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WILD DOG CONTROL: FACTS BEHIND THE STRATEGIES



July 2003

WILD DOG CONTROL: FACTS BEHIND THE STRATEGIES

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July 2003

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INTRODUCTION

The following information provides background to how strategies for controlling wild dogs¹ have been developed over the years, not just in Western Australia, but also other parts of Australia. It is based on scientific studies, including detailed evaluations of techniques and strategies, and also considerable practical experience from doggers, operational staff, and landholders.

This publication focuses on sheep enterprises, which are at the highest risk of wild dog predation. Although the effects of wild dogs on cattle can also be significant and widespread, wild dogs are easier to control in cattle areas. A general population reduction of wild dogs, such as achieved by periodic aerial baiting, is usually highly effective in minimising losses to cattle. In sheep areas, however, it is necessary to aim for local eradication of wild dogs. This requires an intensive, ongoing control effort using all available techniques. The principles outlined apply equally to rangeland and farming areas.

WILD DOG SOCIAL BEHAVIOUR

How do wild dog packs function?

Wild dogs are social animals. Though often only sighted as individuals or pairs, wild dogs are usually organised into distinct social groups consisting of a dominant male and female and their offspring of various years. These packs maintain and defend territories that have very little or no overlap with those of neighbouring packs. Whether packs form, how big they are, and how stable they are seems to be related to the size and abundance of available prey. Larger packs and strong territoriality seem

to be common when kangaroos are the main prey, whereas smaller packs and less defined territories are seen in areas where rabbits are the main prey.

Pack stability and separation of adjacent packs is maintained by means of visual, vocal (howling) and scent (scats and urine) cues. There is no evidence to suggest that scent-marks repel intruding individuals (that is, dogs coming into the pack territory from outside).



Wild dog feeding on a kangaroo.

It is rare to see all pack members together and it is more common to see solitary animals or small sub-groups of the pack. A dominance hierarchy (ranking order) exists within packs. Outright fighting between pack members is rare and aggression seems to be countered by submissive postures. The dominance hierarchy means that the next animal in the order can always replace the lead or 'alpha' dog and bitch. This can happen through one of the leaders being killed or, in some instances, being out-competed by their fellow pack members (usually their own offspring). Such changes in the pack rarely lead to significant changes in pack behaviour or territory occupied.

Can the dominant animal in the pack be identified?

The issue of dominant dogs is sometimes raised in relation to control efforts and the potential increase in wild dog problems if a dominant animal is removed. Although it is not hard to make a claim about the status of a certain dog, it is extremely difficult to categorically identify the status, dominant or otherwise, of an animal in a pack. During

¹ In this publication, the text refers to dingoes where research studies specifically dealt with essentially pure dingoes (such as the work carried out by the Vertebrate Pest Research Section in the Pilbara and Nullarbor regions). Most of this information would apply equally to any wild dogs. In other sections, the text usually refers to the more generic term, wild dogs, or simply 'dogs'.

intensive radio tracking studies in the Pilbara, some packs were followed consistently for periods of years, observing many individuals and their interactions. The territories of these packs were also covered extensively on the ground, with tracks and other signs being recorded.

Even with this extensive observation and knowledge of known individuals, it wasn't always possible to identify the intricacies of the dominance hierarchy for all packs. Not surprisingly, the best local Aboriginal trackers were not able to distinguish precisely what hierarchy existed in an area.

Can the dominant animal be captured?

The suggestion that trapping can selectively catch, or deliberately avoid catching, a dominant animal is misleading. Although it may happen occasionally, observations made of wild dog groups, and the rate of trapping and radio-collaring what later proved to be dominant animals, suggest that selective capture of particular individuals of a particular social ranking, even if they could be identified, is virtually impossible.

Why? Because the dominant animal may be a cautious animal, perhaps partly through experience with subordinates getting caught in its presence. On the other hand, the dominant animal is often the first to investigate a new smell such as the trap lure in its territory, potentially making it more vulnerable. There is sufficient variation in behaviour between dogs that setting up to catch subordinates, and not the dominant animal, simply cannot be guaranteed.

Adding to the complexity, members of the social group don't always travel together, meaning that there can be no certainty about which individual will encounter a trap first, and even whether it may be alone or in company.

Can sheep-killing animals be identified?

It has also been suggested that sheep-killing wild dogs can be selectively targeted, in an attempt to deliberately leave other resident wild dogs in the area (see page 5).

The identification of specific killers away from the area where the killing is taking place is difficult.

