furthermore, with support from regional NRMs, local communities contribute at least $5 for every $1 of Government investment (NRM Regions Australia, 2019).

Our offices are based in Ingham, Tully, Innisfail, Cairns, Atherton, Mareeba, Georgetown and Cooktown. The organisations collectively employ over 80 staff and divest at least 50 percent of their funds to local groups and landholders delivering positive natural resource outcomes in the region.

Our response to the Terms of Reference for the Inquiry (attached below) refers largely to feral pigs. However, the Wet Tropics, Cape York and Northern Gulf regions do have populations of deer, whose impacts are unquantified. Feral goats are only known to be present in the Palm Island group off Ingham in the Wet Tropics.

Yours sincerely,

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John Gavin CEO, Cape York NRM	Zoe Williams CEO, Northern Gulf RMG	Stewart Christie CEO, Terrain NRM CEO

The current and potential occurrence of feral deer, pigs and goats across Australia.

Feral pigs are found throughout north Queensland. In the Northern Gulf region, significant numbers have been recorded wreaking havoc on sensitive wetlands along the Gulf of Carpentaria and within the Gilbert River catchment.

Cape York is believed to have the highest density of feral pigs in Australia, with widespread distribution, especially on the coastal plains, wetlands and waterholes. With favourable seasons and a lack of coordinated strategic control efforts, feral pig densities can increase dramatically within current local populations. Numerous good wet seasons in a row can provide for an over population in Cape York to migrate south looking for food reserves and suitable habitat.

Feral pigs, deer and goats currently occur in the Wet Tropics. Populations of feral pigs are well established and widespread right across the Wet Tropics region. Feral deer populations are isolated to a few locations, however there is potential for these populations to expand to new locations in the region. Feral goat populations are restricted to offshore islands in the Palm Island group east of Ingham.

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

Feral pigs cause economic losses to production systems through direct losses to agricultural production, the continued cost of pig control and indirect losses from missed opportunity to create profits from alternative investments. A study undertaken to measure pig damage on selected farms estimated costs to be $4,099 per annum for banana farms and $10,632 per annum for cane farms. Feral pigs may also carry foot and mouth disease and soil borne pathogens such as PanamaTR4 virus, that would have major impacts for the local banana and horticultural growing regions of North Queensland. African Swine Fever has been confirmed in Papua New Guinea in March 2020, on the doorstep of Cape York, and poses a significant threat to the Australian pork industry. Feral pigs also have the potential to be vectors of zoonotic diseases such as Japanese encephalitis which was found in Torres Strait pig populations in 2004 as well as the parasites *Cryptosporidium* and hydatid worm (*echinococcus granulosus*). Alongside their potential as a biosecurity vector, feral pigs can cause major headaches for the agriculture sector through crop damage and destruction as well as causing degradation of native pasture and facilitating the spread and establishment of weeds and woody vegetation.

The impacts of feral pigs on biodiversity values has been listed as a key threatening process under the Australian Government's *Environment Protection and Biodiversity Conservation (EPBC) Act, 1999*. Feral pigs' habit of wallowing and rooting around the edges of watercourses, drainage lines, riparian areas and swamps disturbs natural vegetation, spoils water quality, causes erosion, allows weeds to grow and destroys the habitat of small native animals, as well as increasing sediment flow out to the Great Barrier Reef and Gulf of Carpentaria. Digging behaviours in soft soils reduces regeneration of plants and causes degradation of soil biology, which may cause drastic changes to the composition of native vegetation communities. Feral pigs also cause environmental damage through degradation of habitat (including

endangered ecosystems) and competition with native fauna (including threatened species such as cassowary and the northern bettong) for food resources. The species are omnivorous with a diet including tubers, native seeds and fruits, earthworms, amphipods, beetles, frogs, lizards and the eggs of crocodiles and turtles.

