

Submission
No 250

**INQUIRY INTO HEALTH AND WELLBEING OF
KANGAROOS AND OTHER MACROPODS IN NEW SOUTH
WALES**

Organisation: Friends of Mother Earth Incorporated

Date Received: 26 April 2021

Kangaroo Submission

It's a conflict of interest for the department responsible for the protection of kangaroos to also be responsible for supplying carcasses to a commercial industry.

In 1988, a report – *Kangaroos* – was tabled in Federal Parliament. We refer to page 179 of the report, which states: *The commercial kangaroo industry requires a certain number of kangaroos to be taken to satisfy its markets. The shooters, chiller operators and processors will therefore operate to fulfill their commercial needs within maximum quotas set by the Federal Government. The only other constraint on shooters is the density of kangaroos in the operational area. The shooter needs to kill a certain minimum number to meet his operational costs for the night. It is therefore argued that the commercial shooting of kangaroos depends upon density and not on actual damage or competition with livestock*¹.

On page 182, the report continues: *The Committee strongly opposes any measures to increase the size of the commercial kill for economic reasons instead of for the necessary control of damage to human land use. The concern of this Committee and of many people in the community is that too many kangaroos are killed unnecessarily each year simply for commercial purposes.*

In the abovementioned report, Senator Norm Sanders states: *For the welfare of kangaroos, the industry should be closed. Kangaroos should be left unmolested whenever possible. If farmers can demonstrate crop damage to a responsible wildlife management official, subsidies should be paid for loss or for the installation of electric fencing. Farmers should be discouraged from clearing marginal areas, now kangaroo habitat, for cropping... It should be noted that proposals such as the above have prompted farmers to threaten a "Bloodbath" of kangaroo shooting and poisoning. Some management personnel have used this threat as a justification for the continuation of present practices. This is a mistake. We should not be blackmailed into inaction by threats of terrorism.*

The NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021 states: *The purpose of this plan is to provide a management framework for the commercial harvest of kangaroos in NSW.*

a) Historical and long-term health and wellbeing indicators of kangaroos, and other macropods, at the local, bioregional and state levels, including the risk of localised extinction in New South Wales.

NSW Kills Kangaroos at Risk of Extinction

In NSW, kangaroos are killed under a management plan for a commercial industry. The current document is the *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021*. However, the estimated number of kangaroos in each management zone and the number of kangaroos targeted for slaughter to supply a commercial industry is detailed in the annual quota reports. The current document is the *NSW Kangaroo Management Program 2021 Quota Report*.

Density of unharvested populations in these simulations rarely fell below a minimum of 5 individuals/sq km. Although the critical minimum density is not clearly defined, populations below

¹ [Kangaroos](#) (Senate Select Committee on Animal Welfare, 1988)

2/sq km would generally be considered at risk of extinction. On this basis, Figure 19 suggests that any option resulting in an average long-term density of less than 10/sq km should be rejected since in all such cases the minimum density is likely to fall below the critical level² (Hacker et al, 2004).

In 2019, red kangaroos had a population density of 1.4 kangaroos per sq km in Tibooburra. This population is below 2/sq km and therefore considered at risk of extinction. Commercial killing was suspended in this zone in 2019 and 2020. In 2021, due to a biologically impossible increase of 153%, the population density increased to 3.7 kangaroos per sq km. Such an increase should have been questioned and rejected. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

In 2019, grey kangaroos had a population density of 0.9 kangaroos per sq km in Tibooburra. This population is below 2/sq km and therefore considered at risk of extinction. The estimated population was 48,502. The quota for Eastern Grey Kangaroos was 21,990 and the quota for Western Grey Kangaroos was 5,610 – based on 2018 survey data. The total 2019 quota of 27,600 is 57% of the 2019 estimated population. However, due to the low density, which means that grey kangaroos in this management zone are at risk of extinction, there were no grey kangaroos commercially killed in this management zone. This grey kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

In 2019, red kangaroos had a density of 0.9 kangaroos per sq km in Cobar. The 2020 survey increased the estimated population by a biologically impossible 184%. Even with the 184% increase, the density of red kangaroos in Cobar is only 2.5 kangaroos per sq km. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

The 2020 survey recorded the grey kangaroo density in Cobar as 1.1 kangaroos per sq km. The 1.1 density is after a 504% increase in grey kangaroo numbers within this management zone. The 2021 quota is 10%. This grey kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

The average density for grey kangaroos in Cobar is 11.42. Given that the average density in this management zone is 11.42 kangaroos per sq km, it's impossible to fathom how a density of 1.1 kangaroos per sq km failed to trigger a continued suspension of commercial killing. Using the example from APPENDIX 1 in the *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021*, Cobar should have remained closed to the commercial industry.

