

Legislative issues relating to control of dingoes and other wild dogs in New South Wales.

II. Historical and Technical Justifications for Current Policy

Peter J. S. Fleming

Vertebrate Pest Research Unit, NSW Agriculture, Orange Agricultural Institute, Forest Road, Orange, NSW 2800, Australia.

ABSTRACT

In New South Wales, a series of punitive Acts against dingoes and wild dogs has been enacted since sheep and cattle were introduced with European settlement. Predation of sheep and sometimes calves by wild dogs can be financially debilitating for some livestock enterprises that are adjacent to or within wild dog-inhabited terrain, and this is the impetus for current policies on wild dog management.

Baiting, with meat baits containing compound 1080, trapping and exclusion fencing are the major techniques used to control wild dogs. A strategic approach to the management of wild dogs, where the wild dog problem is quantitatively defined, a plan of action is devised and implemented, and the progress of the plan monitored and evaluated, is promoted.

Introduction

Dingoes and other wild dogs have caused problems for livestock producers since early European settlement in Australia. The first law dealing with the management of any wild dog in Australia was passed in 1830 and it was "An Act for abating the nuisance occasioned by the great number of Dogs which are loose in the Streets of the Towns of Sydney Parramatta Liverpool and Windsor in the Colony of New South Wales" (Breckwoldt 1988). Three years later a bounty was placed on unregistered dogs and dingoes were formally taken into legislation with "An Act to facilitate and encourage the destruction of Native Dogs" in 1852 (Breckwoldt 1988). Ever since, people have been trying to control wild dogs, mainly to stop their interaction with human agricultural activity. However, in the 1960s and 70s the conservation ethic became more prominent, and consequently the management of dingoes has increasingly focused on both control and conservation.

This paper addresses the reasons for managing wild dogs (including *Canis lupus dingo*, *C.l.*

familiaris and hybrids), the animals that are subject to management, the methods and policies of management, and future directions of management of wild dogs in New South Wales. Davis (2001) deals in more detail with the current legislation pertaining to wild dogs.

Reasons for managing Dingoes and other wild dogs

The interaction between wild dogs and sheep production is the most problematic because sheep are more susceptible to predation by wild dogs than are cattle (Fleming and Korn 1989). Sheep were the foundation of most agricultural development in Australia, and they were here in greater numbers earlier than other livestock. The presence of dingoes and other wild dogs has largely set the distribution of sheep and cattle production in Australia (Newsome and Coman 1989). Essentially, sheep and wild dogs are incompatible, although predation of cattle occurs in areas where sheep are absent (Fleming *et al.* 2001).

If wild dogs killed livestock only to satisfy their nutritional requirements, they would not be regarded as such a debilitating problem. Being

a canid, wild dogs can exhibit surplus killing (Kruuk 1972), and therein lies the problem. There is a good evolutionary reason to develop an instinct to kill; there is no contradictory reason to evolve an instinct to stop. Sheep are particularly susceptible to surplus killing and injury because when confronted by a predator, they circle and form a mob as an antipredator behaviour. Sheep are easily caught by wild dogs (Thomson 1992) and as they circle, more and more prey are exposed to the predator. Wild dogs will chase and kill sheep without eating any part (Thomson 1984a). Because of surplus killing, the damage experienced by sheep producers is not necessarily related to the density of wild dogs (Fleming and Nicol, unpublished data).

Calves and weaner cattle are also subject to wild dog predation (Fleming and Korn 1989, Allen and Gonzalez 1998). Dingoes and other wild dogs are able to change their hunting tactic to tackle different sized prey (Corbett 1995). They can hunt either singly or as a group (pack). By hunting in a group they are able to kill animals that are much larger than themselves and then share the benefits between the members of the pack. Hunting as a pack is necessary when wild dogs prey upon cattle whereas individual wild dogs can easily pull down and kill a sheep. Variable hunting tactics also makes it difficult to relate the level of damage to the density of the predator.

What is managed?

