ESRM 350

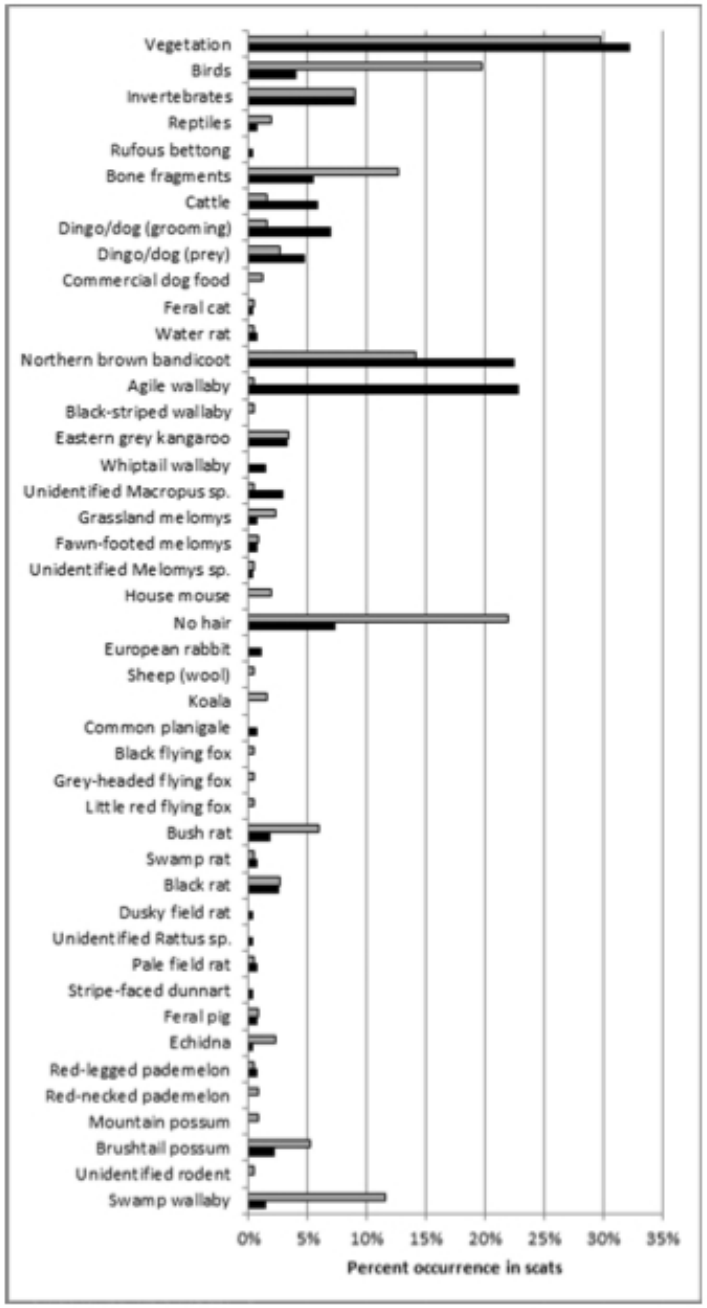
Discussion Section

Autumn 2016

The Dingo:
Baby stealing pest or keystone species?

What is a Dingo?

- 10-15 kg (20-35 lb) canid predator (*Canis dingo*)
- Hunts alone or in packs; can kill large prey (e.g., kangaroos)



- Diet is broad, includes vegetation
- Varies among individuals; regionally

Figure 2. Comparison of food items (% occurrence) found in wild dog scats from north Queensland (NQ, black bars) and south-east Queensland (SEQ, grey bars), 2013–2015.

Allen et al. (2016) *Scientific Reports*

The Story of the Dingo, So Far…

Dingo arrival at least 3500-4000 years ago

Most likely route via Asian seafarers

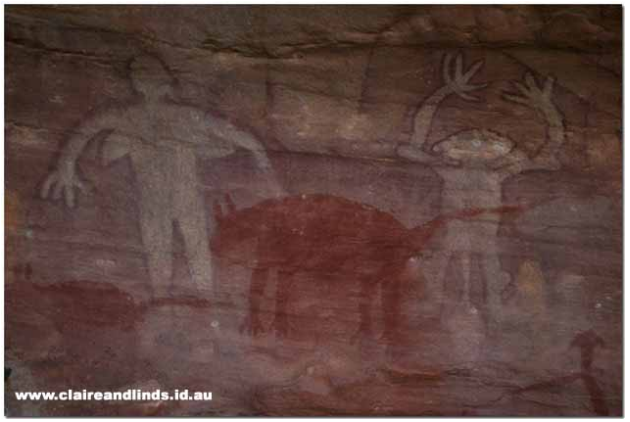
Thai dingo, which has similar morphology to the Australian dingo (source: L. Corbett).

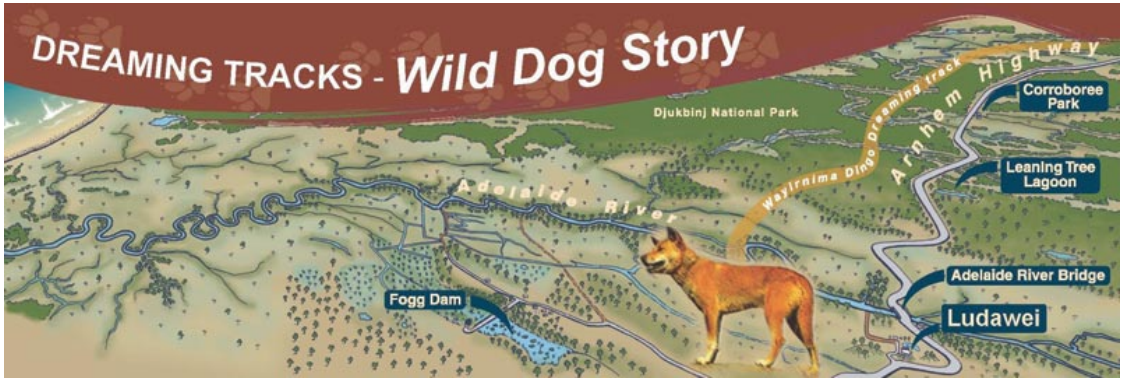
Australian dingo
(*Canis dingo*)

