

Submission
No 144

INQUIRY INTO KOALA POPULATIONS AND HABITAT IN NEW SOUTH WALES

Organisation: Timber NSW
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TIMBER NSW

2 August 2019

The Chair
Ms Cate Faehrmann MLC
NSW Legislative Council
Portfolio Committee No. 7 – Planning and Environment
Parliament House
Sydney NSW 2000

Re: Inquiry into Koala populations and habitat in New South Wales

(a) the status of koala populations and koala habitat in New South Wales, including trends, key threats, resource availability, adequacy of protections and areas for further research,

Koalas in New South Wales are widespread and occur naturally at low densities. Within New South Wales the koala is known to occur in over 750 different vegetation types (Office of Environment and Heritage - OEH, 2019a) and is known to use 137 different tree species (OEH, 2018a). Although widespread the koala is difficult to detect.

At the time of European settlement koalas were rare with few documented records (Gammage 2011; Jurskis 2015). Since European settlement koala populations have fluctuated greatly in response to changes in the way that forests and woodlands have been managed. In contrast to current populations, *P. cinereus* populations then had many more episodes of high mortality, population size appears markedly more volatile and overall abundance was much higher (Gordon and Hrdina 2005).

Around 100 years after European settlement koalas became super abundant. The most plausible explanation for this change is the disruption of Aboriginal fire regimes which led to mass eucalypt regeneration events and chronic decline of mature eucalypt trees in agricultural areas (Lunney and Leary 1988; Gammage 2011; Jurskis 2017). Eucalypt regrowth trees provide large volumes of soft young nutritious leaves in their expanding crowns¹, whereas declining mature trees continuously sprout and resprout nutritious and palatable epicormic² foliage (Jurskis 2017).

The harvest of koalas started in response to the great increase in abundance (Hrdina & Gordon 2004). At Bega in New South Wales, trade in koala skins was common from about 1870 through to possibly the early 1900s (Lunney and Leary 1988). Koalas were also

¹ The leafy part of the tree

² Leaves which sprout from buds on the trunk or limbs of a tree.

commercially harvested in the Pilliga. The trade in koala and possum pelts was regulated through seasonal controls and the issue of permits which specified harvest numbers. By the early 1900s the abundance of koalas in New South Wales had reduced. Koala abundance remained high in Queensland well after it had declined in the southern states (Gordon and Hrdina 2005). In Queensland, legislation to regulate the trade was introduced in 1906. After this date, the koala take ranged from about 450,000 to nearly 1,000,000 skins per season (Hrdina & Gordon 2004).

Crashes in koala populations have been attributed to a combination of over exploitation and drought. In New South Wales commercial harvesting ceased over hundred years ago. Droughts continue to this day. The Millennium Drought reduced the koala population in the Pilliga by 79% (Lunney *et al.* 2017).

In New South Wales today increases in koala numbers are isolated and infrequent. Eucalypt forests in decline such as those with Bell Minor Associated Dieback (BMAD) found around Urbenville and Woodenbong produce flushes of epicormic growth that support elevated koala numbers.

Concern about koala population decline is mostly focused on peri-urban areas. Along the eastern seaboard three koala populations have been formally listed as threatened under the Biodiversity Conservation Act 2016 - koalas in the Pittwater LGA (determined in 1998), the koala population at Hawks Nest and Tea Gardens (determined in 1999), and the koala population between the Tweed River and Brunswick River east of the Pacific Highway (determined in 2016). The NSW Threatened Species Scientific Committee has rejected proposals for listing koala populations as threatened at Bega (determined in 2007) and Port Stephens (determined in 2018).