Unless tracks can be individually recognised, which even the most experienced doggers rarely claim, other signs such as scats containing wool have to be used. This has several problems. Firstly, many wild dogs can cause considerable stock losses without actually eating much (or any) sheep. By way of example, over 40 dingoes were selectively shot in one study area, all targeted because of their observed killing of sheep (seen, identified, and watched from the air). Only 50 per cent actually had any identifiable sheep remains in their stomachs and only 20 per cent of scats collected from the area contained wool.



Sheep killed by wild dogs and left uneaten.

So, even a sheep-killing individual will produce many scats containing no wool. To then link a scat to an individual (without DNA analysis) would not be easy in situations where social groups exist. The reason is that other group members investigate scats, sometimes applying their own mark at the site. Even if tracks could be individually recognised, discerning the exact sequence of which animal did what is virtually impossible.

Do all wild dogs and dingoes in sheep paddocks cause problems?

In a study of monitored dingoes with radio collars, *all* dingoes that ended up in sheep paddocks eventually caused losses in one way or another. This means that any wild dog in sheep paddocks will cause problems, including those that might make sheep avoid certain areas or push them through fences. It is not a good strategy to allow some wild dogs to remain immediately adjacent to a sheep area as the potential for future stock losses is simply too great.



Radio tracking aircraft in the Pilbara study.

HOME RANGE AND MOVEMENTS

What do home range and territory refer to?

The term 'home range' means the normal living area of an animal. If a wild dog happens to spend time coming in and out of sheep paddocks, then that area is part of its home range. It is, therefore, inappropriate to describe routine movement 'to and from' a home range. The home ranges of social companions obviously overlap, with the combined area forming a group home range. When defended, this can be termed a 'territory'.

Will animals routinely travel large distances, for example to sheep paddocks?

Distances travelled by wild dogs have been the subject of much discussion and study, as well as some wild speculation. The fact that a dog is quite capable of covering tens of kilometres in a day doesn't mean that

they normally do so. Moves like these consume considerable energy, and unless they have some immediate survival advantage to a wild animal finding its own food, water or a mate, there is no point in undertaking them. The issue has an important bearing on wild dog control activities, because it has a direct influence on how far control work should extend from stock paddocks.

Decades ago, there was a general view that wild dogs roamed vast distances and that any dog out there could end up killing stock, including those hundreds of kilometres away in the desert. As a result, some doggers used to operate out in country where their efforts were totally wasted. The problem was far closer to home, and there were far more important dogs to remove.

Wild dogs, like most other animals, tend to settle in an area that provides them with adequate resources. They roam as far as necessary for food or water, but there is obviously a biological advantage in an animal knowing its area well (best sites for food, shelter, escape from predators and humans). Where resources are more scattered, dogs roam further, and have larger home ranges. Nevertheless, intensive radio tracking of hundreds of dingoes has shown that instances of individuals living well away from the paddocks, and making 'raids' into them from afar, are rare.

Most commonly, wild dogs that travelled to the edge of sheep country and encroached into it, either:

- settled there (more likely to occur in pastoral country where suitable habitat usually exists in the paddocks); or
- shifted their home range to the neighbouring refuge area (more likely to occur in farming areas where limited opportunities exist for dogs to settle within the actual paddocks).

These facts are not surprising. There's not much biological advantage in an animal living in one area and having to travel

through largely unknown country into another area (sheep paddock), despite the easy food. Dealing with such an occasional occurrence shouldn't be totally ruled out, but this should not form the basis of an entire control strategy. The danger is that wild dogs posing as great a risk to stock will be closer to the paddocks, but in a sense get overlooked in the search for some distant, presumed culprit.

THE BUFFER ZONE STRATEGY

What happens when animals in a territory defend it against intruders?

Territoriality of wild dogs, by definition, implies *defence* of an area. Territoriality means that resident animals, the territory-holders, will stop intruding dogs from settling in that area. The intruders usually avoid the residents and encounters can lead to desperate chases and, in some instances, killing of the intruders by the residents defending their patch.

However, this doesn't mean that intruders normally turn around and retreat the way they have come; it simply means that they keep wandering, looking for an area where there is no sign of existing dogs (scent, markings, howling, sight). They can actually spend some time within a pack territory without conflict, but only by keeping out of the way. More often, the wanderers just move on, searching for vacant areas with sufficient food and water. This further movement can of course lead such individuals into stocked country. In effect, the territorial residents force the intruders *through*, rather than turn them back.

