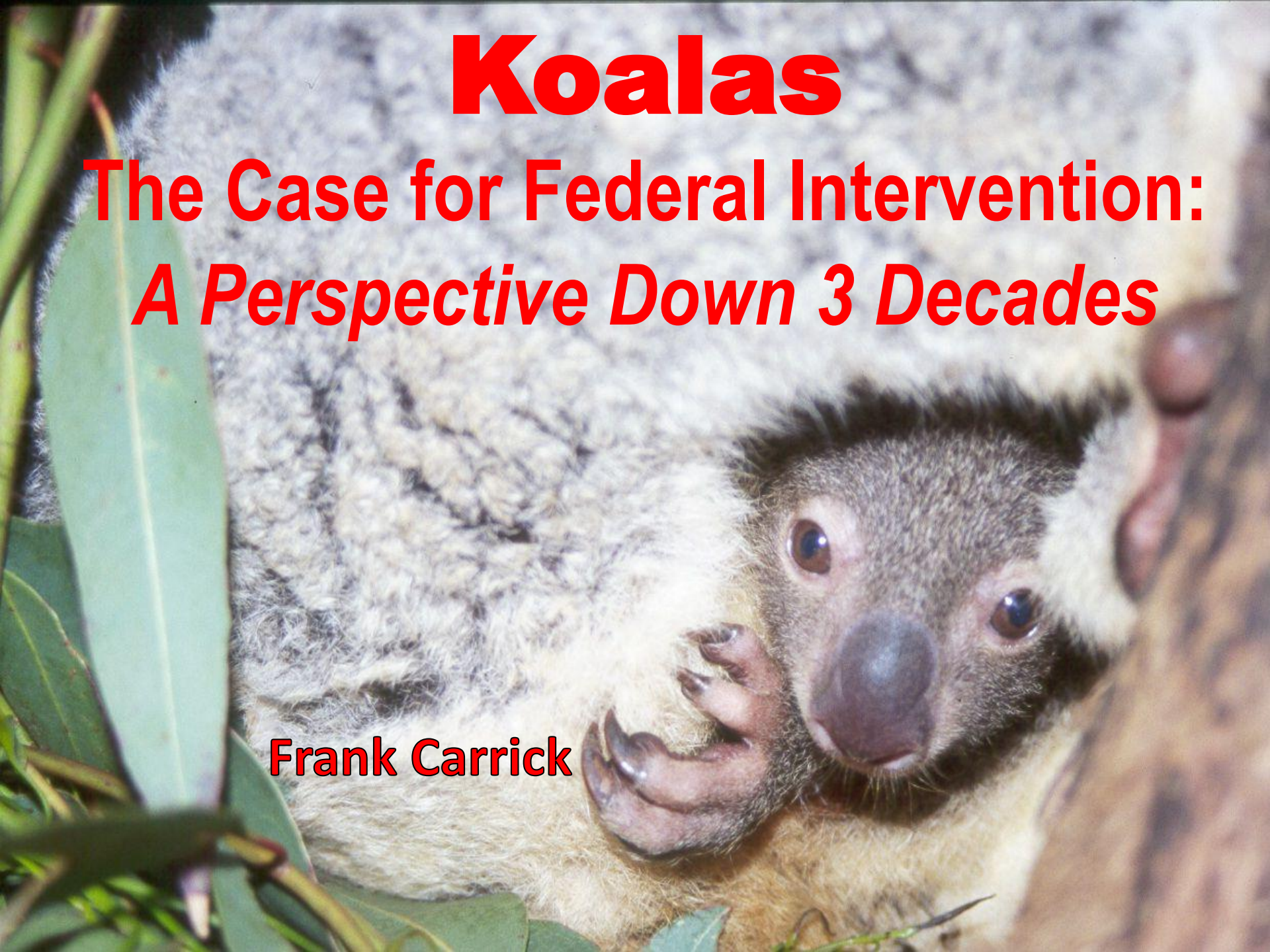


Koalas

The Case for Federal Intervention: *A Perspective Down 3 Decades*

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Senate Standing Committees on Environment and Communications

"Inquiry into the status, health and
sustainability of Australia's koala
population"

Key Issues for Consideration

Every complex problem has a simple solution – and it's always wrong!