The 2020 survey recorded the red kangaroo density in Bourke as 2.1 kangaroos per sq km. Between 2019 and 2020, red kangaroo numbers in Bourke declined by 76%. Yet, the 2021 quota is 10%. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

Between 2018 and 2020, grey kangaroo numbers in Bourke declined by 77%. The grey kangaroo density fell from 3.3 to 0.8 kangaroos per sq km. In 2020, commercial killing was suspended in Bourke. Even though, the estimated population declined from 51,734 in 2019 to 41,501 in 2020, this management zone was re-opened in 2021 with a quota of 10%. This grey kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

The average density for grey kangaroos in Bourke is 8.62. Given that the average density in this management zone is 8.62 kangaroos per sq km, it's impossible to fathom how a density of 0.8 kangaroos per sq km failed to trigger a continued suspension of commercial killing. Using the

² [Kangaroo management options In the Murray-Darling Basin](#) (Hacker et al, 2004) Page 37

example from APPENDIX 1 in the *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021*, Bourke should have remained closed to the commercial industry.

The 2020 survey recorded the red kangaroo density in Narrabri as 2.9 kangaroos per sq km. Between 2017 and 2020, red kangaroo numbers in Bourke declined by 76%. The most recent decline, between 2019 and 2020, was 45%. Yet, the 2021 quota is 17%. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

The 2020 survey recorded the red kangaroo density in Coonabarabran as 2.5 kangaroos per sq km. Between 2019 and 2020, red kangaroo numbers in Coonabarabran declined by 70%. Yet, the 2021 quota is 17%. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

The 2020 survey recorded the red kangaroo density in Griffith North as 1.9 kangaroos per sq km. Yet, the 2021 quota is 17%. This red kangaroo population should not be commercially or non-commercially killed due to risk of localised extinction.

b) The accuracy with which kangaroo, and other macropod, numbers are calculated when determining population size, and the means by which the health and wellbeing of populations is assessed.

In NSW, kangaroos are killed under a management plan for a commercial industry. The current document is the *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021*. However, the estimated number of kangaroos in each management zone and the number of kangaroos targeted for slaughter to supply a commercial industry is detailed in the annual quota reports. The current document is the *NSW Kangaroo Management Program 2021 Quota Report*.

When our organisation studied the *NSW Kangaroo Management Program 2021 Quota Report*, we became aware of numerous problems with the current system used to supply protected animals to a commercial industry.

Firstly, we need to consider the reproduction rate of red kangaroos and grey kangaroos. The reproduction rate for red kangaroos is a maximum of 13.5% under good conditions³. The reproduction rate for grey kangaroos is a maximum of 10% under good conditions⁴.

Between 2019 and 2020, red kangaroos increased by biologically impossible numbers in many management zones. Coincidentally, commercial killing had been suspended for two years in the management zones with biologically impossible increases. The suspension of commercial killing was due to low numbers.

Density of unharvested populations in these simulations rarely fell below a minimum of 5 individuals/sq km. Although the critical minimum density is not clearly defined, populations below 2/sq km would generally be considered at risk of extinction. On this basis, Figure 19 suggests that any option resulting in an average long-term density of less than 10/sq km should be rejected since in all such cases the minimum density is likely to fall below the critical level⁵. (Hacker et al, 2004)

During 2017 to 2020, NSW was in drought⁶. Research indicates that commercial killing at 0-20%

³ <https://www.kangaroosatrisk.net/2-biology--population-ecology.html>

⁴ <https://www.kangaroosatrisk.net/2-biology--population-ecology.html>

⁵ *Kangaroo management options In the Murray-Darling Basin* (Hacker et al, 2004) Page 37

⁶ [Drought update - Water in New South Wales \(nsw.gov.au\)](https://www.nsw.gov.au/drought)

during drought conditions can lead to a decline in kangaroo numbers of up to 65%⁷. Research also concludes that the number of female kangaroos with joeys declines dramatically.