Sources: Google Images

The Story of the Dingo, After Arrival

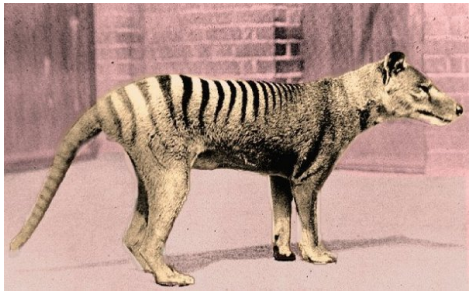
- Companion (hunting and warmth), food source (water)
- But, they soon became feral and occupied every habitat on the mainland





The Story of the Dingo, Post Dispersal

Result of dispersal = extinction of the thylacine, devil and native hen on mainland



Sources: Google Images

A Threat to Livestock

Thompson (1992) *Wildlife Research*

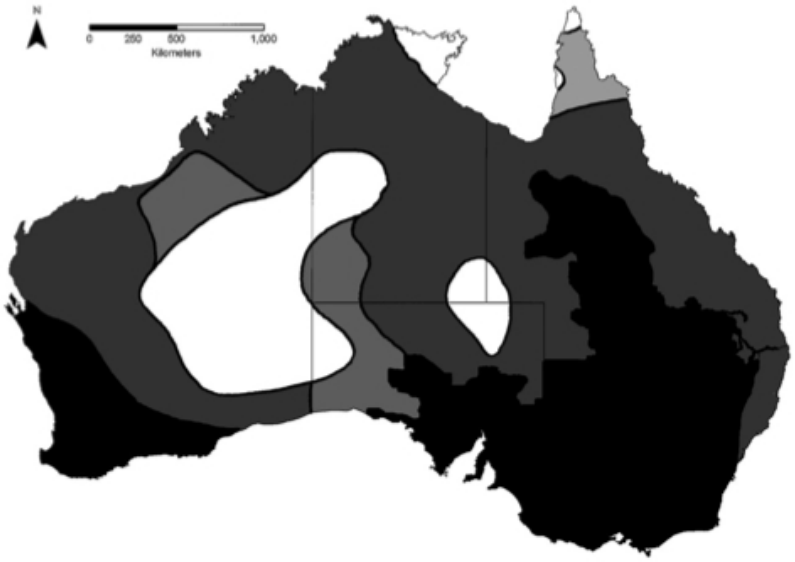


Figure 1. Historical and current distributions of sheep and cattle grazing. White, no/negligible sheep or cattle grazing; pale grey, currently grazed by cattle; medium grey, historically grazed by sheep, then by cattle, currently by neither; dark grey, historically grazed by sheep, currently cattle; black, continual sheep grazing, with recent changes to mixed sheep/cattle grazing and cropping in many areas. Many coastal areas, such as those in south-eastern Australia, historically and currently contain mixed land use, including grazing, that is not explicitly identified here. (Adapted from Allen[5].)

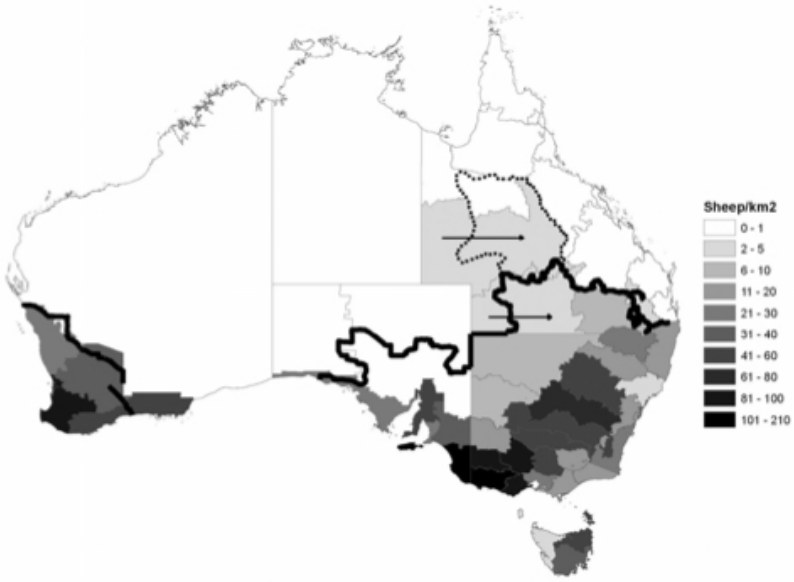


Figure 2. Distribution and density of sheep in 2010. Solid black lines, current alignment of the dingo barrier fence; broken line, former alignment of the dingo barrier fence; arrows indicate that most sheep flocks shown outside the dingo fence should correctly be shown as being inside the fence; administrative boundaries indicate the current Natural Resource Management Regions. (Originally from Australian Bureau of Statistics data, but adapted from: Meat and Livestock Australia. *Australian red meat 2000–2010: a turbulent decade – a vibrant industry*. MLA, Sydney, 2011.)

