

FINAL REPORT
to
BUREAU OF RURAL SCIENCES
NATIONAL FERAL ANIMAL CONTROL PROGRAM

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1. Name of project

Assessing the Effect of a Reduction in Baiting Rates for Wild Dogs

2. Project aims and objectives

This project sought to refine aerial baiting techniques for the control of wild dogs over much of Australia. The number of baits delivered during aerial baiting campaigns against wild dogs is often arbitrarily decided, and almost certainly excessive, particularly in the larger-scale aerial operations in rangeland areas of the country. We anticipated that reduced baiting rates could maintain current levels of control more cost-efficiently. Reduced baiting rates would reduce potential risks to any susceptible non-target species and demonstrate a responsible approach to best practice management.

Specifically, the objectives were:

1. To determine if there is any reduction in the effectiveness of aerial baiting against wild dogs when the number of baits used is substantially reduced (by half).
2. To improve the cost-effectiveness, efficiency and environmental safety of aerial baiting operations.
3. To alert landholders to the excessive usage of baits in baiting campaigns and provide a guide to supervisors of those campaigns as to the proportional reduction which might safely be applied while still maintaining effective control.
4. To promote the development and application of best-practice management for wild dogs.
5. To encourage land managers to develop environmentally responsible, best practice attitudes to wild dog management.

3. Project location

After extensive consultation with WA Department of Agriculture staff across a number of regions, sites were selected in the Upper Gascoyne / Ashburton region in the north west of Western Australia (see Fig. 1).

4. Methodology

Two blocks of 3 stations each were chosen, with selection criteria being based on reports of 'reasonable' numbers of wild dogs, previous baiting history (operational maps detailing flight-lines and numbers of baits dropped each campaign), comparability of topography and

landsystems (especially within blocks, but also between blocks), and a willingness by individual pastoralists to participate in the trial.

Within a block, the three treatments were to be no baiting, baiting at the 'normal' rate, and baiting at half the normal rate, with one treatment per station. In reality, not all stations were willing to not bait or bait at half rate, so selection of the treatment for a station was not strictly random. The following treatments were allocated:

Western Block:

Turee Creek Station	No baiting
Mount Augustus Station	Half rate
Mount Vernon Station	Full ('normal') rate

Eastern Block:

Bulloo Downs Station	No baiting
Tangadee Station	Half rate
Prairie Downs Station	Full ('normal') rate

Potential survey transects were mapped for each station using GIS. Transects were based on previous baiting flight-lines (as close as possible but within 5 km of the selected previous baiting lines). Buffers of at least 10 km were to be maintained between the trial area and other areas being baited (either our other trial baitings or the routine operational baiting in the region).

The monitoring of dingo abundance was to be based on repeated counts of tracks on monitoring plots established along the permanent survey transects (one transect per site). Ideally, plots would be established at uniform intervals (≥ 1 km separation), with at least 50 plots on each transect. Plots would be checked for dog tracks for 3 consecutive mornings, having been cleared of sign on the previous days. This was a modification of the technique described by Allen *et al.* (1996) and Engeman *et al.* (1998). Because dog activity was not expected to be uniformly distributed across the landscape, we expected that a greater separation distance would be needed between some plots. Within a site, some stretches of 'hard', dry country, for example, would be expected to warrant few if any plots. The actual plots were to be either cleared sections of vehicle track, major stock pads, road junctions, creek crossing and the like. Uniformity of types and mix of plots chosen was to be maintained across all sites.

The trial was re-scheduled to the second traditional baiting time of autumn (2002), from earlier plans to evaluate the spring baiting campaign of September / October 2001 (see original project Milestones). The change was made for two reasons. Firstly, the selection of sites, using past baiting maps, current information on known dog population densities, consultation with station management, and preparation of accurate maps to ensure that transects on neighbouring properties met the separation criteria, proved to be very time consuming. It is unlikely that all such tasks could have been satisfactorily completed in time to make the necessary changes to the regions' operational baiting campaigns for spring 2001. Secondly, it was considered that the population of wild dogs would be higher in the autumn period, with the presence of sub-adults from the previous season boosting numbers (e.g. Thomson *et al.* 1992). This would increase the chance of obtaining significant differences in treatment effects.

