







MANAGING THE IMPACTS OF FERAL CAMELS ACROSS REMOTE AUSTRALIA:

Overview of the Australian Feral Camel Management Project











Cover photos:

Large mob of camels (m	hain photo)	:
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Robert Sleep

Waterhole monitoring:

NT Dept of Land Resource Management

Road sign:

Quentin Hart

Helicopter:

Peter Watkins

Camel tracks:

Quentin Hart

Small group of camels:

Quentin Hart

Windmill destroyed by mob of camels:

Australian Feral Camel Management Project

Managing the impacts of feral camels across remote Australia: The Australian Feral Camel Management Project

In 2009, the Australian Feral Camel Management Project was established with support from the Australian Government to manage the impacts of feral camels on:

- nominated environmental sites, which are generally rangelands water sources and surrounding vegetation (Figure 2)
- pastoral vegetation and therefore soil quality.

Despite a focus on the above forms of impact, the project had incidental but important benefits in reducing the impact of feral camels on:

- cultural sites
- pastoral infrastructure, including fences and waterpoints
- human safety, due to feral camel presence on roads, airstrips and in remote communities.

The project also provided the opportunity to improve our knowledge of feral camel population dynamics and movement.

The project has been managed by Ninti One from 2009-2013, in collaboration with 20 formal partners and other collaborators including the Australian Camel Industry Association and RSPCA.

The AFCMP was an ambitious invasive species management project that:

- covered over 3 million square kilometres
- involved hundreds of landholders across all land tenures, including Aboriginal lands, pastoral properties, public and private conservation areas and Crown land
- was the first Australian project to manage a terrestrial vertebrate pest at this scale, using conventional control techniques, without the legislative support (e.g. land access) available to programs such as the Brucellosis and Tuberculosis Eradication Campaign.

As should be the case for all pest animal management projects, the project recognised the importance of:

- addressing actual versus perceived feral camel impacts
- using management methods that were able to rapidly reduce impacts while also meeting safety, target specificity and humaneness standards
- being able to demonstrate achievement in terms of reduced impact.

The project was allocated \$19 million in 2010 by the Australian Government, in addition to contributions from partners, over four years. The project was extended by six months, to 31 December 2013, due to delayed operations in 2010-11 resulting from extensive rainfall throughout the rangelands. With the prudent allocation of funds to only those removal operations that could be conducted cost-effectively, the Australian Government funding requirement has been reduced to \$15 million, subject to final feral camel removal operations.

Establishing the knowledge base

The AFCMP had a broad information base to work from in the form of the 2008 feral camel research report by the Desert Knowledge Cooperative Research Centre (DKCRC). The research was supported by the Australian Government, in recognition of the need to better define the extent of the developing feral camel problem (Figure 1) and management solutions. The report compiled all of the available information on feral camel population dynamics, impacts and management options. It also reviewed relevant legislation and surveyed stakeholder views to put together a proposed



Figure 1: It is important to be able to justify feral camel management programs in terms of their measured rather than perceived impacts.

national management approach for feral camels.

The DKCRC report indicated that the feral camel population was on a growth trajectory with an unknown endpoint, following the progressive release of unwanted domestic transport camels in the early 1900s. Although there had been individual landholder efforts to manage feral camel impacts on waterholes, vegetation, pastoral infrastructure, cultural sites, vehicles and airstrips, there had been limited acknowledgement of the extent of

this national issue - the DKCRC work helped change that and the AFCMP has been the initial management result.

The management response

The Australian Government support for the AFCMP acknowledged that the extreme mobility of feral camels required a nationally-coordinated response across jurisdictions, as well as the impacts of feral camels on nationally-significant wetlands.

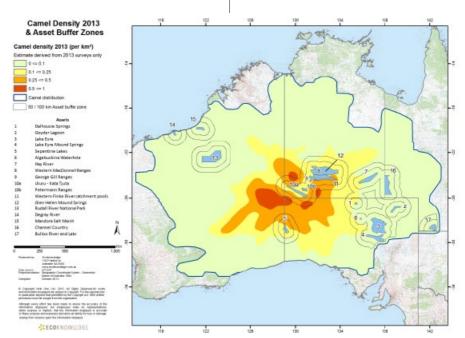


Figure 2: Current (2013) national density map for feral camels with environmental assets and associated buffer zones (0-50km and 50-100km) shown.