Allen and West (2013) *Australian Veterinary Journal*

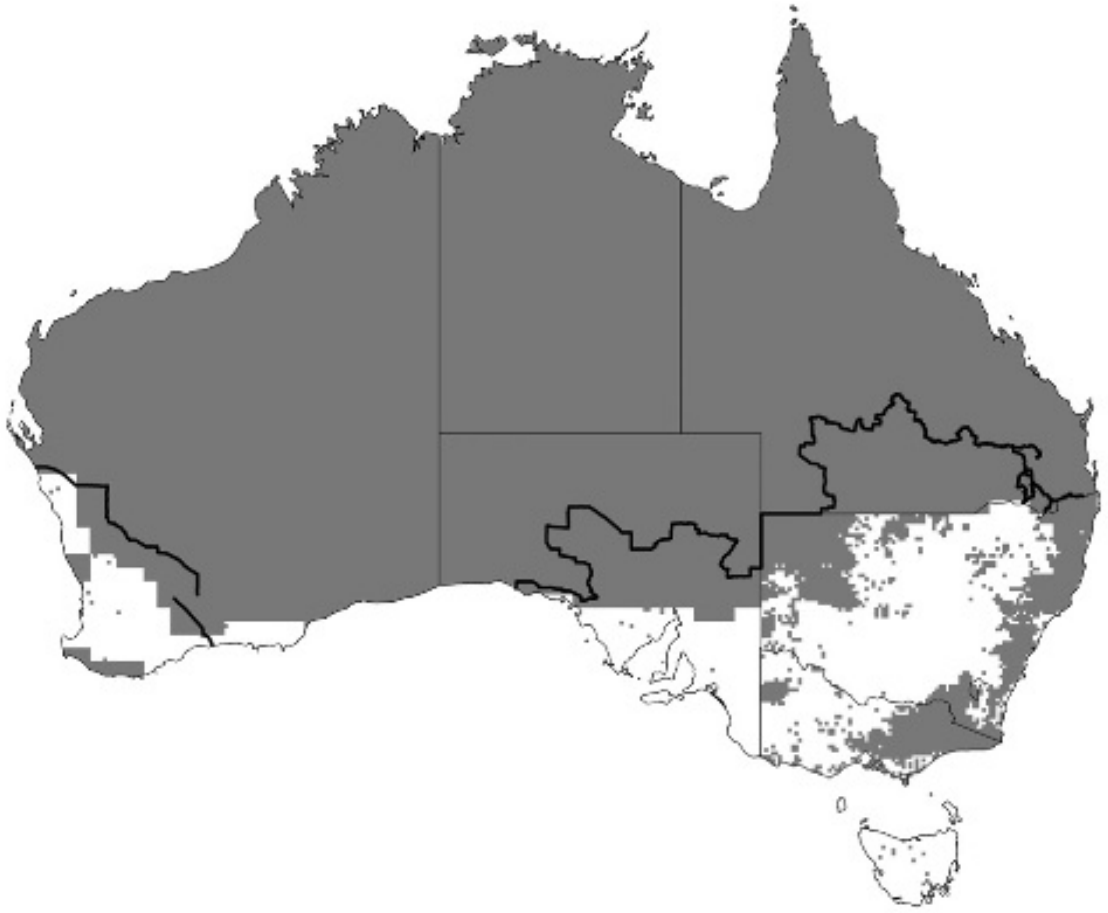
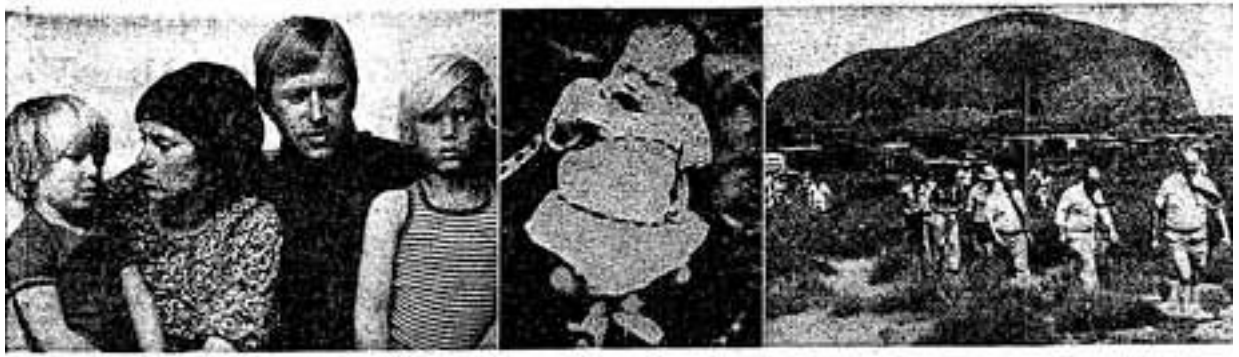


Figure 3. Distribution of dingoes (*Canis lupus dingo*) and other wild dogs (*Canis* spp.) in Australia. Gray, present; white, absent (Source: Invasive Animals Cooperative Research Centre, 2012).

Allen and West (2013) *Australian Veterinary Journal*

Dingo Control

A Threat to Humans?



The Chamberlains (with sons, left) say a dingo took baby Azaria (centre) near Ayers Rock where (right) coroner's men investigate

Lost baby riddle of Ayers Rock grips Australia

from ANNE CHISHOLM in Melbourne

A CORONER'S inquest at Ayers Rock, the great landmark in the red heart of Australia, is investigating the bizarre disappearance of a nine-week-old baby girl.