The legal definitions of wild dogs have recently been changed (see Davis 2001) but, in practice, wild dogs are lumped for management purposes. All free-roaming dogs that are in situations where they are causing or are likely to cause livestock predation are subject to control. It is impossible to know what type of wild dog was responsible for predation because in most cases it is the predation that is observed, not the predator. Because wild dogs are cryptic in their behaviour, management must be directed at all wild dogs in situations where they are likely to cause damage. Eradication is impractical and undesirable so control is best targeted at preventing interactions between livestock and wild dogs. By targeting these situations where wild dogs cause problems rather than persecuting all wild dogs, conservation and control imperatives can coexist. That is, wild dogs can be controlled at the interface of agricultural and government lands, which

mitigates predation of livestock while limiting immigration of feral dogs into areas where dingo conservation is an objective (see Corbett 1995). Directing control activities at situations where wild dogs are a pest rather than at all wild dogs encourages affected stakeholders to concentrate on preventing or limiting the impacts of wild dogs.

Management process and policy

The control of wild dogs requires the most humane, effective and cost beneficial methods available. The methods currently employed are baiting using 1080-poisoned meat baits, trapping with soft-jawed traps and exclusion (barrier) fencing. Barrier fencing, aerial baiting to form buffer zones (Thomson 1984b) and ground baiting to reduce wild dog populations within and adjacent to sheep country have been shown to be cost-effective (Thompson and Fleming 1991) or cost-beneficial (Thomson 1984a, Fleming *et al.* in preparation). The employment of experienced trappers results in fewer non-target captures (Newsome *et al.* 1983) and soft-jawed traps are relatively humane (Fleming *et al.* 1998).

Wild dog predation and management are different in the two major regions of New South Wales. In the Western Division, predation is prevented by the barrier fence that controls the numbers of dingoes entering sheep country and by lethal control inside and near the fence. That is, exclude the wild dogs and control those that breach the barrier. In the eastern sector, the predominant control since the mid 1960s has been with aerial baiting campaigns and, in the north, the maintenance of private dog fences built mainly in the 1920s and 1930s. The principle in the north of the State is to maintain the fence and remove as many wild dogs as possible in a buffer zone immediately on the outside of the fence (Fleming 1996). The idea is to reduce the chances of wild dogs getting into the sheep country and represents a mitigating rather than reactive approach. Usually, barrier fencing is along the edge of national estate lands, presenting a potential conflict between the conservation of pure dingoes and mitigation of agricultural damage. Recently, aerial baiting has been reduced in much of south-eastern New South Wales. There, trapping and ground-based poisoning programs are now the predominant practices.

The dingo is recognised as a native species under the *Threatened Species Conservation Act 1995* and the wild dog policy of the National Parks and Wildlife Service (*National Parks and Wildlife Act 1974*) effectively protects dingoes within national parks and nature reserves. The policy allows the control of wild dogs, including dingoes, on lands managed by the National Parks and Wildlife Service when neighbouring landholders experience or are likely to experience predation of livestock by wild dogs or if park visitors are threatened.

Management strategies

There has been a definite trend in vertebrate pest management throughout Australia from being *ad hoc* to developing strategic approaches. Management, which incorporates the strategic approach, is being promoted nationally by the federal Bureau of Rural Sciences. There is a number of processes in a strategic approach. Firstly, define the problem in terms of;

- what is the problem (for example, predation of x sheep per month, conservation, hydatids, attacks on people),
- where is the problem occurring,
- what is the problem animal (for example, wild dogs, town dogs, pure dingoes),
- how much does the problem cost, and
- how much does it cost to control the problem?

After defining the problem, a management plan is devised outlining;

- techniques for control,
- where to control,
- who is doing the control,
- a time frame for control and,
- measurable indices of success of the plan.

The next thing is to act on the plan. During this process, there needs to be monitoring of predation or predator abundance or both. Often in the past, this hasn't been the case. There has been an assumption that control of wild dogs will result in increases in livestock production. Monitoring enables the plan to be evaluated and increases in production to be measured. After evaluation, the plan can be revised or maintained for subsequent programs.

