

# Beefy BEAST

and the



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A co-operative project between producers and Department of Natural Resources and Water evaluating the impact of dingoes on the Beef Industry

## New experimentalist appointed in Blackall

Former Blackall-based land protection officer and Desert Channels Queensland project officer, Damian Byrne, has accepted the experimentalist position until the Blackall study finishes this September.

Damian was responsible for uniting the interests of Tambo, Blackall and Barcaldine councils and researchers from the Robert Wicks Pest Animal Research Centre in Toowoomba to evaluate broad-scale community baiting programs.

Since his employment in late 2005 Damian has already made a significant contribution to the project. Welcome Damian!



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## Evaluation of large-scale baiting programs—more surprises from Central West Queensland

In our last update of the Blackall Project (Issue 14) we highlighted odd occasions where wild dog activity **increased** after baiting. To better understand this phenomenon the Robert Wicks team delved into the archives and discovered these 'odd' occasions were not as random as they first seemed.

Before-and-after wild dog activity data from 30 baiting programs spread across far North, South West and Central West Queensland and run between 1994 and 2006 were examined. Aligned by month, the results show baiting programs conducted between October and April regularly result in increased wild dog activity (Table 1).

While there is a peak in activity in April/May corresponding with the wild dog mating period, we think October to April represents the more important dispersal phase.

We know that pups, born the previous July, become mobile from October to April, because that's when their smaller footprints first make an appearance on tracking stations.

We believe however, this is also the period when young dogs without established territories begin looking for their own patch. When an area becomes free of wild dogs after baiting, young dogs take advantage of the opportunity to forge their own territory and re-colonise the area.

This information has major implications for the effectiveness of baiting programs and makes the push for coordinated wild dog control even more relevant.

When the relative abundance of wild dogs on baited versus non-baited properties between September 2003 and December 2005 was compared, no significant difference was found (Table 2).

This does not mean baiting is having no effect – it is probably responsible for the generally low wild dog numbers in the area; however, participation in wild dog control over the entire area is required to remove the source of dispersing wild dogs.

The satellite tracking study of young wild dogs that started this April in the Yuleba State Forest, (see NRW website for more information) is expected to improve the understanding of wild dog dispersal and re-colonisation following baiting.



**Table 1.** Changes in wild dog activity (combined data). Aligned by the month, shows October and April baiting programs often result in increased wild dog activity.

Survey Date	Baiting Month	Percent Change	
Mar 04	Mar	-282.6	↑
Mar 05	Mar	-240.0	↑
Mar 05	Mar	-86.8	↑
Mar 05	Mar	no change	
Mar 04	Mar	52.3	
Apr 95	May	-9.1	↑
May 94	May	51.3	
May 04	May	14.9	
May 04	May	83.7	
Jun 95	June	88.9	
Jun 05	June	100.0	
Jun 05	June	100.0	
Jul 96	July	71.2	
Jul 95	July	3.4	
Jun 97	Aug	100.0	
Jul 97	Aug	64.9	
Aug 04	Aug	no change	
Aug 04	Aug	17.2	
Jul 96	Sept	71.4	
Sept 96	Sept	55.6	
May 98	Sept	23.4	
Sept 94	Oct	60.4	
Oct 03	Oct	-86.7	↑
Oct 03	Oct	no change	
Nov 95	Nov	-792.9	↑
Nov 03	Nov	-633.3	↑
Nov 04	Nov	5.5	
Nov 05	Nov	-12.5	↑
Nov 05	Nov	11.3	

**Table 2.** Average indices of wild dog activity in pre- and post-baiting surveys combined for each of the three areas between September 2003 and December 2005.

Location	Barcaldine		Blackall		Tambo	
Treatment Area	Baited	Non-Baited	Baited	Non-Baited	Baited	Non-Baited
Mean Activity Index*	0.04	0.03	0.03	0.04	0.18	0.17
Standard Error	0.01	0.01	0.01	0.01	0.03	0.04
Number of Surveys	17		17		10	

\*Index represents the mean number of wild dog tracks per tracking station per day averaged over two days and 17 (Blackall and Barcaldine) or 10 (Tambo) tracking surveys.

