

# ANALYSIS OF NSW KANGAROO POPULATION COUNTS FOR FATE PROGRAM IN MUDGEES, MERRIWA, CENTRAL TABLELANDS, MOLONG AND HUNTER

By Professor Steve Garlick

## **Background:**

Under FOI I have obtained from the NSW DECC papers relating to my request for reports and analysis underpinning their calculation of kangaroo numbers for the RLPB areas of Mudgee/ Merriwa, Central Tablelands, Molong and Hunter where the Dep't recently announced they would go ahead with a 'harvesting' program as the numbers were over the million mark. What I have been given is:

- Two reports prepared by Dr S Cairns a lecturer in zoology at the UNE – one on “Kangaroo monitoring design and analysis of the Northern Tablelands Region Helicopter Survey”, December 2007 and “Kangaroo monitoring South East NSW Trial Commercial Harvest Zone redesign and Analysis of helicopter Survey”, April 2007.
- A table showing non-commercial licences issued and killings of egk and WR under section 121 between 2000 and 2007 in Mudgee/ Merriwa, Hunter, Central Tablelands, Forbes, Molong, Condoblin and Young
- Sampling definitions and transect maps for the three zones.
- “Working estimates of Eastern Grey Kangaroos in the Young, Central Tablelands and Hunter-Mudgee Kangaroo Management Zones”. This is just a very simple table showing zone size (KM<sup>2</sup>), the estimated number of kangaroos, the range with 95% confidence level and the coefficient of variation. There is no other supporting analysis.

Interestingly, even though it was asked for there was no report provided under FOI underpinning the estimated numbers (and which the recent press release was based on) for Central Tablelands, Hunter and Mudgee 'Management Zones'. One therefore can only conclude (otherwise DECC will be regarded as unlawfully withholding requested information without explanation) no underlying report exists to support the estimated numbers for these areas which in itself is an extraordinary circumstance. If the Kangaroo Management Committee has made any decisions of any kind based on this analysis then it is nothing short of scandalous.

The reports prepared by Dr Cairns state: *“In order to set harvest quotas with the intention of ensuring sustainability, it is necessary to have reasonably accurate and precise estimates of the sizes of kangaroo populations proposed to be harvested”* (p2). In my view the data, analysis and conclusions drawn by Dr Cairns fail the basic test of providing this “reasonably accurate and precise estimates of kangaroos” for a number of reasons. There are of course other considerations not mentioned by Cairns, but which nevertheless are assumed by the Department but which also cannot be concluded from the Cairns work (eg cruelty, sustainability) which the Department/ Minister needs to respond to.

## Data and survey method:

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1. *The data collection method* is a simple head-count and takes no account of age, physical condition or gender of the animals or the characteristics of the land (water, grass, shelter, etc) on which the kangaroos reside. The report says it has taken into account matters of kangaroo ecology, but it is non-specific on how this was done within this methodology. No conclusions can therefore be made about whether the numbers of animals are increasing or decreasing and what their connection to the prevailing physical circumstances at any point in time on any day is. Any work by Pople on risk to quasia extinction is also fallacious for the same reasons. This work on numeration sits outside of any dynamic assessment of kangaroo social structure and mob behaviour and any change in physical circumstance (eg drought). Any conclusions therefore cannot assume any trends and any questions of 'abundance' or otherwise are spurious. Simple human ground truthing is insufficient to address this problem because of animal mobility (due to a wide range of factors) and landscape diversity and micro climate and its connection to the needs of the animals over time.

A related issue to the fallacy of calculating trends is that the base line used not only is very old (1989-90), but was calculated using different data collection and survey design methods.

2. *Survey areas.* Substantial bias is introduced in the definition of the zones for surveying. However the main issue here is the counterfactual. By taking from the surveyed area that land that is cultivated, is it not taking away the precise land area where it is argued by farmers that kangaroos represent a 'problem' to their agricultural pursuits? Why should the remaining uncultivated land be problematic for humans to consider the kangaroo a 'problem'. This is significant for example in the Upper Hunter where the report argues this landuse, together with uplands, represents a large percentage of total land area (43%). Two options remain. Either kangaroos should be considered non-problematic in the remaining land areas of the analysis or the cultivated sections of land need to be included in the analysis, thereby dampening resultant density figures.

3. *Survey times.* Kangaroos move around the landscape throughout the day and the seasons in response to many factors (wind, heat, cold, feeding time, resting time, breeding time, fires, water supply, human presence, predator presence, etc). It is a significant error to assume that a single head count at a single point of time at a single location will accurately account for any of these variables and therefore how kangaroos spread across the available landscape at other points in time. This is a significant error factor because the report draws conclusions about concentrations of presence in the landscape (densities) and suggests 'management' actions as a consequence.

4. *Survey instrument.* Survey transects are defined based on cost limitations and a co-efficient of variation set at around 20 %. Cairns states this as representing "some desired level of precision [the ratio of standard error to mean]... setting the level of precision at 20% would appear to be realistic and cost-effective (Pople et al 2003; Cairns 2004, 2007)" (2007, p.7). This is what is called the "survey effort" which in the study determines the helicopter flying distance for a narrow band of human observation. Noting the cost of using a helicopter one can speculate on the extent to which survey coverage was constrained and the compounding effect of additional errors occurring through human observation from the helicopter. It is not stated for example whether unviable

kangaroos (young 'at-heel', juvenile and the very old) are included in these transect human observations. One can only assume the figures are again overblown by not allowing for this distinction. In other words the total head count includes those that would not be targeted by a harvesting industry wanting to make economic returns, thereby giving a false impression to this industry about likely supply.

