

DRAFT PREPARED 25/8/98

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SOUTH EAST FORESTS KOALAS: **NOMINATION AS AN ENDANGERED POPULATION**

Overview

The South East Forests Conservation Council (SEFCC) submits this further application to nominate remnants of the once abundant population of the Koala (*Phascolarctos cinerus*) in SENSW as endangered.

In correspondence dated 4/6/1998 the NSW Scientific Committee rejected the SEFCC's original (dated) proposal. Its reasons are summarised as follows:

1. The Committee was not convinced that the nominated population can be said to occupy a particular area, as required by the TSC Act. Records of Koalas in areas outside Bermagui/Murrah and Yurammie suggest that the actual metapopulation is considerably more widespread.
2. There is some evidence (eg Lunney et al. 1997) that numbers of Koalas are not in monotonic decline but that numbers have been constantly low for as much as four decades.
3. The committee has received information that the actual population size could be from 50 Koalas to as many as a thousand. The estimates probably vary in response to search effort, differences in estimation and other factors but may indicate that hundreds, rather than tens, of Koalas remain.
4. The committee is not convinced that any threats are currently, or expected in the near future to be, so pervasive that the population is in danger of extinction.

This nomination has been prepared primarily to address each of the issues raised by the Committee. The proponents assume that those reviewing this further nomination will be familiar with information provided in the original nomination and in subsequent correspondence with the Committee. This nomination has been reviewed and endorsed by Professor Tony Norton (RMIT) and Steve Phillips AKF. The proponents have also consulted with staff from the NPWS Regional Threatened Species Unit who have stated that the TSU also believes that the South-East Forests Koala Population is eligible for listing as an Endangered Population.

1. Metapopulation is more widespread

Extending the boundaries of the Nomination

The SEFCC agrees that Koala records are more widespread than those concentrations of records in the Bermagui/Murrah and Tantawangalo/Yurammie areas and that because young Koalas are able to travel large distances, these may not strictly be disjunct from other breeding populations that may still persist in SENSW. Following consultations with the NPWS Threatened Species Unit, Queanbeyan, the proponents have therefore extended the boundaries of the nomination to include all of the forest areas in SENSW from the Victorian border to Bateman's Bay and west to the Monaro Tablelands.

The geographical area that this nomination applies to is shown on Map 1, together with post-1980 Koala records that are divided into categories of five years. This area has been delineated using catchment boundaries that encompass known or predicted Koala habitat based on the distribution of known records. The northern boundary of the area was delineated along a major catchment division that also corresponded to an apparent break in the incidence of Koala records (particularly recent records). The western boundary follows the extent of contiguous extant native vegetation (as mapped from landsat imagery).

. Rework looking at post 1980 records south of Batemans bay (include Numerella)

Recent koala records outside this boundary are almost non-existent, providing sufficient evidence to conclude that this metapopulation is disjunct.

Estimating the koala numbers in the Murrah

The estimate for the number of koalas in the Murrah/Bermagui area is crucial to the argument that the metapopulation is endangered across the entire area delineated in this nomination.

This area has been intensively studied by the South East Forests Koala Research Project.(SEFKRP) Staff have spent xxxx hours searching for koala faecal pellets, with areas subjected to integrated harvesting in the past two decades searched as extensively as other regrowth areas and those where mature forests remain. sear Map 2 records the areas searched in the study area. 80 active sites (ie koala faecal pellets) were located, each site therefore taking an average of eight hours to locate. Areas sustaining three breeding females (as evidenced by faecal pellets of consistently different sizes underneath the same tree) were located. One of these was searched in a later survey. In this area each active site took xxx hours to locate. No evidence of koalas using post-integrated harvesting regrowth was obtained although there was some evidence of some of the widely scattered retained trees being used (South East Forests Conservation Council 1998) The area in which almost all of the active sites were located covers approximately 3000 ha. SEFKRP staff have undertaken searches around this core area but only a very few active sites were located. The approximate boundaries of those koalas with stable home ranges in this breeding aggregate can therefore be delineated, as shown in Map 2.

In the original nomination the SEFKRP estimated this population to be at best no more than 20 koalas. *To be more statistically exact.....* This estimate derived by calculating the average home range sizes for koalas in the region provided by Jurskis and Shields (1996), excluding that of the dispersing young male, and overlaying this with the known koala area in the Murrah. This gives an average home range (MCP) of the koalas of 270ha. Assuming minimal overlap (as was found by Jurskis and Shields 1996) this would give a population of 11 or 12 animals. Even if the home range sizes in this area were smaller than those calculated by Jurskis and Shields (1996) it is difficult to believe that more than twenty koalas remain there, particularly as much of this area has been subjected to integrated harvesting and now contains dense stands of young regrowth that does not appear to be being used by the koalas.