Her parents, Michael Chamberlain, 32, a minister in the Seventh Day Adventist Church, and his wife Lindy, 31, maintain that their daughter Azaria was taken from their tent by a dingo, or wild dog, at a campsite near the rock on the evening

drove south from their home in Mount Isa, a Queensland mining town, to Ayers Rock during the school holidays last August. The Chamberlains are experienced campers and soon had their small blue and orange tent set up.

They were at the campsite for the sunset, when the rock's amazing colours changed from orange to red, purple, and finally black. They were thinking about dinner when they saw a dingo, later described by

impossible. That part of this does not happen.'

Judith West, another camper who had told the Chamberlains earlier of an incident when her 12-year-old daughter had been approached by a dingo, thought she heard a sound like a dog growling. Then, she said, she heard Lindy Chamberlain cry out: 'My God, the dingo's got my baby.'

Four hours were spent in a desperate search by other

the Chamberlains have remained outwardly calm.

They are always smartly dressed for their public appearances. Both are good-looking. Michael tall and blond, Lindy small, dark and pretty.

Rumour soon started. Spots of blood of the same group as Lindy Chamberlain (and 10 per cent of the population) were discovered in a cave. Then, on 24 August, a tourist found Azaria's blood-stained baby clothes at the

Preliminary examination suggested that cuts in the jumpsuit had been made by a blade, not animal teeth.

The inquest was adjourned for further forensic tests. These have included stuffing a similar jumpsuit with soft material and dragging it along the ground and feeding a dead kid goat dressed in baby clothes to a dingo in the Adelaide Zoo.

At the inquest last week forensic experts said no dingo hair or saliva was found on

protect on the clothing if it had been dragged through the scrub.

On Friday, a specialist doctor told the court he found two small holes near the neck of the baby's vest. He said they could not have been made by a dingo's teeth.

The Chamberlains, after death threats and harassment, have been forced to move from Mount Isa to Newcastle, New South Wales. Lindy Chamberlain told a magazine reporter recently that their life had become

https://www.youtube.com/watch?v=VKxiqa6kdrI

Meanwhile…

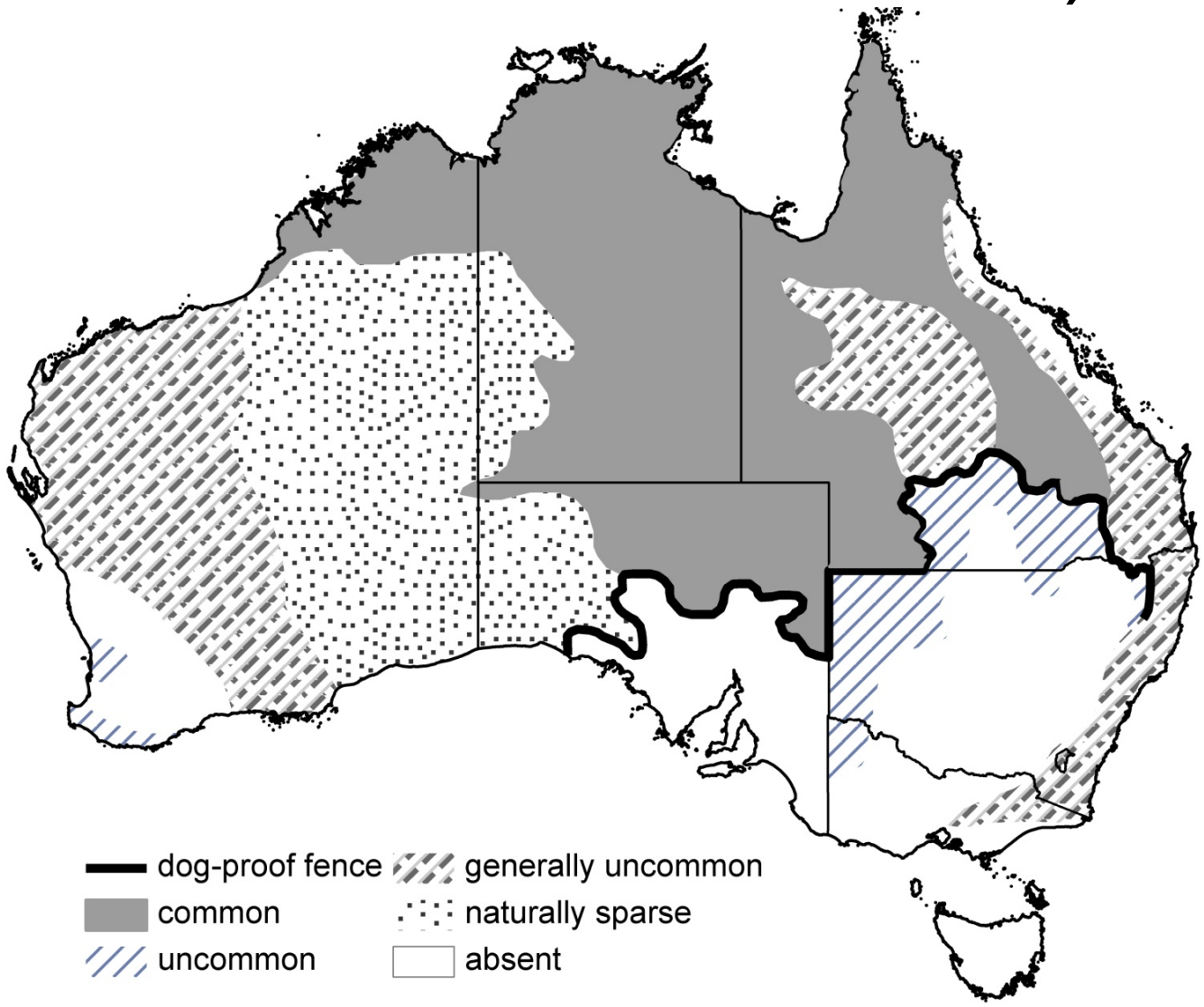
- Dingoes became new top-order predator (excluding humans)
- Native prey developed anti-predator strategies
- Extinction rate low (virtually none) (co-evolution for a few thousand years)
- But, what happened next ...

