



SAVING KANGAROO ISLAND FROM FERAL DEER

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Across Australia, many communities are being exposed to the very destructive habits of feral deer in numbers. On Kangaroo Island, the Natural Resources Management Board is making sure we don't have to find out the hard way just how destructive they can be.

The Board, with funding from the National Heritage Trust and Invasive Animals Cooperative Research Centre (CRC), has been working with the community to eradicate feral deer on the Island while the population is still small.

This consistent, coordinated management stops feral deer from spreading across the Island damaging primary production and biodiversity, and threatening the

community through collisions with vehicles. The feral deer program aims to remove these threats now before the expense, and damage, becomes too great.

Since its inception the program has also determined the distribution of the population, trialled and taken different control actions and established a monitoring program to measure success in reducing the distribution and abundance of deer.

Deer first became feral on Kangaroo Island in 1999 when 80–300 mainly female fallow deer escaped from a deer farm adjoining Western River Conservation Park. The deer now occupy an area of around 92,000 hectares.



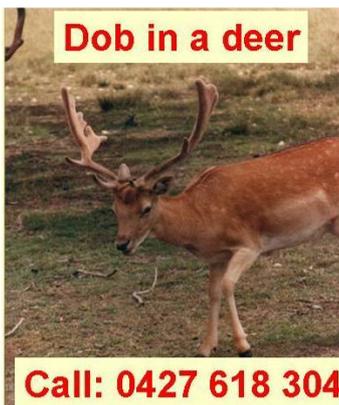
Future social, ecological and economic costs to Kangaroo Island will be substantial if feral deer are not controlled



The Feral Animal Management Program works to manage, control, monitor and where appropriate eradicate the threats from feral pig, deer, goats and cats to natural resources (Including biodiversity and primary production resources) on Kangaroo Island.

Below left: The fridge magnet distributed to all Island residents as part of the 'Dob in a Deer' campaign

Below right: Farmed fallow deer *Image: C.McGhie*





What are the impacts of feral deer?

As feral deer have only recently become established on Kangaroo Island, their impacts are still small. In other areas where their populations are larger their impacts are considerable:

Environmental

-  Changes to bushland through trampling, grazing and ring barking vegetation
-  Soil erosion and soil compaction in areas of high use such as trails, pastures and creeklines
-  Weed dispersal
-  Fouling of waterholes
-  Spread of plant diseases such as *Phytophthora cinnamomi*

Social

-  Increased levels of illegal hunting
-  Automotive and aviation collisions
-  Destruction of gardens

Primary production

-  Competition with stock for pasture
-  Spread of disease, for example Johnes disease and bovine tuberculosis
-  Ring-barking trees and destroying saplings including pines and bluegum plantations, particularly during the rut
-  Trampling and grazing of agricultural crops
-  Destruction of vineyards
-  Soil compaction
-  Damage to fences

Where do feral deer live?

On Kangaroo Island feral deer are generally found in areas of native vegetation or forestry bordering agricultural land. They graze pastures and retreat into dense cover for shelter. KI deer are still concentrated in the district they initially escaped from but there have been sightings across one-third of the Island within an area bounded by the West End Highway, the South Coast Road near Kelly Hill Caves, and adjacent to pine forests on Bark Hut Road (Figure 1).

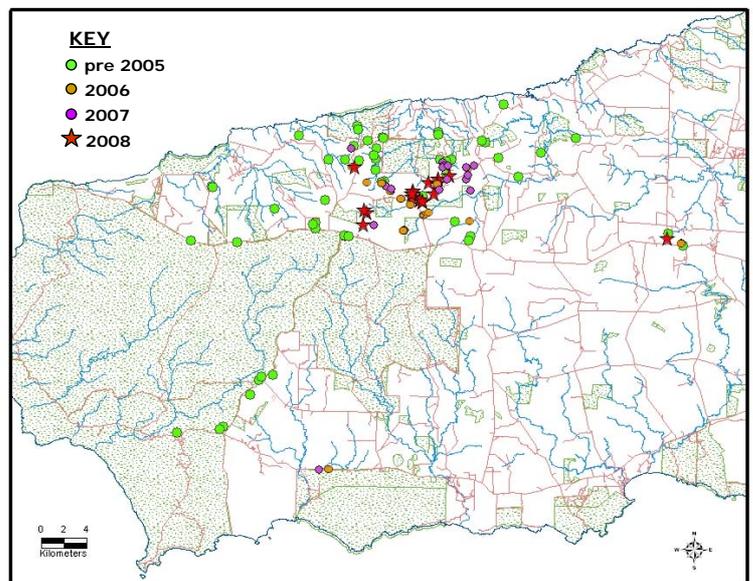


Figure 1: Known distribution of feral deer on KI

What damage do feral deer do?