## A closer look at aerial baiting

After sending Damian Byrne, the research team's new experimentalist, to a GIS / Arc view course at the University of Queensland in January, 'the team' has been able to take a detailed look at aerial baiting and uncovered some fascinating results.

Five properties (Atlam, Malta, Carwell, Caldervale and Goodliffe National Park) located along the Tambo transect and aerial baited in 2004 and 2005 were examined. Wild dog activity was calculated from tracking stations within one, two, five and greater than five kilometres of the baiting flight path (Figure 1).

Not surprisingly, immediately after baiting there were generally fewer wild dogs within one or two kilometres of where the baits were laid compared to 5 km away.

Between May and October however, wild dog activity declined at distances >5 km from where baits were laid. Meanwhile, in the vicinity of baited areas there were corresponding increases in wild dog activity.

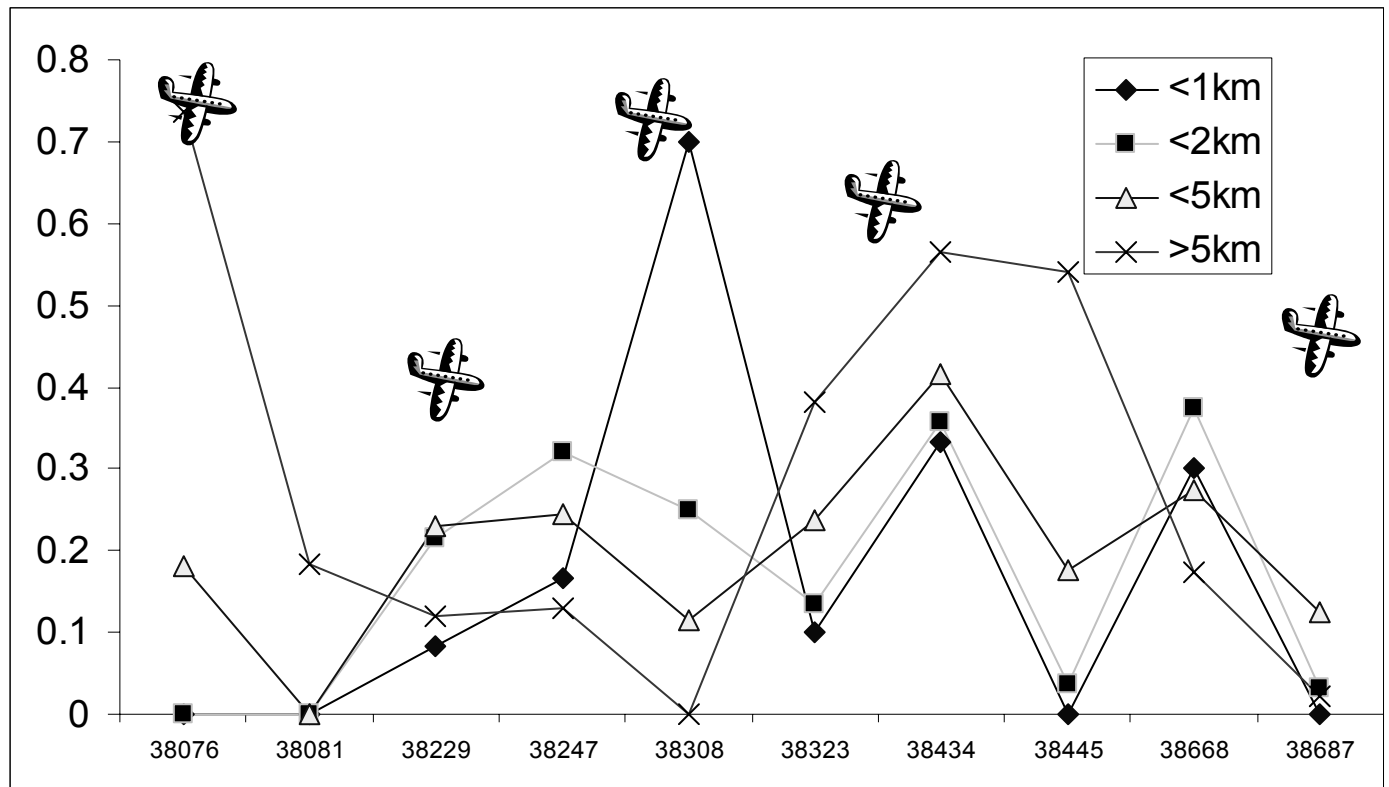
In the terrain and relatively thick vegetation found along the Great Dividing Range where these properties are located, there was an 81% decrease in mean wild dog activity within a kilometre of the flight paths. This baiting impact decreases rapidly with distance from the flight path (Figure 2).

