Feral Animals in Northern Australia

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Key Points

- Feral animal numbers in Australia are increasing as they tend to have high reproductive rates and few natural predators or fatal diseases.

- The cost of dealing with feral animals is also increasing in terms of control methods and meeting the cost of the damage they impose.

- Feral cats continue to play a role in the loss and extinction of Australian native animals with 63 species of native mammals, reptiles, birds and amphibians found in their stomachs.

- The agricultural impact of feral pigs is estimated to be more than $100 million annually from lamb predation, infrastructure damage, crop and pasture loss, water fouling, disease spread, erosion, competition with stock and the huge costs of control.

- Feral horse and donkey numbers in Australia are in excess of 400,000. This number is likely to increase rapidly.

Summary

Introduced feral animals are having a significant detrimental effect on the Australian environment, resulting in the loss of species, habitat and biodiversity as well as damage to the aquatic ecosystems and waterways. The costs associated with research, control and management of feral animals, together with the related resource implications, are increasing each year. The ability to find solutions to control breeding, reduce animal numbers and the resulting environmental sustainment, however, are not commensurate with spending.
Analysis

**Origins and Arrival in Australia**

Pests that are not native to a host environment are commonly referred to as *exotic, invasive,* or *alien* species. Feral pests are a particular subset of these species. They are animals that were once livestock or domesticated species but have since established self-sustaining populations in the natural environment. Exotic pest species are usually introduced by humans, and the reasons for their introduction are varied. In some cases, the species are reared for food purposes. This includes goats and pigs. Others were introduced because they aid humans in their work; horses for draught work and transportation or the drought-tolerant dromedary camel, originally used to carry goods on inland exploration expeditions and to move and trade goods in arid environments. Some exotic species were introduced for nostalgic reasons such as the European rabbit and the European red fox (as a reminder of England), for the pastime and sport of hunting.

Other, once domesticated, pest species that are now widely prevalent, and causing significant problems, arrived in Australia in the First Fleet; dogs and cats came here as settlers’ pets. Cats are also thought to have been washed ashore in north-west Australia in the mid-17th century, having been aboard wrecked Dutch merchant ships where they had been used to control rats and mice.

**Feral Animal Threat to Northern Australia**

Fauna species currently threatening northern Australia are many and varied and include species of exotic birds, fish and reptiles. In particular, the cane toad of the genus *Rhinella,* once introduced as a biological control against the cane beetle, has occupied Queensland and the Northern Territory and is now posing a major threat to regional biodiversity. It is set to invade the Kimberley region.

Large mammal species, the dromedary camel (*Camelus dromedaries*), large-hooved horses (*Equus ferus*) and donkeys (*Equus africanus asinus*) are causing ecological damage to the health of Australia’s tropical savannas. Those large grazing animals out-compete domestic grazing stock to the point where they have been known to consume all of the scarce native savanna grasses. Though less prevalent than horses and donkeys, goats (*Capra hircus*) with their cloven hooves are likewise a threat, particularly around water courses where their movements trample small, delicate plants and damage the soil. Pigs (*Sus scrofa*) are contributing to environmental damage on an increasing scale, particularly in wetlands and water holes. Here, their natural action of rooting and digging around stream banks in search of food, and wallowing in the mud, fouls the water and causes siltation, consequently harming the native fish and marine organisms inhabiting the water source.

Two predatory mammal species are also having a significant detrimental effect to the natural environment and biodiversity of Australia’s tropical savannas: cats (*Felis catus*) and dogs (*Canis lupus*) prey on native rodents, mammals, reptiles and birds to the point where, in some cases, population numbers and species biodiversity are threatened. These hunter species are highly adaptable and can survive on little moisture (in the case of cats).
Secretive, cunning and preferring to hunt at night, they have become well-adapted to surviving in the environment of northern Australia. Not only do they prey on native fauna, but also attack and consume livestock.