How do territories relate to a dog-free buffer zone?

The territorial behaviour of wild dogs forms the basis for creating a virtually dog-free buffer zone next to the stocked country. Dogs coming in from further out will tend to settle here (the area had sufficient resources for the previous residents, so why would the newcomers need to go further?). The newcomers would be no more likely than their predecessors to roam over a wider area. This would be especially so if

the buffer had been cleared across the effective width of typically two territories, which can be 15 to 20 kilometres in total in some areas. General and effective control of these dogs is actually easier to manage than trying to selectively leave some dogs in an ineffective buffer.

Detailed studies, and many practitioners, have clearly documented the outcome of leaving a partially occupied buffer. Wild dogs arriving from further afield are unable to settle in the buffer because residents have been left behind, and move through to the stock paddocks. It is well known that it is more difficult to deal with wild dogs once they are among sheep, so tackling them where it is easier (in the buffer and away from stock) is common sense. The other advantage of this approach is that the timing of control is not quite so critical. Targeting any wild dogs in the buffer is not as urgent as dealing with a dog that is already encroaching into sheep paddocks.

Why not use other strategies instead of the buffer zone?

The behavioural basis of the buffer zone strategy is similar for many comparable members of the dog family around the world, including wolves, coyotes and jackals. The experience in Western Australia and elsewhere is that when a buffer is properly implemented and maintained, it is highly effective. Recent, widespread wild dog problems in the state are not due to a failure of the principle, but rather to an ineffective control effort in general. It would be risky to attempt to implement alternative strategies based on well-meaning but unfounded and unverifiable counter-interpretations of wild dog social behaviour and movements.

A COMBINATION OF TOOLS

It is vitally important that all options be considered in any control strategy for wild dogs including:

- aerial baiting;
- ground baiting;
- trapping;
- shooting; and
- techniques such as exclusion fencing.

The emphasis on particular techniques may change from time to time, area to area, and situation to situation. The general strategy and the various techniques available are outlined in the Farmnote *Wild dog control* (Agdex 674). The following provides further information on some of these techniques, particularly those that have been the subject of ongoing debate.

AERIAL BAITING

Aerial baiting was largely developed as a means to achieve preventative control, allowing baiting in otherwise inaccessible areas, and assisting in creating buffers to prevent the movement of wild dogs into stocked areas. Its adoption as the only tool to solve all wild dog problems is not a good strategy.

Aerial baiting does work and many examples, both past and present, demonstrate this. However, there are also examples where aerial baiting has not been so effective.

How does available food supply affect baiting success?

A major factor to consider is that wild dogs are less likely to take baits when there is abundant food available. In these circumstances, it doesn't mean that the dogs don't like the baits, it is simply that they prefer their natural, fresh prey. There are many anecdotal observations of wild dogs walking past freshly perished cattle, foregoing an abundant source of ready meat, and proceeding to hunt kangaroos. The same is common in sheep areas: dogs will leave freshly killed or mortally injured sheep and move on to hunt kangaroos.

When the food supply is high, younger wild dogs are more likely take baits. The question of adult dogs teaching youngsters to avoid baits is sometimes raised. There is no clear information on this, although there are observations of previously trapped or trap-shy dingoes leading others away to avoid traps. Whether adults can similarly dissuade youngsters from eating baits is a matter of speculation, though they can't keep track of all their wandering pups at

once, even when they travel in a tight group.

Is it worth baiting paddocks where sheep are being killed?

Because of the food supply issues outlined above, baiting is seldom the primary control method recommended in paddocks where wild dogs have already started killing sheep. Not only do sheep provide an easy food source, but kangaroos and other preferred prey of wild dogs are usually readily available in sheep grazing areas too. Under these circumstances there is less chance that the dogs will take bait. Research studies on dingoes in the Pilbara showed that the animals in the best condition were those in sheep paddocks; they clearly had access to easy food and so were the best fed.