The Story of the Dingo, after European Settlement

- Arrival of Europeans – well known impacts (e.g habitat clearing)
- Important to note – introduction of pests (e.g. foxes, cats and rabbits)
- At least 22 mammal extinctions (highest rate in the world)
- How does this relate to dingoes?

Sources: Google Images

The Story of the Dingo, Now (after control and exclusion)



Source: Modified after Fleming et al 2001

Letnic et al. (2012) *Biol Rev*

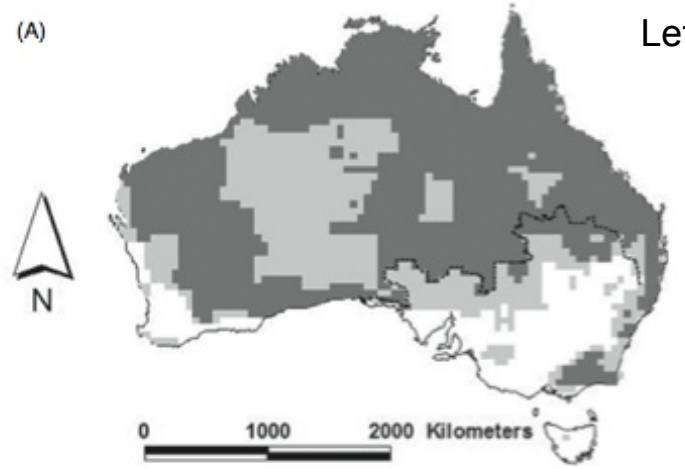


Fig. 1. A map (A) showing the route of the dingo fence (dashed line) through Australia and areas where dingoes and wild dogs are common (dark grey), rare (light grey) and absent (unshaded). Dingoes were never present on the island of Tasmania but feral dogs now exist there. Distributions are derived from maps published by the Australian Natural Resources Atlas and the National and Water Resources Audit (http://www.nlwra.gov.au/national-land-and-waterresources-audit/atlas, viewed 11th May 2011). (B) The dingo fence in the Strzelecki Desert on the border of New South Wales and South Australia. The specifications of the fence vary along its length, at this point the fence is approximately 2 m tall and is normally impenetrable to dingoes, foxes, kangaroos, rabbits and small mammals.

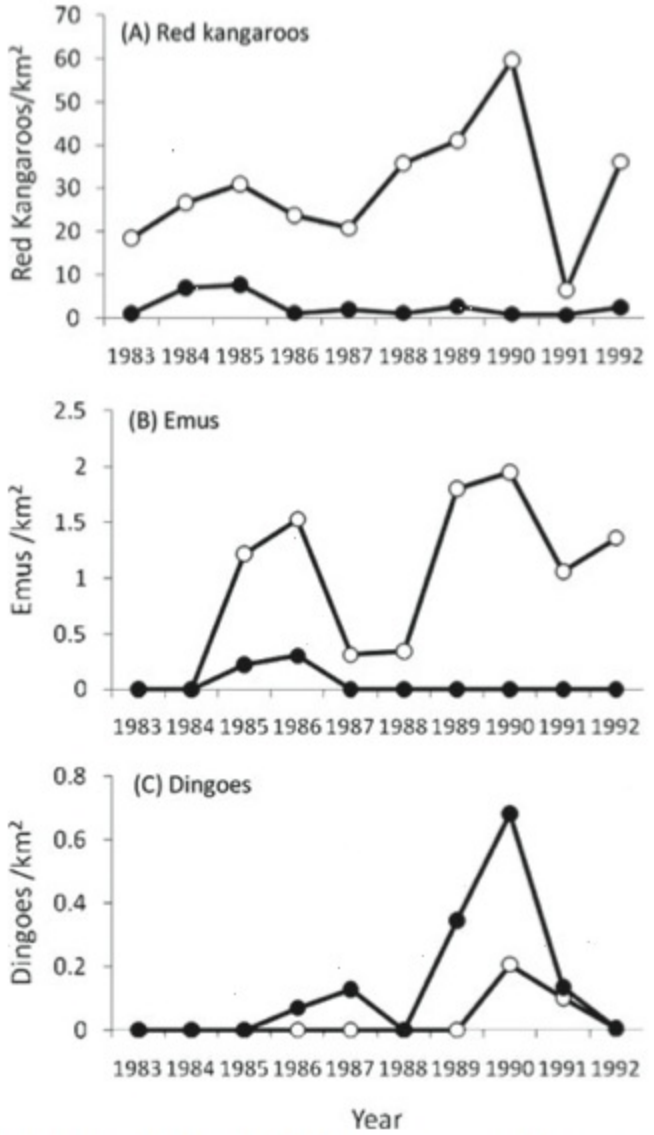
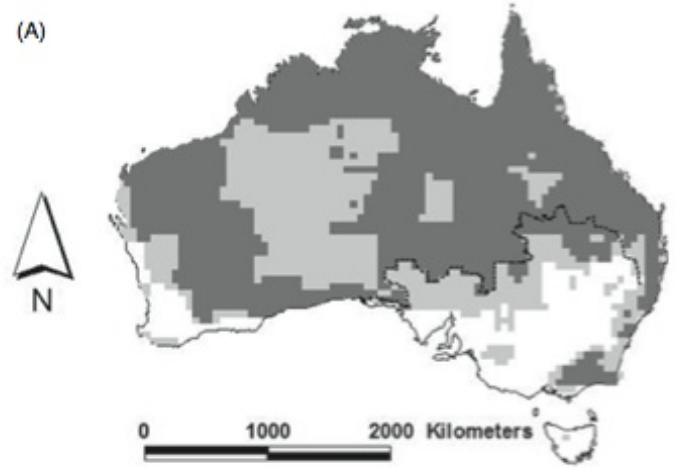


