

# Feral camels in the Australian rangelands

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## Abstract

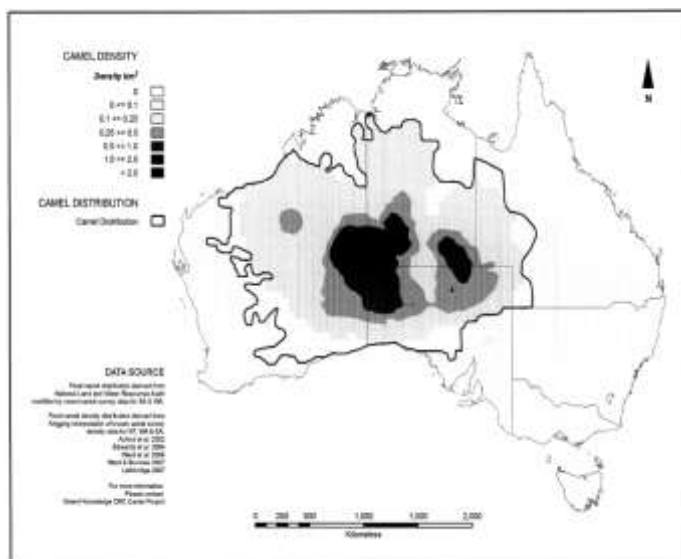
The growing size and impact of the feral camel population in Australia's rangelands has emerged as a serious issue of management. The usual rangelands issues of remoteness, low human population density and limited capacity are compounded by the mobility of camels and their extreme hardiness in ostensibly hostile environments. There are commercial and non-commercial options for dealing with the feral camel population, with commercial options constrained by limited processing capacity and a market for camel products unwilling to pay the real costs of production.

## Introduction

The dromedary camel (*Camelus dromedarius*) was imported into Australia more than 150 years ago and is now an established feral animal over much of the Australian continent.

Camels were introduced to Australia in 1840 and played an important role in the development of central Australia in both the nineteenth and early twentieth centuries. The replacement of the camel by the motor vehicle in the early twentieth century resulted in large numbers of animals being released into the wild and the subsequent establishment of a feral population in Australia rangelands (DEWHA 2009a).

This feral population is understood to occupy over 3.3 million sq km – or over 40% of Australia's land mass and around 80% of the rangelands (Fig. 1) – and is expanding into new areas. Best estimates place the population of feral camels at around one million in 2008, and doubling approximately every nine years (Saalfeld & Edwards 2008).



(from Saalfeld & Edwards 2008)

Fig. 1. Density distribution across the range of feral camels in Australia

However, feral camels are generally only noticed when their activities intersect with remote Aboriginal people, pastoralists, and the tourism and mining industries. Consequently, the significant damage by camels to the fragile ecosystems, cultural sites, isolated communities, and pastoral enterprises of desert Australia has gone largely unnoticed by the bulk of Australia's population.

If we do not act now to mitigate the damage being caused by feral camels, irreparable damage may be done across much of desert Australia. The longer we take to act, the more it will cost to manage and repair the negative impacts of feral camels.

### *Camels as a pest*

Feral camels are having significant negative impacts – the direct economic costs have been estimated at over \$10 million per annum, while the environmental, social, cultural impacts are substantial and unacceptable (Edwards, Zeng and Saalfeld 2008).

The impacts of feral camels include:

- regular defoliation of and damage to terrestrial vegetation, and the local extinction of some species of native vegetation;
- damage to wetlands and groundwater dependent ecosystems through draining, fouling and trampling;

- damage to sites of cultural significance to Aboriginal people; and
- damage to the pastoral industry and infrastructure, including:
  - direct control and management costs of \$2.36 million per annum; and
  - damage to infrastructure on pastoral leases, Indigenous settlements and conservation lands, damage to the dog fence, production losses, and road accidents costs of \$8.93 million per annum (Edwards, Zeng and Saalfeld 2008).

