Submission to the NSW Koala Strategy

To understand how to effectively manage koala populations into the future, some understanding of population dynamics prior to and since 1788 need to be understood. The *Complete Book of Australian Mammals 1983,* edited by Ronald Strahan, notes:

There is considerable evidence that, prior to European settlement, and particularly in areas of dry sclerophyll and woodland, koalas were under great predatory pressure from Aborigines (who took them in the trees) and dingoes (which took them on the ground). As Europeans took over the land for agriculture and grazing, those Aborigines who were not killed or displaced had their diet largely changed towards the European pattern. Much effort was directed to reducing the numbers of dingoes and, with the reduction of these two predators, koala populations began to increase. The habitat available to them had been reduced by forest clearing but it seems that, in what remained, their density increased to the point where it became economic, towards the end of the nineteenth century, to establish a trade based on their skins.[1]

Following the arrival of the First Fleet, koalas were not immediately found.

Though the First Fleet arrived at Sydney in January 1788, it was not until some 15 years later – August 1803 - that a Koala was brought in for detailed scientific description.[2]

In less than 100 years, in parts of eastern Australia, the koala population had exploded and millions of koalas were killed for the fur trade. In the early part of the 20th century, a factory at Wyndham in southeast NSW processed koala skins.

A current resident of Wyndham was told by her grandmother, that one morning, on her way to school in Wyndham, she had counted 92 koalas. The distance of her journey is not known. The Bega Valley also recorded extraordinarily high numbers of koalas over a century ago.

Part of the rise in koala numbers appears to have resulted from the increase in suitable browse, as changed land and fire management, applied stress to the remaining mature eucalypts across forests and woodlands occupied by koalas. The use of mature stressed eucalypts, continues in some areas today and high density koala populations, in some parts of Victoria, have applied such heavy browsing pressure to the host eucalypts, that the trees have died.

There are three photos in the *Explanation of Intended Effect: State Environmental Planning Policy No. 44 – Koala Habitat Protection*.[3] Those photos all show eucalypts, with crowns dominated by epicormic shoots. Not only are epicormic shoots generally favoured by koalas over mature leaves on healthy trees, the shoots grow from tree trunks and larger branches, making them much more accessible than branchlets in healthy crowns.

Photo D Lunny, OEH

Environment Minister Upton's press release on 26 February outlined the success of a GPS koala tracking study in Wingecarribee, as information was gathered to help improve koala management. Unfortunately, the radio tracking program undertaken in the NSW south coast forests during the 1990s, was terminated about 15 years ago, otherwise there would be more data on the browsing habits and population dynamics of the local koalas.

I recommend that the Environment Minister makes additional funding available to recommence the tracking program in south east NSW forests.

The Chief Scientist and Engineers report December 2016[4] states: *The Koala Advisory Committee has recommended more studies in areas where regeneration harvesting has been applied, or where it may occur into the future. This is to determine if regeneration harvesting and associated forestry practices in these forests impact on koala populations.*[3]

Given the recent dedication of the Murrah Flora reserves, which have a significant area of regeneration harvesting dating from the 1970s and 1980s, and given the survey results in the table below, **I recommend that the Murrah Flora reserves be included in the areas to be studied, to determine how past harvesting affects koala populations.**

If the table below is any guide, it appears that koala numbers have not been adversely affected in comparison to adjoining reserves.

Tenure	# sites	# trees searched	# sites with KFPs	Occ. Rate	95%CI
Biamanga NP	128	3840	9	7.03%	2.6-11.5%
Gulaga NP	8	240	0	0.00%	NA
Bermagui NR	38	1140	4	10.53%	0.7-20.3%
Mimosa Rocks NP	9	270	0	0.00%	NA
Mumbulla SF	176	5280	38	21.59%	15.5-27.7%
Murrah SF	55	1650	8	14.55%	5.2-23.9%
Bermagui SF	89	2670	3	3.37%	0-7.1%
Private Land	72	2160	2	2.78%	0-6.6%
Other Aboriginal Land	14	420	2	14.29%	0-32.6%
All National Parks	183	5490	13	7.10%	3.3-10.8%
All State Forests	320	9600	49	15.31%	11.3-19.3%
Total All Sites	**589**	**17670**	**66**	**11.21%**	**8.7-13.8%**

One of the key aspects of ensuring the long-term survival of the koala is to ensure that the geographical footprint of the species is increased. A paper published in 2012 Kavanagh and Stanton[3] provides direction on how this might be achieved. The study used radio tracking to establish the usage patterns of different types of habitat by koalas. The Summary of the paper states in part:

Revegetation within cleared farming landscapes offers the potential to restore habitat of many woodland-dependent species that have declined since European settlement. Most species of arboreal marsupials require hollows for breeding and diurnal shelter, a resource that is usually available only in old trees; however, this constraint does not apply to the Koala. In this study, we describe the occupancy and use of young (4- to 7-year old eucalypt plantations by Koalas in a predominantly cleared landscape used for intensive cropping and grazing.

Woodlot planting at operational scale (up to 400 hectares) was undertaken between 2001 and 2004, with a prime objective of assisting in the control of dryland salinity. The paper noted: *Despite the high degree of habitat loss and fragmentation on the Liverpool Plains, Koalas are still present in this landscape and the conservation outlook for this* species would be greatly improved if revegetation programmes were expanded in this region.

It is likely that similar revegetation programs in southeast NSW would assist in broadening the area of habitat available for koalas and assist in linking populations currently isolated by extensive tracts of agricultural land.

On 16 May 2012, the Narooma News reported: *A second grant of $2.821 million will rehabilitee strategic reaches of the Bega River valley, help return koalas to the valley by building a connected private land network of koala habitats using "koala carbon forests", enhance remnant grassy woodlands, and employ a local Koori ranger crew to maintain habitat corridors and support landholders managing for biodiversity.*

NSW environment minister Robyn Parker said the funding would support a six-year program linking national parks and reserves, state forests, Aboriginal lands and some privately held properties.

I recommend that a review of the outputs of this program be undertaken to gauge the effectiveness of this funding in enhancing koala habitat.

I recommend that plan underpinning the private land network be reviewed and additional funding be allocated to the project to extend the initial plantings.

I recommend that any planting program be overseen by an independent committee, with expertise in operational scale revegetation projects.

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References

1. Complete Book of Australian Mammals edited by Ronald Strahan 1983.
2. The Discovery of the Koala: Hat Hill (Mount Kembla), New South Wales 1803 by Michael Organ BSc Dip Arch Admin, 9 March 2006
3. Explanation of Intended Effect: State Environmental Planning Policy No. 44 – Koala Habitat Protection. NSW Government Planning & Environment Department 2016.
4. Report of the Independent Review into the Decline of Koala Populations in Key Areas of NSW. NSW Chief Scientist & Engineer December 2016.
5. Koalas Use Young Eucalyptus Plantations in an Agricultural Landscape on the Liverpool Plains, New South Wales by Rodney P. Kavanagh and Matthew A. Stanton. Ecological Management & Restoration Vol. 13 No. 3 September 2012.

Female Koala and Joey Murrah Flora Reserves (Formerly Mumbulla State Forest) 12 March 2016