Fig. 2. The density of (A) red kangaroos, (B) emus and (C) dingoes at sites on either side of the dingo fence during aerial surveys conducted in north-eastern South Australia between 1983 and 1992. The symbols denote sites where dingoes were common (shaded symbols) and rare (open symbols). Fluctuations in kangaroo and emu abundances appeared to be dampened in the presence of dingoes, suggesting the existence of top-down regulation by dingoes. (Adapted from Fig. 3, Pople *et al.*, 2000).



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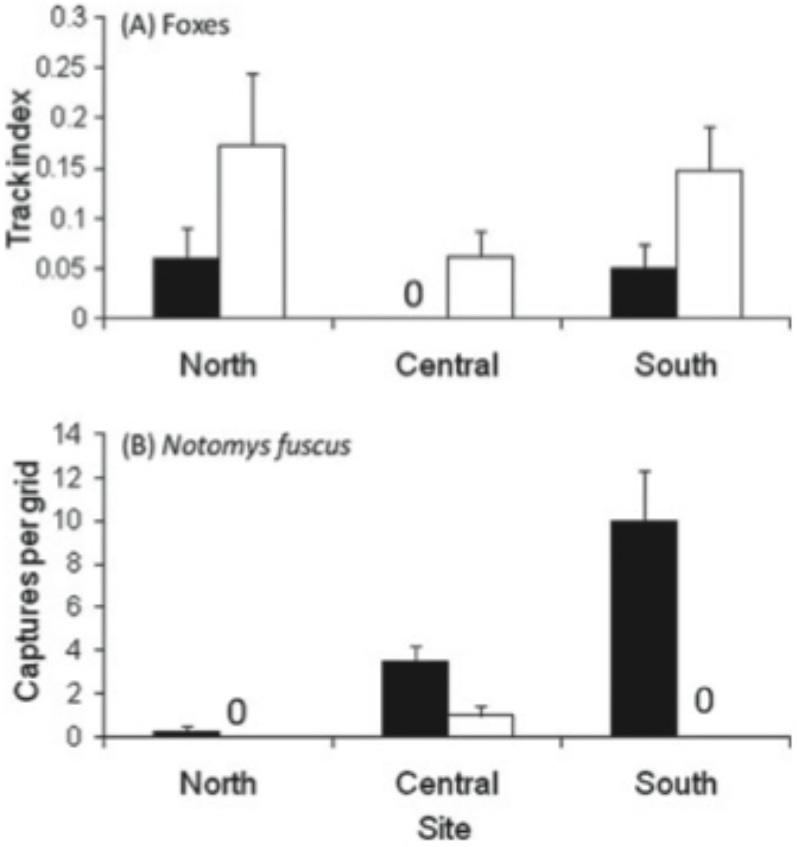
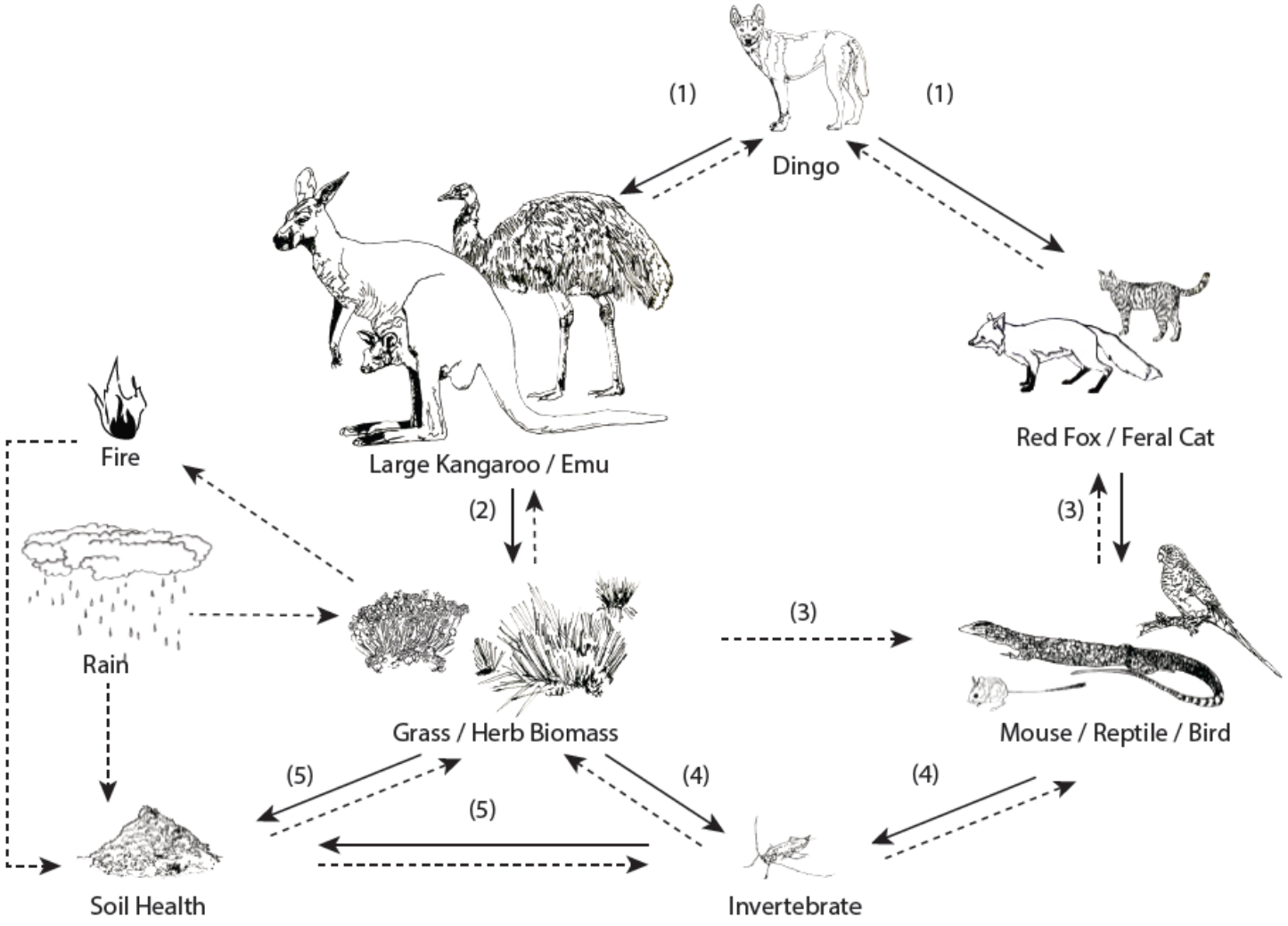