In 2016 in response to growing pressure from animal welfare agencies and environment organisations the NSW Government engaged the NSW Chief Scientist to chair a government review into the decline of koala populations in key areas of NSW. The committee engaged Dr Martin Predavec to prepare an independent report. Dr Martin Predavec summarised the findings of four previously reported case studies. The case studies were at Coffs Harbour LGA, Campbelltown LGA, Pilliga and South Coast. Dr Predavec's reported that Koala populations in the Coffs Harbour LGA were stable, increasing in the Campbelltown LGA and in decline in the Pilliga and South Coast. As was expected the report's findings were inconclusive stating that "*in terms of koala population trends, the patterns discussed in the case studies should only be taken to reflect what was thought to be occurring at the time that the studies were completed: It is well recognised that koala population trends can change within a relatively short period of time.*"

Knowledge gaps around the status of NSW koala populations in more remote forests were the trigger for new koala research. Law *et al.* (2017) developed a field validated koala habitat suitability model for 8.5 million hectares of north-eastern NSW. The published paper found that the largest determinant of koala habitat suitability was wildfire frequency (Figure 1). Law *et al.*'s 2017 finding suggests that the proportion of suitable koala habitat in this region could be greatly increased through improved fire management (i.e. controlled cool burning).

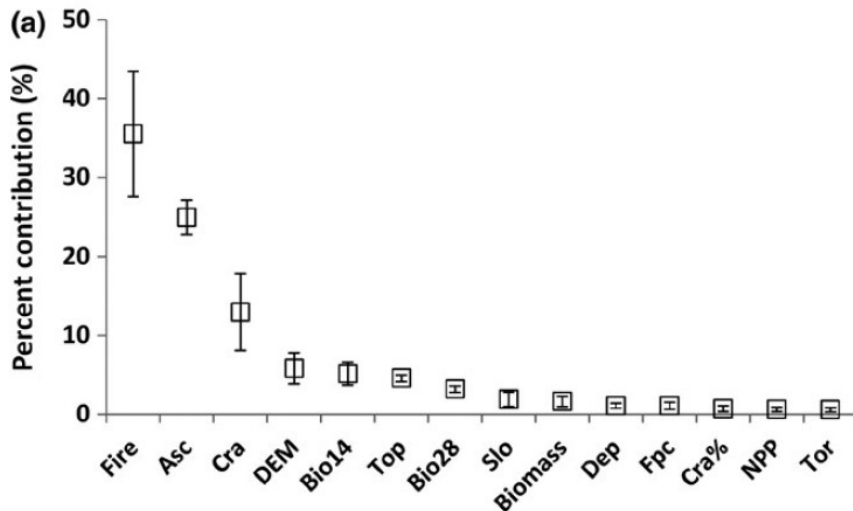


Figure 1 - Percent contribution of the 14 predictor variables – Fire (wildfire frequency), Asc (soil type), Cra (vegetation type) (Source: Law et al. 2017)

OEH is yet to acknowledge the significance of the wildfire frequency finding. This may be due to the poor wildfire record of the NSW National Parks & Wildlife Service (NPWS) (Figure 2).