Feral pigs' prey on small nesting birds, eggs and some aquatic species, and have been implicated in the decline of the snake-necked turtle. A survey of aquatic fauna in Karumba found very low abundances of freshwater turtles which was partially attributed to feral pigs predating turtle eggs and disturbing nesting sites. The Western Cape Turtle Threat Abatement Alliance (WCTTAA) see feral pigs as a major threat to endangered marine turtles and believe that if the feral pig problem is not solved that it will mean localized extinction for Flatback and Olive Ridley turtles.

The Cape York Peninsula Regional Biosecurity Plan 2016 – 2021 was developed in response to the significant risks to Cape York Peninsula's economic, environmental, social and cultural assets posed by existing and potential weeds and pest animals from within and outside Australia. The Plan was collaboratively developed by Cape York NRM, Cook Shire Council (CSC), Weipa Town Authority, Wujal Wujal, Hopevale, Lockhart, Mapoon, Napranum, Aurukun, Pormpuraaw and Kowanyama Aboriginal Shire Councils and the Northern Peninsula Area Regional Council (NPARC). The development of the Plan was the culmination of extensive consultation with Cape York Peninsula communities, Traditional Owners and all levels of government and was developed in recognition that the most practical and effective way to manage many of these risks is at the regional level through coordinated effort to achieve landscape scale outcomes. However, due to limited resources and a lack of coordinated effort across the region and generally in relation to feral pigs, this Plan has only been partially implemented.

The impacts of feral deer in the Wet Tropics are currently not quantified, due to the limited distribution of deer in the region. However, it is assumed that if deer populations were to expand, the impacts would be like other regions where populations are more established.

Feral goats are limited to offshore islands in the Palm Island Group. Feral goats have had a significant impact on ground cover on these islands leading to significant soil loss from water erosion.

Effectiveness of current state and national laws, policies and practices in limiting spread and mitigating impacts of feral deer, pigs and goats

Generally, state and national laws, policies and practices have little or no effect on limiting the spread or mitigating impacts of these feral animals, and in fact, the major impact of the regulatory framework is increasing the difficulty of dealing with bait distribution and storage. The current framework also doesn't assist or drive a collaborative effort between properties. Both state and federal policies that relate to the control of feral animals generally involve focus on protection of a natural asset, or as occurs in Queensland under the *Biosecurity Act 2014*, landholders have a general obligation to keep their land free of feral pigs, deer and goats. This policy and legislative framework does not support an integrated,

cross tenure control, as each tenure has a different level of commitment and goals for controlling feral pigs, goats and deer.

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

Welfare Implications

We do not believe there are any welfare issues with the currently available tools where they are well delivered, and adhere to animal welfare and ethical standards, encompassing the *Animal Care and Protection Act 2001 (Qld)*, and various state and local government biosecurity guidelines.

Aerial shooting with qualified aerial shooters is the most effective way of controlling dense populations of feral pigs and this method gives accurate data of return on investment per removed animal. This industry is highly regulated by the weapons licensing branch in each state, although certain individuals can slip through the cracks and have performed aerial duties. A qualified aerial shooting contractor should have public liability insurance, all current licenses relating to State laws and regulations, have completed an aerial humane destruction course, operate under the relevant codes of practice, adhere to the *Animal Care and Protection Act* and have carriage and discharge certification to shoot from a helicopter governed by CASA. It is recommended that a checklist such as this be made available to the industry that use aerial shooting contractors to support compliance and prevent unqualified persons having access to government funded projects.

Control Methods

General

Pig control options include ground and aerial bait dispersal, trapping, fencing, ground hunting, fertility control and aerial culls by shooting from helicopters. Feral pig control needs to be regularly repeated to maintain the reduction in pig numbers. Poisoning is the most appropriate technique for large scale feral pig population control because it is economic, efficient and accessible. Poison baiting can affect non-target species such as goannas and birds of prey, but with careful selection and management of the baits and poisons used, non-target impacts can be reduced considerably. A feral pig program must consider a range of management options, as pigs can become wary of baits, can become trap-shy, and wary of shooters. According to the CSIRO, effective feral pig control requires around 75 percent of the population to be culled every year for at least several years in a row, within a catchment where ingress of replacement pigs is minimal. Therefore, coordinated efforts between properties and across regions are essential to success.

