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THE DEVELOPMENT OF A POLICY FOR THE MANAGEMENT OF DINGO POPULATIONS IN SOUTH AUSTRALIA

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ABSTRACT: Competing concerns between conservation and sheep-growing interests in South Australia over problems associated with the naturalised dog, *Canis familiaris dingo*, prompted the development of a policy for the management of this subspecies. The background to the development of this policy is outlined. The policy provides for a compromise between the need to protect the livestock industry while ensuring the continued survival of the dingo as a wildlife species.

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INTRODUCTION

The dingo is a subspecies of the domestic dog, *Canis familiaris*, which arrived in Australia relatively recently in geological terms. While earlier opinion held that its ancestors arrived some time since the isolation of Tasmania by the sea at the end of the Pleistocene about 12,000 years ago, Gollan (1984) has revised this estimate to approximately 4,000 years based on the fossil record. He advances the provocative theory that the dingo's ancestors were most likely working sheep dogs from the Indus Valley in southern Asia introduced through Timor by maritime peoples. He discounts the alternative theory of island hopping (Corbett 1985) by arguing that there are no fossils of dogs more than 2,500 years old in the area other than in Timor where they coexisted with sheep and goats between 3,500 and 4,000 years ago. The earliest Australian dingo fossils are estimated at between 3,000 and 3,500 years old (Figure 1).

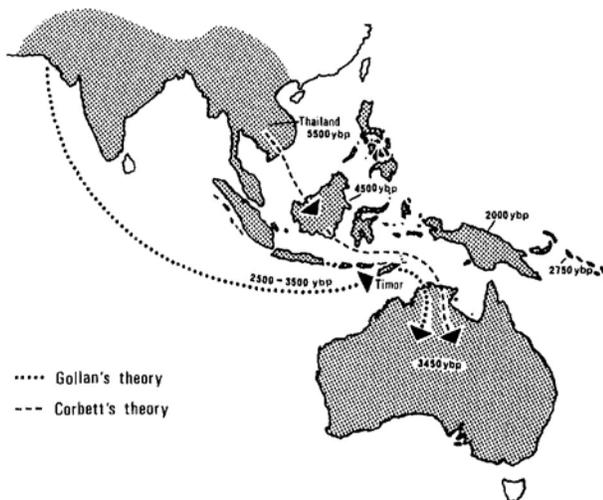


Fig. 1. Suggested routes of the introduction of dingoes into Australia.

Dingoes have caused trouble to the livestock industry in Australia ever since the arrival of the first sheep which accompanied European settlement in 1788 (Rolls 1969). In South Australia the problems posed for woolgrowers by dingoes have been officially recognised by the State Government since settlement in 1836 (Newland 1971).

South Australia is the third largest of the States of Australia with an area of approximately 1 million square kilometres, which is four times the size of the United Kingdom or one-tenth the United States of America.

Over 80% of the state receives less than 250 mm of rain per year, and much of this arid area is able to be used as rangeland grazing for sheep or cattle. The merino sheep developed and grown in this environment are recognised wool producers. There are 17 million sheep in the state and wool worth \$A378 million from them represented approximately 20 percent of total exports in 1988. Exports of live sheep and sheep meat add to this figure.

The map of South Australia depicted in Figure 2 indicates the wool-growing areas protected by the Dog Fence which stretches 2225 km from the Southern Ocean to the state's eastern border. Dingoes once occurred throughout the mainland part of the state but have all but been eradicated from the area south of the Dog Fence. The wool industry in South Australia is dependent upon the area enclosed by the Dog Fence being maintained in a dingo-free condition and the Fence being maintained to an adequate standard to keep dingoes out.

THE DINGO IN AUSTRALIA

Despite its recent arrival in Australia, the dingo is now regarded as a native Australian mammal with unique characteristics which have developed as a result of its adaptation to the Australian environment.