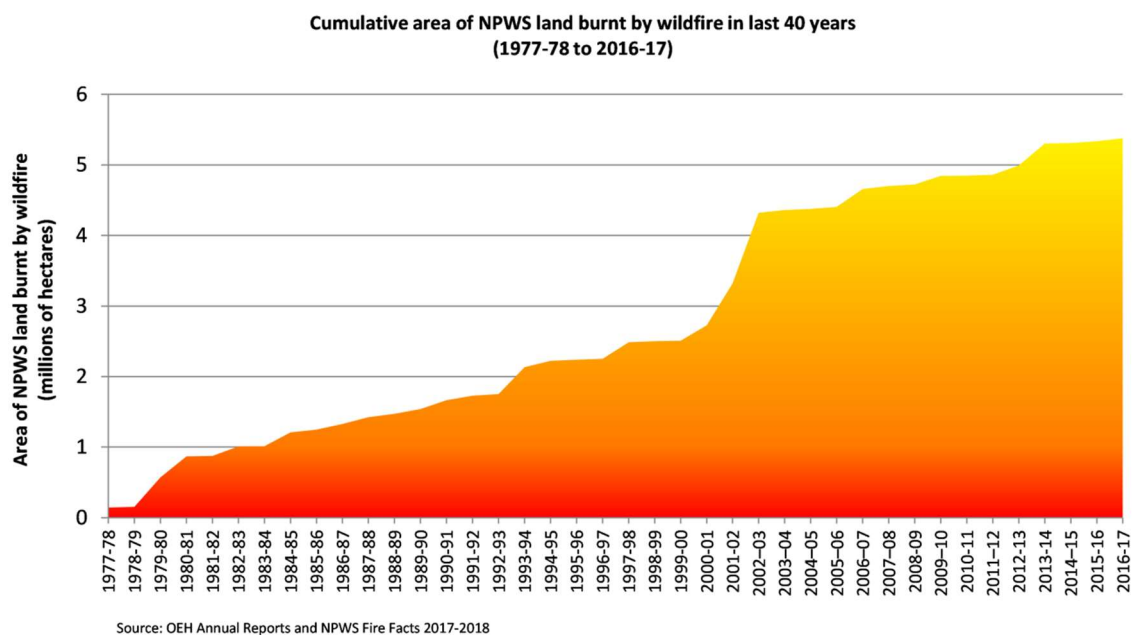


Figure 2 - Cumulate area of National Parks and Reserves burnt by wildfire in the last 40 years (1978-2017)

In the last twenty years alone around three million hectares of National Parks and reserves has been burnt in wildfire events, the more notable of these being the Great Divide fire (2003), Pilliga fires (2006 [Figure 3] and 2018), Warrumbungle fires (2013), and Blue Mountains fire (2013). OEH statistics (OEH 2019b) collected since 1989 show that canopy loss due to wildfire is more than double the canopy loss attributed to agricultural clearing. It should be noted that only intense wildfires consume tree canopies.

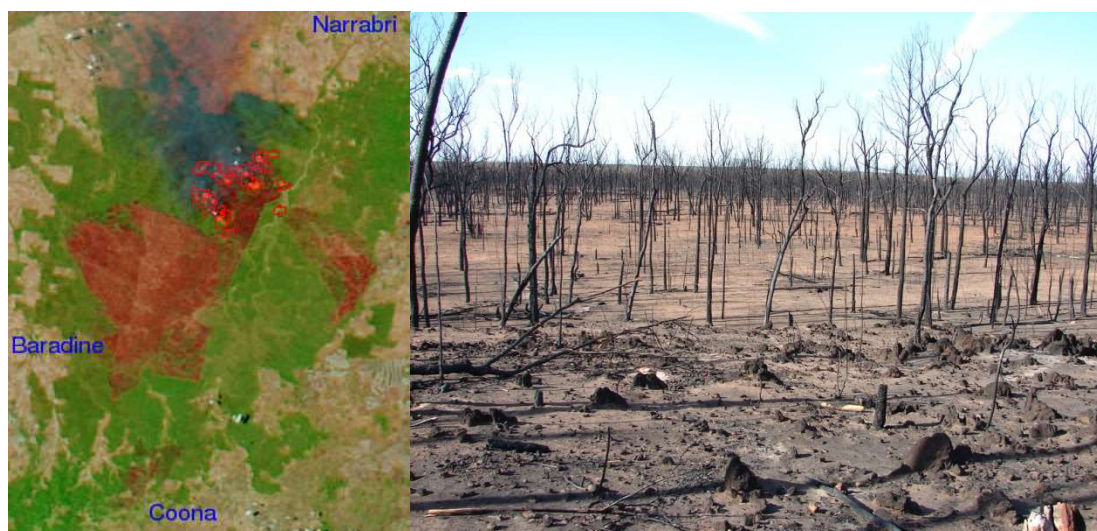


Figure 3 Satellite image showing extent of 2006 wildfire in the Pilliga (92,000 hectares) and photo of on-ground effect

Without more formal recognition of the threat which wildfires pose to koalas and their habitat, we anticipate that investment in koala conservation will continue to be misdirected.

