Field Trip Report

Effectiveness of a feral cat baiting operation on the Gibson Desert Nature Reserve in September 1998.

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Summary

Cat baiting carried out over 400 km^2 in the Gibson Desert Nature Reserve (GDNR) during prolonged dry spells in March 1994 and May 1996 resulted in an 80% reduction in cat density, and eradication of foxes and dingoes. A third baiting was carried out in September 1998 following above average annual rainfall (about a 1 in 5 year event). As a result of previous cat baiting, and an influx of dingoes into the (baited) area, the cat density prior to the September baiting was very low (track count density index (TDI) = 3.9). Based on the TDI, baiting reduced cat density by about 20% (post-bait TDI = 3.0), but, given the very low pre-bait density, it is difficult to draw firm conclusions about the significance of these figures. This result, together with unsuccessful bait uptake trials carried out this September, suggests that there is an "unbaitable widow" in the arid interior. The rule; bait during average or below average seasons or during prolonged drought, not during good seasons or soon after (significant) rain.

The cat density in the area which has been baited every 2 years since 1992 is significantly lower than in the unbaited control, and has been so since cat baiting commenced in 1994. The current TDI in the baited area is 3.0, compared with a TDI in the unbaited area of 22.9. Reptiles and small (mouse size) mammals in the Gibson Desert study area have not shown a response to six years of predator control so there appears little point in baiting the arid interior unless it is to protect a re-introduction or a species known to be in decline (such as the Bilby). On the basis of the overall success of cat control in the GDNR, we are in a position to move beyond the "fe-line" with Western Shield. We need to move stepwise. We suggest that the first step is to carry out broad area cat baiting operations in the Wanjarri Nature Reserve (and surrounding leases?) in preparation for fauna re-introductions. Once this is established, we could then move on to more (logistically) difficult parts of the arid interior.

Introduction

The purpose of this trip was to assess the effectiveness of cat baiting carried out on the Gibson Desert Nature Reserve on the 8th of September 1998. Baiting under dry conditions (below average rainfall and after long rain-free periods) in 1994 and 1996 reduced cat density by >80% and eliminated foxes and dingoes. The September 1998 baiting operation aimed to test the effectiveness of the cat bait following above average rainfall. Baiting was preceded by good rains from September 1997 to September 1998. Unfortunately the on-site automatic weather station failed so rainfall data are not available for the period. However, field conditions indicate that rainfall over the last 12 months was well above average (which is about 200 mm) and that the season was one of the best experienced in the region since 1992/93. Indicators of above average rainfall include the green, healthy condition of the vegetation, copious amounts of flower, fruit and seed, and Mungilli claypan was full in March 1998 and still carries a large volume of water. This is only the second time since 1987 that the claypan has filled, an indication of the amount of rain in the region. There was an abundance of fauna usually associated with good rains such as bustards, kangaroos, raptors and granivorous birds.

September 1998 baiting strategy

As with earlier baitings, an area of 400 km^2 (20 km x 20 km) was aerially baited using small fresh kangaroo meat baits (cat baits) containing 3 mg of 1080 and delivered at a density of 10 baits km^{-2} . As with previous baitings, both the baited area and the unbaited control area were assessed for cat, fox and dingo density before and after baiting using the track count method. This involves scraping and sweeping cut lines (mineral exploration tracks) each morning and inspecting them for feral predator tracks the following morning. While this census technique is not perfect, there are no better alternatives. Experienced observers working the same area and applying the same rules can make repeatable and reliable estimates of predator density along the tracks. About 30 km was assessed in each area each night over three consecutive nights. Bait uptake trials using non-toxic baits were conducted prior to baiting in the unbaited (control) area. This involved laying out 300 cat baits along a 30 km line and assessing the number of baits taken by cats. Twenty five per cent of baits visited by cats were ingested, the reminder being ignored.

Pre and post-bait track counts

The densities of cats, foxes and dingoes were estimated using the track count method before baiting in September 1998 and some five weeks after baiting in October 1998. Mean track density indices before and after baiting are shown in Table 1. The track density index equates to the number of individuals (tracks) recorded along the equivalent of a100 km line transect.