These data suggest that to achieve an 80% decrease in wild dog activity across a shire or region, flight paths need to be within two or three kms of each other. This information shouldn't be interpreted as a recommendation to fly grid patterns as physical features are important predictors of wild dog activity.

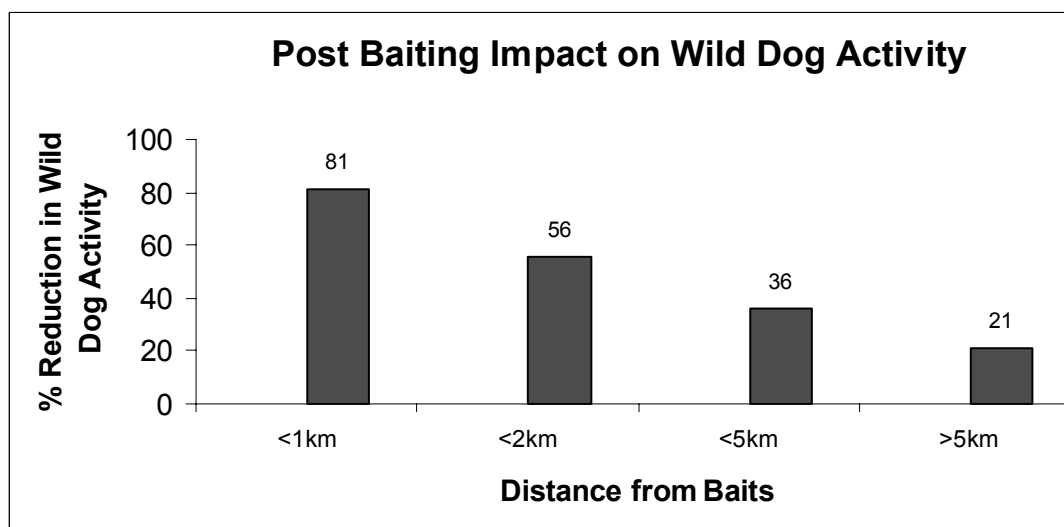
The forested boundaries between improved pasture and timbered country (like the Caldervale and Goodliffe National Park boundaries), clumps of dense timber surrounded by open downs (gidgee patches southeast

of Tambo for example) and timbered drainage lines (like the Nive River) consistently show wild dog activity and/or re-colonisation after control programs.

