The conservation status of the dingo *Canis lupus dingo* in Australia, with particular reference to New South Wales: threats to pure dingoes and potential solutions

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ABSTRACT

The status of dingoes in seven major regions of Australia was investigated using skull discriminant measurements and pelt colours. Results indicated that there is only one form of dingo throughout Australia- the Australian dingo *Canis lupus dingo*. Previously held notions of several distinct forms, such as alpine, desert and tropical dingoes were dispelled.

Hybridisation with domestic dogs remains the greatest threat to the continued existence of pure dingo populations. Hybrids exist in wild populations from northern, central and north-western Australia, and it appears that only hybrids remain in the south-eastern Highlands of Australia. In New South Wales, mixed populations of dingoes and hybrids were present in the north-eastern Tablelands about 20 years ago but whether or not dingoes still remain there will only be confirmed by analysis of samples from current populations. Other threats to dingoes are Dingo Preservation Societies and the recently enacted NSW Companion Animals Act because they are based on untested dingo stock and effectively increase the hybridisation process. Protecting dingoes under the NSW Threatened Species Conservation Act 1995 or the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999 is also likely to be ineffective unless hybrids are removed from natural habitats.

Large islands offer the best hope of preserving dingoes in natural environments provided they are cleared of hybrids, the remaining dingo populations managed in relation to natural food supplies, and humans accept changes in ownership of pet dogs and the quality of the experience in enjoying dingoes.

The success of both island and mainland refugia depends on successfully developing molecular methods, such as DNA fingerprinting, to assess the status of live animals of all ages, rather than skull morphometrics that can only be used on adult dead animals. It is imperative that the researchers developing molecular methods use pre-European material rather than modern material as reference benchmarks to avoid ambiguity. Once established, it would be useful to crosscheck molecular methods with the time-honoured skull morphology methods.

Introduction

Based on skull morphology, the Dingo *Canis lupus dingo* evolved from the Pale-footed Wolf (also known as the Indian Wolf *Canis lupus pallipes*) about 6-10,000 years ago (Corbett 1995). The oldest known dingo fossils, dated about 5500 BP, are in Thailand and Vietnam (Higham *et al*. 1980) so that south-east Asia is presumed to be the cradle of dingo evolution. The stimulus for this evolution is believed to have occurred when human society changed from hunter-gathers to sedentary rice farmers,

Pages 10 - 19 in *A Symposium on the Dingo* edited by C. R. Dickman and Daniel Lunney, 2001. Royal Zoological Society of New South Wales, Mosman NSW.

which allowed commensal relationships to form between wild wolves (*C.l.pallipes*) and villagers (Clutton-Brock 1977, 1989; Corbett 1995). It is not known whether there were several widespread sites where commensal relationships formed or a single site and the early dingoes were transported by people throughout southern Asia. However, it does appear that there were two subsequent and contrasting lines of evolution in western and eastern Asia (Corbett 1995). In western Asia, people actively selected particular morphological characters and behaviours for hunting, guarding, traction, size, appendages and so on which became the templates for modern breeds of domestic dogs. In eastern Asia, people also used dingoes for hunting and guarding but there was no artificial selection of morphological and behavioural characters so that the dingo's basic form was retained and shaped only by natural selection pressures. This was the form transported by people throughout the world along land and/or sea routes. For Australia, there is no doubt that Asian seafarers ('Sea Gipsies' in recent times) transported dingoes to and from Australia rather than Aborigines (Corbett 1985).

Given that the oldest dingo fossils in Australia are dated at about 4000 years, the first dingoes probably arrived about then. Some would have escaped or were traded to Aborigines who probably assisted dingoes in colonising the entire mainland within about 500 years of their arrival; as based on the oldest known fossils (about 3-3500 years) in southern Australia (Macintosh 1964, Mulvaney 1975, White & O'Connell 1982). Dingo numbers would have remained fairly low until Europeans arrived and modified habitats and changed many dingo behaviours. In particular, the use of artesian bores that allowed stock to forage and often die beyond the natural watering points in arid areas (about 75% of Australia) provided dingoes with water and food during droughts; and their distribution and numbers greatly increased. Similarly, the 100-year war between pastoralism and dingoes was easily won by dingoes mainly because control techniques simply fractured packs and thereby dampened the natural population regulation in dingoes where most breeding was confined to the dominant pack female (Corbett 1995). Ironically, however, crossbreeding with domestic dogs also increased over the same period to the extent that hybrids occur throughout the mainland and predominantly so in southern Australia (Newsome et al. 1985, Corbett 1995). Given the current rate of hybridisation (see below) it is likely that most populations of pure dingoes will be extinct by the end of the 21st century and Australia would then become a land of hybrids and feral dogs.

