10.1071/ZO24008

Australian Journal of Zoology

Supplementary Material

An assessment of dingo ancestry in camp dogs in Western Australia

T. L. Kreplins[A,*], *D. Stephens*[B], *N. Laing*[C], *and C. Oskam*[D]

[A]Department of Primary Industries and Regional Development, 75 York Road, Northam, WA 6403, Australia.

[B]Zoological Genetics, Inglewood, SA, Australia.

[C]School of Veterinary Medicine, Murdoch University, 90 South Street, Murdoch, WA 6050, Australia.

[D]School of Medical, Molecular, and Forensic Sciences, and the Centre for Biosecurity and One Health, Harry Butler Institute, Murdoch University, 90 South Street, Murdoch, WA 6050, Australia.

[*]Correspondence to: T. L. Kreplins Department of Primary Industries and Regional Development, PO Box 483, Northam, WA 6401, Australia Email: tracey.kreplins@dpid.wa.gov.au

AMTC position statement on the taxonomy of the dingo.
1st June 2024

Taxonomists overwhelmingly agree that the dingo is an ancient type of domestic dog that has the scientific name *Canis familiaris* (ASM Database (taxonomic source for IUCN Red List)). The Australasian Mammal Taxonomy Consortium (AMTC) agrees that the correct name of the dingo is *Canis familiaris* (not *Canis dingo*). Some taxonomists have placed the dog, dingo and gray wolf together in the gray wolf species (*Canis lupus*), because domesticated dogs are descended from wolves (Dog ancestry, ICZN Case). When the domestic dog is recognised as a type of gray wolf it is usually named *Canis lupus familiaris*. However, the AMTC agrees with Gentry et al. (Naming domestic derivates) that a name based on the domestic form is appropriate for the dingo.

The AMTC is a group of museum and academic taxonomists affiliated with the Australian Mammal Society. The role of the AMTC is to review published scientific names to assess how authors have assigned them, and curate a list of Australasian mammal names so that mammal researchers and others can easily keep up-to-date with new and accepted species descriptions and their correct names. This list is published by the Australian Mammal Society (AMTC The Conversation). The AMTC continues to review research on mammal taxonomy in Australasia as it is published and to amend this list.

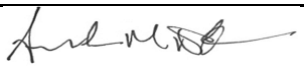
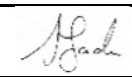
When assigning scientific names to animals, the focus should not be on a population of interest in a particular place (e.g., the dingo in Australia). Instead, taxonomists must consider the whole group (such as a lineage or clade), examine where major genetic and morphological differences lie, and decide whether the proposed species boundaries are consistent with the accepted level of distinctiveness between animal species. Dog taxonomy and breed origin is of great interest globally, and researchers around the world have sequenced hundreds of ancient and modern canid (dog family) mitochondrial and nuclear genomes in recent years. Robust analyses of nuclear genome data indicate that all *Canis familiaris* dogs can be split into three major ancestral lineages: a western Eurasian lineage (including European dogs such as the Labrador retriever, Middle Eastern, and African dogs, such as the basenji); an east Asian lineage (including Asian village dogs, some Chinese breeds, New Guinea singing dogs and dingoes); and an Arctic lineage (including Alaskan malamutes and Siberian huskies) (Bergstrom et al. Science (Fig. 5)) (the phylogenetic species concept). These analyses reveal that the dingo is not more genetically distinct than any other ancient dog variety. For example, Siberian huskies are also ancient (Dog ancestry) and are just as genetically distinct as dingoes, so both of these are placed in *Canis familiaris*. Dingoes can and do breed with dogs in these lineages and produce viable offspring (the biological species concept).

Modern techniques allow all dog breeds / populations to be genetically distinguishable; however, that does not mean that they are different enough to be recognised and named as separate species. Organisms show genetic clustering at a range of levels including family groups (shallow difference), to populations, subspecies, species, genera (deeper difference), and so on. Dingoes are genetically distinguishable from Australian dogs of European origin. However, genetic or morphological distinction does not necessarily mean that a group is different at the species level. If this were the sole criterion and taxonomists applied a pure phylogenetic species concept, each diagnosable dog lineage would be considered a separate species, which would be biologically unsustainable and not meaningful. The difference between Australian dogs of European origin and dingoes is at the population level, consistent with the accepted time that the dingo arrived in Australia, 3000 - 3500 years ago (Dates on dingo bones). Speciation in vertebrates typically takes more than a million years, and rarely tens of thousands to hundreds of thousands of years.

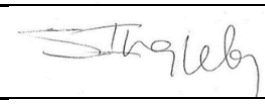
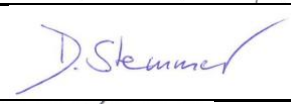
The name and distinctiveness of the dingo (nomenclature and taxonomy) is a separate issue to its ecological and cultural role. AMTC members (signed below) agree with the IUCN Canid Specialist Group and most Australian mammal ecologists that dingoes often provide critical ecological roles as apex predators, and also have important cultural roles. However, many taxonomic groups below species level are recognised, valued and conserved around the world. Naming the dingo as a separate species should not be necessary to protect it and recognise its value to Australians, and to species and ecosystem conservation.

Signatures

AMTC Steering Committee:

Diana Fisher: AMTC Chair, University of Queensland & IUCN Australasian Marsupial & Monotreme Specialist Group co-chair	
Andrew Baker: Queensland University of Technology & Queensland Museum	
Kenny Travouillon: Australian Mammal Society President & Western Australian Museum	
Greta Frankham: Australian Museum	
Mark Eldridge: Australian Museum	
Stephen Jackson: Australian Museum	
Linette Umbrello: Queensland University of Technology & Western Australian Museum	
Tyrone Lavery: University of Melbourne & Queensland Museum	

AMTC Members:

Vera Weisbecker: Flinders University	
Sandy Ingleby, Australian Museum	
David Stemmer, South Australian Museum	
Matthew Phillips, Queensland University of Technology	
Peter Menkhorst, Museums Victoria	
Michael Archer, University of New South Wales	
Kevin Rowe, Museums Victoria	

Suzanne Hand, University of New South Wales	
Natalie Warburton, Murdoch University	
Kristofer M. Helgen, Australian Museum Research Institute	
Steven J. B. Cooper, South Australian Museum	
Teigan Cremona, Charles Darwin University