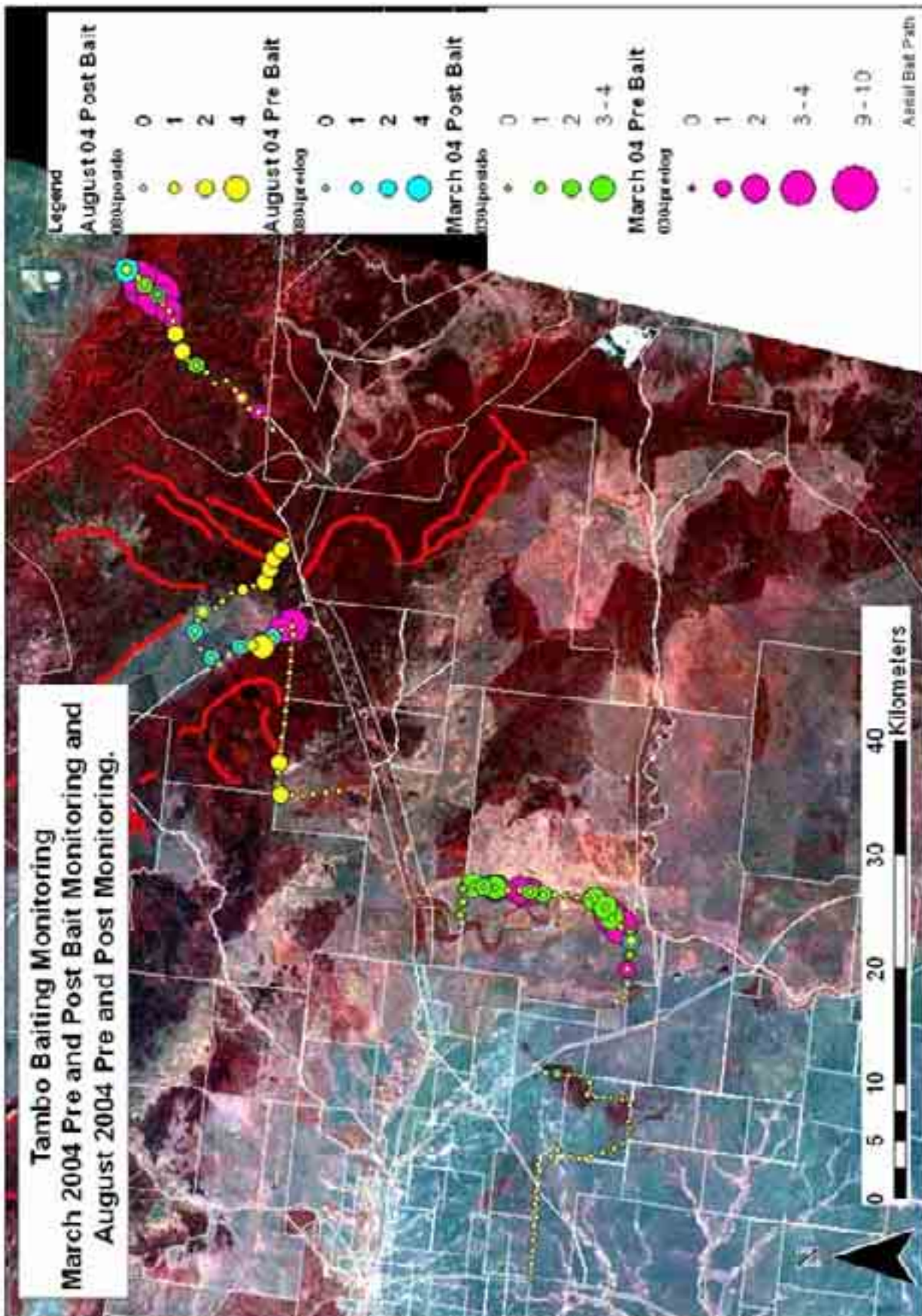
This information shows how easily large-scale baiting programs can be compromised when participation is poor, when properties are baited in only some locations; or when properties are baited at different times of the year.



**Figure 1:** Results of five aerial baiting programs conducted during 2004 and 2005 on properties in Tambo area showing changes in wild dog activity calculated at different distances from the flight path.



**Figure 2:** Average reduction in wild dog activity calculated at different distances from the flight path.



Satellite image of the Tambo transect (represented by faint bars) showing the number and locations of wild dog tracks detected during four surveys in 2004 (discs). The bottom left hand area of the map is open grasslands and much of the rest of the area is uncleared forests; thick black lines are 1080 baiting flightlines. Examples of areas where wild dog control should focus are circled (forest boundaries with improved pastures, island patches of vegetation and timbered creek lines). For more clarity, colour images are available on the Beefy and the Beast section of the NRMW website: <[www.nrm.qld.gov.au](http://www.nrm.qld.gov.au)>.