The impacts of feral camels are likely to increase significantly as the population increases.

### *Camels as a resource*

The camel is superbly adapted to rangelands conditions, having specific mechanisms to cope with heat and with water conservation in an arid environment. Consequently, camels can utilise most habitats in the rangelands, depending on availability of food and summer shade.

There is a significant international camel industry based on the production of meat, leather, blood and milk products, as well as on breeding live camels for transport and entertainment (racing). In contrast, an Australian camel industry has struggled to gain momentum. There have been many attempts to commercialise both farming of camels and wild harvest for the local and export meat trade. Edwards, Zeng and Saalfeld (2008) have estimated the annualised benefit that accrues to landholders from utilisation of feral camels to be \$0.62 million.

While the reasons for the failure of individual businesses will vary, there are some common elements militating against a successful local camel industry. Wild harvest cannot provide the consistent supply of live camels to enable processors to enter into lucrative long-term supply contracts. The remote locations impose substantial mustering and transport costs. In addition, limited processing capacity and inadequate marketing have impeded the development of a strong local camel industry (Zeng & McGregor 2008).

A well-developed local camel industry could provide much-needed employment and economic activity in the rangelands of Australia as well as a management tool to assist in the control of feral camels.

### *Coordinated camel management*

The history of feral camel management in Australia is dominated by differing policy frameworks and different regulatory requirements of the various jurisdictions; and by short term programs that were not coordinated across tenure or jurisdictional boundaries and are generally insufficiently resourced. The population of feral camels is now beyond the capacity of any one-land manager, or indeed any one jurisdiction, to manage the problem. Large-scale and coordinated intervention is now essential.

### *National Feral Camel Action Plan*

Primary industry and environment Ministers across Australia have directed the preparation of a National Feral Camel Action Plan to provide clear and consistent policy direction for feral camel management, and a strategic and risk-based approach upon which local, regional and state-based management can be undertaken.

The National Feral Camel Action Plan is intended to be a general agreement between the Western Australian, South Australian, Northern Territory, Queensland and the Australian governments to manage the impacts of feral camels. The draft Action Plan does not deal explicitly with the development of a camel industry as this is seen as a matter for the camel industry and individual entrepreneurs (DEWHA 2009b).

### *On-ground camel removal activities*

A reduction in the number and density of feral camels is essential to mitigate their adverse impacts. Current advice is that feral camels should be managed to a long-term target density of 0.1 - 0.2 camels/km<sup>2</sup> at property to regional scales (Edwards, Zeng, Saalfeld, Vaarzon-Morel and McGregor 2008).

Camels are very mobile animals, capable of re-occupying land where they have previously been controlled. Consequently, we have to be prepared to deal with the feral camels wherever they occur and by the best means available. The more remote the location; the more restricted the range of options becomes. Yet the need to control feral camel numbers across their full range remains.

Non-commercial methods for feral camel control are aerial shooting, ground-based shooting, and exclusion fencing (including barriers that allow for partial access). Of these three methods, aerial shooting and ground-based shooting are considered to have the greatest application.

Of the commercial methods, the pet meat industry may make the greatest contribution, followed by a meat industry for human consumption. Pet-meating is attractive as it involves minimal capital infrastructure and could quickly provide livelihoods for Indigenous people (Zeng & McGregor 2008). However, the contribution from commercial activities will depend on the development of secure markets that are prepared to pay the real costs of harvesting and transport.

The Australian Government has committed \$19 million to a four-year project to reduce the number and density of feral camels around priority environmental assets (biological refugia and high conservation value aquatic ecosystems). With an equivalent level of activity by state governments, there is potential for a significant reduction in the size and impact of the feral camel herd, as well as opportunities for some development of a local camel industry. However, the need to guarantee supply and to produce a consistently good product at a competitive price will probably see a move towards farming camels in Australia in the longer term if market demand holds up.

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