Lorna Glen Introduced Predator Monitoring

Data Summary
23-27 June 2011
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Summary

- While relatively low, the track activity (TAI) of cats and wild dogs has increased almost four-fold since October 2010 i.e; Cat TAI has increased from 2.3 to 8.9 and Dog TAI from 1.1 to 4.6.
- The estimated number of individual cats (IDI) has increased from 11.4 to 15.7 per 100 km (37% increase) since October 2010.
- If the July 2011 baiting is not successful, then expect to see a further increase in cat density, probably to pre-control levels or above (TAI = 30-35) following this seasons breeding and dispersal.
- No evidence that the active stations (FAPS or non-toxic baits) attract cats or dogs, with most animals walking past the stations.
- Mulgara removed a total of 93 non-toxic baits (NTBs), which is a 150% increase from October 2010. Mulgara were most abundant on Transects 3, 7 and 9 (Bullimore), but occurred on all transects, including in Cunyu and Lorna land systems. Based on track activity and NTB take, they are relatively abundant in the Bullimore land system in both recently burnt and longer unburnt spinifex.
- Echidna TAI was 8.8, which is similar to October 2010 (9.4).
- Rabbit TAI was 6.3 which is 31% higher than October 2010 (4.8).
- 4 sets of bilby tracks were recorded (Transects 1, 2 and 8).
- The new Edge-prowler bait callers (tweety birds) were trialed, but having only 10 units, we did not have a sufficient sample size to intercept a cat or a dog, so we are none the wiser. More extensive sampling will take place in the coming months.

Estimating introduced predator density

Feral cats, and to a lesser extent, wild dogs, are rarely seen and their populations are difficult to determine using trapping or spotlighting techniques. Therefore, indirect measures are used to estimate relative abundance. We use two measures, which rely on skilled observers and some sampling rule sets.

1. The Track Activity Index (TAI), which is calculated from the total number of sets of tracks (footprint sets) recorded over 5 nights for the 7 dragged transects each 10 km long. Algar and Burrows provide a rule set for determining whether a set of discontinuous track sets detected on a transect on the same day is counted as one or more track sets. In essence, if cat tracks are the same size, going in the same direction and are less than 2 km apart, we assume it is the same animal. The TAI is the measure used to set thresholds for free range fauna re-introductions (TAI<10.0).

TAI = (total number of track sets counted over 5 nights X 100) / 350.

2. The Individual Density Index (IDI): This is calculated from the estimated number of individual animals (cats or dogs) detected by footprints along the dragged transects over 5 nights. That is, after 5 nights, we examine the data and estimate how many individual animals we think there are along the 70 km (7 transects x 10 km) of dragged transects and express this as a number per 100 km. This is estimated based on the size of the cat (or dog) and where along the transect it is detected each night. The IDI is calculated by:

IDI = (No. of individuals X 100) / 70.

The IDI is less reliable than the TDI because it requires somewhat subjective (expert) judgements and assumptions to be made about the actual number of individual animals on the transects over 5 nights.

To compare the TAI and the IDI, consider the following example:

After 5 nights of surveying a 10 km transect, we record one cat track set each night, so the TAI = (5 x 100) / 50 = 10.0. However, because of the size and location of the tracks, we conclude that the tracks have been made by 2 individual cats, so the IDI = (2 x 100) / 10 = 20.0. If we concluded that the tracks were made by 3 cats, then the IDI = (3 x 100) / 10 = 30.0, etc.

Data and Notes

Table 1: Summary of track activity (TAI) for cats & dogs only.
TAI = (Total individual tracks X 100) / 350

Transect (Drag lines)	Day 1		Day 2		Day 3		Day 4		Day 5		**Total**	
	Cat	Dog	Cat	Dog	Cat	Dog	Cat	Dog	Cat	Dog	Cat	Dog
1	1	1	1	0	1	2	0	0	1	2	4	5
2	0	1	1	0	2	1	1	1	1	0	5	3
3	1	0	1	0	1	0	0	0	1	0	4	0
5	0	0	1	0	2	0	2	0	1	0	6	0
7	2	0	1	0	0	0	0	0	1	0	4	0
8	1	1	2	2	1	0	1	0	0	2	5	5
9	1	0	0	1	1	0	1	0	0	2	3	3
Total tracks	6	3	7	3	8	3	5	1	5	6	31	16
TAI	**9.0**	**4.3**	**10**	**4.3**	**11.4**	**4.3**	**7.1**	**1.4**	**7.1**	**9.0**	**8.9**	**4.6**