If, and only if, hybrids perform the same ecological role as pure dingoes in native ecosystems, perhaps there is no major threat of altered predation rates on native prey and other disruptions to those ecosystems. However, the few available data suggest that important physiological differences do exist and some may have adverse implications for pastoralism (Corbett 1995).

This paper examines changes in the status of pure dingoes and hybrids in Australia over the past three decades with particular reference to populations in New South Wales. It also re-examines the issue of whether or not distinct forms of tropical, desert and alpine dingoes exist within Australia. The major threats to pure dingoes are discussed, as are the major problems associated with hybrids. Finally, management options to conserve pure dingoes are advanced.

Methods

Defining pure dingoes and hybrids

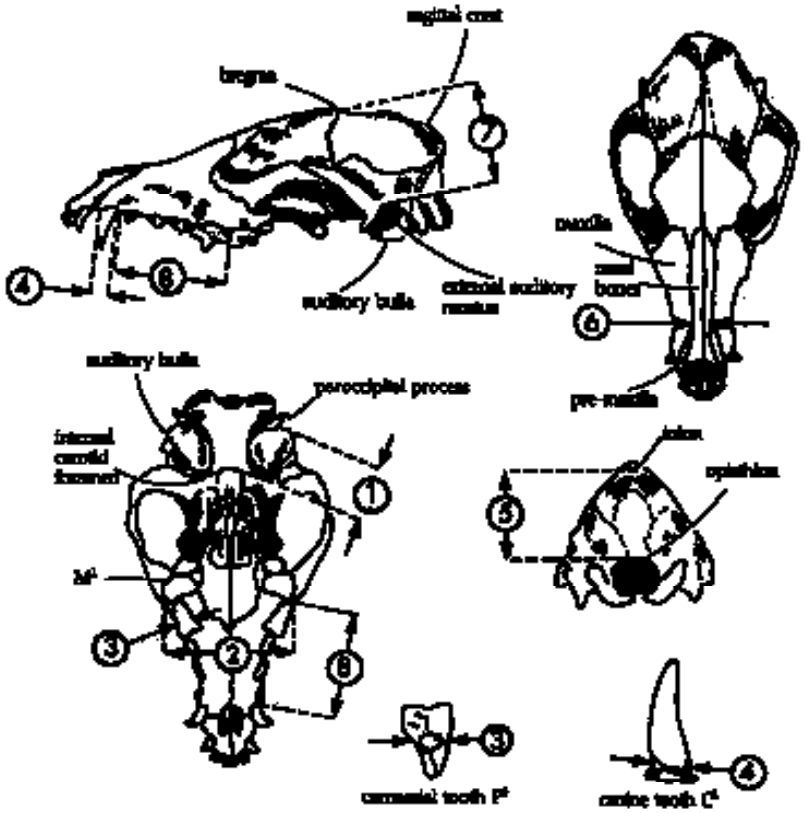
Prior research indicates that the most reliable parameters to distinguish between dingoes and hybrids are based on skull morphology, pelt colours and breeding pattern. From analysis of about 120 skull measurements, Newsome *et al.* (1980) and Newsome & Corbett (1982, 1985) deduced that the best eight discriminates could be combined into a skull score where dingoes had scores ≥1.271 and hybrids had scores between –1.393 and +1.270. The same researchers also studied the inheritance of pelt colours both in the wild and in captivity, and concluded that only four types were indicative of dingoes; ginger, black-and-tan, all white and all black (Newsome & Corbett 1985, Corbett 1995). The pelt colours of hybrids also include these four types as well as many others, particularly brindle, patchy ginger-and-white, patchy black-and-white and sable. Although generally difficult to ascertain in wild animals, differences in female breeding patterns are clear cut: dingoes are seasonal breeders and produce just one litter each autumn whereas hybrids may have two oestrus periods each year so that pups can be born in autumn or in spring seasons (Newsome *et al.* 1973, Catling *et al.* 1992). Male dingoes sometimes exhibit seasonal peaks

in testis and prostrate morphology and function in hot climates (Corbett 1995), but usually can produce sperm all year as for hybrid males (Catling 1979, Catling *et al*. 1992).