Aerial shooting has the advantage of being target specific, has a good initial knockdown of populations, can cover otherwise inaccessible areas, and is initially cost effective. Trapping is also target specific but very labour intensive and can be access restrictive. Baiting, both from the ground and air using 1080 is

carried out under strict guidelines from Queensland Health. It is reasonably cost efficient, however it is not favourable with some remote communities and conservation groups and has the potential to affect off-target species. All current methods work well together for an integrated approach and some methods are more effective than others depending on land types and ecosystems. They all require follow up and sustained pressure on feral pig populations to be effective.

Monitoring of pigs by aerial and ground counts is necessary to ensure that populations are reduced, so that the efforts are not wasted. It is often best to undertake control when pigs are concentrated rather than dispersed, such as during the late dry season. Targeted baiting programs to reduce pigs at critical times (such as leading up to the turtle nesting season or during the dry season where wetlands may be more vulnerable to damage) can be highly effective in reducing pig damage. This improves success rates and reduces effort, thereby reducing costs. A side effect of feral pig control may be that predators which relied substantially on pigs for their diet, such as dingoes, may switch to other prey, such as cattle, kangaroos and wallabies and smaller mammals. Monitoring of populations of these larger predators should be included in the feral pig monitoring program.

An integrated approach to control methods means that the most efficient and appropriate means of control is being applied in each situation. The longer that feral pig populations can be subjected to consistent control, the greater the opportunity to achieve sustained success. Applying a variety of control methods on a year-round basis is preferred to an annual one-off cull. Projects that adhere to these principles have been shown to greatly reduce and maintain the low impact over time (see attached case study from Cape York).

Evaluating the effectiveness of feral pig control is difficult - there is no clear correlation between impact and population. Projects need to focus on impact reduction rather than number of animals removed, as projects that focus purely on population reduction without any connection to impact reduction are often unsustainable in the long term. Effective control programs establish very clear agreed objectives with their stakeholders in the beginning and monitor their performance against these objectives over time.

Land managers should also explore opportunities to form partnerships with community organisations for the delivery of feral animal management. There are organisations such as the Conservation and Wildlife Management Branch of the Sporting Shooters Association of Australia that have a long history of providing accredited volunteers to undertake control of feral species. There are two current projects supported by this organisation in the Wet Tropics region. Further information on this organisation can be found at https://cwm.ssaaqld.org.au/2013/

We believe that the currently available control and containment tools and methods are suitable for the management of feral pigs, goats and deer but we believe they must be better resourced so that they can be applied in an integrated manner over large areas.

Cape York

For many years, Cape York NRM have coordinated a highly successful turtle project for western Cape York with a strong focus on feral pigs. Queensland Government surveys in 2001 reported the average predation rate of turtle nests on the Western Cape to be greater than 90 percent. Since 2014, the Western Cape Turtle Threat Abatement Alliance (WCTTAA) has been implementing coordinated pig control effort across Northern Peninsula Area Regional Council/ Apudthama, Mapoon, Napranum and Pormpuraaw, removing more than 3,000 pigs per year and reducing the predation rate of marine turtle nests on WCTTAA-monitored beaches to an average of 10 percent. Despite the success of the program, the WCTTAA pig culling budget was cut by nearly half in 2019, with the entire WCTTAA program slated for closure post-30 June 2020. This project exemplifies the general approach to funding feral pig management that relies on sporadic, targeted funding for short periods of time in a scatter-gun approach to overall management.

Cook Shire Council and Queensland Parks and Wildlife Service also undertake on-going baiting, aerial shooting and trapping programs in the Cape which is very effective. Cape York NRM also believes there is a role for the use of bailing or flushing dogs in the management of feral pigs, especially in dense vegetation or heathlands.