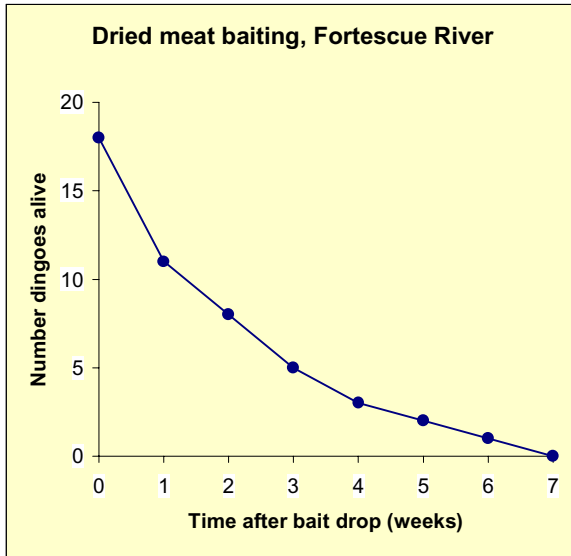
This information indicates that it is better to use baits where they are most likely to work—in the buffer or outside the paddocks where food is harder to hunt or find. Baiting need not be abandoned altogether in these circumstances; it just needs to be remembered that it is not likely to be highly effective. Nevertheless, it will still remove foxes if they are present, and that can help with other forms of wild dog control such as trapping.

Is it true that baiting can be ineffective because some dogs won't eat baits?

Wild dogs that don't eat baits are not necessarily bait-shy. Bait-shyness generally comes about through a sub-lethal dosing of poison, and later avoidance of baits (see page 7). Alternatively, and of more concern, is that perhaps some genetic trait makes some individuals more wary, and they avoid objects such as baits. This could then confer a selective advantage so that, in time, the proportion of dogs displaying that trait would increase. There is no direct evidence that this is the case.

It is common to see evidence of wild dogs walking past baits. However, detailed radio tracking of similar, supposedly bait-shy, individuals showed that many eventually took a bait, some six to seven weeks after

the baits were laid and first encountered (see graph). Talk of extensive bait-shyness is unsupported speculation and can be counter-productive by directing resources away from baiting in areas where it *is* a highly appropriate technique.



Graph showing the progressive kill of radio-collared dingoes in a baiting trial. All 18 monitored dingoes were killed by baits, the last individual dying 7 weeks after the baits were dropped.

What other factors affect baiting success?

The real key to baiting success (apart from the availability of natural food) is bait placement. Poor placement can lead to conclusions that aerial baiting 'doesn't work', but examination often reveals that baits were laid in inappropriate places, often not in wild dog refuge areas, or near natural waters or hunting areas. It is crucial that these sorts of places are better mapped and targeted, and that a person with sound knowledge of the area navigates the baiting plane.

Ample proof exists showing just how effective aerial baiting can be when carried out properly.



Landholders mapping key target areas for aerial baiting campaigns.

Can wild dogs become bait-shy?

The issue of sub-lethal baits, mentioned above, is worth some discussion. As is commonly known, 1080 is leached from baits by water, so that baits eventually lose their toxicity (and of course, at some stage, go through a phase of being sub-lethal). This has always been the case, and suggestions that this could explain an increase in supposedly bait-shy dogs is not supported by past experience.

If consumption of sub-lethal baits had been a regular occurrence over the past 20 years, there would have been a far more rapid deterioration in the effectiveness of 1080 baiting. There is also no evidence of this occurring with fox control, despite repeated baiting campaigns over many years (and in far wetter areas than where most wild dog control is carried out).

A further point on bait-shyness is that 1080 has a long latent period. This means that after the wild dog has eaten a bait, 10 hours or more can elapse, even for lethal doses, before symptoms of poisoning appear. This latent period is even greater for lower doses. It seems unlikely that a dog, eating a variety of foods in the course of perhaps a 24-hour period, would be able to readily associate feeling sick with a bait eaten many hours earlier.

There's not much point in getting a bait to a wild dog and not killing it. Therefore, it is still good practice to use dry, rather than moist baits, to counter any tendency for rapid 1080 loss and any *potential* problem

with sub-lethal baits. Moist meat will lose 1080 far more quickly than dried meat, increasing the chance that a dog will find a sub-lethal bait during even the first few days of a campaign.

GROUND BAITING

In many cases, aerial baiting is being used in the more accessible areas where baits would be better laid from the ground. Fewer baits are needed than for the equivalent aerial approach, maybe in the order of one ground bait to five aerial baits. Ground baits can be carefully placed where they are most likely to be found by a wild dog, and not trampled by cattle or dropped into water. Hand-placed baits can also be more readily monitored for 'take' by wild dogs, though a lack of immediate take does not mean that the effort has been wasted. Reliance even on ground baiting should be reduced when food supply is very high, and where wild dogs are already in sheep paddocks, because baiting is then less likely to be effective.

BAIT TYPE

Can poor baiting results stem from poor quality baits?