5. Results

Research staff with extensive experience in assessments of wild dog populations carried out a thorough evaluation of the selected sites over the period February 10-21, 2002. A site in the eastern block was visited first, though ongoing thunderstorm activity made some parts of the property inaccessible, and water was widely distributed. Despite this, good evidence of dog activity was found, and one group of 3 dingoes was seen. Rather than complete the formal marking out of 'final' transects and plots at this stage, it was decided to continue the preliminary check to ensure that other sites would also be potentially suitable.

The weather prompted a move to the western-most site, where less rain had fallen and the country was almost drought-stricken. Again some dog sign was seen, though it was more patchily distributed than the previous site. Large stretches of proposed transects had little or no fresh dog activity. A further site in the western block was also surveyed. This had more consistent dog sign, with fresh tracks of groups of dogs being seen, particularly in the vicinity of the Ashburton River that was flowing at the time. However, despite the clear evidence of some wild dogs through the area, there was little indication of consistent activity (few repeated visits to the same locality over a period of days). This was confirmed by retracing some of our surveyed potential transects on a second day: few, if any 'dummy' plots would have been visited by dogs. Given that this disappointing result was in the most promising of the 3 sites surveyed, there was a clear risk that our planned methodology would not provide a sufficient index of dog activity on which to evaluate the outcome of baiting, at least in the sites checked to that point.

Trial postponed

Given the real risk that the monitoring technique would not be sensitive enough in the current conditions to allow a meaningful assessment of the trial, we decided to temporarily postpone the trial. The early-April timing of the operational baiting meant that we were left with insufficient time to seek new areas and arrange alternative baiting regimes to complete the trial within the original schedule.

6. Discussion and implications for future work

Though no formal collection of data was possible in the trial, it was clear that the technique described by Allen *et al.* (1996) and Engeman *et al.* (1998) would not have been suitable under the circumstances of the current study. Our proposed modifications to the technique (selecting specific locations for plots, 3 days monitoring) were designed to increase the likelihood of visits by dogs to plots, improve the sample size, reduce contagion (multiple visits to plots by the same dog/s), and reduce the variance of the measure. However, even with the proposed alterations, large sections of transects (and a high proportion of plots) would have remained unvisited by dogs over the monitoring period.

There are several possible reasons for the unexpected potential deficiencies in the monitoring technique in this area. It appears that the control work (mostly aerial baiting) that has been undertaken on the stations surveyed had a greater impact than that implied by reports from pastoralists of the area, leaving population densities below those expected. Nevertheless, sufficient dogs remained to justify ongoing operational control work, though numbers were marginal for our trial purposes where the treatment effects may not have been substantial, and therefore difficult to measure accurately. Coupled with this, the relatively recent rain (albeit sometimes only in the upper catchments) meant that water was widely distributed along watercourses, and dogs had not settled into regular foci of activity within their ranges. This

was further exacerbated by the fact that station access tracks in this particular region tended to give only limited vehicular access to the favoured riverine habitats, where most dog activity was then occurring. Given that our monitoring transects necessarily have to follow station access tracks, this was a further impediment to the study in that area. In contrast, it would appear that wild dogs were more evenly dispersed across the areas studied by Allen *et al.* (1996) and Engeman *et al.* (1998). It is also likely that the access roads used in those studies were more regularly used by dogs than in our situation.

Extension

Extension work was limited to a general article in the Pastoral Memo, distributed to stations throughout the pastoral areas of WA. The text of the article is given in Appendix 1. Some useful feedback and discussions were generated through this article. As well, the field work and associated local contact with pastoralists was valuable to further promote the notion of fine-tuning baiting rates and the better targeting areas of highest risk. It is too early yet to gauge whether this has led to modifications in current practice, but the extension work will continue, albeit at present based on concept rather than trial data.

Future work

We feel it would be prudent to carry out a pilot trial of the survey method before embarking on a full-scale trial. We should be able to minimise at least some of the negative factors that came to light during our assessment of the Gascoyne / Ashburton region. It is likely, for example, that we can select areas in the Pilbara which have not been subjected to intensive control and which will have greater numbers of wild dogs. The Pilbara was not available for an autumn trial, as only a spring baiting is carried out there. Water distribution will not be subject to the sudden, major changes that come about through late summer rainfall, and so dogs are more likely to have more focussed areas of activity later in the year. In much of the Pilbara, stations rely heavily on natural waters for stock, and vehicle access tracks are necessarily linked to these.

