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Letter to the Editor

A response to LETNIC M et al., 2011 [Current Zoology, 57 (5): 668–670]

Wild dogma II: The role and implications of wild dogma for wild dog management in Australia

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Abstract The studies of Allen (2011) and Allen et al. (2011) recently examined the methodology underpinning claims that dingoes provide net benefits to biodiversity by suppressing foxes and cats. They found most studies to have design flaws and/or observational methods that preclude valid interpretations from the data, describing most of the current literature as 'wild dogma'. In this short supplement, we briefly highlight the roles and implications of wild dogma for wild dog management in Australia. We discuss nomenclature, and the influence that unreliable science can have on policy and practice changes related to apex predator management [*Current Zoology* 57 (6): 737–740, 2011].

Keywords Apex predator, *Canis lupus dingo*, Practice change, Public perceptions, Wild dog management

Dingoes (*Canis lupus dingo* and hybrids) have had a tumultuous history since their introduction to Australia, often being viewed as a destructive pest, an ecological saviour, or something in between. These perspectives largely rest on the attention given to which species dingoes happen to be killing at the time. Additionally, dingoes have importance to some indigenous people, and may also influence some wildlife species by their mere presence. In recent years however, there has been a growing body of literature focussing primarily on their perceived ability to provide faunal biodiversity benefits through suppression of foxes *Vulpes vulpes* and feral cats *Felis catus*.

We recently reviewed the methodology underpinning this literature and found that 75% of field studies were based on data acquired in flawed experimental designs, with a further 20% using insensitive measures (Allen et al., 2011, but see response by Letnic et al., 2011a). Desktop studies relying on distribution maps for modelling purposes suffered similar weaknesses (Allen, 2011). We described this literature as 'wild dogma', and cautioned the use of deficient studies to inform dingo management. In this brief supplement, we aim to highlight the roles and implications of wild dogma for dingo/wild dog management in Australia.

Like all domesticated dogs, dingoes are a derivative of the grey wolf *Canis lupus* (Saetre et al., 2004; Savolainen et al., 2004), and discussions on the ecological roles of dingoes are clouded by nomenclature. The taxonomic name applied to the same group of dingoes could be either *Canis lupus dingo*, *Canis lupus familiaris*, *Canis familiaris dingo*, *Canis dingo*, or feral/wild individuals of *Canis familiaris* – each term being in common and current usage. Each of these taxonomic names essentially describes the same type of animal, and claiming that *Canis lupus dingo* is functionally any different from *Canis lupus familiaris* is largely impossible at present (Claridge and Hunt, 2008). Until such time as a definitive technique (such as DNA identification) is able to reliably distinguish between them in the field (Elledge et al., 2008; Jones, 2009), followed by the demonstration of a functional difference between them, all wild living canids in Australia could be collectively labelled and managed as 'wild dogs' (Fleming et al., 2001). Thus, wild dogs are either conserved or killed in many places, and their current management largely depends on where they live and what they're doing, not what their genetics are or what they look like. Wild dogma influences public and professional attitudes about the positive and negative man-

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agement of wild dogs.

This is particularly important because recent literature has culminated in calls to cease lethal control of wild dogs and restore them to some livestock production areas where they have been locally eradicated (Dickman et al., 2009; Letnic et al., 2011b). This mirrors international studies on other apex predators that are often rare or in decline (Hayward and Somers, 2009). In contrast, there are probably more wild dogs now than at any other time in Australia's ecological history (Corbett, 2001b; Davies et al., 2010), though their genetic identity is being altered through hybridisation (Corbett, 2001a; Purcell, 2010). Less than 25% of Australia is relatively free of wild dogs (i.e. the sheep production zone), which are typically either widespread, common, and/or abundant in all other areas (West, 2008), in spite of sporadic lethal control in some places (Allen, 2010). Thus, wild dog densities have been reduced in restricted areas to accommodate sheep production, but they have conversely increased in other areas through the anthropogenic provision of ample food and water resources (Corbett, 2001b; Davies et al., 2010; Allen, 2011). In short, wild dogs are doing very well in Australia.