Bait path data provided by SW Air Services, Charleville.

## How to pick a pure dingo

One of the objectives in the Queensland Wild Dog Strategy is to conserve pure dingoes. A practical dilemma associated with this is how to control wild dogs on state managed land while conserving pure dingoes.

Amanda Elledge, an Honors student at the University of Queensland Gatton campus, helped with this objective by assessing the reliability of visual characteristics in distinguishing pure dingoes from hybrids.

Amanda compared DNA (analyses done by Dr Alan Wilton) and skull morphology (analyses done by Dr Laurie Corbett) with visual assessments of purity made by a number of people regarded as dingo experts.

Sixty wild dogs captured during routine control programs in South East Queensland (Ferals Out program) as well as 40 skulls previously collected from South West Queensland (maintained by the Queensland Museum) were used in the assessment.

Fifty-six of the SEQ wild dogs were photographed and their images sent to experts for independent classification of 'unknown' animals as dingoes, hybrids or dogs.

Overall, analyses of the 56 South East Queensland animals indicated there was only 17.9 percent agreement between DNA, skull morphology and visual assessments of purity.

The association was greater between DNA and visual assessments (25.0 percent agreement) and skull morphology and visual assessments (21.4 percent agreement) than between the accepted methods of DNA and skull morphology (8.9 percent agreement).

Surprisingly, both DNA and skull morphology identified a previously unknown colour form of pure dingo – a white animal with ginger patches that had no other oddities, such as ticking.

Amanda says this colour form is not found in most dingo populations and may be the product of interbreeding within an isolated population of pure dingoes or the result of a simple genetic mutation.

DNA analyses showed that the 56 South East Queensland captured wild dogs had more than 50 percent dingo genes or were pure dingoes. There were no pure (feral) domestic dogs or dingo-dog hybrids with mostly dog genes.

This shows that the urban wild dogs in Brisbane and the Sunshine Coast are descendants of dingo populations rather than escaped or dumped domestic dogs.

Visual characteristics identified to be indicative, but not necessarily exclusive, of dingoes were the presence/absence of a ginger, black-and-tan or white patchy coat; dingo-like conformation; and, four white feet with a few white tail hairs.

The characteristics of hybrids were the presence/absence of a black or a sable coat.



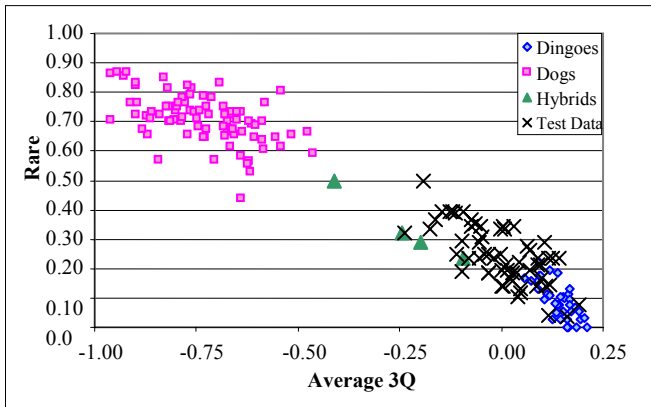
White animal with ginger patches assigned a dingo status by DNA and skull morphology analyses.



White animal with ginger patches showing 'ticking' (or spotting) in the coat. DNA and skull morphology assigned this animal as "dingo" and "hybrid" respectively.



Ginger animal displaying sable colouration (prominent dark hair along the back). DNA and skull morphology assigned this animal as "uncertain" and "dingo" respectively.



**Figure 3:** Genetic status of the 60 SEQ animals. The four reference hybrid dingoes represent one quarter (left point), one half (two middle points) and three quarter (right point) dingoes.