Simple Solution 1: *Just move the Koalas.*

Firstly and most obviously – where do proponents suggest we move them to? In any case, as discussed below this is a prescription for hastening local extinction and is contraindicated for a number of reasons.

Simple Solution 2: *Set up Koala reserves to conserve the species.*

This is NOT what Biodiversity Conservation is about – reserves have their place as part of the conservation effort, but not to be effectively free range zoos. In any case for wide-ranging species like Koalas, even good quality Koala habitat has a carrying capacity of about 0.4 koalas per Hectare; thus to provide for the long term security of a regional population of about 10,000 individuals, some 25,000 Ha would be needed. This is for “good habitat” – in places where land would probably be proposed for “Koala Reserves”, it's more likely to have a carrying capacity around 0.1 Koalas per Ha; so 100,000 Ha would be required!

The Koala Sceptics

There are still lots of Koalas, so there's no problem!

Firstly, anyone who purports to give an accurate figure for the Koala population of Australia should be treated with deep scepticism (the data do not exist) – BUT this is not really the key issue: the population trend is far more important than absolute abundance and there are reliable data available. Apart from the abnormal southern populations in Victoria and South Australia, almost all other wild populations that we know about are in decline. Multiple local extinctions have been documented. Even for the “overabundant” Victorian and South Australian populations, there is emerging concern over their stability – demographically they require ongoing active management and signs of lack of genetic fitness are now showing up (Cristescu *et al.* 2009).

Conventional “Wisdom”?

There's no point reserving habitat (and preventing it's development making “megabucks”) – the Koalas will all be killed by cars or dogs. In any case they are all doomed by disease!

This is a significant departure from reality. The amount of habitat available to Koalas is the ultimate determinant of how many Koalas will survive in Australia – but although a necessary condition it is not sufficient by itself; mortality from vehicles , domestic dogs and disease are the major proximate causes of mortality. High speed, high traffic volume roads must avoid Koala habitat or be engineered to prevent Koalas being killed or injured; dog ownership must be controlled to prevent attacks; current and emerging Koala diseases must be managed. But the most strategically important requirement is for the Commonwealth to use it's power and influence to prevent further net loss and fragmentation of Koala habitat.

Doomed by Disease?!?

“Koalas are being infected with and they’ll be extinct in 10 years unless funding is provided to develop a vaccine.” If 1984 insert “Chlamydia” / if 1990 insert “Retrovirus”.

Actually the evidence indicates to me that Koalas have co-evolved with both chlamydiae and retrovirus for at least a few million years.

There is a difference between being infected and being sick.

Can these organisms lead to sickness and death in Koalas? In the case of chlamydial disease, certainly but NOT inevitably. In the case of KoRV probably yes, but situation is still being clarified (and more work needs to be done).

Would a vaccine solve the problem? This seems like a good idea for captive Koalas, but even if one could be developed in time (by no means assured given experience of lack of success with Trachoma and genital chlamydiosis vaccine development for people), there are major questions of logistics and even efficacy of use in wild Koalas.

“Oils ain’t oils”

The innately high carrying capacity habitats (mostly in the Urban Footprint) cannot be replaced with equal amounts of habitat in the generally more steeply sloping or higher elevation timbered areas outside the Urban Footprint

Mostly the reason that the latter areas still have trees is that they are pretty lousy for agricultural purposes

Opportunities for re-creating high carrying capacity Koala habitat should be sought in previously productive agricultural areas no longer viable for traditional primary production; possibly in association with “carbon offset” initiatives – NOT a “quick fix” but a possible part of a medium / long term solution

Koalas' Need for “Federal Intervention”