**Environmental Risks**

Feral horses, donkeys and goats cause major damage to the natural environment, including degradation and damage to soil and waterways from the trampling of their hooves that break up the soil’s crust and protective cover of vegetation, resulting in erosion. They eat native seedlings and destroy vegetation and they spread weeds when seed is caught in their coats or deposited in their droppings. Horses and donkeys regularly travel 50km in search of food and water, which augments their destructive impact. As horses, donkeys and camels compete with domestic stock for food, overgrazing and strip-browsing occurs, thus increasing the degree of soil degradation and erosive effects. Feral goats cause biodiversity loss because the woody and non-woody native plants they consume have difficulty maintaining population numbers.

Feral camels and pigs cause significant environmental damage, particularly around water holes where they trample plants, foul the water and compete with native species for food and water. In times of drought camels accessing water to drink will become bogged and perish in the mud. Pigs will wallow in soft mud to keep cool and will root around searching for underground food, including small animals and tubers. The adverse environmental effects on water quality are significant from sedimentation, loss of habitat and local biodiversity.

The damage caused by large feral animals is not restricted to the natural environment; they destroy fences in their efforts to reach food and consume crops that are costly to replace. They are also known to break down stream banks and irrigation works in their efforts to access water.

The loss of native rodents, mammals, reptiles and birds is also significant, having both an economic and an environmental effect. Indeed, the [Invasive Animals Cooperative Research Centres Programme](https://www.iacrc.gov.au/) reports up to 80 endangered and threatened species are at risk in Australia from feral cat predation. Feral dogs prey on proportionally larger animals and carrion and they also target livestock. As reported in the [National Wild Dog Action Plan](https://www.environment.gov.au), costs associated with stock losses and controlling wild dogs range from $48m to 60m annually.

Dingoes are thought to have come from Asia as long as 5,000 years ago. Though technically not native to Australia, time and evolution have seen dingoes adapt to become an important component of the Australian natural environment; they occupy a niche as an apex predator and play a role in keeping natural systems in balance. Dingoes also hold a significant place in the spiritual and cultural practices of some Aboriginal and Torres Strait Islander communities. Feral dogs are threatening the existence of ‘pure’ dingoes. The speed and extent to which hybridization has occurred from inter-breeding since domestic dogs were introduced now threaten the genetic purity and number of pure-bred dingo populations. Studies conducted by the International Union for the Conservation of Nature in 2004...
resulted in the dingo being reassessed from Low Risk to now being determined as **Vulnerable**.

![Figure 1: Possible hybridized Dingo foraging in northern Australia. Source: Rayjan2011](image)

**Biosecurity Risk**

The presence of large numbers of feral animals poses a significant biosecurity risk to Australia from endemic diseases or pathogens they may carry, such as equine influenza and foot-and-mouth disease in horses and donkeys; Swine brucellosis and Bovine tuberculosis in pigs; and the canine distemper virus in wild dogs. The threat of the spread of disease and parasites to native animals and domestic stock is high; disease-carrying feral animals could, for instance, access domesticated stock in paddocks and yards where infection could easily spread.

The environmental and economic consequences of diseases carried by feral animals have been estimated in the order of **$50 billion**, for a major outbreak of foot-and-mouth disease. The impact would be felt through loss of trade, tourism and other costs associated with disease management and the recovery from a disease outbreak. From feral dog populations, in which the tapeworm is endemic, a large proportion of cattle offal may be condemned at abattoirs to minimise the risk of transmission to humans with annual losses to the Queensland meat industry due to tape worm alone have been estimated from $2.7m to $6m.

A **significant concern** to human health exists from bacteria and disease agents that can be passed from feral animals. One form of bacterium, which is widespread among feral goats,
can cause Q fever. Although usually non-pathogenic in goats, Q fever is a bacterial infection that can cause flu-like symptoms in humans leading to pneumonia, hepatitis and death. It is considered to be a most infectious disease, with people being capable of becoming infected from a single cell.

**Feral Animal Control**

Australian scientists, land managers and farmers have been working to identify and implement effective methods to control large feral animals (camels, horses, goats and pigs) since early settlement. Traditional methods used include exclusion fencing around waterholes and areas of cultural significance, use of guard animals, culling from the ground or from the air and, to a lesser extent, chemical, biological and fertility controls which are costly to implement and administer and, in many cases, require regular follow up treatments to ensure success.