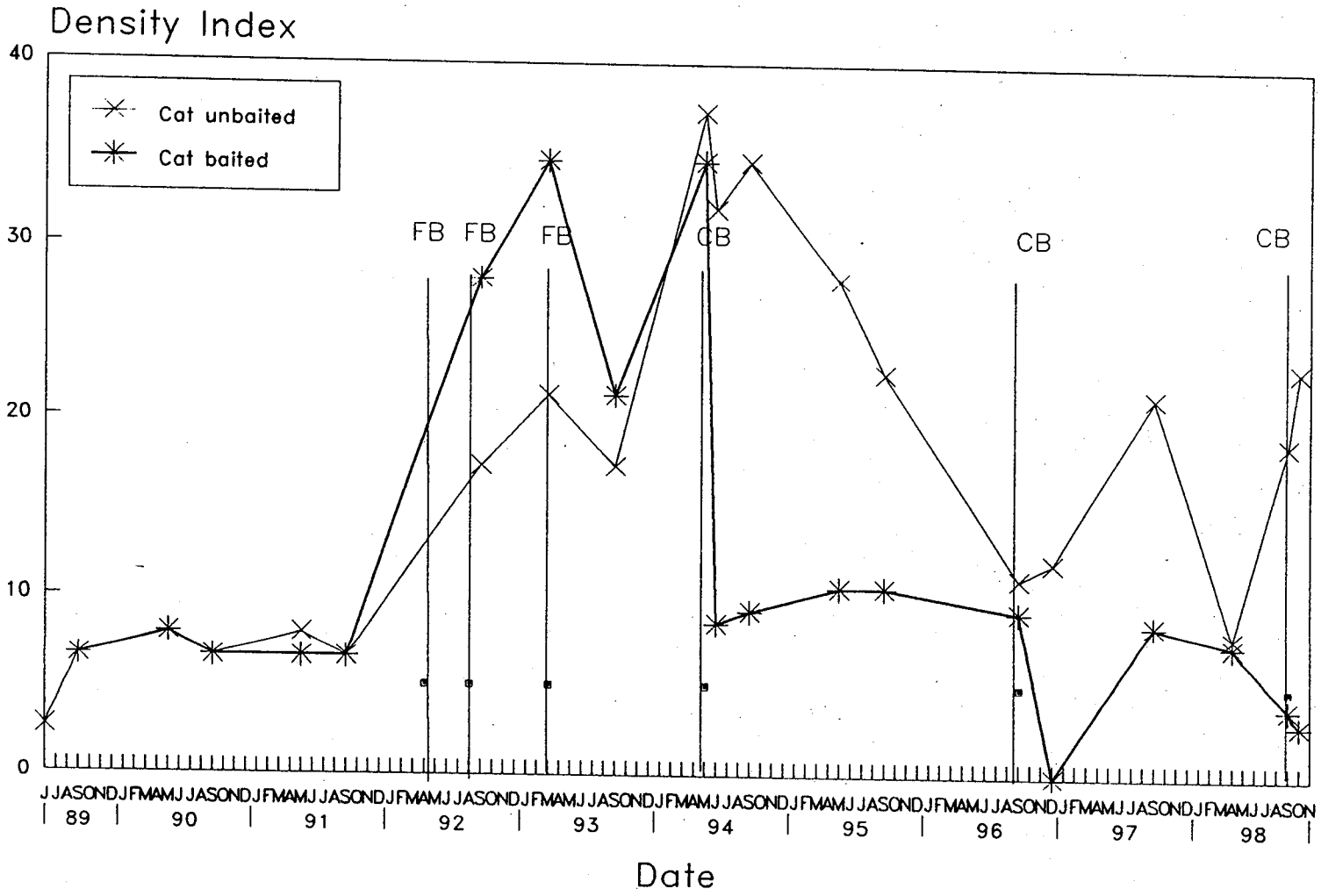
Table 1: Mean pre-bait and post-bait track density indices (TDI = animals/100 km of transect) from three nights of survey.

	Pre-baiting densities		Post-baiting densities	
Species	**Unbaited area**	**Baited area**	**Unbaited area**	**Baited area**
Cat	18.7	3.9	22.9	3.0
Fox	3.7	0.8	1.0	0.0
Dingo	3.7	27.0	0.0	4.9

Of the 23 cats recorded over three nights in the unbaited zone, 13 were small cats or kittens, indicating that it has been a good breeding season, and the kittens dispersed over the last five weeks since the pre-baiting census. The latest baiting (September 1998) appears to have had little affect on the cats (TDI 3.9 to 3.0; a 20% reduction) but the low starting density of cats (3.9) makes it very difficult assess baiting effectiveness. The other outstanding feature in Table 1 is the high dingo density in the baited area prior to baiting (TDI = 27.0). A small pack of about 9 dingoes had moved into the area since surveys were done in April 1998 and the September baiting has reduced this to 2. Dingoes are known to travel long distances (up to 200 km) so it is most likely that the 2 dingoes recorded in the area five weeks after baiting came in from outside the baited area recently. As is usually the case, fox density was very low and baiting totally eradicated foxes.