Fig. 4. Indices of the abundance of (A) red foxes *Vulpes vulpes* and (B) dusky hopping mice *Notomys fuscus* at three locations (north, central, south) in the Strzelecki Desert, central Australia. Data are means + 1 standard error. Open bars represent sites where dingoes were absent, shaded bars indicate sites where dingoes were present, and 0 indicates no activity recorded (source, Letnic *et al.*, 2009*a*). Foxes were less abundant and hopping mice were more abundant in the presence of dingoes.

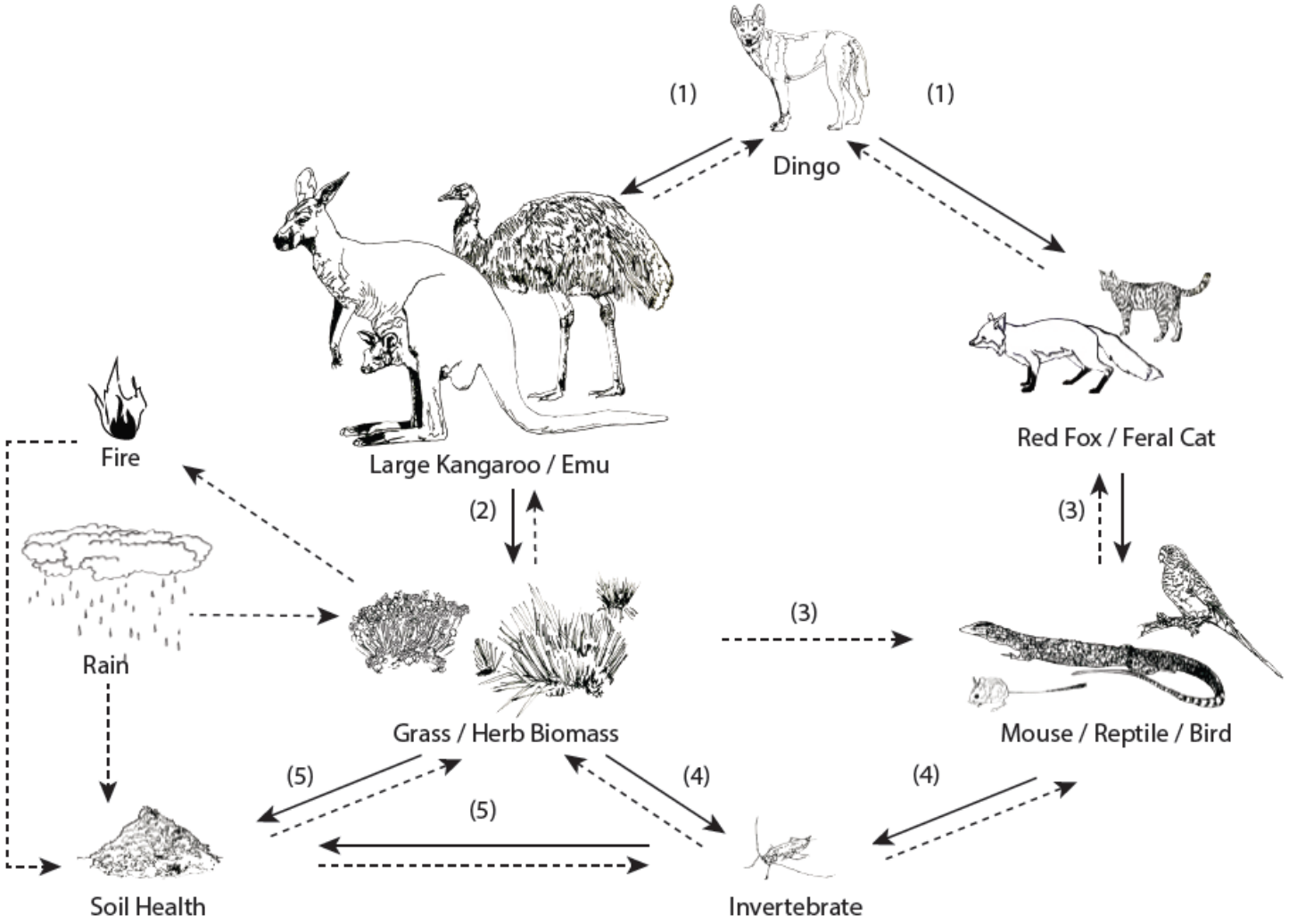
Letnic et al. (2012) *Biol Rev*

Evidence to Support Positive Management of Dingoes



Are Dingoes a *Pest*?

