

Statement by **Dan Lunney** for the **Inquiry into koala populations and habitat in New South Wales** (6.12.2019)

As a research scientist specialising in wildlife, I have published extensively on forest wildlife, particularly koalas, with 66 refereed papers and chapters on koalas, 2 more refereed papers where koalas are an important part, 2 monographs, and 11 other publications on koalas, mainly for a broader readership. I can supply a list of these publications. When I say "I" in the following statements, it should be read as "we" because my research has been in conjunction with many other researchers. I also add that funding for research remains a perennial matter of interest. The following sequence of research, policy and management puts my conclusions into perspective.

In 1986-87, I conducted a state-wide survey of koalas, in parallel with all the koala States, initiated by the Commonwealth government. Our conclusions for NSW were that about half to three-quarters of the koala populations had disappeared in NSW since the arrival of Europeans, with habitat loss being the primary cause of the loss.

On the basis of these findings, the Minister at the time (Tim Moore) called for a Koala Summit, which we held in November 1988. We published the Summit in 1990, with the then Premier (Nick Greiner) writing the foreword. The summit prompted me to focus locally, with projects initiated in Coffs Harbour, Iluka, Port Stephens, Eden region, and later in Campbelltown, Gunnedah, Pilliga, Warrumbungle National Park, and the four local government areas on the north coast.

In 1992, I was chair of the Scientific Committee for the first threatened species legislation in NSW - *Endangered Fauna (Interim Protection) Act 1991*. The koala was listed as vulnerable. It remains in this category (now under the *Biodiversity Conservation Act 2016*).

In 1994, I assisted in writing SEPP 44. This SEPP was initiated by the then Planning Minister, Robert Webster. I was the koala expert, the other two members were planners. SEPP has two elements, DAs, and Comprehensive Koala Plans of Management (CKPoM). To demonstrate how to write such a plan, I produced the first plan. It was for Coffs Harbour. It was adopted by council in 1999, and formed part of council's LEP, which was adopted in the NSW State Parliament in 2000 by the then Minister Andrew Refshauge, giving greater strength to the CKPoM. This CKPoM is still in place, it is thus a success. CKPoMs cover land over which a council has planning authority, and it is private land that is so critical to conserving koala habitat. It is the land with the nutrient rich soils, that are moister and more productive, that support the trees that are preferred by koalas. The prime agricultural lands, and the towns and roads that service rural communities, are the centre of the conflict over how to identify and conserve koala habitat and koala populations.

In 1996, the Commonwealth government convened a working group to prepare a "National Koala conservation strategy". I was the NSW representative. The strategy was accepted by the environment ministerial council in 1998. The exercise was repeated, and in 2009, the "National Koala conservation and management strategy 2009-14" was similarly approved. I was one of the two NSW representatives on the drafting team. In 2011, the Commonwealth parliament completed an enquiry into koalas, and in 2012, the Commonwealth listed the koala as a threatened species (vulnerable) for NSW Queensland and the ACT.

In 2006, as a precursor to the preparation of the 2008 NSW Koala Recovery Plan, I conducted a detailed survey of the distribution of the koala in NSW. I also participated in the drafting of the

Recovery Plan, which was launched by the then Minister for the Environment, Carmel Tebbutt. The recovery plan expired, with the SOS Koala Iconic project preceding the 2018 NSW Koala Strategy. I have had a minor role here, joining various discussion groups. The SOS program is also part of today's koala conservation efforts, and I have a minor role, mainly as a recipient of funding for research.

My research projects over the last 33 years have included community-based surveys, now called citizen science, the impact of fire, climate change, dogs, cars, habitat loss, with new initiatives including integrating sociological approaches with ecological thinking, and ecological history, i.e. using the historical record to produce a picture of change in koala habitat and in koala populations since European arrival, settlement and land use change. Also, I have been examining the role of koala rehabilitation in local koala survival.

My major fire project was examining the survival and reproduction of the koala population in Port Stephens following the major fires in 1994. The short answer is that the koalas were feeding in the burnt forest within three months of the fire, and the females had young within a year of the fire. The survival of this population was equal to the population in the adjacent unburnt area.

The first of my two major studies of climate change was in Gunnedah, where heatwaves in 2009 during the millennium drought killed a quarter of the koala population from dehydration in a matter of weeks. Also, drought has adversely affected the koala populations in the Pilliga forests and the Warrumbungle National Park, and in the latter case, fire in 2013 compounded the problems of drought. The second study was in the Eden region. We found that the region had become hotter and drier and the koala population had contracted to the cooler, moister part of the region.

A number of conclusions can be drawn from this research. Habitat loss is the critical element in causing koala populations to decline in NSW. As the area for koalas shrinks, the secondary elements – dog attacks, roadkill, disease – rise in importance. Also, the slow press of gradual warming and declining rainfall take their toll, as do the shock of heatwaves. Fire is dramatic, and kills and injures koalas, but from a population viewpoint, it is the amount of habitat that remains unburnt with koalas that is a key element in the survival of koala populations. The habitat recovers quickly, but an important point is that it is an added impost to declining populations.

From an ecological viewpoint, it is the compounding of factors that is so important, although only one factor may be visible. Also, key factors can be hidden. In Port Stephens, we initially thought that fire and roadkill were the dominant factors in the loss of koalas, but our radio-tracking showed that most of the koalas were killed by dogs. Further, although the list of issues confronting koala populations is common across the State, their relative importance from location to location differs, and thus the conservation decisions need to fit local conditions.

As a research scientist, I submit that most of the initiatives for koala conservation have grown out of research projects, or been enhanced by sustained research in an iterative process of interacting with policy, planning and management, or benefitted from research, especially research that has been published.

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DR DAN LUNNEY

Received by

ANDREW RATCHFORD

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