It is important to use the most cost-effective methods for management. Some measurement of the costs and outcomes of control is required to assess the cost-effectiveness of a management plan. It is also imperative that cost-effective control methods are as humane as is possible so that the *Prevention of Cruelty to Animals Amendment Act 1997* is not flouted.

It is also important that management plans avoid costs to national estate attributes, such as non-target animals and environmental services. Non-target impacts can be viewed at two levels; the individual level, and the population. Individual animals become important where the species is susceptible to a control practice and is locally at risk of extinction because it occurs at low density in a limited area. However, if a population is viable and strong, the loss of individuals is not important to the local survival of the species. Just because individuals of a non-target species can be killed by a particular control tool, it does not automatically follow that the use of the tool is hazardous to the population. For example, spotted-tailed quolls *Dasyurus maculatus* are susceptible to 1080 poison at the rate used for wild dogs but the removal of potentially competitive introduced canids, including foxes *Vulpes vulpes*, by using 1080 baits might be beneficial to quoll populations. Further research is required to answer this question.

A strategic approach allows and encourages the conservation of pure dingoes off agricultural lands. This would first require identification of pure dingoes from DNA analysis (see Wilton 2000). Management would be directed to slow hybridisation in "islands" where the majority of wild dogs are dingoes and where isolation and dingo social structure have limited the rate of hybridisation.

How do we "progress" the strategic approach?

Firstly, the need for cooperative management is emphasised. Many people are involved with or have an interest in both conservation and the control of wild dogs. It is very important to be inclusive of stakeholders in the decisions that are made at both the local level and at a more general level. Discussions with stakeholder groups including Aboriginal communities, animal welfare groups, the landholders that are affected and managers of national estate land are required.

Wild dogs do not recognise property boundaries and often have private and national estate lands within their home ranges. Group efforts better reflect the large home-range size of wild dogs. It is essential that planning and management be on the group level so that management practices best suit the aims of all stakeholders. The group is also the best unit to carry out a management plan because it enables cost sharing for expensive or labour-intensive control methods such as aerial baiting.

Future directions of wild dog management

The changes in classification of dingoes under the *Companion Animal Act 1998* and under the latest version (1998) of the *Rural Lands Protection Act* (see Davis 2000 in this symposium for more detailed discussion of the relevant legislation) have pragmatic implications for future management of wild dogs. The new legislation allows somebody who observes an unrestrained and uncontrolled dog on their land to do something about that animal without fear that they might be doing something illegal. The legislation also binds the crown (see Davis 2000) so that now it has responsibility for the management of declared pest animals on its land, including populations of wild dogs. This has important implications for group control efforts.

The new legislation has implications for all species regarded as vertebrate pests throughout New South Wales. Now it is the *situation* in which the animal is deleterious, not the *species* as a whole that is recognised as the problem. This new legislation does not put obligations on people to control animals that really are not a problem in their particular area unless the pest animal declaration applies to a species statewide, such as the rabbit *Oryctolagus cuniculus*. If wild dogs as a species were declared pest animals over the whole State then the status quo would probably apply. This is because wild dogs are now only controlled in areas where they are considered pests and wild dogs that inhabit natural estate areas remote from agricultural lands are left largely unmolested. Although managers of government lands would be obliged to control declared pests under the new legislation, remote wild dogs are unlikely to be persecuted

because such activities would be impracticable. The pragmatic approach is to limit government obligations to those populations of wild dogs that are perceived to threaten livestock production, that is pest *situations*, and this scenario can be accommodated in the new *Rural Lands Protection Act 1998*.

For better management of wild dogs, the continued evaluation of the laws and policies, and how they apply is to be encouraged. Research is part of the revision process. Currently, there is a research program in the south-east of the State and the Australian Capital Territory (ACT) involving 14 organisations and agencies, including ACT Environment, NSW National Parks and Wildlife Service, NSW State Forests and five Rural Lands Protection Boards. The program aims to collect historical and current data on livestock losses, wild dog abundance, their distribution and prevalence of hydatidosis in livestock and wild dogs, and devise a generic management plan encompassing all these elements. The plan will be flexible enough to allow groups in different areas to substitute data from their own situation and institute a strategic approach. The program is also collaborating with Alan Wilton (see Wilton 2000) by collecting DNA samples to examine the genetic make-up of wild dogs in the south-east.