Unfortunately for the dingo, the introduction of sheep with the early European settlers has resulted in continuing conflict, and the establishment of a widespread and successful sheep-growing industry has resulted in strenuous and extensive efforts to minimise problems caused by dingoes. These efforts have not always succeeded, however, and there have been many instances of land being abandoned because of dingoes (Farwell 1950).

The plan of Australia prepared by Breckwolfdt and Newsome (1988), Figure 3, shows the current dingo distribution in Australia. The areas on the mainland where dingoes are now absent contain the major sheep-growing areas of the country.

HISTORY OF DINGOES IN SOUTH AUSTRALIA

Dingoes had been gradually eradicated and fenced out of southern South Australia where 34,000 miles of dog-proof fence were erected by 1931 in various Vermin Fenced

Districts established since the 1890s. These efforts were given guidance and direction in 1946 by legislation to coordinate their efforts and establish the Dog Fence, a continuous fence extending for 2,225 km and which replaced several individually maintained fences. The Dog Fence joins in with other similar fences in the States of New South Wales and Queensland with an overall length of 5,614 kms.

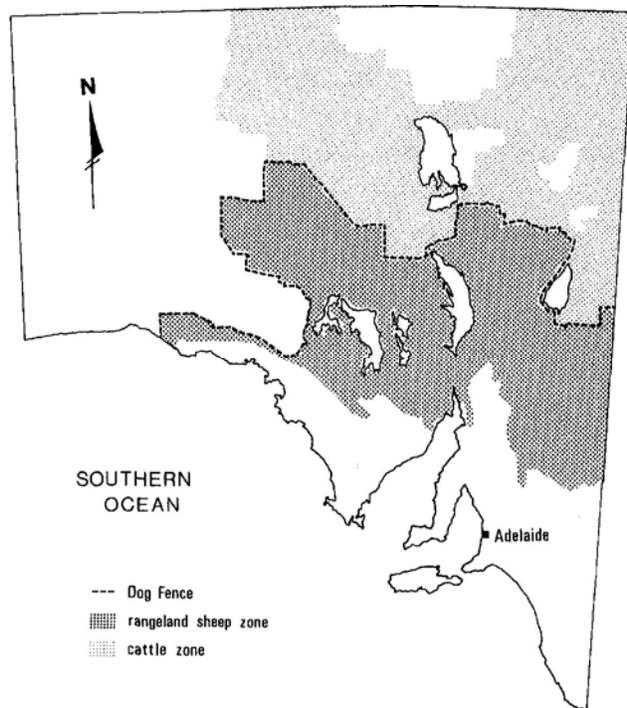


Fig. 2. South Australia showing the relationship of the wool-growing zone to the location of the Dog Fence.

The major responsibility for maintaining the Dog Fence rests with the individual landholders whose properties adjoin the inside of the Fence. Their efforts are overseen and coordinated by the Dog Fence Board which is subsidised by the State Government. Total funds available annually are \$A300,000 of which one-third is provided by a rate levied on properties protected. In 1977 the Government recognised the importance of the Fence by providing an additional \$A85,000 to realign the western end, which was continually subject to severe damage from burrowing native marsupials, wombats. The Fence has a current capital value of \$11.2 million.

The official concern about the threat of dingoes to sheep was reiterated in 1969 at a national conference of authorities responsible for the administration of dingo control measures. This resulted in the introduction in South Australia of the use of the effective predicide sodium monofluoroacetate (1080) which is easily incorporated in bait material. A consequence of that decision was a stimulation of concern by conservationists that dingoes would be eliminated from the rest of the state and caused agitation for protection of the dingo.

The subsequent debate resulted in the development of an official policy designed to accommodate these competing concerns of the community. The policy was adopted in 1977.

South Australia was the first state in Australia to adopt an official dingo management policy and this has been endorsed by all successive governments. Another state, Victoria, adopted a policy on the management of dingoes in 1985.