Much time has been spent speculating about bait quality including:

- wet versus dry meat;
- baits too dry;
- use of thawed frozen meat versus unfrozen meat;
- 1080 not working;
- how the 1080 is applied to the baits; and
- ants eating baits.

These suggestions stem from the observations detailed earlier, that some wild dogs were still alive after baiting, and were sometimes seen to walk past intact baits. However, rather than some consistent state-wide problem with the actual bait, it is far more likely that these poorer results in some areas are due to the two main factors already mentioned:

1. the baits not being placed in the best areas; and
2. the availability of abundant, preferred natural food.

Are alternative baits available?

The current dried meat bait will be available in the future as a registered product. This means that factory-produced dried meat baits will be available for purchase by landholders through retailers (with the usual 1080 requirements), so landholders can buy a quantity of ready-to-lay baits to have on hand.

Despite the known effectiveness of the dried meat bait, there is some merit in having alternative bait materials. A salami type bait developed for foxes in Western Australia is expected to be tested for use against wild dogs. If it proves to be effective, the salami bait would be an additional bait, not necessarily replacing the field or factory-produced dried meat bait, and it too would be available from retailers. The salami baits would have a uniform size and weight, which means that they may be able to be aurally dropped via an automated delivery system. This would allow the navigator to have complete control of the bait-drop.



Well-prepared dried meat baits.

Why can't strychnine be used to bait wild dogs?

Some calls have been made to allow strychnine to be available for bait making, principally to make carcass baits. Strychnine has been banned as a pesticide in many states and countries because it is seen as an inhumane poison. Carcass baiting with strychnine was also non-selective, and killed numerous native animals. The return of strychnine for wild dog baiting cannot be justified and would not be compatible with the responsible use of poisons by landholders.

There is also a risk that strychnine could be lost as a poison to use on trap jaws. This apparent anomaly, that strychnine is still used on traps, is argued on the grounds that a trapped dog would suffer longer and die a crueller death if left in an unpoisoned trap. The use of a poison on the trap is also the reason that unpadded traps can still be used for wild dog control in this state.

If carcasses are seen as desirable food for a wild dog, there is no reason why they can't be used as lures, with individual, hand-placed 1080 baits scattered about.

DOGGERS

When is trapping needed?

In some instances, particularly when wild dogs are operating within sheep paddocks, specialist trapping is required. A novice can be readily taught the basic mechanical skills of setting a trap, but needs to spend time with an experienced dogger to learn where to set traps and the type of sets that can be used. Incorrect placement of traps not only wastes time but also, more importantly, has the potential to create trap-shy dogs, which then often become a challenge for even the most experienced dogger.



Dogger preparing trap site.

How can the effectiveness of doggers be assessed?

The value of dogging should be measured in terms of the prevention of losses and harassment of livestock. There is often a tendency to rate a dogger on the number of dogs caught or scalps collected. This can foster a move away from ground baiting, because with 1080, wild dog carcasses are seldom found. An unfortunate consequence of this is that some doggers tend to rely more on trapping and shooting, when all techniques have a place in an effective program.

The scalp-count evaluation method is fraught with misinterpretation. For example, who has done a better job: a dogger who has collected 300 scalps from the desert fringe well away from stock, or the dogger who has battled to kill 30 wild dogs from in and around sheep paddocks and has prevented stock losses? The answer is obvious.

What other roles can doggers play?

There has been a general reduction of experienced doggers and expertise in the industry. In most pastoral areas, there has been a reduction in station staff and so there are fewer experienced people able to take note of wild dog activity, let alone act on it. The lack of on-ground information in many cases has led to aerial baiting not targeting the most appropriate areas. This is one further reason for retaining doggers on the ground. They do far more than simply bait and catch dogs; they keep track of areas where dog numbers may be

increasing, signs of movement and so on, and can give valuable input to effective targeting of control efforts in local operational plans.

FURTHER READING

See the following Department of Agriculture Farmnotes:

- Wild dog control.
- Recognising wild dog and dingo predation.
- Bounties and wild dog control.
- Dingo.
- Guide to the safe use of 1080 poison.
- Guide to the safe use of strychnine for jawed traps.

See these Farmnotes at:

www.agric.wa.gov.au/programs/app/dec_an/notelist.htm

For more information see the following publication:

- 'Managing the Impacts of Dingoes and Other Wild Dogs', by Peter Fleming, Laurie Corbett, Robert Harden and Peter Thomson. Bureau of Rural Sciences, 2001.