Summary and conclusions

NSW Agriculture promotes management of wild dogs in which cost-beneficial control, humane control, and a strategic approach are encouraged. In the strategic approach, plans are made taking account of the available data and all the people that are involved, and the plan is enacted, monitored and evaluated. After determining whether or not the plan was successful, it is revised and progressed. In future, more emphasis is to be placed on the dynamic strategic approach to wild dog management. Research is required to investigate the impact of control programs on populations of non-target carnivores and the frequencies of dingo genes in wild dog populations, and to improve best practices for control and conservation. An adaptive management approach is being used in a research project in south-eastern NSW and the ACT.

References

- Allen, L. R. and Gonzalez, T., 1998. Baiting reduces dingo numbers, changes age structures yet often increases calf losses. *Proceedings Australian Vertebrate Pest Control Conference* 11: 421–428
- Breckwoldt, R., 1988. *A Very Elegant Animal: The Dingo*. Angus and Robertson: North Ryde.
- Corbett, L., 1995. *The Dingo in Australia and Asia*. University of New South Wales Press: Sydney.
- Davis, E. 2001 Legislative issues relating to control of dingoes and other wild dogs in New South Wales. Pp. 39–41 *A Symposium on the Dingo*. Ed by C. R. Dickman and D. Lunney. Royal Zoological Society of NSW.
- Fleming, P. J. S., 1996. Aspects of the management of wild dogs (*Canis familiaris*) in north-eastern New South Wales. Unpublished M. Res. Sc. thesis, University of New England: Armidale.
- Fleming, P. J. S., Allen, L. R., Berghout, M. J., Meek, P. D., Pavlov, P. M., Stevens, P., Strong, K., Thompson, J. A. and Thomson, P. C., 1998. The performance of wild-canid traps in Australia: efficiency, selectivity and trap-related injuries. *Wildlife Research* 25: 327–338.
- Fleming, P., Corbett, L., Harden, R., and Thomson, P., 2001. *Managing the Impacts of Dingoes and Other Wild Dogs*. Bureau of Rural Sciences, Australian Government Publishing Service: Canberra.
- Fleming, P. J. S., and Korn, T. J., 1989. Predation of livestock by wild dogs in eastern New South Wales. *Australian Rangelands Journal* 11: 61–66.
- Kruuk, H., 1972. *The Spotted Hyaena: A Study of Predation and Social Behaviour*. Chicago University Press: Chicago.
- Newsome, A. E., Catling, P. C., Corbett, L. K., and Burt, R. J., 1983. The feeding ecology of the dingo I. Stomach contents from trapping in southeast Australia and the non-target wildlife also caught in dingo traps. *Australian Wildlife Research* 10: 477–486.
- Newsome, A. E., and Coman, B. J., 1989. *Canidae*. Pp. 993–1005 in: D. W. Walton and B. J. Richardson (Eds) *Fauna of Australia. Vol. 1B, Mammalia*. Australian Government Publishing Service: Canberra.
- Thompson, J. A., and Fleming, P. J. S., 1991. The cost of aerial baiting for wild dog management in north-eastern New South Wales. *Australian Rangelands Journal* 13: 47–56.
- Thomson, P. C., 1984a. Dingoes and sheep in pastoral areas. *Journal of Agriculture, Western Australia* 25: 27–31.
- Thomson, P. C., 1984b. The use of buffer zones in dingo control. *Journal of Agriculture, Western Australia* 25: 32–33.
- Thomson, P. C., 1992. The behavioural ecology of dingoes in north-western Australia. III. Hunting and feeding behaviour, and diet. *Wildlife Research* 19: 531–541.
- Wilton, A. 2001 DNA Methods of Assessing Dingo Purity. Pp. 49–56 *A Symposium on the Dingo*. Ed by C. R. Dickman and D. Lunney. Royal Zoological Society of NSW.