**Note:** Average 3Q on the x-axis is the relative probability that a sample is from a pure dingo population versus a population with 25 percent dog genes, and Rare on the y-axis is the proportion of alleles that are rarely found in the dingo. An Average 3Q score greater than 0.05 and a Rare score below 0.25 indicate that an animal is most likely to be a dingo. Although many of the SEQ animals were assigned a 'hybrid' status, these animals are principally  $\frac{1}{2}$  to pure dingoes. (A. Wilton unpublished data).

## South East Queensland's urban wild dog project

A study by University of Queensland Honours student Ben Allen indicates that like their human counterparts, suburban wild dogs are happy to confine themselves to much smaller territories than their country relatives.

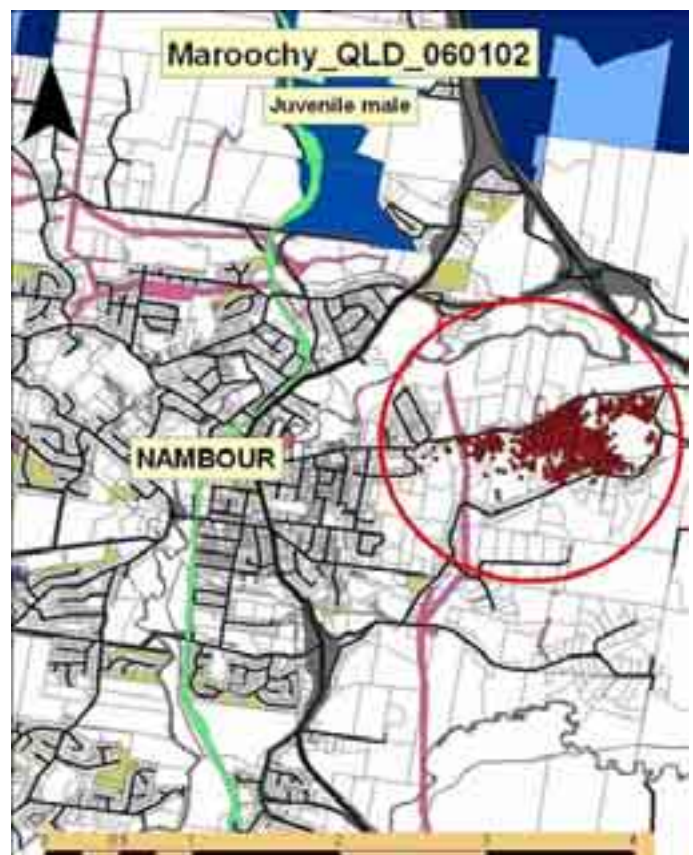
The project, conducted over the summer of 2005/06 and supported by Queensland Health, Maroochy Shire, Townsville City, Pine Rivers Shire, Ferals Out and NRMW, aimed to better understand suburban wild dog behaviour by tracking their fine-scale movements.

Fitted with GPS data logger collars, six urban wild dogs captured from the Ferny Hills, Nambour and Maroochy areas were tracked during their day-to-day activities.

Their positions were recorded hourly during daylight hours and every five minutes through the night, with up to 4000 locations recorded for each dog before the collars automatically dropped off after three weeks.

While these suburban dogs appear to have very small territories, of just two or three kilometres in diameter, all the territories contain at least some bushland where they take refuge during the day.

At night these dogs move freely through residential properties, cross major roads and seem quite at home.



Example of the movements of a wild dog from the Sunshine Coast.



**A dog collared:** This young wild dog was captured and released on the Sunshine Coast in 2006 for a movement study of wild dogs in urban areas.

## Hear from you

### For further information contact:

Lee Allen  
Department of Natural Resources and Water  
PO Box 318  
Toowoomba Q 4350  
Telephone (07) 4688 1397  
Email [Lee.Allen@nrm.qld.gov.au](mailto:Lee.Allen@nrm.qld.gov.au)

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