In earlier studies (Newsome & Corbett 1985), pure dingoes were classified solely on the basis of skull scores ≥1.271. A tighter definition was used in this study. Pure dingoes were defined as those animals with (1) ginger pelts, (2) skull scores ≥1.271, and (3) each of the eight skull variables contributing to the skull score had to be within the 95% confidence limits for dingoes. Figure 1 indicates the eight skull variables used and procedures to calculate a skull score. Henceforth in this paper such defined animals are called pure dingoes (or dingoes). Animals of unclear taxonomic status are called wild dogs.

Skull samples

A total of 180 skulls of wild dingoes that had been sampled throughout Australia over the past three decades were borrowed from the National Wildlife Collection in Canberra, the Agricultural



Numbers in circles refer to X1 – X8 below. Values in parenthesis indicate the dingo 95% confidence limits (CL) for each measurement. Reject skulls with any measurement outside the dingo CL:

X1 = Length of auditory bulla (measured from where it abuts the paroccipital process to the internal carotid foramen, excluding any projection on the foramen),

(CL: 22.8 – 27.4 mm).

X2 = Maximum maxillary width (measured at about the junction of the P4 and M1 teeth),

(CL: 56.8 – 63.8 mm).

X3 = Mid-crown width of the P4 tooth (measured through the highest cusp in a lateral direction),

(CL: 6.9 – 8.2 mm).

X4 = Basal crown length of C1 (measured along the tooth row),

(CL: 8.6 – 10.5 mm).

X5 = Opisthion to inion (measured from a central inion point and not including the notch in the opisthion, if present,

(CL: 30.0 – 37.0 mm).

X6 = Width of both nasal bones (measured at premaxilla-maxilla suture),

(CL: 10.2 – 13.0 mm).

X7 = Cranial height (measured from the upper notch of the external auditory meatus to the bregma, including the sagittal crest),

(CL: 52.4 – 59.4 mm).

X8 = Distance between the posterior alveolar rims of C1 – P4,

(CL: 50.8 – 58.4 mm).

Substitute the values (X1 – X8) in the following equation to calculate the skull score (Y):

Y = 0.249 X1 - 0.261 X2 + 1.999 X3 – 1.137 X4 + 0.318 X5 + 0.475 X6 – 0.205 X7 + 0.136 X8 – 3.717

Figure 1. Skull measurements and protocol to determine skull scores (from Corbett 1995)

Table 1. Skull samples: numbers, locations and proportions classified as pure dingoes

Region	No. skulls examined *	No. skulls classified as pure dingoes **	Approximate locations where sampled	Approximate dates when sampled
Kakadu National Park	24	23 (96%)	Kapalga	1980-85
Barkly Tablelands	20	17 (85%)	Brunette Downs, Anthonys Lagoon	1968-73
Central Australia	40	33 (83%)	The Garden, Tieyon	1967-75
Pilbara	34	25 (74%)	Unspecified	1970's
Gibson Desert	20	17 (85%)	Petermann Ranges	1969
South-east Highlands	25	13 (52%)	NSW: Nadgee, Batemans Bay, Koscuisko. ACT: Unspecified VIC: Eskdale, Nariel, Eustace Gap, Tom Groggin, Mt Pinnebow, Lucyvale, Mitta Mitta, Corryong	1964-75
North-east New South Wales	17	6 (35%)	Bonalbo, Port Macquarie, Aspley River Gorge, and other unspecified locations	1961to 1970's
Total	**180**	**134 (74%)**		**1961-75**

* Samples comprised about even numbers of adult males and females. All were previously classified as dingoes based solely on skull scores (Newsome & Corbett 1985) except skulls from Pilbara and NE NSW which were not previously classified.

** Based on adult dingoes with ginger pelts, skull scores ≥1.271 and all eight skull variables within the dingo 95% Confidence Limits.

Protection Board of Western Australia and the University of New England. Although most of these skulls had previously been measured and classified as dingoes (based solely on skull scores), I re-measured most skulls to minimise variability between measurements and measurers. With such a tight definition (above), many skulls previously classified as dingoes dropped out so that relatively few samples (134) qualified as pure dingoes. However, a fairly representative geographical range of samples was obtained including the wet-dry tropics of northern Australia, sub-monsoonal habitats, hot arid habitats of central Australian deserts, semi-arid habitats of north-western Western Australia and temperate coastal and mountainous habitats of south-eastern Australia (see Table 1). The major habitats that were not represented in this study were the temperate habitats of south-western Australia and tropical Queensland habitats.