Other populations

Information provided in the SEFCC's original nomination demonstrates that the area with the other concentration of koala records (Tantawangalo/Yurammie) has significantly fewer koalas. and that numbers appear to have declined significantly in recent years. (see 2) below.

The only other area in that delineated in this nomination that may sustain significant numbers of koalas is in the Numerella. This was not included in the original nomination because few data exist about this population. The only recent surveys have been those undertaken by the SEFKRP.

Numerella stuff

Others may be scattered throughout the region but it is highly unlikely that a population the size of that in the Murrah would have escaped detection given the level of public interest and the amount of fauna research and surveys that have been undertaken in the region.

Threatening Processes

The long-term impacts of integrated harvesting and associated practices that has already occurred in these Koala areas, the threat of further operations and the complacency of the agency responsible for their management are probably the greatest threats facing these remnants. These and related issues are discussed in detail in Appendix 3.3.

Immediate danger of extinction

Appendix 3.4 examines the case that the region's Koalas are in immediate danger of extinction. Numbers may have already reached such a low point that their survival will rely on the effective implementation of a Recovery Plan.

Are Koala numbers stable or declining?

The Committee's interpretation of the results in Lunney et al (1997) does not take account of the following:

- the number of respondents to Lunney's community survey who were living in the region in 1991 and who reported sightings in the 1980's and 90's was probably of an order of magnitude larger than the number of respondents who were living in the region in 1991 who reported sightings from the 1960's;
- thousands of kilometers of roading (primarily for logging operations) has been established in forests over these decades, increasing opportunities for Koala sightings;
- there was a significant increase in survey effort by State Forests staff and community groups in the 1980's and 1990's.

Given the above information we would respectfully suggest that notions regarding the perceived absence of a monotonic decline are not only invalid, but also an entirely inappropriate interpretation of the results that were obtained by Lunney et al (1997).

How many Koalas?

The committee then states: *The committee has received information that the actual population size could be from 50 Koalas to as many as a thousand. The estimates probably vary in response to search effort, differences in estimation and other factors but may indicate that hundreds, rather than tens, of Koalas remain.*

State Forests population estimates

To our knowledge, only State Forests staff have provided estimates of approximately 1000 Koalas in the region (Jurskis and Potter 1997, Shields 1997). This figure was calculated by assuming that all dry forests in the region, whatever their tree species mix and disturbance history, could support Koalas at the same average density as the average home range size of eight radio-tracked Koalas in the agency's study. The authors then assumed that if half of this habitat were occupied then the regional population would be approximately 1000 Koalas.

This method does not take into account the existence of threats such as logging, fire and predation and the impacts these factors had on the radio-tracked Koalas and continue to have on the remaining population. The estimates produced by SFNSW staff cannot be substantiated and the methodology would not be accepted in a high school biology class. It is therefore somewhat surprising that the NSW Scientific Committee gives this estimate any credibility. There is no evidence that all dry forest types in the region can sustain Koalas, particularly breeding aggregates; only very specific and minimally disturbed eucalypt communities appear able to do so (South East Forests Conservation Council 1998);

Evidence of low and declining numbers

The following information supports the view that Koala numbers in the region are much lower and that these have continued to decline in recent decades:

- All wildlife researchers apart from Jurskis and Potter consider that the Koala has been rare for many decades (eg Lunney and Leary (1988), Lunney and Reed (1989), Saxon and Shepherd (1993), Lunney et al (1997), with no suggestion that there could be as many as a thousand Koalas;
- Extensive anecdotal evidence suggests that localised extinctions and population declines have continued over recent decades. For example, many local people refer to declines in Koala numbers in the Bermagui/Murrah area. *We used to see them along the Bermagui/Cobago Rd, but not anymore* is an often repeated statement;
- In 1990/91 there was evidence of a breeding aggregate of at least five Koalas in Central Tantawangalo (Allen in Cork 1995); There appears to have been a localized extinction of this aggregate in the past few years (Allen and Bertram 1997);
- Koalas were repeatedly reported in Yurammie State Forest before and during integrated harvesting operations that were undertaken there in the late seventies (Braithwaite 1983). Very few Koalas have

survived; they are no longer repeatedly reported despite a substantial increase in both survey effort and the number of people living in the area;