From Figure 1 it can be seen that cat density in the unbaited area increased significantly over the period April to September 1998. By contrast, cat density in the baited area decreased slightly over the same period and was significantly lower than the unbaited area (22.9 compared with 3.0). There are two possible explanations for these trends. Either the very high dingo density in the baited area prior to baiting caused a real reduction in the cat density due to predation, or the reduction was an apparent reduction induced by the presence of the dingoes restricting the activity of cats on the track, giving the impression that the cat density was low. However, cat density decreased only slightly (about 20%) five weeks after baiting, even though dingo density was dramatically reduced by the baiting. This suggests either a real reduction in cat density due to the presence of the dingoes, or the baiting was far more effective than was indicated by the track density counts. In summary, the high dingo density and the low recorded density of cats prior to baiting in the baited area has confounded the interpretation of the effectiveness of the baiting.

Figure 1: Cat tack density index (TDI) for Gibson Desert study site. Baiting times also shown; FB = fox bait, CB = cat bait.



Bait uptake trials - September 1998

Over the period 23-25 September (after baiting), fresh small kangaroo meat sausage baits (with and without digest) were laid out over 30 km in the unbaited control area to determine the proportion of baits taken by cats. On the first night, 73 baits with digest were laid out (200 m apart for 12 km then 400 m for 4.8 km), on the second night, 147 fresh baits without digest were laid out over 30 km (about 200 m intervals), and on the third night, 150 baits with digest were laid out over 30 km (200 m apart). The baits were inspected each morning and all baits replaced with fresh baits later that evening .

Of the 370 baits laid out over three nights, 31 were affected by ants, 11 were taken by goannas and 6 were taken by turkeys. In all, 8 cats visited the baits, but only one cat took one bait. A number of cats walked past the baits (see Table 2 below).

Table 3: Bait uptake trials - Gibson Desert September 1998

Cat No.	Baits visited	Baits taken
1	2	0
2	3	0
3	2	0
4	6	0
5	1	1
6	3	0
7	1	0
8	5	0
Total:	**23**	**1**

Conclusions

The low density of cats and the high density of dingoes in the baited area prior to baiting makes it difficult to draw any firm conclusions about the effectiveness of the last baiting, but it appears to have been less effective than previous cat baitings. Dingo density in the baited area was probably higher in the unbaited area (prior to baiting) due to the proximity of abundant surface water in an unusual drainage feature within the baited area. Dingo density in the unbaited control was low. Baiting significantly reduced both fox and dingo density.

While the cat baiting was somewhat inconclusive due to the low number of cats in the baited area prior to baiting, the apparent 20% reduction following baiting together with

the poor bait uptake during the uptake trials, suggest that the above average rainfall over the last 12 months has increased live prey abundance and reduced the effectiveness of baiting. This confirms previous observations that baiting in periods of prolonged drought is the most effective time to control cats.

The very poor bait uptake experienced during the bait uptake trials is of concern. As has been the experience in the past, cats either walked past the baits on the roads or investigated the baits but did not ingest them. It is possible that cats are reluctant to pick up baits laid along tracks, but may pick them up when they find them in the bush. However, there is no reason why this should be the case. To broaden the window of opportunity for baiting cats beyond times of famine, more work needs to be done on bait development. We need to pursue the development of an **irresistible** cat bait; one which will be ingested at any time of the year.

One line of investigation which might be worth pursuing is the development of a "lure"-type bait; one which resembles cat prey. In the Gibson Desert, reptiles form the major component of cat diet. Of the reptile group, legless lizards, geckoes and small skinks are most abundant and are almost always found in the gut and scats of cats. Early morning track inspections also reveal that these animals are most active at night and are quite abundant. They are relatively slow moving and a easy prey for cats, especially legless lizards.

The idea of using a lure, or a bait which is made to look like exactly like cat prey in every detail, such as a legless lizard, will be investigated over the next six months.

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