Pelt colour samples

Published data on pelt colours of 4573 dingoes and hybrids sampled throughout Australia and south-east Asia (Corbett 1995) were re-analysed for this study.

Data analysis

Most analyses were performed using ANOVA with a $P<0.05$ level of significance.

Results

Pelt colours and skulls – earlier studies

Figures 2a and b respectively show the predominant pelt colours of 4573 wild dogs in south-east Asia and Australia, and within Australia. The presence of predominantly ginger-coloured animals in the seven countries studied suggests that dingoes exist everywhere, but the fairly high proportions of sable, brindle and patchy coloured animals suggests that hybrids are also present everywhere. It is notable that relatively fewer black dingoes were recorded in Australia compared to the south-east Asian countries.

Within Australia (Figure 2b), the predominance of ginger-coloured animals in northern, central and north-western regions suggests that most animals in those regions are likely to be dingoes. By contrast, the relatively higher proportions of sable, brindle and patchy coloured animals in south-eastern regions suggests that populations there contain many hybrids. That conclusion is supported by studies using skull scores. About 94-100% of 1184 animals in northern and central regions were classified as dingoes compared to 22-65% of 407 animals in south-eastern regions (Newsome & Corbett 1985). It is now appropriate to re-examine the status of wild dogs in Australia using the tighter definition of dingoes previously outlined.