- Koalas too have been victims of “vertical fiscal imbalance”
- Commonwealth has been & shows signs of again being part of the problem & has rarely been an effective part of a solution
 - National Koala Strategy has been largely unknown or ignored – about as useful as the proverbial “teats on a bull”!
 - no significant Commonwealth Koala conservation funding for more than 2 decades
 - the recent dedication of 43Ha as Koala habitat in the Koala Coast by Peter Garrett is certainly very welcome, but it must be just the initial down payment

Failing the Common Sense Test

It is likely that $\sim 1/4$ to $1/3$ of ALL Queensland's remaining Koalas live in SEQ – the majority in the coastal areas. Most of the world's wild Koalas live in Queensland - thus a highly significant proportion of the national Koala population is in imminent threat of regional extinction from the dramatic declines documented or reasonably inferred

The picture for the rest of the national Koala population is none too rosy either – due to a variety of factors, similar to those in SEQ &/or associated with long term climate change &/or demographic and genetic instability:

- New South Wales has documented multiple local extinctions and recognises several presently endangered populations
- Instability of Victorian populations
- Extinction of original South Australian Koalas

How then can the documented ongoing and drastic declines and local extinctions of Koalas in most of the species' geographic range NOT be of “National Significance”? The present Commonwealth position totally fails the “Common Sense Test”!

The Scientific Advisory Committee of the Department of Sustainability, Environment, Water, Population and Communities has formed a view on the status of Koalas which I do not share but understand.

The Committee is hamstrung by process and precedent, but if the question concerning the Koala was put the other way around (which I believe would be consistent with the Precautionary Principle) - i.e. **“Is there compelling evidence that the Koala is NOT declining rapidly towards foreseeable extinction?”**, I believe the Committee members would be have to answer **“No”** and agree that there are insufficient data to be confident the process isn't well & truly underway!

For an internationally recognised faunal icon , at the very least this must obligate the Commonwealth Government to obtain effectively and rapidly the necessary information on the species' status.

And now for some background.....

Koala distribution is heterogeneous (patchy habitat)

**Northern Koalas –
Densest populations (even considering observer bias) in SE QLD and NE NSW**

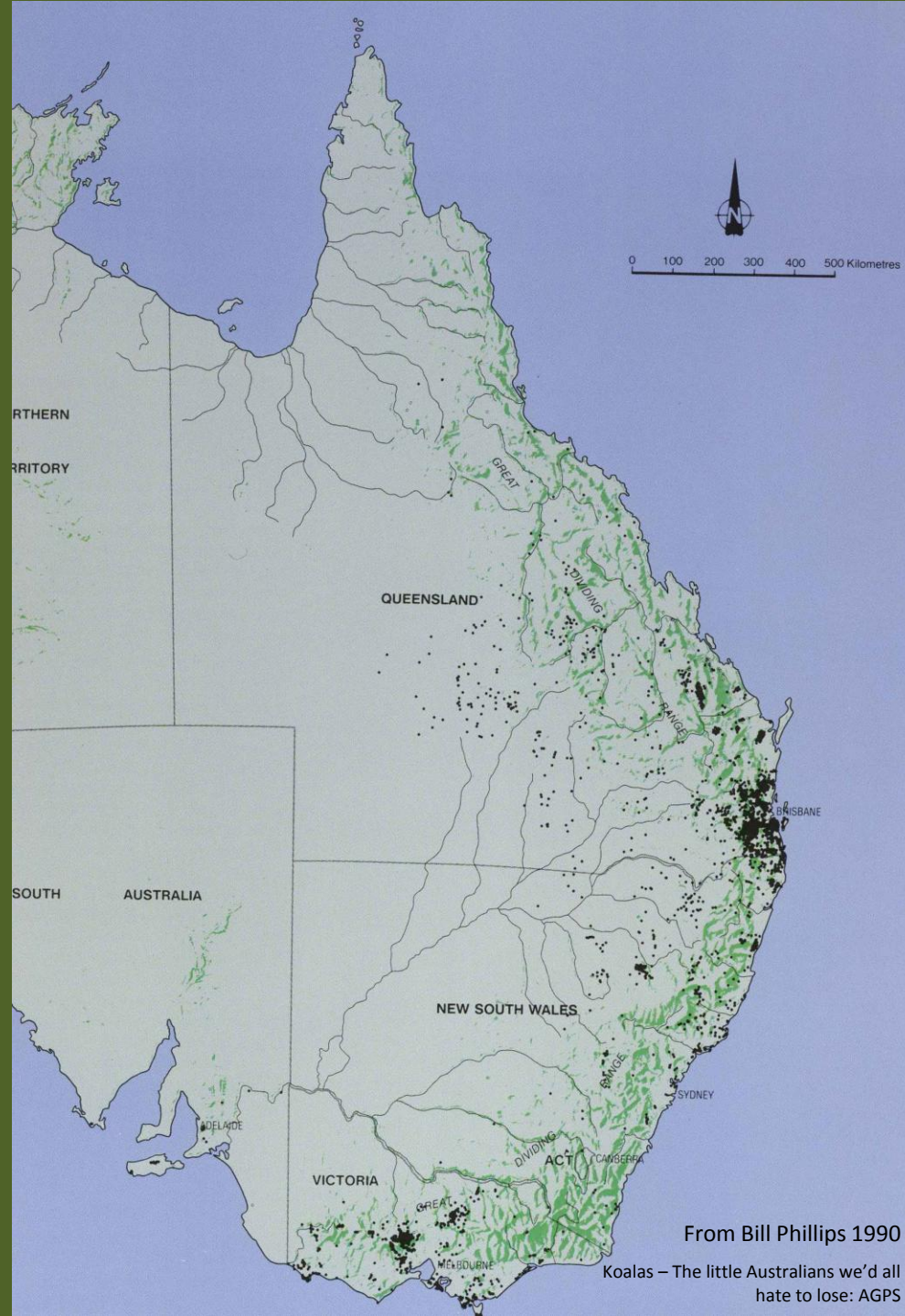
Highest rate of development pressure coincides