Wild dogs also have almost mythical status in Australian culture (Hytten, 2009), and conflicting viewpoints, stories, and legends inhibit cooperative wild dog management. Wild dogma perpetuates this confusion and only serves to keep the discussion grounded in ambiguity. While amassing more and more unreliable studies could be viewed as 'a growing body evidence' for the positive role of wild dogs, it essentially amounts to claiming that more and more 'unknowns' create a 'known'. The folly in this view should be obvious, and no amount of unreliable studies will be enough. By examining the methodological detail in this body of literature, we therefore did not 'miss' any meta-patterns (Letnic et al., 2011a), but demonstrated that the foremost observable meta-pattern is one of consistently unreliable studies (Allen et al., 2011). This confusion and unreliability of recently published studies not only impedes the control of wild dogs, but it also curtails their preservation.

For example, some land managers may refuse to participate in community wild dog control programs in livestock production areas with the belief that they will suppress foxes and cats. This weakens the effectiveness of the control program and undermines the efforts of all the other participants. Conversely, some land managers may continue to destroy wild dogs where their preservation may actually be economically beneficial for their enterprise and the environment generally. Clear, demonstrable, evidence for the roles of wild dogs (whatever they are) are required to inform their best-practice management. In turn, this may inform the improved recovery of threatened wildlife species.

The studies discussed in Allen (2011) and Allen et al. (2011) contribute to wild dog management by providing theories and hypotheses suitable for subsequent testing and consideration. However, most of them cannot (and do not) constitute evidence for these theories and hypotheses in and of themselves – individually or collectively (Allen et al., 2011). As such, they cannot be used reliably as support for the notion that wild dogs suppress mesopredators or provide net benefits to faunal biodiversity. For recent publications advocating this viewpoint, a close examination of the literature supporting this notion typically leads back to the very studies found to be most unreliable. Allen et al., (2011) was concerned that such studies would be used to prematurely inform policy and practice change despite the clear absence of supporting data. This has already begun to occur.

For example, Allen (2011) showed that ignoring the effects of historical and contemporary sheep grazing overlooks the role of wild dogs as post-grazing agents of faunal decline and extinction, and the primary study criticised (Johnson et al., 2007) has already been used to support policy change protecting pure dingoes in Victoria (Clarke, 2007[3]). In addition, Carwardine et al. (2011) recommends the prohibition of wild dog control as the foremost action to reduce the impacts of cats in tropical northern Australia. However, this proposal was supported with reference to studies conducted in temperate (Johnson and VanDerWal, 2009) and arid (Letnic et al., 2009) areas, which were determined to be misleading and unreliable after critical review (Allen, 2010; Allen et al., 2011). Confusingly, the recommendation of Carwardine et al. (2011) is also contrary to published evidence from tropical northern areas (Kennedy et al., 2011), which reports that wild dog control does not positively affect cat activity.

The potential biodiversity outcomes of prematurely managing wild dogs positively in the absence of reliable information were highlighted by Augusteyn (2010[1]), which reported the results of a study that ceased control of wild dogs, believing their reestablishment would suppress the impacts of mesopredators. When the critically endangered species (bridled nailtail wallabies *Onychogalea fraenata*) continued to decline, wild dog control was resumed, and the wallaby population

quickly responded positively. Contemporary wild dog control typically targets both wild dogs *and* foxes (Fleming, 1996; Claridge et al*.,* 2010), and control programs for these canids have never resulted in negative effects for threatened species populations (Glen et al., 2007; APVMA, 2008[2]; Saunders et al., 2010). Moreover, this conclusion is not due to a mere lack of relevant studies, but is the result of rigorous reviews of multiple studies to investigate the non-target impacts of canid control in all areas of Australia (for examples, see Eldridge et al., 2002; Allen, 2005; Fenner et al., 2009; Claridge et al., 2010). Given this, continued calls to suspend wild dog control on biodiversity conservation grounds are perplexing, especially when they're supported by unreliable studies. This highlights how wild dogma can influence policy and practice change with negative consequences for faunal biodiversity.