- The number of Koala records on the NPWS wildlife Atlas database declined to almost zero by 1994. Increases since then are the result of more sophisticated survey effort;
- SFNSW staff have failed to locate Koala evidence in all their pre-logging surveys in the Eden region in the past three years;
- The following Koala areas have been subjected to integrated harvesting operations in the past three decades: Nagee, Nullica, Tantawangalo, Mt Darragh, Yurammie, Murrah and Bermagui. In almost all cases these involved clearfell operations in coupes up to 100 ha in size (in Nagee these areas were much larger) that were usually in the most productive and flatter areas. No serious attempt was made ameliorate impacts on Koalas (Allen and Bertram 1997). Even SFNSW accept that Koala numbers declined in the early years as a result of these operations (Jurskis and Shields 1996). SFNSW have not been able to demonstrate that Koalas can survive in forests where the first logging cycle has been completed (all remaining old growth coupes logged). This first cycle, in the remaining unlogged coupes of the EMA, will be completed by the year 2010;
- Research by the South East Forests Koala Research Project has established that there has been a significant change in eucalypt species composition and structure in areas subjected to integrated harvesting and that the regenerating forest is less able to sustain Koalas (South East Forests Conservation Council 1998);
- The only known breeding aggregate of Koalas occupying an area not subjected to integrated harvesting was in Central Tantawangalo. The only known breeding female in this area was radio-collared by State Forests staff and subsequently found dead;
- Another breeding female was radio-tracked in an area that had been subjected to integrated harvesting in South Nullica State Forest. Contact with her was lost. Presumably she is now dead as in 1993 she was considered elderly (Jurskis and Potter, 1997). A very young female (her offspring) was also radio-collared, even though she only weighed 1.8kg. She was subsequently found dead by State Forests staff (FCNSW1993).
- 50% of the Koalas that were radio-tracked by State Forests staff perished during this study. Contact was lost with all other animals. Although the authors report that native fauna, falling branches, wire grass and cold weather caused these deaths, the possibility that these statistics may suggest a continuing decline in Koala numbers is not examined by them;
- Despite millions of dollars having been spent on Koala research and surveys in the region in the past decade, the Murrah remains as the only area known to be sustaining a breeding aggregate of this once abundant population.
- With the Murrah results the South East Forests Koala Research Project staff has proved its ability to quickly locate evidence of Koalas and also evidence of breeding females if they are present. No other area has yielded comparable results. Using Jurskis and Potter's own home range figures it unlikely that 20 Koalas remain in this area. A reasonable conclusion to be drawn from paucity of evidence from all other areas surveyed by the same team is that breeding aggregates of Koalas, if they are present at all, consist of only one, or possibly two, breeding females;
- Using data principally derived from surveys of the distribution of Koala faecal pellets in many areas currently occupied by Koalas Phillips (1997) has re-defined Koala food trees in terms of primary, secondary and supplementary categories of browse species. Koalas demonstrate a consistent and statistically quantifiable pattern of use of these species according to this ranking across their range. In the coastal and hinterland areas of South East NSW Koalas have lost access to their traditional primary browse species and are depending only on the secondary and supplementary browse species. (South East Forests Conservation Council 1998);
- Koala numbers are declining nationally such that the species should immediately be listed vulnerable under existing IUCN criteria, with the likelihood that the species will be endangered nationally within the next ten to fifteen years (Phillips, 1998). On the basis of the available information it is reasonable to conclude that the situation faced by the Koalas in our region is simply one where that decline in numbers has progressed further here than in most other areas of the continent.

IUCN, 1994

We request the committee notes the following:

Given that data are rarely available for the whole range or population of a taxon, it may often be appropriate to use the information that is available to make intelligent inferences about the overall status of the taxon in question. In cases where a wide variation in estimates is found, it is legitimate to apply the precautionary principle and use the estimate (providing it is credible) that leads to listing in the category of highest risk. (IUCN, 1994) If the NSW Scientific committee were to follow this ICUN recommendation it is reasonable, given the above information, to accept our population estimates at least on the basis of the precautionary principle. Regardless, a difference of opinion regarding population estimates which would result in the area's population being increased from one of 10's to that of 100's does not lessen the importance of the population (in terms of conservation status) nor diminish the risk of extinction, assuming that current threatening processes will continue unabated.

Boundaries

The committee rightly accepts that the boundary issue is not as significant as that of Koala numbers, but says, *Nevertheless the committee takes the view that the population is likely to be more extensive than implied, potentially covering albeit patchily, many hundreds of sq kilometers.* If the committee accepts that our population estimates are probably correct then boundary issues are even less important. Even if a breeding aggregate of Koalas still survives either to the south or west of Eden -and there is no validated scientific evidence that supports this contention- it will undoubtedly be facing the same crisis as the population in the Murrah, Dignam's Ck and, if it still exists, in Yurammie.

Political implications of losing this population

The political implications of losing this population after all the warnings, all the habitat degradation, all the procrastination, all the obstrufication and all the research effort are too awesome to contemplate. We have to move with an effective recovery program and we have to do it urgently.

Yours Sincerely
Chris Allen/Robert Bertram
6/7/98

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