“Everyone” agrees Koalas in SEQ & NE NSW are declining

Southern Koalas – Proportionately greatest historic Koala habitat loss

**“Official VIC / SA view”:
overabundance is dominant problem**

Has this changed with recent catastrophic fires?

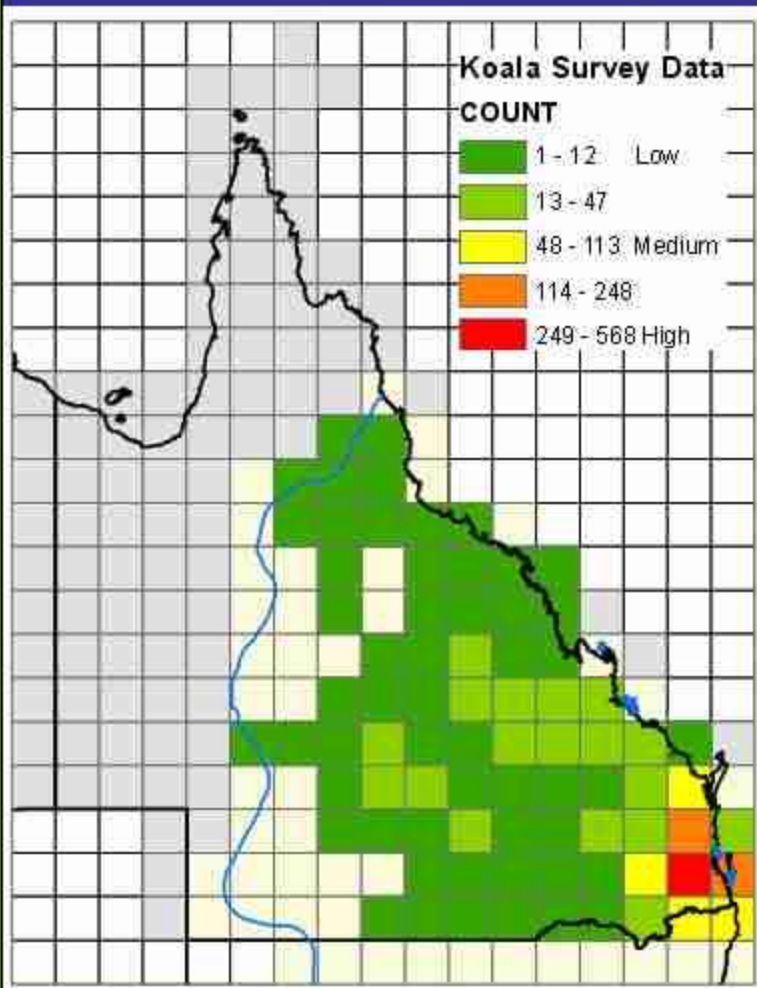


From Bill Phillips 1990

Koalas – The little Australians we'd all hate to lose: AGPS

Koalas in Queensland