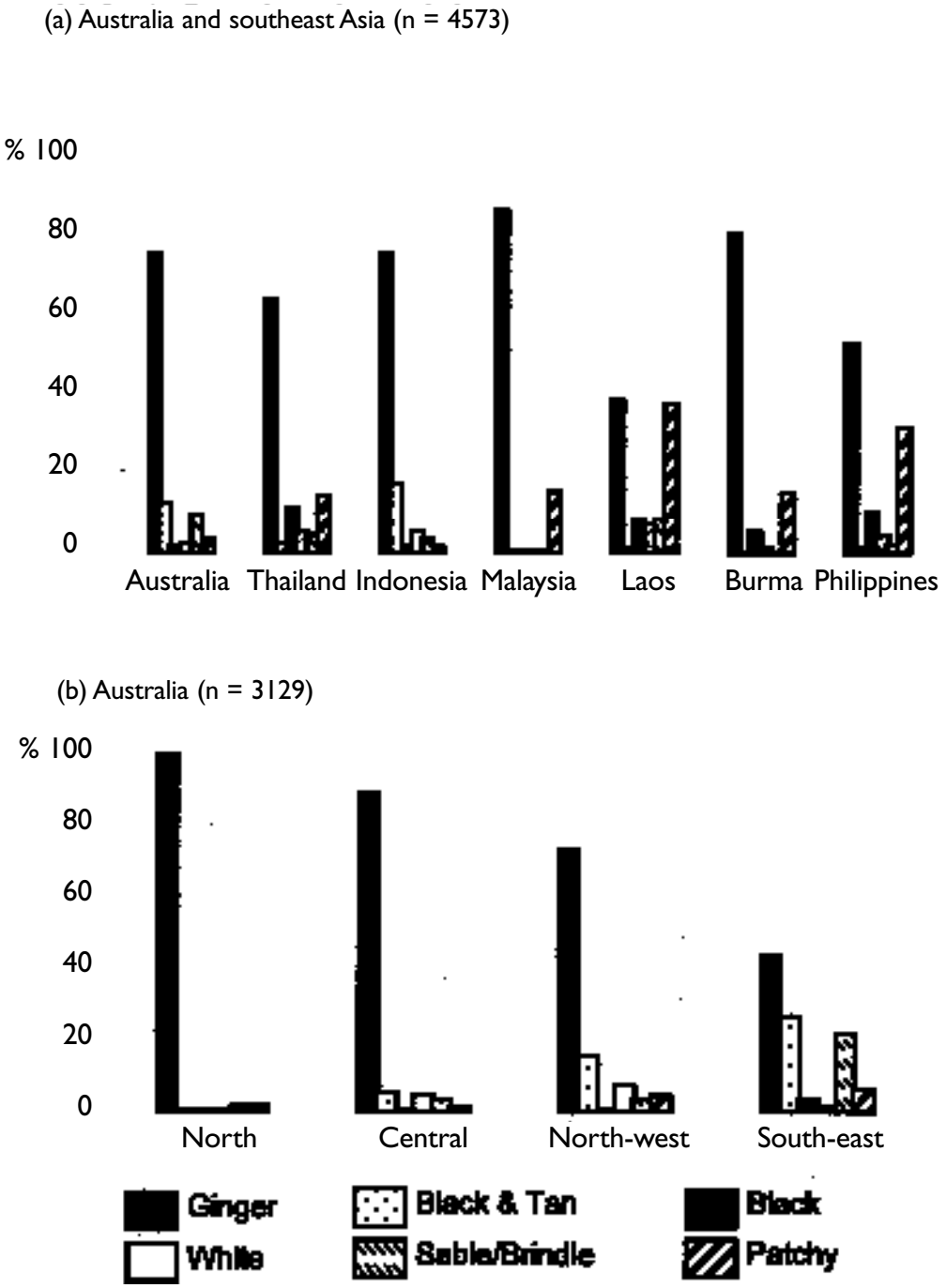


Figure 2. Wild dog pelage colours in Australia and southeast Asia (from Corbett 1995)

Earlier studies based on canonical variate analysis of skull scores also indicated that dingoes in Australia were sufficiently distinct from dingoes in Thailand that they could be considered as separate races (Corbett 1985). Further studies suggested that there might be distinct types of dingoes within Australia, in particular, tropical, desert and alpine forms (Corbett 1995). Given the current popularity of such indicative forms of dingoes in some sections of the Australian community, it is also appropriate to now re-examine this issue.

Regional purity of dingo populations in Australia

About three-quarters (74%) of 180 skulls examined from seven major regions throughout Australia were classified as dingoes (Table 1) and totally pure populations were not recorded anywhere. The purest dingo populations were in northern, central and north-western Australia (96-74% of sampled populations were dingoes) and predominantly hybrids were recorded from south-eastern Australia (65-48% of sampled populations were hybrids).

Table 2. ANOVA comparison of skull scores of dingoes from seven major regions in Australia

	South-east Highlands	Central Australia	Gibson Desert	Barkly Tableland	Kakadu	Pilbara
Central Aust	***					
Gibson	***	ns				
Barkly	***	ns	ns			
Kakadu	***	ns	ns	ns		
Pilbara	***	ns	ns	ns	ns	
NE NSW	**	ns	ns	ns	ns	ns