### **Model and analysis:**

The analysis, in calculating kangaroo numbers goes to very high levels of coefficient variation. Clearly this is determined by the cost of helicopter hire and the size of the actual zone area included in the survey design (ie high and medium density areas) and is not consistent with the goal of obtaining 'precise' numbers. The coefficient of variation for the Central Tablelands for example is more than 30%! (95% confidence interval). This reflects poorly on the survey design. In other words in the case of the Central Tablelands we can be 95% certain, based on the survey design, that the estimated kangaroo numbers lies somewhere between 210,100 and 860,000 a difference of 650,000! Such 'precision' is hardly satisfactory to be considering issues of sustainability in numbers or in presenting the harvesting industry with a viable production quantum.

### **Report conclusions:**

The Cairns analysis does not achieve its goal of obtaining 'precise' kangaroo numbers. It is completely fallacious for this work to be making comparisons over time or in terms of densities at a point in time and in density changes over time. For example the report states: "Since the last surveys of the Northern Tablelands KMZ conducted in 2004 eastern grey kangaroos numbers have increased 58% in the Glenn Innes zone, decreased by 12% in the Armidale zone, and increased by 36% in the Upper Hunter zone". Based on the arguments presented above such conclusions are just not possible. Similarly conclusions about kangaroo densities are not possible

### **Cruelty:**

The RSPCA, the ACT, State and Commonwealth government Departments of the Environment, shallow ecologists, and even less reputable groups such as the kangaroo harvesting industry and kangaroo 'management' consultants, would all have us believe a single gunshot to the head of a healthy kangaroo is humane animal welfare. The consequences of perpetuating this myth are, in fact, horrendous from a welfare perspective.

Even if we accept the unreal assumption that every gun toting killer is 100 per cent accurate with a head shot every single time they blast at an unsuspecting kangaroo, and even if we ignore the fact that the term 'humane' is inappropriate for non-human animals about which we know so little, what actually happens in practice is more than enough to

persuade us that this all too pervasive animal welfare myth should be debunked as an anthropocentric oxymoron and its practitioners roundly condemned.

When its mother is 'humanely' shot, the orphaned 'pouched' joey is ripped from its mother's pouch, decapitated, stomped on, or swung repeatedly against the nearest hard object until its head is crushed and its fragile limbs fractured. The 'at-heel' offspring of the dead mother is deprived of its mother's company, milk and protection and forced to flee and fend for itself against predators such as foxes and marauding dogs. When large male kangaroos are killed the social structure of the mob is destroyed, one consequence of which is a lack of control over the behaviour of juvenile males towards the immature females.

Even if not killed outright the fleeing, fearful and possibly injured kangaroo, will often die a lingering and excruciatingly painful death, which could take months. Pain, exertion and anxiety create physiological and biochemical changes in metabolism leading to lactic acidosis and muscle damage, including to the heart muscle, the release of myoglobin, renal failure, tissue hypoxia, paralysis, and progressive damage to the liver, adrenal gland, brain and lymphatic system.

No fair-minded human with an ounce of compassion could possibly believe there is anything 'humane' in any of this institutionally-condoned, and even encouraged, behaviour towards a kangaroo. It is pure unadulterated brutality carried out by unfeeling, unknowing, unthinking, cowardly thugs. It is about institutions that should know better and landholders, both government and private, blaming an inoffensive and gentle animal for their own poor practices on clapped-out land that has been laid waste by sheep and cattle overgrazing, scorched-earth clearing, and overuse of chemicals for years.

### **Inappropriate behaviour:**

It's a known fact that shooters tote their wares to unsuspecting landowners by visiting properties to attempt to achieve their quotas of carcasses. The unethical methods used have become a desperate ploy, along with governments widening kangaroo killing zones, to try to maintain the dwindling killing industry as a viable enterprise. The shrinking numbers of 'suitable' animals, the increased distances that need to be covered in the new zones create a desperate and generally unviable set of industry production parameters in responding to active marketing programs by the kangaroo meat industry. The stated goal of the project was to obtain: "...reasonably accurate and precise estimates of the size of the kangaroo populations *proposed to be harvested* [my emphasis]". Given the simplistic head counts undertaken one can only conclude that economically unviable animals are to be included in the harvest process, which is completely unethical and cruel and can not be consistent with any notion of 'sustainability'.

### **Sustainability:**

While not specifically outlined, it appears highly likely that estimated 'kangaroo densities' in the 'management zones' are used not only to determine kangaroo harvesting numbers but also that the residual unharvested represents some kind of 'sustainable'

number. For the same reasons stated above as to why the harvesting numbers cannot be determined, so therefore what remains for 'sustainability' purposes also cannot be determined from the Cairns analysis.

**Conclusion:**

1. Given the significance of the conclusions drawn by Dr Cairns in determining kangaroo killing quotas for these regions for government and others for these and for other regions in NSW, Dr Cairns needs to be able to defend the criticisms (data, model, survey and analysis and conclusions) made above about his calculation of estimated numbers of kangaroos that would represent potential supply for a harvesting industry seeking some economic returns rather than loss. My conclusion is that the estimates given at a point in time are completely unreliable and no time series comparisons can be made that might suggest growth or decline from the data.
  
2. The DECC needs to explain, given the above arguments: (a) why their killing program cannot be labelled cruel; (b) by what criteria, outside of the Cairns analysis, are questions of sustainability guaranteed and what program of close monitoring do they have in place to ensure it.; and (c) whether they are giving 'false economy' to the harvesting industry by endorsing not only the poor enumeration of Dr Cairns, but also including unviable animals for harvesting in the total count.