Normalised koala national survey data



Normalised for human population –
Largest koala populations:

- South East Queensland (SEQ)
- Springsure (BBS)
- Clermont (BBN)
- Tambo, Backall (MGD)
- Eastern Mulgalands (ML)

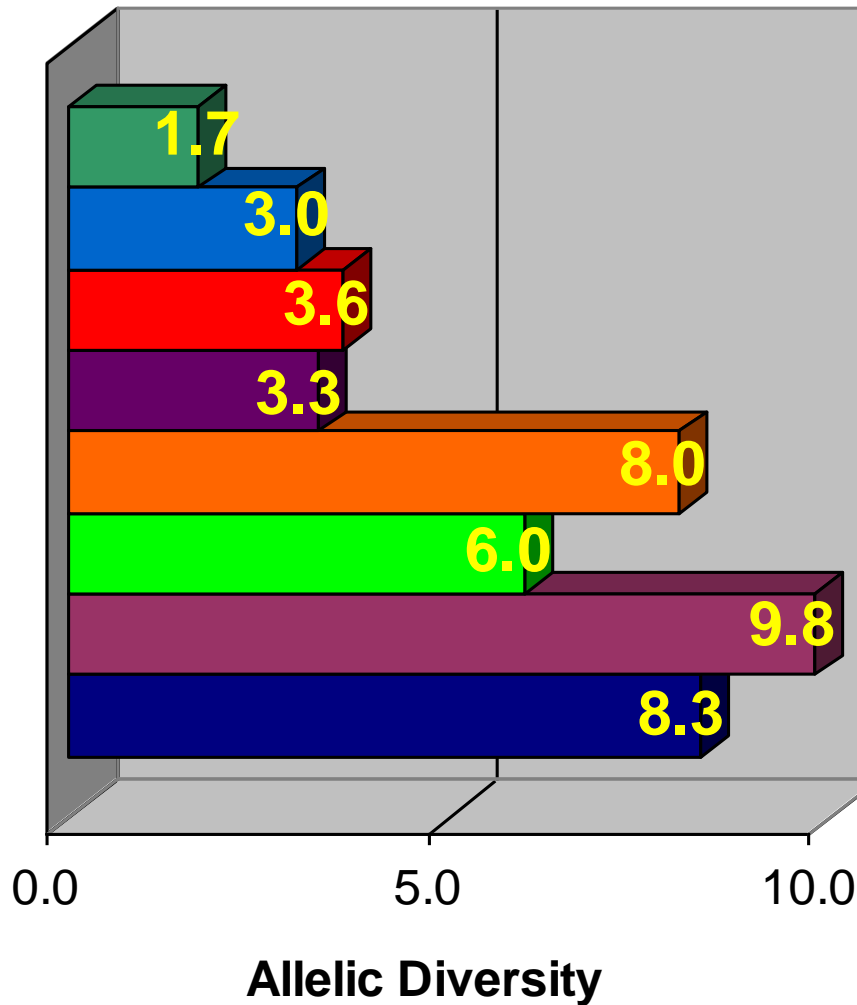
(Preece 2010)

SEQ is vital to Koalas – it is & probably always has been their stronghold!

“Real Koalas” Live up North!