The development of Law *et al.*'s (2017) habitat suitability model has been complemented with a koala occupancy survey (Law *et al.* 2018) in which 1.66 million hectares of forest classified as 'moderate-high' quality koala habitat was assessed. The survey of such a large area was possible through the novel use of acoustic recorders (Song Meters) and customised sound recognition software. The survey was conducted across 171 sites over three koala breeding seasons between 2015 and 2017. There were 2,513 validated koala bellows recorded at 106 (62%) sites and occupancy was found to be stable over the three breeding seasons. From these results Law *et al.* concluded that the hinterland forests of north-east NSW are supporting a widespread, though likely low density koala population that is considerably larger than previously estimated. We are aware that Dr Law has recently initiated a koala tracking program that will monitor where koalas go and how they are using their habitat.

More research of this type is needed to address community concern and guide conservation efforts. Occupancy surveys other NSW regions would advance scientific knowledge as would ongoing surveys in north-eastern NSW to monitor population stability.

Much of the concern about threats to koala populations and habitat is focused on forestry and land clearing. It is important to emphasise that forestry is not land clearing as it is regenerated or replanted. Evidence of the extent of these activities and their impact is frequently misrepresented or taken out of context.

In NSW there is 29 million hectares of land that supports native woody vegetation (OEH 2018c). In 2017-18 NSW woody vegetation change data (OEH 2019b) reveals that canopy removal from native forestry (selective timber harvesting) averages 8,930 hectares per year which equates to 0.03% of the NSW woody vegetation estate. Multiplied out over 30 years³ total canopy removal equals 267,900 hectares which is still less than 1% of the NSW woody vegetation estate.

³ 30 years being a common return interval for heavily harvested forest

Native forests regenerate following harvesting and this regrowth becomes a highly desirable food resource for koalas. Research by Kavanagh *et al.* (1995) found that koalas respond favourably to forestry being three times more frequent in heavily harvested than unharvested forests. Law *et al.* (2018) found no statistical difference in koala occupancy between State forests subject to heavy harvesting and unharvested forests in National Parks and reserves.

Unlike forestry, the impacts of agricultural clearing on koala habitat can be permanent. Fortunately, the scale of agricultural clearing relative to extent of NSW koala habitat is very small. In 2017-18 NSW woody vegetation change data (OEH 2019b) reveals that canopy removal from agricultural clearing (cropping, pasture, thinning) is averaging 10,500 hectares per year with an additional 6,043 hectares per year attributed to other routine agricultural management or allowable activities. This clearing equates to 0.06% of the NSW woody vegetation estate or 5.7% of the estate if continued at the same rate for the next 100 years. Not included in the statistics are the areas of agricultural cleared land that are being returned to forest cover (principally through natural regeneration). In many cases this regrowth is suitable koala habitat and is offsetting the impact of canopy losses.

Land clearing associated with infrastructure has the greatest impact as it results in permanent land-use change (i.e. from natural to man-made). Infrastructure clearing is averaging 4,200 hectares per year which if continued for 100 years will reduce the woody vegetation estate by 1.5%. The impacts of clearing for infrastructure on koala habitat are often greater than their size alone suggests, as much of this activity occurs east of the Pacific highway in forests which support higher density koala populations.

Trends in clearing activity (changes from one year to the next) are also commonly misrepresented. For example, in a recent opinion article (Daley 2019) it states that the clearing of native vegetation in NSW has escalated by 800%. What isn't acknowledged is the change in the way that clearing is being measured.

Over the last ten years OEH has changed its assessment methodology four times (i.e. pre-2009 Landsat only; 2010-2015 Spot 5; 2016-2017 Sentinel and Spot 5; 2018 Sentinel only). Comparison of figures generated using different methods is not valid and can be very misleading. For example, the use of Sentinel 2 satellite imagery which was used in 2017-18 to quantify canopy removals generates much higher figures than the Spot 5 satellite imagery that was used prior to 2017.