*** P<0.001; ** P<0.01; ns = not significant, P>0.05

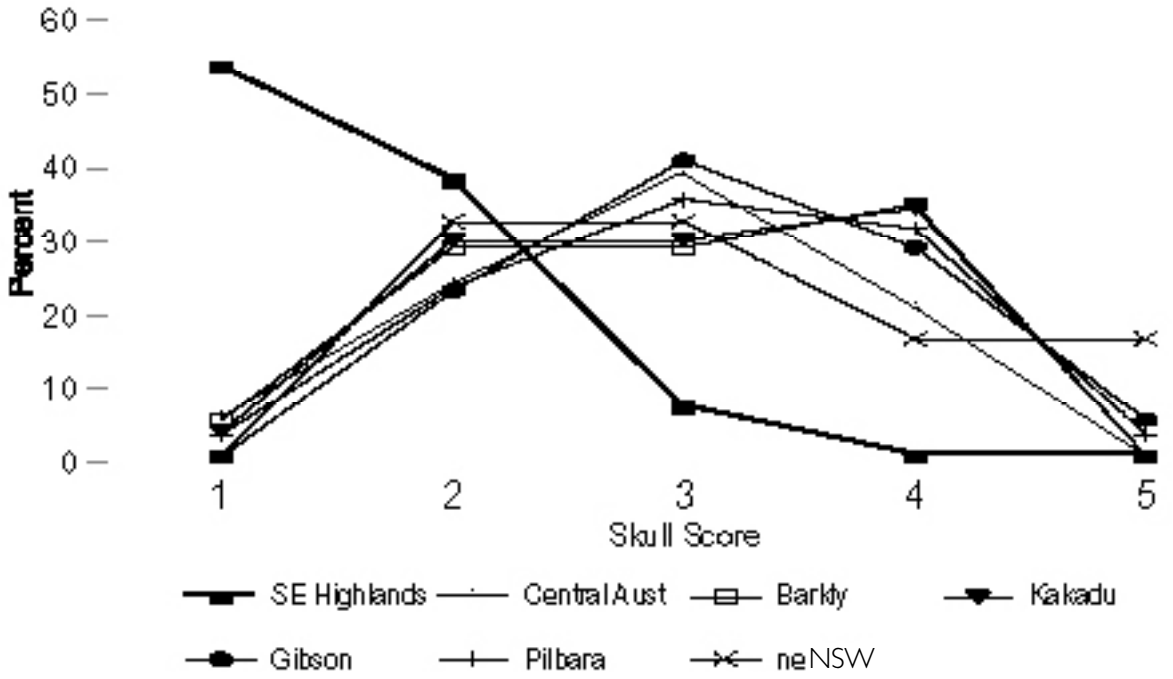


Figure 3. Distribution of skull scores of dingoes from seven major regions in Australia

Comparisons between regions

ANOVA testing of skull scores indicated that only dingoes from the south-eastern Highlands were significantly different to the other six regions (Table 2) that had very similar and even spreads of skull scores (Figure 3). This suggests that animals from the south-eastern Highlands are either a distinct dingo race (Alpine dingoes) or there is a relatively greater influence from hybrids there. The skew to the left (towards the hybrid range of skull scores, 1.270 to –1.393, Corbett 1995) suggests the latter case is most probable (Figure 3).

Discussion

Dingo populations in Australia

Based on the analysis of skulls in this paper, there is only one type or form of dingo in Australia – the Australian Dingo *Canis lupus dingo*. There is no distinct 'Alpine' form in the south-eastern Highlands. Although dingo components of some populations there were significantly different to dingo populations elsewhere in Australia, the difference is almost certainly due to contamination from domestic dog genes. Within Australia, the south-eastern Highlands has the longest history of association between dingoes and hybrids so that some 'dingoes' contain only a small proportion of domestic genes through hybrids back-crossing with pure dingoes. This speculation is supported by crossbreeding experiments in captivity where back-crossing F1 hybrids to pure dingoes took about three generations to produce animals (theoretically one-eighth dingo) that resembled pure dingoes in phenotype and breeding pattern (Newsome & Corbett 1982).

Hybrids exist in all populations throughout Australia and the proportion of hybrids appears to be increasing. In north-east Victoria, only about 49% of populations were classified as

dingoes in the 1960s (Newsome & Corbett 1985) and the proportion of dingoes then declined by more than half over the next 20 years to 17% (Jones 1990). If that rate of decline continued over the past ten years, as is likely, pure dingoes are probably very scarce in north-east Victoria today and there is no doubt they will soon be extinct in that region.

There is no reason to be complacent that hybrids will not eventually overrun dingo populations elsewhere in Australia. Even in Kakadu National Park, wild dogs that are obviously hybrids are increasingly being recorded by experienced Park Rangers and researchers (Corbett 1999).

Dingo populations in New South Wales

Are there regions in New South Wales (NSW) where populations of pure dingoes exist? In north-eastern NSW, 6 of 17 animals (35%) were classified as dingoes (Table 1). However, it should be borne in mind that those samples were collected about 24-38 years ago so that the proportion of hybrids is probably greater today. In a more recent sample (1991-93) from north-eastern NSW, about half of 39 wild dogs were hybrids as based on non-dingo pelt colours (Fleming 1996) and the remaining half were not necessarily pure dingoes because many hybrids can exhibit dingo pelt colours.

In south-eastern NSW, most samples from and adjacent to Mt Kosciusko and all samples from Nadgee Nature Reserve were classified as hybrids.

Thus, based on skull scores of samples used in this study, the prognosis for regional populations of pure dingoes in NSW is poor. The best hope appears to be in north-eastern and possibly western NSW where samples were not available for this study. Analysis of modern samples is obviously required to clarify the status of dingoes in those regions.

Threats to pure dingoes

The three major threats to the continued existence of pure dingoes in Australia are (1) hybridisation, (2) actions of dingo preservation societies, and (3) consequences of the NSW Companion Animals Act.