Some communities on Cape York rely on pigs as a protein source, as access to fresh food is limited, and where available, can be very expensive. In these areas, the communities are not keen to undertake any kind of pig control, even if numbers are very high. In addition, many Indigenous Ranger groups are involved in the management of pigs in Cape York, but many local people are precluded from shooting programs as their domestic violence history means they are ineligible for a firearms license.

Northern Gulf

In regions as remote and vast as the Northern Gulf, aerial culls are often considered to be the most viable option, but they are very expensive. In October 2013, a feral pig control program was established along a 170km section of the Gilbert River. During the initial control operations in October 2013, 3,410 pigs were culled using aerial shooting. Follow up aerial culls performed in October and November 2014 shot a total of 3,010 pigs. This project encompassed a group of smaller properties plus one large holding added during the program. The numbers of feral pigs shot during 2013 and 2014 were relatively comparable, indicating that program investment needed to be greater to have long term effective outcomes.

Wet Tropics

The landscape of the Wet Tropics includes large areas of inaccessible protected areas bounded by agricultural and residential land. Feral animals, particularly pigs are highly mobile and actively move between areas of natural habitat and adjoining agricultural land. The mobility of feral pigs and the complexity of the landscape makes it hard to define landholder responsibilities under the relevant legislation in the Wet Tropics. There has been conflict over time about who bears the responsibility for feral pig control - the farmer who incurs the damage, or the adjoining landholder that has the habitat which provides shelter for the pigs. Often government land management agencies aren't provided with

enough funds to effectively control feral pigs on their land. The funding provided to land managers for feral pig control is linked to projects, which is an unsustainable model for funding for what is a constant and never-ending job. Policymakers need to acknowledge that there are no short-term fixes for feral pig management. It should also be noted that there is a strong community culture of hunting feral pigs in the Wet Tropics and this needs to be acknowledged by policy makers when planning for control programs.

Current methods for the control of feral pigs in the Wet Tropics are effective when applied at a scale that enables control of entire populations. Coverage of an entire population greatly reduces the ability of repopulation from outside areas.

Priority research questions

CSIRO have undertaken collaring and tracking programs to better understand movements and home ranges of feral pigs across Northern Australia. There has been an ongoing, though unsystematic, approach to feral pig control across north Queensland by a variety of individuals and organisations over the years. Understanding how the relative impacts of these efforts have impacted on the northern Queensland feral pig populations (if at all) is a critical part of the puzzle to find a long-term solution to feral pig management in north Queensland.

The benefits of developing and fully implementing national threat abatement plans for feral deer, pigs and goats

Although there is a national threat abatement plan for feral pigs, the plan currently has very little influence on programs at the regional level. Regional and local government biosecurity planning processes are the biggest drivers of feral animal control programs within the region.

Fully implementing the national feral pig threat abatement plan in north Queensland would result in a multitude of environmental and economic benefits. As previously mentioned, feral pigs pose the most direct threat to several species of marine turtles nesting on the western coast of Cape York. The survival of these endangered turtle populations relies on the control of feral pigs in these coastal ecosystems. The ongoing control of feral pigs across north Queensland would also provide co-benefits for a range of native flora and fauna that are either predated or disturbed, as well as broader ecosystem function, agricultural productivity and water quality in both the Gulf of Carpentaria and Great Barrier Reef lagoon. Implementing the feral pig abatement plan would also significantly reduce the threat of disease transmission, including the potential spread of African Swine Fever.

Any support for projects must make sure that they meet the following principles.

- Aim to control the whole population and are at the appropriate landscape scale.
- Are sustainable over the long term.
- Are efficient in terms of the controls applied.

The NRM sector is in an excellent position to coordinate feral pig abatement under the national threat abatement plan at a regional level. With enough funding, regional implementation would allow for a well-planned and coordinated long term program that could be properly monitored to ensure that it is effective. This approach must involve all levels of government investing in a strategic, long term, whole of region feral pig management program. Implementation effort must be aligned and focused on supporting the enduring capacity of communities and land managers to practice appropriate management of land and sea country. Strong local and regional governance arrangements are fundamental to foster a coordinated commitment to empowering communities and land managers. Region-wide governance arrangements will play a pivotal role in the oversight of the implementation.