Further information on techniques to monitor abundance of wild dogs is warranted. Such measures were an important component of various broader deficiencies in knowledge and practice concerning wild dogs, identified in Fleming *et al.* (2001). The results of our preliminary investigation so far clearly suggest that population survey techniques used in one part of Australia are not necessarily directly applicable elsewhere, at least at all times and in all situations.

Acknowledgements

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References

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7. Expenditure Statement

All Commonwealth funds allocated under the initial installment were committed against salaries of those staff involved in the preliminary site selection and site survey. As outlined, a considerable effort was expended to collate mapping data from previous campaigns and to create new maps with proposed transects. In addition, to maximise the effectiveness of the first field survey, 3 staff instead of a planned 2 were involved. All other costs were covered by the WA Department of Agriculture.

BRS was advised of the postponement of the trial, and the second payment was not sought.

A financial statement is attached at Appendix 2.

Appendix 1. Text from article published in Department of Agriculture "Pastoral Memo" (Dec 2001, Northern Pastoral Region, ISSN 1033 5757; Southern Rangelands, ISSN 0726 9382)

Baiting Rates for Wild Dog Control

A new trial will be carried out early in 2002 by the Vertebrate Pest Research Section, evaluating aerial baiting techniques for the control of wild dogs. This federally-funded project will test whether reduced baiting rates can maintain current levels of control. Reduced baiting rates would achieve cost-savings and reduce potential risks to susceptible non-target species. A satisfactory outcome would lead to a refinement of control operations, enhancing best practice management, and demonstrating a responsible approach to the use of 1080. The proposed work was outlined at the APB Pastoral Conference held early in 2001, and received general support at that time.

Aerial baiting is widely used to effectively manage the impacts of wild dog predation on livestock, with baiting being specifically targeted at stocked paddocks and limited adjacent 'buffer zones'. Despite this existing strategic approach, the number of baits delivered during these campaigns is often arbitrarily decided, and almost certainly excessive, particularly in the larger-scale aerial operations. Previous work in the Fortescue River area demonstrated that traditional aerial baiting campaigns accurately targeted appropriate sites to lay baits. However, the number of sites targeted and the number of baits dropped was far in excess of that needed to expose the entire target population of dingoes to baits.

Excessive numbers of baits clearly increase the costs of any baiting campaign (bait materials and labour to prepare the baits), as well as increasing potential risks to some non-target species. In many areas pastoralists and others have been reluctant to accept a substantial reduction in the number of baits used, even though the potential benefits are clear. Agency staff supervising these campaigns have no real guidelines as to how far bait numbers could be reduced without reducing the effectiveness of the operation. A demonstration that the effectiveness of aerial baiting is maintained at significantly reduced baiting rates would do much to allay these concerns. Similar demonstrations of reduced rates for baiting for fox control led to a rapid adoption of the findings, and has enabled many fox baiting programs to continue or expand, with ongoing, more cost-effective control.

The trial work is likely to take place in the Upper Gascoyne and/or Meekatharra regions. We are seeking 6 groups of stations or areas of Crown Land each covering up to 10,000 km² in area. The sites will represent 2 sets of 3 'treatments'. Two sites will be from an area where little or no aerial baiting is currently being carried out (at least planned for autumn 2002). Two sites will be baited at existing rates (based on the recent history of baiting). Two sites will be baited at the reduced rate (nominally half the recent historical rate for the area). The work will clearly rely heavily on the cooperation of pastoralists, and we will be needing to encourage 2 of the 6 areas to accept a reduced baiting rate for the coming autumn baiting.

The trial work will involve deriving estimates of wild dog numbers before and after the baitings at each of the sites, based on counts of dog tracks along set transects. Kangaroo or other prey numbers will be assessed as well, to ensure that the conditions facing the dogs are similar between sites. We also expect to collect anecdotal information from the areas, checking on any changes that may be noticeable with an altered baiting rate (e.g. in a worst-case scenario, a need for more ground-based follow-up control work).

We hope to identify potential sites over the next couple of months (by the end of 2001), and plan to make on-ground assessments and finalisation of sites in early 2002. We'll be seeking areas with reasonable numbers of dogs, because we need to have the best chance of picking any difference in population reductions caused by the baitings.

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