Genetic Diversity

Near extinction (VIC) or complete extinction (SA) of Southern Koalas coupled with widespread translocation from genetically impoverished source populations has produced severe genetic homogenisation & loss of diversity. In QLD by contrast, even the small & artificially established St Bees Island population (small population & small island) has about twice the allelic diversity of the most diverse VIC population and is more than 3X as diverse as the much larger (population & island) Kangaroo Island population in SA



- Kangaroo Is SA
- French Is VIC
- Phillip Is VIC
- Brisbane Ranges VIC
- NE NSW
- St Bees Island
- SEQ
- Blair Athol

Major Threats to Koalas

Directly Controllable

Primary

Loss and fragmentation of habitat

Secondary

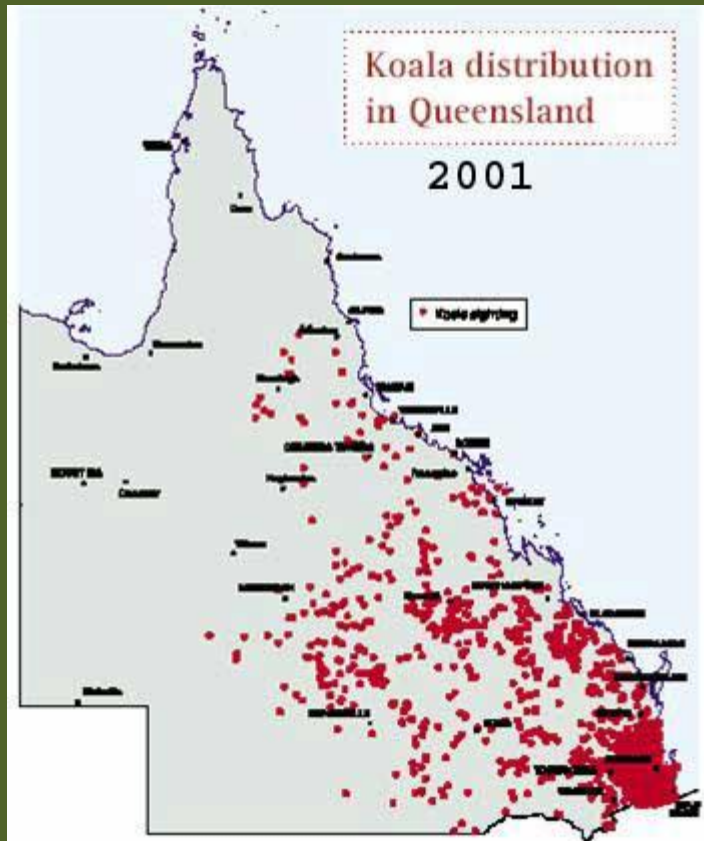
Vehicle injury and mortality

Attacks by domestic dogs

Infectious disease

No Range Contraction?

Technically true (hypothetical extreme below right would still qualify as the same range)
BUT there have been huge effects on distribution within range!



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?!*#!!!



In reality, Koalas have been lost from well over 50% of their national distribution in the last 200 years – probably only 8 - 15% of lowland forest in Southeast Queensland remains, for example

Management Implications

- The superficially seemingly reasonable but actually counter-productive approach of “let’s just move the Koalas” is fatally flawed
 - Current published evidence shows it actually increases mortality
 - Unless “new” habitat is created, it’s obviously a “zero sum game” (i.e. just “shuffling the deckchairs on the *Titanic*”)
 - Contraindicated by genetics in most circumstances – translocating coastal Koalas to sites West of the coastal ranges or *vice versa* is especially unwise

Motor Vehicle Trauma

Mother killed on road at Victoria Point – baby survived, was rescued, hand raised and released back to the wild



Domestic Dog Attacks



Infectious Disease



Chlamydial keratoconjunctivitis

A Few Words About Disease

Even though largely secondary to the other threats, infectious disease can be devastating

Most morbidity & mortality due to bacteria in Family *Chlamydiae*

Affects eyes, urinary tract, reproductive tract, respiratory tract

Treatable – particularly effective for eye disease

Infection often manifests as disease following habitat destruction (e.g. documented following Ney Road residential development, construction of Moreton Bay Road)