In summary, koala conservation needs to take greater account of the koala's history pre and post European settlement and its capacity to expand and collapse in response to favourable and unfavourable conditions. Management of the key threats to koala populations and their habitat need to be based on science and statistical data, rather than exaggerated and misrepresented claims. The notion that koalas can be better protected in National Parks and Reserves than in State forests and on private land, has not been demonstrated and the evidence around wildfire history suggests that the reverse may be the case. The NSW Government should be sceptical when agencies and NGOs advocate that more parks and reserves are needed for koala conservation.

There is a significant opportunity to increase NSW koala populations by expanding the amount of suitable koala habitat. This can be achieved by the NSW Government altering its forest fire management policies and practices so that forests become less prone to wildfire. Clearing of native vegetation for agriculture and infrastructure should continue to be carefully managed with acknowledgement that the vast majority of koala populations and koala habitat (> 90%) is not affected by this activity. Forestry activities including thinning can improve the suitability of koala habitat by promoting forest regeneration (of preferred species) and healthy regrowth forests.

(b) the impacts on koalas and koala habitat from:

(i) the Coastal Integrated Forestry Operations Approvals and Regional Forest Agreements,

As detailed in (a) above, the scale of native timber harvesting impacts is monitored by OEH through the analysis of satellite imagery. The monitoring shows that the extent of harvesting disturbance is small relative to area in which koalas are known to occur.

Koala research by Kavanagh *et al.* (1995) and Law *et al.* (2018) reveals that 'at worst' forestry has no impact on koala populations and at best it is highly favourable.

The NSW EPA independently regulates native forestry operations. This agency has developed a comprehensive set of operating rules that provide multiple layers of environmental safeguards, which protect native animals including koalas and their habitat. The safeguards for koalas include:

- A comprehensive network of reserve corridors and protected areas which limit the scale and intensity of harvesting. These reserves typically account for around half of the proposed harvesting area.
- Employment of a team of professional ecologists with specialist training in fauna and flora identification. These ecologists are required to undertake targeted (pre-operational) surveys.
- If koalas are known to live in a State forest but their habitat has not been mapped (e.g. in some Southern forests) the Ecologists are required to undertake targeted koala surveys. These surveys involve using acoustic recording devices or targeted searches for koala scats (faecal pellets). If koalas are found no operations can proceed until the NSW EPA has reviewed the survey results and issued a determination including site-specific conditions
- In the North East Region where koala habitat has been mapped, records of koalas trigger the application of stringent species-specific conditions. These include exclusion zones with a radius of 25 metres or greater around trees in which koalas are found. Preferred browse trees are retained (either 10 per hectare or 5 per hectare depending on circumstance). Tallowwood, Swamp Mahogany and Red Gums which are preferred browse tree species are prioritised for retention
- If a koala is found its location is accurately reported.
- Detailed requirements which ensure that harvested forests are effectively regenerated and natural species mixes retained.

(ii) the Private Native Forestry Code of Practice,

On private land the scale and intensity of native timber harvesting is much lower than on State forests. 2017-18 NSW woody vegetation change data (OEH 2019) reveals that canopy removal from private native forestry averages just 1,770 hectares per year which accounts for less than 0.02% of the native forest trees on NSW private land.

The PNF Code has similar levels of environmental protection to those which apply on State forests. Retention of old growth forest, rainforests, steep slopes and riparian

habitat provide a network of connected reserves. Tree retention requirements ensure that harvesting is selective and that habitat and feed trees are retained.

Koala habitat suitability has been mapped on the north coast where 80% of PNF activity occurs. This map can assist landholders to manage their forests in a way that is sympathetic to the needs of koalas (i.e. by maintaining their regrowth forests in a healthy and productive growing state).

(iii) the old growth forest remapping and rezoning program,

The old growth forest remapping and rezoning program has no connection to koala conservation. There is no research that suggests that koalas favour mature or old growth forest. The remapping pilot study has identified areas of old growth currently not protected that should be and areas currently protected that are not old growth. This mapping should be subjected to upgraded technology at all times considering the levels of accuracy now achieved by satellite imagery and Lidar.