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

The three regions we represent are dominated by World Heritage areas, key conservation properties and extensive and intensive agriculture, where populations of feral pigs, in particular, are widespread and destructive. Their presence causes major cultural, social, environmental and economic impacts. In the agricultural and grazing sectors this includes direct losses to production and the continued cost of pig control, as well as indirect losses from missed opportunity to create profits from alternative investments. Across the landscape they devastate nationally important natural ecosystems that support livelihoods, and greatly undermine natural and cultural values. For all of these reasons and more we urge a national approach to preventing the worsening of these problems. We urge there to be investment from all levels of government in a strategic, long term approach that considers the impact these feral animals have on matters of National Interest including national biosecurity threats and the recovery of EPBC species and ecological communities.

CASE STUDY - South Endeavour Trust Integrated Feral Pig Control Program - Cape York, July 2018-March 2020

Introduction

South Endeavour Trust own four properties encompassing around 100,000 hectares in the Normanby and Annan River catchments near Cooktown on Cape York including Kings Plains, Alkoomie, Caloola and South Endeavour.

The properties have been purchased for conservation and have largely been destocked of cattle. Land management issues include rehabilitation and stabilisation of erosion prone areas, fire management to mitigate threats from wildfires, weed control and an integrated program of feral animal management.

Feral pig control was conducted under previous management with shooting, baiting and trapping when time and resources permitted. In the dry season of 2018, Australian Wildlife Management Solutions (AWMS) were contracted to carry out aerial shooting across the four properties, while contract mustering for destocking cattle was occurring at the same time. In early 2019, the South Endeavour Trust Director consulted with AWMS and the Regional Agriculture Landcare Facilitator, and it was decided that ground operations needed to combine with the aerial work to achieve an integrated control program to effectively manage feral pigs within the various and numerous ecosystems of the properties. A program of intensive and sustained ground shooting, both night and day, trapping and detection dogs, combined with aerial shooting in the more open country working in combination with the ground crew has seen a big improvement in wetland condition and a reduction in pig numbers.

Results

Five aerial shoots averaging 4 hours in duration (90 hours in total) from July 2018 to March 2020 with a total of 309 pigs, including other feral species totalling 478, with an average cost of $25.80/ pig. Flight paths and animals dispatched were mapped and recorded. A decrease in numbers from 74 pigs in November 2018 to only 6 pigs in March 2020 combined with the groundwork.

Ground shooting and trapping from May 2019 totalled 546 hours with a total of 93 pigs, including other feral species totalling 259, with an average cost of $21.16/pig.

Conclusion

Seasonal conditions for access during the wet season were more constrained on the ground than from the air. Aerial shooting is also more cost effective later in the dry season when pigs are concentrated around water, and there is generally less grass cover. It is also very target specific. Ground shooting was more effective in rainforest scrubs with aerial control better in inaccessible and remote open areas. Ground and air control worked well together with ground control follow up on carcasses from aerial shoots utilised for lures and baits for traps.

Fire management is also an important tool in savannah landscapes with early burns encouraging animals onto fresh green pick and aiding access. Aerial shooting is most economic for initial knockdown of large

numbers, especially on larger properties, and it is important to get every pig in the mob to avoid them becoming wary of helicopters. The last aerial shoot in March 2020 noted minimal pig diggings and disturbance, with the pilot commenting it was the best he had seen the country in five years of flying there. Gallery forest areas along the Normanby River would have provided shelter and safe breeding grounds for pigs if ground control was not implemented. The owner is also looking at the potential for nitrate baits that will hopefully be target-specific.

As in all feral pig programs, the goal is to finally get pigs to a manageable level. However, follow up and sustained pressure on pig populations is vital, especially in favoured pig habitats such as the South Endeavour Trust properties.