Almost all Koalas are infected with Koala Retrovirus

Other Major Threats to Koalas

Can't be Controlled but MUST be Managed

- **Stochastic Events**
 - Bushfire
 - Flood
 - Storm
- **Climate Change**
 - Exceeding Physiological Limits
 - Coastal Inundation
 - Increased Frequency & Severity of Stochastic Events
 - Emerging Diseases

There are robust methods for estimating Koala abundance but all are resource intensive

Koala Coast: Strip Transects 4695 ha searched: 1792 koalas

Pine Rivers: Line Transects 64 km searched: 82 koalas

(Dique *et al.* 2004)

“Indirect” methods (including pellet surveys with rigorous calibration – Sullivan *et al.* 2002) may be applicable for low density populations

More generally, indirect methods (including detection of faecal pellets) can certainly be used to determine Koala presence (though not absence unless stringent criteria are developed); they may have a role in ground-truthing of predictive mapping and establishing distribution

Without extensive controls – which are heavily site dependent - that’s about all they can validly achieve

Definitely cannot be used to establish dietary preferences

Generally can’t estimate abundance without extensive site specific calibration

(Ellis *et al.* 1998)

Global Financial Crisis & Defence White Paper 2009

- Proposed selling off of “surplus” defence lands
- ADF has some of best biodiversity left in Australia – paradoxically much in military training areas and weapons ranges
- Also a variety of other land assets
- The Commonwealth must not be allowed to dispose of such assets without assessing and protecting biodiversity (particularly Koala habitat) values

What's in a name?

Current classification of Koalas as “State-based” arbitrary subspecies not supportable

- *Phascolarctos cinereus cinereus* – NSW
- *P. c. adustus* – QLD
- *P. c. victor* - VIC

But no real evidence for latitudinal cline either

Most likely there are 2 “subspecies”:

“Northern Koala” – *P. c. cinereus* – NSW & QLD

“Southern Koala” – *P. c. victor* – VIC & SA

I believe that technically it is open to the Commonwealth to recognise the current taxonomy and treat the species as consisting of 3 sub-species and thus treat the Queensland and New South Wales populations in one way and the Victorian and South Australian populations differently.

So What?

- It is abundantly clear that the coastal populations of “Northern Koalas” are in drastic decline – NSW has documented a series of local extinctions & QLD is on the verge of repeating this folly unless drastic action is taken.
- Management of “Southern Koalas” is driven by previous extreme habitat loss and unintended outcomes of translocations.
- In different ways, the 2 basic kinds of Koala are “Conservation Dependent” – the definition in the EPBC Act should be amended to take account of this reality.
- **Most importantly there is a sensible basis to recognise 2 kinds of Koalas (“Northern” & “Southern”) facing different key threatening processes & requiring quite different Commonwealth actions!**

Conservation Status of “Northern Koalas”

- It is clear that the 2 coastal SEQ populations for which we have unequivocal data (Koala Coast and Pine Rivers) meet the criteria for classification as “Endangered Wildlife” under the Nature Conservation Act and similar trends are evident in the Gold Coast and Sunshine Coast – the QLD Government should reclassify them immediately.
- The NSW Government has already classified a number of coastal populations as “Endangered” and the NSW Koala Recovery Plan recognises that changes to SEPP44 are required.
- The Commonwealth Government must urgently recognise the distinctiveness and decline of at least the QLD coastal populations (and by inference the coastal NSW populations as well – which are in evident decline on the North and Central Coast and almost extinct South of Sydney), reclassify them as “Critically Endangered” or “Endangered” as appropriate, so as to provide them with the protection of the EPBC Act.

What can the Senate Inquiry do to help Koalas?

Even though our knowledge may be incomplete, I believe that there is ample evidence to demonstrate that the species is in serious decline; the Inquiry should not be distracted by the situation of the abnormal populations in southern Australia.

I sincerely hope that a determination by the Committee of the dire situation facing Koalas can overcome the current impediments to Commonwealth action.