Methods to control or otherwise eradicate predatory feral cats and dogs have likewise been wide-ranging. Options include trapping, poison baiting and shooting from the ground, all of which have limited degrees of success. Most procedures are still in current use. The major factor hampering control is that the predators are intelligent and cunning; they mostly hunt at night and when there is an abundance of food. Programmes to target predatory feral species have included chemical (poisons), biological and fertility controls.

Although traditional methods of controlling populations of feral animals across Northern Australia are under constant review, there are few ‘new’ options. Instead, management emphasis has been on gaining knowledge to understand animal characteristics such as feeding and watering habits, husbandry and the environment in which they are found. The data collected is used to address knowledge gaps which will result in devising and implementing more comprehensive programmes to manage feral animals. Through the increasing use of technology and Global Positioning System mapping, scientists are more able to target specific sites where, for instance, poison baits would be most effective in reducing cat numbers. Research and development undertaken in Australia have resulted in new toxic bait products that target dogs, using para-aminopropiophenone (PAPP) and products containing PAPP are awaiting final governmental approval for their use.

**Opportunities and Exploitation**

Management strategies have been devised and developed and are realising both a reduction in populations of feral camels and their environmental impacts. They are also bringing financial reward to a number of Australian companies and Aboriginal communities. In the Northern Territory, as an alternative to Government controlled culling programmes, operators herd and harvest camels for their leather, wool and meat, which are highly sought domestically and for export to Saudi Arabia and other markets.

Feral horses and, to a lesser extent, donkeys in northern Australia are trapped or mustered for commercial sale. They are used as stock animals as well as pets, and working animals at riding establishments.
Is the War Being Won?

Population numbers of feral cats vary wildly. Some estimates state there are 5.6 million feral cats in Australia while a 1992 survey estimated there were 12 million. Similarly, estimated numbers of wild dogs differ significantly. What is clear though is predation by feral cats and wild dogs is having an increasingly negative impact on native wildlife.

![Feral horses. Source: Marco Boccalatte](image)

In respect to the estimated 23 million feral pigs in Australia, they are concentrated predominantly in NSW, Queensland and across the top of the Northern Territory. Their distribution is based on their environment and the availability of food and water. Research data relating to control of feral pigs is limited. Evidence from Australian southern states does show pig numbers are rising from which it can reasonably be deduced that numbers in Australia’s north, in particular the wetter areas of northern Queensland, the Northern Territory and to a lesser degree the drier Kimberley, are likewise increasing.

In a report published in 1991, there were some 232,820 horses and donkeys in the Northern Territory. Current estimates suggest that in there anywhere between 300,000 to 400,000 animals now inhabiting the dry savanna regions of Australia’s north. This implies that, though wide-ranging efforts have been taken to reduce animal numbers, as well as capturing and domesticating them, control measures have had little to limited effect.

Impacts of Climate Change

Climate change may include temperature increases (global warming), sea-level rises, changes in rainfall patterns and more extreme weather events such as droughts or cyclones.
Climate change is becoming a major threat to the biodiversity of the World Heritage Area of Australia’s northern wet tropics. It can make the impacts of other threats much worse. Global warming could decrease the habitat of many endemic vertebrate species, leaving only isolated pockets of rainforest in which to live. It is predicted that seven frog species, five mammal species, three bird species and three skink species could lose over half their present habitat with only a 1ºC temperature increase. Feral cats already inhabit northern Australian rainforests where they are having a damaging effect on populations of animals that also occupy such areas by competing for food, habitat, shelter and other resources. In such areas, increasing numbers of cats will severely impact on the mammal, reptile and bird species native to the rainforests.

Conclusion

Feral animals came to Australia on the First Fleet as domesticated livestock, as pets and as working animals. Later, they were imported as food and for sport and, in case of the Cane Toad, as an early form of biological control in the sugar cane industry. Other predator species were brought to Australia in much earlier times to adapt, survive and to occupy an important niche in indigenous culture and the Australian natural environment. Unfortunately, Australia now faces a legacy of harmful, damaging and destructive effects caused of feral animals, particularly in northern Australia where the negatives by far outweigh the well-intentioned, though naïve, intent of those who first introduced the animals to the Australian natural environment. The consequential risk, particularly to the rainforests of the tropical north, will be a loss of species and biodiversity caused by predation in response to the effects of climate change.

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