QUESTIONS & ANSWERS

CHRIS DICKMAN: Thank you, Peter and Eric. We have a few minutes for questions.

FORD: Dode Ford from the World League for Protection of Animals. Two short questions: Is there a bounty system now in the Western Lands Commission area? Do you pay for dingo scalps now?

ERIC DAVIS: I'll answer that really quickly and then flick it up the back. The Act [Wild Dog Destruction Act 1921] provides for a bounty system but I'm not aware of it being in place but Keith Allison or Geoff Wise might answer that.

KEITH ALLISON: Yes, there is a bounty for scalps for \$10 per animal (indistinct).

FLEMING: There is a bounty of \$10 per scalp in the Western Division but it's rarely implemented.

ALLISON: Queensland are doing away with it, I think, and South Australia has done away with it in the past.

FLEMING: The bounty system in Queensland is no longer encouraged by State government agencies and is limited to local government areas. The system has been abandoned in South Australia as well. Basically, the bounty system is being removed throughout most of Australia now, because it doesn't work.

FORD: How many scalps were paid for in the last financial year?

ALLISON: Last financial year the Wild Dog Destruction Board out west paid for 22 scalps; \$220. Being \$10 each, not many property owners bother about it. It costs a lot more trying to get that killing dog or to stop the damage. They are not worried about paying \$10: \$10 is nothing to us. If we have the dog in there killing (indistinct) it can destroy a family's income.

FORD: Why continue with it [bounties]?

FORD: The other short question is regarding dingo ownership. As the 1998 RLPA Act has not yet been proclaimed and as the minister has expressed an opinion that he thinks dingo ownership should depend on people belonging to a recognised dingo organisation, why can't something be done about it?

DAVIS: There's two things I need to say. The first is that, despite that opinion by the minister, the application of the Act was previously that only people that kept entire dingoes had to be a member of a dingo association. The second issue is purely a pragmatic political question. I don't know what the minister decided or why, so you're asking the wrong person for the second one.

MARTIN DENNY: Is the Department of Agriculture in charge of the wild dog fence?

DAVIS: No, the Wild Dog Destruction Board.

DENNY: The Wild Dog Destruction Board; does that come under the Department of Agriculture or is it quite a separate entity?

DAVIS: The Wild Dog Destruction Board is separate and Geoff Wise will probably allude to all that this afternoon. It's enabled by the Wild Dog Destruction Act, so it's constituted by that Act. The chairman is the Western Lands Commissioner, and it comes under the Department of Land and Water Conservation.

DENNY: So it would be the Department of Land and Water Conservation who could give us an alternative quote to the \$10 million to move the dog fence out of the Sturt National Park. Is that correct?

LINDY STACKER: I think we're looking at the wrong problem animal and that we're the problem animal, so shouldn't we be talking about that and what sheep grazing is doing to this country, especially in the north west of New South Wales? That's the real problem, and we never look at the real problem. We only look at the symptoms, not the cause. So could we talk about sheep grazing, cattle grazing, especially sheep grazing?

DAVIS: Actually, you're raising a really important issue and it's broader than sheep grazing or cattle grazing, it's total grazing pressure, and I reckon we could devote more than just this one day to that issue, as Keith Allison has alluded to this morning. I mean, some of these things are historic artefacts in

terms of what we do and where we do them but to treat that as superficially as a quick shot back now, I don't think would be fair.

DAVIS: I think we all would be here all day on this problem. Total grazing pressure, especially if we're talking about our semi-arid areas, is a big issue and it's far more complex than just sheep or cattle, or feral goats for that matter, and I think Alan Newsome this morning raised some interesting issues with macropods and all sorts of other natives, emus and so forth, that also interact with our management, historic and present, out in those areas.

STACKER: The dingo is still referred to as a pest, so we've got to change our language first.

DAVIS: I think Alan Newsome was indicating that perhaps they were but if we pursue it, it will take all day.

**Post-symposium response by Peter Fleming to Lindy Stacker's question. During my talk, I emphasised that we should look at pest situations not pest species and set our control for those situations where wild dogs are pests. I also emphasised the need to marry conservation and control aims.