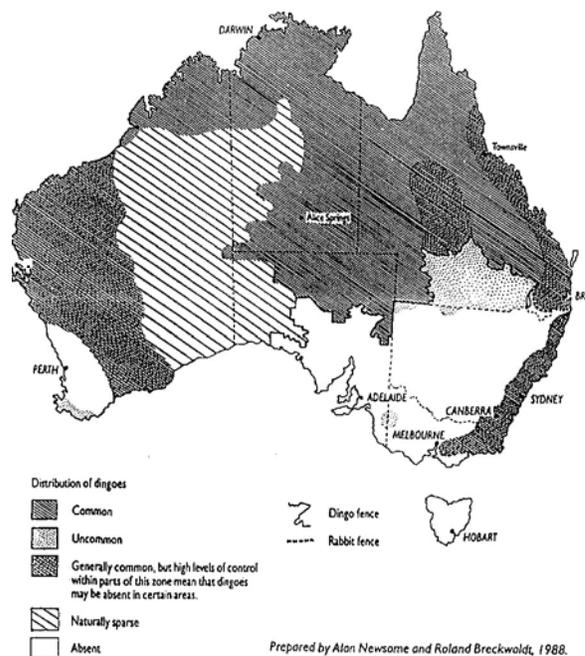


Fig. 3. The current distribution of the dingo in Australia.

The need for the control of dingoes varies between the sheep and cattle zones of the state, and the sole compelling reason for controlling dingoes is their inherent hunting ability and the adverse effect this has on the livestock industry. It is highly likely that dingo numbers have increased markedly in the arid northern part of the state since European settlement because of the provision of watering facilities for stock and the introduction of rabbits. However, at any particular time their numbers will reflect fluctuating seasonal conditions which characterise the arid zone in which they live.

THE DEVELOPMENT OF THE POLICY

The need for a logical, clearly enunciated management plan which could take into account these competing needs became obvious in 1975. At that time new legislation was introduced entrusting the administration of dingo control to the Vertebrate Pests Control Authority (VPCA), the members of which represented conservation and practical landholding interests.

Over the next 3 years, during which extensive negotiations were conducted by staff of the VPCA with landholder interests, conservation groups and the Ministers of Agriculture, Environment, and Lands, an acceptable policy was developed.

Sheep killing, which was a very common occurrence during the early settlement of the sheep zone according to Farwell (1950), is still a frequent occurrence whenever dingoes breach the Dog Fence. This is supported in recent research by Thomson (1984). For this reason the policy objective within the sheep zone is complete elimination of dingoes.

The pest status of the dingo is not so clearly defined within the cattle zone. In good seasons few calves appear to

be lost to dingoes; however, the killing of calves may be more common during periods of drought when normal prey is scarce. Some landholders claim that cows weakened by drought are better able to survive if the calves are removed. These landholders rarely, if ever, control dingoes. The cattle industry may also benefit from predation by dingoes on rabbits *Oryctolagus cuniculus* and native plague rats *Rattus villosissimus* which graze on the native vegetation.

As well as providing a barrier from dingoes entering the sheep zone, the Fence also provides a reference line for a buffer area immediately outside the sheep zone for the coordinated use of 1080 poison to reduce likely incursions. When dingoes are found in the sheep zone, the methods used to eliminate them include poisoning, trapping, and shooting. Aerial baiting programmes carried out before 1969, in which some 360,000 strychnine baits were broadcast annually over large tracts of country extending far from the Fence, were considered to be unnecessarily wide-ranging and are no longer permitted. (It should be noted that the dingo survived as a wildlife species in spite of these aerial campaigns.)

Because dingo predation on cattle is far less than on sheep, efforts to control dingoes in the cattle zone are much less. The efforts are restricted to sporadic and opportunistic shooting with very occasional attempts at poisoning or trapping. Government-supervised 1080 baiting campaigns are occasionally employed in the cattle zone but only when field inspections support the claims by landholders of excessively high numbers of dingoes and attendant losses of calves. These programmes occur infrequently about every third year or so and represent an average of only 4% of the 1080 baits used for dingo control. Sinclair and Bird (1984, in press) have assessed the nontarget risks of these baits and have concluded they are negligible.