By April 1965, the percentage of female red kangaroos with young, as shown by a CSIRO study, had dropped since December 1963 from 71% with pouch young and 25% with young at foot to 8% with pouch young and 1% with young at foot⁸. (A history of the debate (1948-2009) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg, Daniel Lunney, 2010)

Commercial killing was suspended in Tibooburra in 2019 and 2020 due to critical minimum densities generally considered at risk of extinction. Yet, in 2020, red kangaroo numbers increased by 153%. The biologically impossible increase allowed the NSW Office of Environment & Heritage to resume commercial killing of red kangaroos with a 20,046 quota, which is 10% of the alleged estimated population.

Re-opening Tibooburra to commercial killing goes against the objectives of the EPBC Act because it fails to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way. The EPBC Act also requires that *the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife*. A biologically impossible increase of 153% should have inspired the precautionary principle.

For instance, the 2019 estimate of red kangaroos in Tibooburra was 79,346. NSW was in drought conditions, so any increase is unlikely. Furthermore, this population declined by 69.7% in 2018 and 77% in 2019. In 2020, grey kangaroos in Tibooburra declined by 86%. Red kangaroo numbers continued to decline in the adjacent management zones in South Australia. Under the circumstances, a decline in red kangaroo numbers is more probable than an increase. If the red kangaroo population remained steady at 79,346 in 2020, a quota of 20,046 could potentially be 25% of the population. If the red kangaroo population declined by a modest 10%, a quota of 20,046 could potentially be 28% of the population.

Tibooburra should have remained closed to commercial and non-commercial killing in 2021.

Commercial killing was suspended in Cobar in 2019 and 2020 due to critical minimum kangaroo densities generally considered at risk of extinction. Yet, in 2020, red kangaroo numbers allegedly increased by 184%. The biologically impossible increase allowed the NSW Office of Environment & Heritage to resume commercial killing of red kangaroos with a 17,422 quota, which is 17% of the alleged estimated population.

In addition, in 2020, grey kangaroo numbers allegedly increased by 504%. The biologically impossible increase allowed the NSW Office of Environment & Heritage to resume commercial killing of grey kangaroos with a 4,421 quota, which is 10% of the alleged estimated population.

Re-opening Cobar to commercial killing goes against the objectives of the EPBC Act because it fails to ensure that any commercial utilisation of Australian native wildlife for the purposes of export is managed in an ecologically sustainable way. The EPBC Act also requires that *the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife*. Biologically impossible increases of 184% and 504% should have inspired the precautionary principle.

⁷ [Harvest management in drought](#) (Pople A.R. 2003)

⁸ [A history of the debate \(1948-2009\) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg](#) (Daniel Lunney) Page 390

For instance, the 2019 estimate of red kangaroos in Cobar was 36,058 and grey kangaroos was 7,317. NSW was in drought conditions, so any increase is unlikely. Furthermore, red kangaroo numbers declined by 80.5% in 2018 and 19.4% in 2019. Grey kangaroo numbers declined by 55.8% in 2018 and 91% in 2019. Red and grey kangaroo numbers continued to decline in the adjacent management zones. Under the circumstances, a decline in red and grey kangaroo numbers is more probable than massive increases.

If the red kangaroo population remained steady at 36,058 in 2020, a quota of 17,422 could potentially be 48% of the population. If the grey kangaroo population remained steady at 7,317, a quota of 4,421 could potentially be 60% of the population.

Cobar should have remained closed to commercial and non-commercial killing in 2021.

Between December 2018 and January 2019, under drought conditions, there were three incidences of massive fish deaths (estimated at over 1 million fish) in the Lower Darling. Yet, in 2019, the red kangaroo population in the Lower Darling allegedly increased by 124.7%. The biologically impossible increase allowed the NSW Office of Environment & Heritage to increase the quota from 52,295 in 2018 to 117,490 in 2019. The quota more than doubled, even though the increase in red kangaroo numbers is impossible.

Between 2018 and 2019, red kangaroo numbers in Bourke allegedly increased by 103.2%. Between 2017 and 2018, grey kangaroo numbers in Narrabri allegedly increased by 63.5%. Between 2018 and 2019, red kangaroo numbers in Coonabarabran allegedly increased by 129.1%. Between 2019 and 2020, red kangaroo numbers in Griffith South allegedly increased by 137%.

Red kangaroo numbers in Broken Hill are biologically impossible. During the 2017 to 2020 drought, red kangaroos in Broken Hill increased by 45%. Research indicates that commercial killing at 0-20% during drought conditions can lead to a decline in kangaroo numbers by a minimum of 40-50%⁹. In the adjacent South Australian management zone, red kangaroos declined by 71%. However, the adjacent management zones in NSW experienced miraculous increases in red kangaroo numbers: 124.7% in Lower Darling, 184% in Cobar and 153% in Tibooburra. These massive increases raise the question: Where did all these red kangaroos come from?