(iv) the 2016 land management reforms, including the Local Land Services Amendment Act 2016 and associated regulations and codes

Refer to comments made in relation to land clearing in (a) above.

(c) the effectiveness of State Environmental Planning Policy 44 - Koala Habitat Protection, the NSW Koala Strategy and the Biodiversity Conservation Act 2016, including the threatened species provisions and associated regulations, in protecting koala habitat and responding to key threats,

State Environmental Planning Policy (SEPP) 44 - Koala Habitat Protection was originally designed to minimise the impacts of land clearing (permanent land-use change) associated with urban expansion along the eastern seaboard. The way the policy has been implemented by Local Government has been inconsistent and ad-hoc. Private native forestry (PNF) has been inadvertently captured by SEPP 44. Focusing on the protection of 'core koala habitat' is a flaw in the design of SEPP 44. Koalas in New South Wales are widespread, occurring at low densities across millions of hectares of forest. Trying to map 'core koala habitat' over such a vast area is impractical, cost prohibitive and achieves little for scientific koala conservation.

Private native forestry (PNF) is subject to SEPP 44 but shouldn't be. Forestry research (Kavanagh *et al.* 1995; Law *et al.* 2018) shows that native forestry is not detrimental to koalas and may be favourable. The absence of any demonstrable impacts provides strong grounds for having PNF excised from the requirements of SEPP 44. When SEPP 44 came into force there were very few maps of koala habitat suitability. Today there is a management scale koala habitat suitability map covering the entire north coast where 80% of PNF activity occurs. The current review of PNF provides an opportunity for koala habitat management requirements to be wholly incorporated within the PNF Codes (as they are under the Coastal IFOA).

The NSW Koala Strategy (OEH 2018b) is a document that promotes the case for more reserves. The NSW Koala Strategy does not acknowledge or incorporate the findings of Law *et al.*'s 2018 koala occupancy study. It prominently states that "*Recent studies estimate a 26% decline in numbers over the past three generations (15–21 years)*". Timber NSW believes this statement is inaccurate and misleading. There is also no mention of Law *et al.*'s 2017 finding that wildfire is a major determinant of koala habitat suitability. We conclude that

the findings of Law *et al.*'s 2017 and Law *et al.*'s 2018 have been omitted because they do not support the case for new reserves.

(d) identification of key areas of koala habitat on private and public land that should be protected, including areas currently at risk of logging or clearing, and the likely impacts of climate change on koalas and koala distribution,

Koalas occur at low densities over millions of hectares. It is not practicable or effective to try and conserve koalas using a reserve-based approach. Directing public monies into purchasing land for koala reserves reduces the funds which could be available for improving the suitability of forests as koala habitat. Creation of reserves can only be justified where high suitability koala habitat is at risk of being permanently lost. State forests do not fall into this category as timber harvesting and koala populations happily coexist (Kavanagh *et al.* 1995; Law *et al.* 2018).

(e) the environmental, social and economic impacts of establishing new protected areas to conserve koala habitat, including national parks, and

The creation of a Great Koala National Park (GKNP) on the NSW north coast was NSW Labor Party policy at the last State election and remains their policy. 175,000 hectares of the region's most productive and economically important State forests were identified for inclusion in the GKNP. The State forests on the NSW North Coast operate as a single wood supply zone. If the GKNP had been implemented as proposed or is in the future, it impacts the entire region's native forest sector and arguably will lead to complete collapse of the industry.

Ernst & Young was engaged by the Australian Forest Products Association to provide an assessment of the impact of the proposed Great Koala National Park. Ernst & Young (2019) found that a collapse of the industry on the north coast caused by the creation of GKNP would result in the loss of \$757million in output, \$292 million in value-added and 1,871 jobs. A copy of the report is attached to this submission.

(f) any other related matter.

No comment.

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