The bonus paid for a dingo scalp was reduced in 1977 from \$4 to \$2 in line with a 1975 resolution of State and Federal Ministers of Agriculture that bonus payments should be phased out completely. This has resulted in the virtual elimination of scalps presented for payment in South Australia.

The Vertebrate Pests Control Authority (now replaced by Animal and Plant Control Commission) was concerned by the vulnerability of the sheep industry to any relaxation of the effort in maintaining the sheep zone free of dingoes and the genetic ill-effects of domestication on dingoes, which are of the same species as domestic dogs, and actively supported the 1975 resolution of Standing Committee on Agriculture (an Australia-wide body) that:

"State and Territory authorities concerned should take action to ensure that dingoes or their offspring, pure-bred or otherwise, are not kept in other than specially authorised Zoological Gardens or Circuses."

As a result dingoes in South Australia may only be kept by specially authorised zoos, circuses or research institutes. The possession, attempted domestication, or commercial exploitation of dingoes is unacceptable because of the likelihood that these practices would lead to the reintroduction of dingoes into sheep areas and jeopardise the sheep industry and because of the likely genetic demise of the dingo.

This attitude toward the dingo is supported by Burley et al. (1983) and Johnson, et al. (1983) in their investigations into the dangers to sheep from large domestic dogs.

The domestication or commercial exploitation by show breed societies is also considered likely to undermine efforts to maintain the dingo essentially as a wildlife species and is

not an acceptable alternative to maintaining the species in the wild. Animal breeders are not able to breed for characteristics which aid the survival of the species in the wild; indeed the very nature of domestication means that there will be active selection against wild-type characteristics. For these reasons domestication of dingoes is opposed by conservation bodies.

Although dingoes have been virtually eradicated from southern South Australia, they still occur commonly over some 580,000 square kilometres of the arid north outside the Dog Fence, and this represents about 60% of the State's total area. However, they do occur as a relic population in a relatively small portion of undeveloped woodland within the agricultural lands in the south-eastern part of the state, but the local objective is for their elimination and this is consistent with the policy.

THE POLICY

The policy objective requires "the protection of the livestock industry to the degree necessary to ensure its economic survival while at the same time recognising that the continued survival of the dingo as a wildlife species is ensured."

The policy has been strongly supported by both conservation and livestock interests. This was particularly demonstrated in 1982 when very strong representation was made by the conservation lobby to oppose a political election promise to allow dingoes to be kept in domestic situations.

As a result, the policy objective is being achieved in the following ways:

The livestock industry is being protected by

1. Maintenance of the sheep zone free of dingoes.
2. Effective maintenance of a dog-proof fence around the fringe of the sheep country.
3. The destruction of dingoes in the vicinity of the fence by the owners of the fence.
4. Regular, government-organised baiting campaigns being carried out in a narrow buffer area immediately adjacent to the outside of the fence (the environmental safety of such baiting has been assessed during a 5-year study by Sinclair and Bird financed by the pastoralists and the Government).
5. Government-organised poisoning campaigns carried out in a limited area of the cattle zone (which lies outside the dog-proof fence) when dingo numbers are excessively high.
6. Restricting the keeping of dingoes to specially authorised zoos and circuses.

The survival of the dingo as a wildlife species is ensured by:

1. Restricting the organised baiting campaigns in the cattle zone to limited areas and to times when dingoes are present only in excessively high numbers (handling of 1080 poison is restricted to qualified government officers).
2. Prohibiting the laying of baits from aircraft.
3. Restricting the circumstances in which dingoes can be kept, thus limiting the opportunity to change the strain through domestic breeding.

A recent result of the policy has been the change to the status of the dingo under the Animal and Plant Control (Agricultural Protection and Other Purposes) Act 1986 so that for the first time in 100 years there is no longer any

legislative requirement to destroy dingoes in the area outside the Dog Fence.

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