The AFCMP employed management techniques, including aerial and ground culling and mustering for commercial use (Figure 3), that were based on nationally-agreed Standard Operating Procedures, to ensure that they could be implemented in a consistent way to ensure acceptable efficacy, safety and humaneness. Informed landholder preference was the key determinant of which management approaches were used in which areas.

A comprehensive monitoring and evaluation process was put in place to assess the achievement of project objectives, with target densities at key environmental sites being set as a de facto measure of reduced impact.

Key achievements

The AFCMP has:

- removed over 160,000 feral camels from 660,000 sq km and achieved density targets at nominated environmental assets (Figure 2)
- established landholder consents across 1.3 million sq km of priority management areas for commercial and/or noncommercial feral camel removal
- formed and enhanced collaborations within and between jurisdictions and stakeholder groups
- facilitated contact between the commercial use industry and landholders



Figure 3: The main feral camel management methods are aerial culling, ground culling and mustering.



Australian Feral Camel Management Project Overview

- built the skills and infrastructure capacity and successfully integrated the three main feral camel management methods commercial use, aerial culling and ground culling
- improved knowledge about feral camels, their impacts and their management.

The opportunity that now presents...

The feral camel population estimate is currently around 300,000 and there is now a real opportunity to maintain low density populations in the Simpson Desert and Pilbara regions. More work is required in the Surveyor Generals Corner region to reduce densities and this will require a concerted commercial use effort in

- conjunction with aerial and ground culling.
- Feral camels may be the first widely established pest animal in Australia that we are able to reduce to, and maintain at, acceptably low densities.
- The commercial use industry is now better placed to make a contribution to population knockdown in the Surveyor Generals Corner region, but must transition rapidly to an industry based on domestic camels.
- Aboriginal landholders are better equipped to manage small localised feral camel problems through ground culling.
- The efficiency of aerial culling has been enhanced in many ways



~3.5 m Browse Zone

Figure 4: The main 'browse zone' of feral camels as measured under the AFCMP.

Australian Feral Camel Management Project Overview

through the experience gained under the AFCMP.

- Improved information on feral camel population dynamics and impacts will help guide future management planning.
- The improved approaches to feral camel management can be adapted to the management of other large feral herbivores.

Failure to maintain the current pressure on the feral camel population will result in a return to unacceptable levels of impact such as those recorded through the AFCMP monitoring program (Figures 4, 5 and 6).

The AFCMP should be regarded as only the first step in ongoing nationally-coordinated feral camel management. The extreme mobility

of feral camels requires management across jurisdictions; not just across land tenure. The DKCRC report, AFCMP findings and the National Feral Camel Action Plan provide the direction for future feral camel management. However, there is a risk of regression in many AFCMP achievements if commitment to and resourcing of feral camel management reverts to historic levels. All land managers have a responsibility in this; not just government agencies.

The systems and partnerships developed through the AFCMP will support long-term feral camel management and we believe that the project offers a useful model for other cross-tenure and cross-jurisdictional environmental management projects.



Camels present

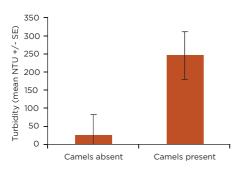


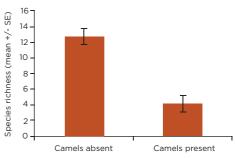
- · Higher turbidity (muddy water)
- · Lower species richness
- · Fewer sensitive species
- · Fewer predatory invertebrates
- · Fewer species with gills





- · Lower turbidity (clearer water)
- · Higher species richness
- · More sensitive species
- · More predatory invertebrates
- · More species with gills





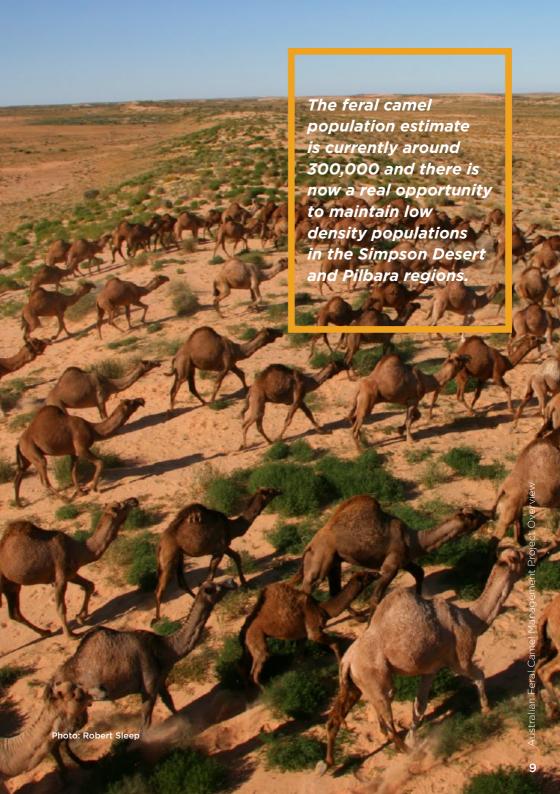
Turbility

Species richness

Figure 5: Examples of some of the findings of waterhole monitoring under the AFCMP.