Hybridisation has been and continues to be the greatest threatening process to dingo integrity. Although it has always occurred in bush areas as a result of occasional but inevitably 'lost' domestic dogs breeding with dingoes, the rate of hybridisation is relatively low. This is because the behavioural differences between dingoes seem great enough to make it difficult for dogs to infiltrate dingo society and breed, particularly in remote areas where there are more dingoes living in stable packs (Corbett 1995). However, in recent years, hybridisation rates have increased as a result of a trend for people in urban and semi-rural areas to acquire 'pet' dingoes and thereby greatly increase contact between dingoes and domestic dogs. Because 'pet' dingoes grow up in the urban situation without those social behaviours that curb breeding, crossbreeding is also markedly increased. Many of the resulting hybrids are rejected by 'owners' or stray to the bush where their dingo genes make it easier for them to infiltrate wild dingo society and breed with pure dingoes.

Dingo preservation societies are small groups of dedicated people who recognise the dingo's plight and legally obtain wild animals for enjoyment and to preserve the species. Basically, they are equivalent to private zoos where dingoes are treated as companion animals. Despite such admirable aims, there are, unfortunately, two major problems. Firstly, as with any zoo or wildlife park, there is the problem of inbreeding and the 'unnatural surroundings' discourage the natural selection of wild characteristics. Indeed, some breeders actively select for traits that conform with their mistaken view of dingo varietal forms; a process which is reminiscent of the fate of early dingoes many years ago in western Asia (see introduction above). The second, and more serious problem, is that dingo preservation societies do not have proven stocks of pure dingoes. Most of their animals have been recently obtained from eastern and south-eastern Australia where the evidence presented in this paper indicates that probably all populations in those regions are well hybridised. The skull scores of several 'prime' animals from two well-known preservation societies indicated that those presumed pure dingoes were, in fact, hybrids (Corbett, unpublished). Even stock obtained from more remote areas such as central Australia has not been adequately tested for purity. The implication is that dingo preservation societies are essentially preserving, propagating, promoting and selling hybrids. Further, this problem was sanctioned and exacerbated in 1993 when the Australian National Kennel Council recognised the dingo as an official breed of dog and adopted it as Australia's national breed without any effective governance on how purity should be recognised and maintained.

In 1998, the NSW Government passed the *Companion Animals Act* whereby the status of the dingo changed from a 'noxious' animal to a 'companion' animal so that people can legally keep dingoes as pets without a special licence. The major consequences of this Act are two-fold. The first is the problem of obtaining stocks of pure dingoes. Members of the public are most likely to obtain animals from the dingo preservation societies or similar enterprises; as indicated above, most of their stocks are hybrids. The second, more serious problem, is associated with the risk to humans of keeping a tame wolf (pure or hybrid). It should not be forgotten that the dingo is a wild wolf that can be tamed but not domesticated. To do so would change its specific identity and create just another breed of domestic dog. The human health risks associated with the keeping of wild animals are real. For example, generations of wild dingoes at Fraser Island have, as a result of tourism promotion, become accustomed to the close presence of humans. One outcome is that many of those dingoes regard unsuspecting human visitors as (1) potential competitors for food (handouts and refuse), (2) apparent competitors for breeding mates, (3) enemies of pups, (4) objects to direct displacement activities resulting from an altercation with other (more dominant) dingo group members, and (5) objects that juvenile dingoes can practice social and hunting behaviours. The result is that many visitors are bitten, often severely (Corbett 1998). I should add that the Queensland Government has recognised the potential problems with dingoes on Fraser Island and currently has a draft management plan under review (Queensland Government 1999). If such problems are not addressed, human deaths are not out of the question, at least if wolf-dog hybrids in America are anything to go by. There have been eight human fatalities by 'pet' wolf-dog hybrids in recent years and the California City Zoo terminated experiments with wolf hybrids because most were too dangerous to handle (Gloyd 1992).

The ultimate upshot of the Companion Animals Act is likely to be an increase in the rate of hybridisation. Despite the threats of heavy penalties for non-conforming owners, many companion dingoes will be allowed to breed with domestic dogs in suburbia and many of the resulting hybrids will find their way into the bush to breed with wild dingoes and further swamp the dingo gene pool.

Conserving pure dingoes

For reasons outlined above, the *Companion Animals Act* 1998 and the efforts of dingo preservation societies are likely to be of little use in conserving dingoes, even if pet dingoes were neutered and the societies were able to obtain stocks of pure dingoes. Protecting the dingo under the NSW *Threatened Species Conservation Act* 1995 or the *Commonwealth's Environment Protection and Biodiversity Conservation Act* 1999 is also likely to be of little use unless hybrid-free habitats in the bush are created and maintained; a most unlikely scenario on the mainland. However, a possible exception might be the types of wildlife sanctuaries that are funded by shareholders, such as Warrawong Sanctuary and Scotia Sanctuary (Earth Sanctuaries Ltd.), where exotic animals are excluded and natural wildlife interactions are both encouraged and monitored (Wamsley 1998).