Or a *Keystone Species*?



So, Where Do We Go From Here?

Restoration Ecology
THE JOURNAL OF THE SOCIETY FOR ECOLOGICAL RESTORATION

OPINION ARTICLE

Resolving the value of the dingo in ecological restoration

Thomas M. Newsome[1,2,3], Guy-Anthony Ballard[4,5], Mathew S. Crowther[1], Justin A. Dellinger[6], Peter J. S. Fleming[4,7], Alistair S. Glen[8], Aaron C. Greenville[1], Chris N. Johnson[9], Mike Letnic[10], Katherine E. Moseby[11,12], Dale G. Nimmo[13], Michael Paul Nelson[2], John L. Read[11,12], William J. Ripple[2], Euan G. Ritchie[13], Carolyn R. Shores[6], Arian D. Wallach[14], Aaron J. Wirsing[6], Christopher R. Dickman[1]

There is global interest in restoring populations of apex predators, both to conserve them and to harness their ecological services. In Australia, reintroduction of dingoes (*Canis dingo*) has been proposed to help restore degraded rangelands. This proposal is based on theories and the results of studies suggesting that dingoes can suppress populations of prey (especially medium- and large-sized herbivores) and invasive predators such as red foxes (*Vulpes vulpes*) and feral cats (*Felis catus*) that prey on threatened native species. However, the idea of dingo reintroduction has met opposition, especially from scientists who query the dingo's positive effects for some species or in some environments. Here, we ask '*what is a feasible experimental design for assessing the role of dingoes in ecological restoration?*' We outline and propose a dingo reintroduction experiment—one that draws upon the existing dingo-proof fence—and identify an area suitable for this (Sturt National Park, western New South Wales). Although challenging, this initiative would test whether dingoes can help restore Australia's rangeland biodiversity, and potentially provide proof-of-concept for apex predator reintroductions globally.

Key words: Australia, *Canis dingo*, extinction, mesopredator release, top predator

Move the Dog-Proof Fence

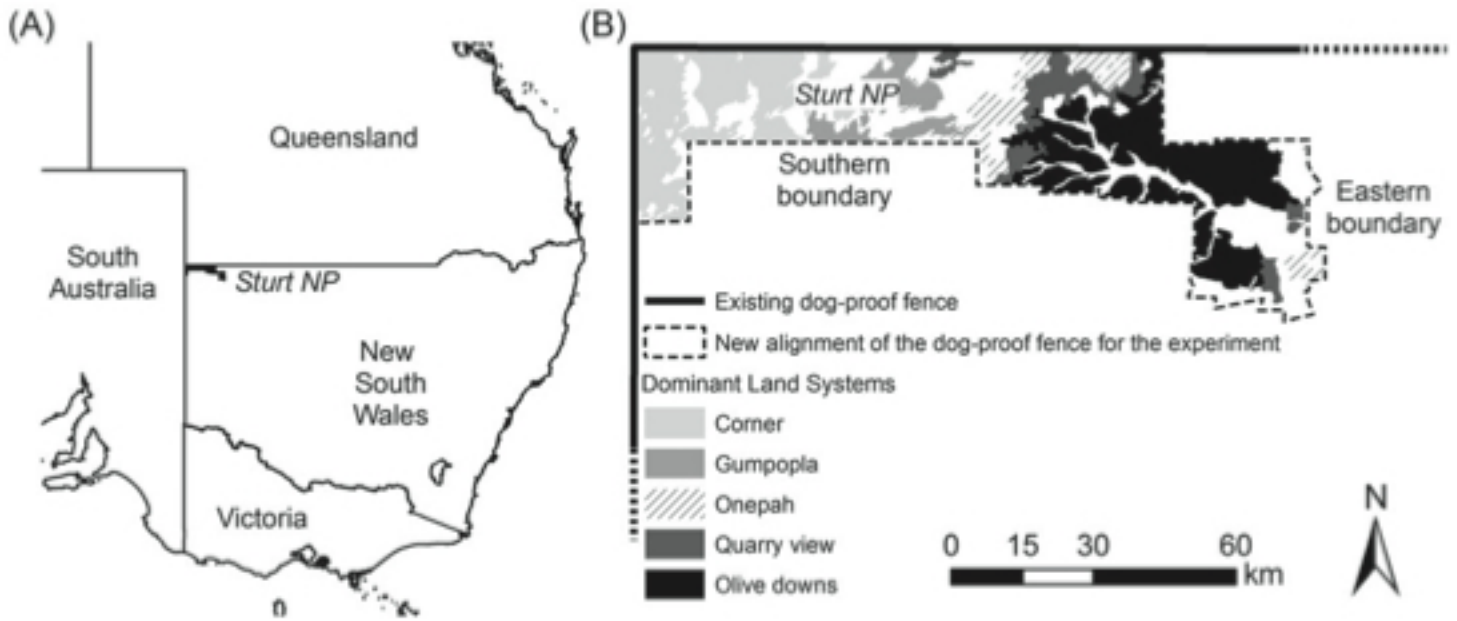


Figure 2. (A) Location of Sturt National Park in the Western Division of New South Wales, Australia and (B) dominant land systems (shaded areas) within the Park. Dingoes may recolonize or build up densities naturally from within the Park should the dingo (dog-proof) fence be realigned on the southern and eastern boundaries.

Newsome et al. (2015) *Restoration Ecology*

Selectively End Dingo Control