When in large numbers fallow deer live in large herds. In autumn, bucks (male deer) call for hinds (female deer) from their rutting (breeding) areas. To establish rutting areas, bucks trample down the vegetation with their hooves and antlers, and urinate

Below left: Brenton Florance, KI NRM Board Feral Animal Control Officer, explaining deer control to Invasive Animals CRC postgraduate students *Image: T.Heinson*

Below right: Female feral deer (hinds) caught in an infra-red camera *Image: Kangaroo Island NRM Board*





everywhere to spread their scent hoping to attract females to mate. If mating is successful one fawn is born per hind in spring or summer. Hinds generally become sexually mature in their second year but on Kangaroo Island first-year females have been found pregnant.

Analysis of feral deer stomach contents has found that deer eat mainly grass species supplemented with native vegetation (Figure 2).

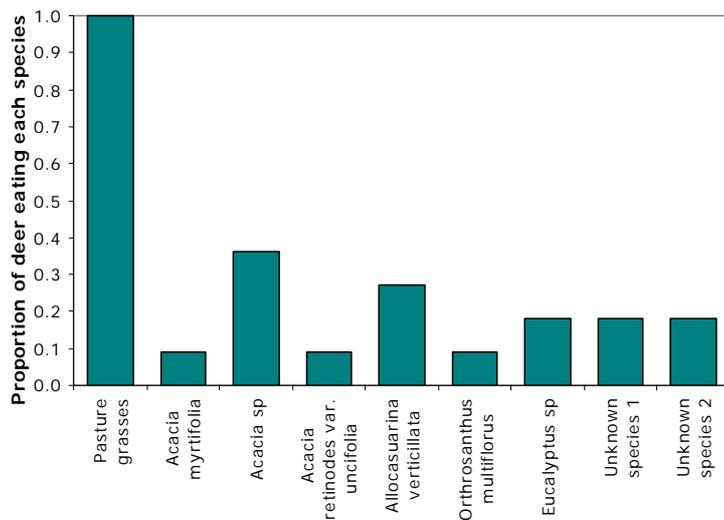


Figure 2: Plant species consumed by KI feral deer

How have landholders contributed?

Kangaroo Island landholders have given invaluable support to the Feral Animal Management Program in eradicating deer. They have allowed access to properties, reported sightings and destroyed deer.

Deer farmers are also working with the program to ensure their fences are secure to prevent more escapes. The program conducts regular fence inspections with landholders.

How does the control program work?

The Feral Animal Management Program's deer control across their entire range has destroyed over 130 deer since 2006. Control is targeted to certain times of the year to optimise success. The program's control officers have coupled their extensive local experience with successful methods used in other areas in Australia and New Zealand. They are constantly developing new strategies to improve their success.

What is monitoring telling us?

The illusive, secretive nature of deer makes them a difficult species to monitor. The program uses tracks to determine changes in population size and distribution, and the effectiveness of control techniques used. The Feral Animal Management Program uses three methods to determine the effectiveness of their control and the likelihood of eradication:

1. Changes in cost per unit effort

This method monitors the effort required to shoot each feral deer. This data has been collected since 2006. It is now taking 10 times longer for control officers to locate and destroy a deer than when the program began. This suggests that feral deer numbers are decreasing.

Below left: Nick Markopoulos, Feral Animal Project Officer, examines damage from deer to young forestry saplings
Image: J.Baker

Below right: Brenton Florance, Feral Animal Control Officer, with a freshly killed stag Image: Kangaroo Island NRM Board





2. Detecting the presence or absence of feral deer in an area

Feral deer tracks are used to determine if deer are present in an area and how many are there. In 2008 the Feral Animal Management Program monitored 233 dams for tracks, finding evidence of deer at 27 sites. All but two of these sites were within the core area near Western River (Figure 1). This information is also used to determine how easily deer are detected in an area which will help in defining when eradication has been achieved. The track monitoring will be expanded to include sites further west, north and east in 2009.

|| The KI Feral Animal Management Program is leading Australia in developing and trialling new techniques to successfully eradicate feral deer.

All feral deer destroyed are sexed too. More female feral deer are being shot than males. Genetic samples are also collected from all of the feral deer shot. These samples are analysed by the University of Canberra to determine if DNA can reveal the number of breeding males left in the population. By using this analysis the program will know when there are no males left in the population and hence no breeding.

What will we do in the future?

The Feral Animal Management Program will continue to work with the community to eradicate feral deer from Kangaroo Island by:

3. Detecting changes in the age structure and sex ratios of the feral deer population

The Feral Animal Management Program ages all the feral deer they destroy by examining the wear on the deer's teeth, a technique used by the Department of Primary Industries and Water in Tasmania. This information is used to determine how many adults and juveniles are being caught within the population. Since 2006 the proportion of juveniles to adults in the population has decreased, indicating that the reproductive output of the population is declining.



inspecting deer farm fences



finalising deer escape protocols



promoting the 'Dob in a Deer' campaign



collecting information on the population size, breeding success and age structure



monitoring annually around dams to detect changes in distribution and abundance



continuing control operations.

Below left: Feral deer tracks *Image: Kangaroo Island NRM Board*

Below right: A red deer stag from a deer farm on the north coast of Kangaroo Island *Image: Kangaroo Island NRM Board*