Both Governments and societies could help by continuing to inform the public of the plight of dingoes. Most Australians don't realise that dingoes are under threat of extinction and can be forgiven for thinking so, given the huge publicity on dingo predation on stock and control programs. If more people understood the impact of domestic dogs on dingo genes and wished to keep the dingo as a native Australian species, then perhaps people may accept restrictions on inherent rights to own intact domestic dogs especially in remote and other refuge areas. In other words, an informed and motivated public must be the driving force behind efforts to conserve dingoes.

There are two actions that offer the best hope of conserving dingoes. The first relates to the identification of pure dingoes. Currently the calculation of skull scores is the only proven way of identifying pure dingoes. Unfortunately, this method can only be applied to adult, dead dingoes and thus is of limited use to wildlife managers and dingo breeders who need to ascertain the identity of young living animals so as to decide whether to cull or maintain particular animals. However, recent work on canine molecular genetics in Australia and overseas promises a practical method to assess the purity of wild and captive dingo populations, both living and deceased (Wilton 2001, Wayne 1993, Vila *et al.* 1997). It is imperative that material dated prior to European settlement of Australia is used as the reference benchmark in DNA 'fingerprinting' experiments.

Such material will be unequivocally pure dingo and will eliminate all argument as to the validity of tests on extant animals in captivity and in the wild. Such reference material is available in the form of fossils and cave deposits, such as the Fromm's Landing dingo (Macintosh 1964).

The second action relates to the use of islands as dingo refugia.

Island refugia

All islands with populations of dingoes and domestic dogs probably also contain hybrids. Even Fraser Island, frequently advertised as the remaining bastion of pure dingo populations (Queensland Government 1994) has hybrids. Based on skull scores, 17% of 35 wild dogs recently sampled there were hybrid (Woodall *et al.* 1996), which is not surprising given that Fraser Island was occupied by timber cutters, sand miners and other human settlers (and their dogs) since the late 1880s (Williams 1982).

However, islands such as Fraser, Melville, Bathurst and Groote, offer the best hope of conserving dingoes because they (1) contain many representative habitats of the mainland, (2) are large enough for dingoes to live and breed in partly or completely natural conditions, (3) small enough for wild populations to be screened and hybrids and feral dogs removed, and (4) sufficiently isolated for managers to maintain the integrity of pure dingo populations, once established, through culling of excess dingoes or transportation of extra dingoes to the mainland.

Islands don't necessarily need to be offshore. They could be 'islands' of well-protected and maintained sanctuaries on the mainland, which would have the added advantage of additional habitats, such as hot deserts, not available on offshore islands. As indicated above, such sanctuaries already exist on the mainland and are very successful in conserving rare and endangered marsupials and birds (Wamsley 1998). There is no justifiable reason why enlightened and motivated people could not form companies to establish wildlife sanctuaries of adequate size for dingoes to live naturally.

It is obvious that such options depend upon the successful determination of biochemical or genetic markers so that the status of extant animals on islands can be ascertained and non-dingoes removed. In addition, once pure dingo populations are established, it will also be vital for managers to cull (or transport) dingoes from islands to keep population numbers matched with natural food supplies. It will also be important to educate both dingoes and human visitors of the dangers of forming close associations. For dingoes, this may include aversive conditioning to deter juveniles that attempt to feed on human handouts at camp grounds, tourist resorts and the homes of residents. For human residents, it might mean that they will need to forsake the right to own domestic dogs, and visitors will need to change expectations of encountering dingoes to that of a quality experience; so that, for example, a fleeting glimpse of a wild dingo disappearing into the sunset would be more rewarding than a mob of wild dogs stealing food from a barbecue.

Acknowledgements

John Wombey (CSIRO, Australian National Wildlife Collection) and Peter Thomson (Agricultural Protection Board of Western Australia) lent skulls. Bob Harden (NSW National Parks & Wildlife Service) measured skulls from north-eastern NSW and Peter Catling (CSIRO) measured skulls from Nadgee. John Wombey and Mick Burt (CSIRO) extracted information from CSIRO files.

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