Irrespective of these implications, it is important to remember that we did not attempt to challenge mesopredator release theory or deny that wild dogs can/do have positive roles in the environment – we merely highlighted the weaknesses of studies claiming to provide evidence for such functions. We certainly did not demonise the dingo, specifically stating that it would be regrettable if our study were viewed in this way. Improved research may yet demonstrate the ecosystem services and net benefits of retaining wild dogs in some areas, but we reaffirm the importance of avoiding the common pitfalls identified in Allen et al. (2011) when undertaking such research. We also encourage researchers to focus on applied science questions (e.g. does wild dog control harm threatened species?) that can inform wild dog and threatened species management more appropriately. Replacing wild dogma with wild dog fact will greatly enhance our ability to manage this unique and charismatic predator in Australia.

References

Allen BL, 2010. Did dingo control cause the elimination of kowaris through mesopredator release effects? A response to Wallach and O'Neill (2009). Animal Biodiversity and Conservation 32(2): 1–4.

Allen BL, 2011. A comment on the distribution of historical and contemporary livestock grazing across Australia: Implications for using dingoes for biodiversity conservation Ecological Management and Restoration 12(1): 26–30.

Allen BL, Engeman RM, Allen LR, 2011. Wild dogma: An examination of recent "evidence" for dingo regulation of invasive mesopredator release in Australia. Current Zoology 57(5): 568–583.

Allen LR, 2005. The impact of wild dog predation and wild dog control on beef cattle production, PhD Thesis. Department of Zoology, The University of Queensland.

Carwardine J, O'Connor T, Legge S, Mackey B, Possingham HP et al., 2011. Priority Threat Management to Protect Kimberley Wildlife. Brisbane: CSIRO Ecosystem Sciences.

Claridge AW, Cunningham RB, Catling PC, Reid AM, 2010. Trends in the activity levels of forest-dwelling vertebrate fauna against a background of intensive baiting for foxes. Forest Ecology and Management 260(5): 822–832.

Claridge A, Hunt R, 2008. Evaluating the role of the Dingo as a trophic regulator: Additional practical suggestions. Ecological Management & Restoration 9 (2): 116–119.

Corbett LK, 2001a. 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. In: Dickman CR, Lunney D ed. Proceedings of the A symposium on the dingo. Mosman: Royal Zoological Society of New South Wales.

Corbett LK, 2001b. The dingo in Australia and Asia. 2nd edn. South Australia: J.B. Books.

Davies KF, Melbourne BA, James CD, Cuningham RB, 2010. Using traits of species to understand responses to land use change: Birds and livestock grazing in the Australian arid zone. Biological Conservation 143: 78–85.

Dickman C, Glen A, Letnic M, 2009. Reintroducing the dingo: Can Australia's conservation wastelands be restored? In: Hayward MW, Somers MJ ed. Reintroduction of Top-order predators. Oxford: Wiley–Blackwell, 238–269.

Eldridge SR, Shakeshaft BJ, Nano TJ, 2002. The Impact of Wild Dog Control on Cattle, Native and Introduced Herbivores and Introduced Predators in Central Australia: Final Report to the Bureau of Rural Sciences. Alice Springs: Parks and Wildlife Commission of the Northern Territory.

Elledge AE, Allen LR, Carlsson B-L, Wilton AN, Leung LK-P, 2008. An evaluation of genetic analyses, skull morphology and visual appearance for assessing dingo purity: Implications for dingo conservation. Wildlife Research 35: 812–820.