Figure 6: The ultimate result of congregations of feral camels at arid zone waterholes: no water or surrounding vegetation; and dying and dead camels.



Recommendations

The AFCMP has provided the opportunity to learn from the governance and operational issues of a project that has succeeded in overcoming the challenges of: operating on a large scale across all land tenures; not having the same legislative basis for land access as programs such as the Brucellosis and Tuberculosis Eradication campaign; and, involving a wide range of potentially conflicting stakeholder views. Some of the below recommendations are specific to feral camel management, but most have implications for the management of other large feral herbivores and NRM projects in general.

THE NEED FOR CONTINUED FERAL CAMEL MANAGEMENT

Recommendation 1.

That the Australian Government, in partnership with the Queensland, South Australian, Western Australian state and Northern Territory governments, maintain a coordinated approach to the management of large feral herbivores in arid Australia. This approach needs to account for the experience of the AFCMP, including:

 The annual level of AFCMP resources (around \$4 million per year of Australian Government funding) was appropriate and allowed the required level of engagement of a diverse range of stakeholders through

- a necessarily comprehensive governance and consultation structure.
- Large-scale projects such as the AFCMP are likely to require more than a four-year time frame to account for the establishment phase and seasonal conditions.
- There are benefits in such projects being coordinated by an independent non-government agency that does not have direct land management interests and operates nationally rather than in a particular jurisdiction.

COLLABORATION FOR EFFECTIVE FERAL CAMEL MANAGEMENT

Recommendation 2.

That Governments and land managers maintain AFCMP collaborations at inter- and intra-jurisdictional levels to maintain a coordinated management approach that is appropriately resourced.

Recommendation 4.

That large NRM projects have regular formalised contact with funding agencies, and, preferably, continuity of project coordinator positions and funding agency contacts.

Recommendation 3.

That future Federal/State government support for feral camel management ensures that there is significant collaboration between agencies with potentially conflicting objectives (e.g. environmental protection versus commercial industry development).

Recommendation 5.

That land managers be recognised as key partners in management projects that impact on the land that they own/manage. Recognition involves providing them with the information upon which to make informed decisions as well as including them actively in the decision-making process.



PROJECT SCALE AND OBJECTIVES

Recommendation 6.

That large NRM projects have specific, quantifiable project objectives (e.g. pest animal density targets) based on solid research, with enough flexibility to alter the management approach as the project is rolled out. The AFCMP was based on a three-year research program and involved an adaptive management approach whereby annual plans were developed to account for improved knowledge and changing conditions.

Recommendation 8.

That the landscape-scale approach should be considered for other mobile pest species with the option of adopting distinct operational regions (as per the three used in the AFCMP of Simpson, Surveyor Generals Corner and Pilbara) where there are distinct high-density areas and/or differences in seasonal patterns, preferred form of removal etc.

Recommendation 7.

That regional density targets continue to be the main quantifiable performance measure for feral camel management, with the assumption being that at an average regional density of <0.1 camels per sq km, the frequency and severity of feral camel congregations will be substantially reduced. Although local density is more relevant than regional density in relation to feral camel impacts, for such a mobile species, local density is a transitory notion.

Recommendation 9.

That resourcing of feral camel management is flexible to account for the variable opportunities provided by seasonal conditions – i.e. to ensure that removal operations can be undertaken at short notice to manage developing feral camel congregations and emergency events.

PROJECT SCALE AND OBJECTIVES (CONTINUED)

Recommendation 10.

That future feral camel management employs an integrated management approach which acknowledges the role of commercial use where it is able to contribute to sustained high levels of off-take in conjunction with other removal approaches; and that there will always be a key role for aerial culling to achieve rapid population knockdown and where feral camels are too remote or in too poor a condition for commercial use.