Notes Table 1: Track Activity Index (TAI)

- Mean Cat TAI = 8.9 and Dog TAI = 4.6. While relatively low, it is significantly higher than when measured in October 2010 (2.3 and 1.1 respectively).
- The TAI in Table 1 is calculated over 5 nights on the 70 km of transect that are readable (the drag lines).
- The TAI is a measure of track / footprint activity per 100 km of transect, not of the number of individual animals (see Table 1 for density of individuals).
- Cats were recorded on all transects, but dogs were only recorded on four of seven transects.
- On several occasions, individual cats travelled up to 4 km along transects, passing by and showing no interest in active stations (FAPS / NTBs). Likewise, dogs showed no interest in the active stations.
- Recommend regular (3-6 monthly) hand baiting of roads and tracks with dog baits as part of the predator monitoring work.

Table 2: Estimated number of individual cats and dogs encountered on drag line transects. Individual Density Index (IDI) = (No. individuals X 100) / 70

Transect	Cats	Dogs
1	1	2
2	2	1
3	2	0
5	1	0
7	2	0
8	1	2
9	2	2
Total	11	7
Mean IDI	**15.7**	**10.0**

Notes Table 2: Individual Density Index (IDI)

- The IDI is based on the estimated number of individual animals recorded over the 5 nights, not the number of track sets (see above). Unlike the Track Activity Index (TAI), it is calculated on a transect length of 70 km (7 x 10km), not 350 km (5 nights x 70 km), and standardized to 100 km.
- Since October 2010, the Cat IDI has increased from 11.4 to 15.7 (37% increase) and the Dog IDI has increased from 5.7 to 10.0 (75% increase).

Table 3: Summary of active (FAPs & NTBs) sample points

Transect	Totals over 5 days			
	Nil activity	Pass	Visit	NT- Bait take
1	42	Dog - 2	0	Mulgara – 1 Bird - 5
2	35	Dog - 2 Cat - 3	Cat - 1	Mulgara – 7 Bird - 2
3	20	Cat - 4	0	Mulgara – 22 Bird – 3 Cat - 1
4	45	Dog - 1	0	Mulgara – 2 Bird - 2
5	36	0	0	Mulgara – 10 Bird - 4
6	36	0	0	Mulgara – 3 Bird – 10 Cat - 1
7	25	0	0	Mulgara – 21 Bird - 4
8	28	Cat-1	Cat-1	Mulgara – 11 Bird – 8 Varanid - 1
9	28	Dog - 3	0	Mulgara – 14 Bird – 3 Ants- 2
10	41	Cat - 2		Mulgara – 2 Bird - 5
Total	336 (67%)	18 (3.6%) (Cat – 10; Dog-8)	Cat - 2 (0.4%)	Mulgara – 93 (18.6%) Bird – 46 (9.2%) Cat – 2 (0.4%) Ants – 2 (0.4%)

				Varanid - 1 (0.2%)

Notes Table 3:

- No activity on a high proportion of active stations (67%)
- Cats: 10 passes; 2 visits; 1 take
- Dogs: 8 passes; 0 visits; 0 takes
- Number of non-toxic baits taken by mulgara has increased from 37 in October 2010 to 93 in June 2011.
- Colder weather, so very low bait take by varanids compared with October 2010.
- Take by birds slightly down on October 2010.
- As mentioned in our last report, the active stations (FAPs and NTBs) are not adding any useful information regarding density of introduced predators, but are a useful way of assessing distribution and relative density of mulgara. We may need to consider novel attractants – animals may be desensitized to existing lures?
- Sand pads every 500m has increased potential of track intercepts on transects 4,6 and 10.
- Line 10 has been changed from Camel Well Drive to a circuit around the compound. Sand pads have not been constructed, but droppers every 500m mark the location of swept / raked 1 m wide sample strip across the track (in lieu of sand pads).

Other:

- Keith Morris and Judy Dunlop, with input from us, are compiling a response plan in the (inevitable) event of a predator (cat /dog) breaching the compound. This should be completed in a few months.
- Trapping using wire cage traps and leghold traps (in buckets) will be a key response action in the event of a predator breaching the compound, or if there is a need to trap cats outside the compound. To this end, we will be carrying out further trials of trap lures and callers imported from the USA.
- It is my view that using Aboriginal trackers to remove predators that breach the compound will also be an important strategy. I would like this matter raised with Martu at the next joint management meeting.
- We experienced several mechanical problems with the quad bikes. This has been discussed with Goldfields Regional staff.
- Copy of data sheets from this session have been forwarded to Dave Algar.