Fenner S, Körtner G, Vernes K, 2009. Aerial baiting with 1080 to control wild dogs does not affect the populations of two common small mammal species. Wildlife Research 36(6): 528–532.

Fleming P, Corbett L, Harden R, Thomson P, 2001. Managing the Impacts of Dingoes and Other Wild Dogs. Canberra: Bureau of Rural Sciences.

Fleming PJS, 1996. Ground-placed baits for the control of wild dogs: Evaluation of a replacement-baiting strategy in north-eastern New South Wales. Wildlife Research 23(6): 729–740.

[1] Augusteyn J, 2010. Determining the effectiveness of canine control at Taunton National park (Scientific) and its impact on the population of bridled nailtail wallabies In 'Proceedings of the Queensland Pest Animal Symposium'. Gladstone, Queensland.

[2] APVMA, 2008. Review findings for sodium monofluoroacetate: The reconsideration of registrations of products containing sodium monofluoroacetate and approvals of their associated labels, Environmental Assessment. Australian Pesticides and Veterinary Medicines Authority.

[3] Clarke M, 2007. 'Final recommendation on a nomination for listing: *Canis lupus* subsp. dingo.' (Scientific Advisory Committee, Department of Sustainability and Environment: Victoria)

Glen AS, Gentle MN, Dickman CR, 2007. Non-target impacts of poison baiting for predator control in Australia. Mammal Review 37(3): 191–205.

Hayward MW, Somers MJ, 2009. Reintroduction of Top-order Predators. Oxford: Wiley-Blackwell.

Hytten KF, 2009. Dingo dualisms: Exploring the ambiguous identity of Australian dingoes. Australian Zoology 35(1): 18–27.

Johnson C, VanDerWal J, 2009. Evidence that dingoes limit the abundance of a mesopredator in eastern Australian forests. Journal of Applied Ecology 46: 641–646.

Johnson CN, Isaac JL, Fisher DO, 2007. Rarity of a top predator triggers continent-wide collapse of mammal prey: Dingoes and marsupials in Australia. Proceedings of the Royal Society, Biological Sciences Series B 274(1608): 341–346.

Jones E, 2009. Hybridisation between the dingo *Canis lupus dingo* and the domestic dog *Canis lupus familiaris* in Victoria: A critical review. Australian Mammology 31: 1–7.

Kennedy M, Phillips B, Legge S, Murphy S, Faulkner R, 2011. Do dingoes suppress the activity of feral cats in northern Australia? Austral Ecology *In press*.

Letnic M, Crowther M, Koch F ,2009. Does a top-predator provide an endangered rodent with refuge from a mesopredator? Animal Conservation 12(4): 302–312.

Letnic M, Crowther MS, Dickman CR, Ritchie E, 2011a. Demonising the dingo: How much wild dogma is enough? Current Zoology 57(5): 668–670.

Letnic M, Greenville A, Denny E, Dickman CR, Tischler M et al., 2011b. Does a top predator suppress the abundance of an invasive mesopredator at a continental scale? Global Ecology and Biogeography 20(2): 343–353.

Purcell BV, 2010. Australian Natural History Series: Dingo. Collingwood: CSIRO Publishing.

Saetre P, Lindberg J, Leonard JA, Olsson K, Pettersson U et al., 2004. From wild wolf to domestic dog: Gene expression changes in the brain. Molecular Brain Research 126(2): 198–206.

Saunders GR, Gentle MN, Dickman CR, 2010. The impacts and management of foxes *Vulpes vulpes* in Australia. Mammal Review 40(3): 181–211.

Savolainen P, Leitner T, Wilton AN, Matisoo-Smith E, Lundeberg J, 2004. A detailed picture of the origin of the Australian dingo, obtained from the study of mitochondrial DNA. PANS 101(33): 12387–12390.

West P, 2008. Assessing Invasive Animals in Australia 2008. Canberra: National Land and Water Resources Audit, The Invasive Animals Cooperative Research Centre.