COMMERCIAL USE

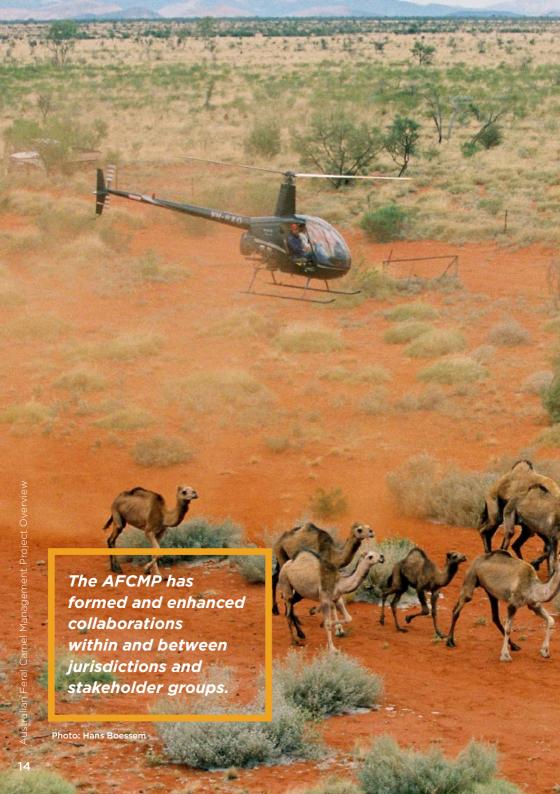
Recommendation 11.

That the commercial use industry reduces its reliance on feral harvest and builds captive herds. This will improve the reliability and quality of supply to abattoirs and also reduce potential conflicts between commercial use and impact reduction objectives.

KEY OPERATIONAL ISSUES

Recommendation 12.

That, although legislative differences between jurisdictions have not been a major impediment to the rollout of the AFCMP, feral camel management agencies continue to look for opportunities to address the issues identified in the Desert Knowledge CRC review as well as the legislation/policy review undertaken by the SA Government during the AFCMP.



KEY OPERATIONAL ISSUES (CONTINUED)

Recommendation 13.

That future large pest animal management programs consider the process for setting and assessing the humaneness of removal operations developed under the AFCMP.

Recommendation 16.

That the size of 'no go' areas (e.g. communities, waterholes and cultural sites where culling cannot take place) for aerial culling be reduced as much as possible to reduce the distance that feral camels need to be moved before culling.

Recommendation 14.

That neighbouring jurisdictions keep each other informed about feral camel densities/movements and removal operations, to improve ongoing national coordination of feral camel management.

Recommendation 17.

That the 'Judas' technique (using satellite-collared individual animals to guide removal of associated groups of animals) be considered where feral camel populations have been reduced to very low densities (e.g. in the Simpson Desert).

Recommendation 15.

That remote area operations involve at least two helicopters for Occupational Health and Safety reasons.

Recommendation 18.

That the improved ground culling capability that has been developed on Aboriginal lands under the AFCMP be maintained and enhanced to allow Aboriginal rangers and other community members to effectively manage small numbers of animals that are causing problems at waterholes, roads, airstrips, communities etc.

KEY OPERATIONAL ISSUES (CONTINUED)

Recommendation 19.

That exclusion be considered a relatively minor component of effective feral camel management due to the cost-effectiveness of construction and maintenance relative to other management approaches.

Recommendation 20.

That the 'removal assistance' payments made under the AFCMP be maintained for a limited time period to continue to encourage the commercial removal of female camels and to ensure that mustering operations comply with the SOP.

Recommendation 21.

That, although 'removal assistance' payments have some potential to contribute to feral camel management, the use of 'Market-Based Instruments' in general is considered carefully as their administration requirements can outweigh the theoretical benefits of a competitive tendering process, particularly where there is only a small number of potential tender proposals.



FUTURE INFORMATION NEEDS

Recommendation 22.

That the environmental monitoring framework and sites established through the AFCMP be maintained and involve Aboriginal rangers. Wherever possible, this work should be linked to national data collection processes for the rangelands.

Recommendation 23.

That population surveys be continued at a frequency of 8-10 years to improve population modelling and therefore help to refine the management approaches. Ongoing investigation of more automated aerial survey approaches is required to allow increased survey frequency and/or area.

Recommendation 24.

That intelligence networks for obtaining and collating information on feral camel congregations be maintained to provide early warning to support more proactive operational responses. These networks can be combined with monitoring weather and fire information to locate potential feral camel congregations.

For the full AFCMP report and other feral camel information: www.nintione.com.au









Project Collaborators





























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Management Board