In 2019, the number of red kangaroos in Lower Darling allegedly was the highest on record. Grey kangaroos in Lower Darling are allegedly defying drought and experiencing a boom period. These population estimates are at odds with years of scientific research and the reality of two droughts since 2000.

The alleged biologically impossible increases are numerous in every management zone. The increases in Tibooburra and Cobar appeared to be for the sole purpose of re-opening these management zones after they have been closed for two years. In any case, the irregularities and inaccuracies in the population surveys reveal that the current system is woefully inadequate to ensure the sustainability of NSW's regional kangaroo populations.

The EPBC Act requires that *the precautionary principle is taken into account in making decisions relating to the utilisation of wildlife*. The precautionary principle should prevent the NSW Office of Environment & Heritage from adopting biologically impossible increases in kangaroo numbers, especially when the density is considered at risk of extinction¹⁰ (Hacker et al, 2004).

⁹ [Harvest management in drought](#) (Pople A.R. 2003)

¹⁰ [Kangaroo management options In the Murray-Darling Basin](#) (Hacker et al, 2004) Page 37

The *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021* states: “The purpose of this plan is to provide a management framework for the commercial harvest of kangaroos in NSW.” This statement, combined with the mismanagement discussed in this submission, indicates that the priority of providing quotas for a profit-driven commercial industry sacrifices the health and well being of kangaroo populations and causes localised extinctions.

c) Threats to kangaroo, and other macropod, habitat, including the impact of: (i) climate change, drought and diversion and depletion of surface water sources, (ii) bushfires, (iii) land clearing for agriculture, mining and urban development, (iv) the growing prevalence of exclusion fencing which restricts and disrupts the movement of kangaroos.

Current kangaroo management uses proportional population management which means a fixed quota of the population can be harvested. Current management doesn't account for environmental stochasticity, such as drought and climate change.

Annual quotas are set for a calendar year that represent a percentage (15% for red kangaroos and 13-15% for the two grey kangaroo species) of the population estimated annually (in most areas) by aerial survey in the winter of the previous year. Even if the quotas are taken, the actual rates of harvest will differ from 13-15%, because populations will rarely remain stable. There is therefore some risk of over- or underharvest. If the population halves over 12 months, the actual harvest rate over the year becomes roughly 21% instead of the desired (set by quota) rate of 15%. If the decline is 80%, the annual harvest rate is likely to be around 34%¹¹. (Harvest management in drought, Pople AR, 2003)

In 2017, the estimated red kangaroo population for Narrabri was 785,211. By 2018, the estimated population had declined by 55% to 353,348. The 2018 quota, which was set in 2017, was 133,486, which equates to 38% of the population.

In 2017, the estimated red kangaroo population for Coonabarabran was 588,404. By 2018, the estimated population had declined by 63% to 218,312. The 2018 quota, which was set in 2017, was 100,029, which equates to 46% of the population.

In 2017, the estimated red kangaroo population for Griffith was 819,450. By 2018, the estimated population had declined by 65% to 284,853. The 2018 quota, which was set in 2017, was 139,307, which equates to 49% of the population.

Quotas don't take drought or climate change into consideration. When populations decline, as in the above examples, quotas are risky and detrimental to the survival of regional kangaroo populations, in breach of the EPBC Act.

By April 1965, the percentage of female red kangaroos with young, as shown by a CSIRO study, had dropped since December 1963 from 71% with pouch young and 25% with young at foot to 8% with pouch young and 1% with young at foot¹² (Daniel Lunney, 2010).

If average rainfall drops by more than c. 10%, any level of harvesting of red kangaroos may be unsustainable, emphasizing the need for integrating climate change predictions in population management and increase our understanding of how environmental stochasticity translates into

¹¹ [Harvest management in drought](#) (Pople AR, 2003) Page 3

¹² [A history of the debate \(1948-2009\) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg](#) (Daniel Lunney) Page 390

population growth rate¹³ (Jonzen et al (2009)).

In a mild drought 83% of young red kangaroos die and in a severe drought juvenile mortality is 100%¹⁴. Red kangaroo populations can fall by between 41% - 59% and 45% - 55% for grey kangaroos during drought^{15 16}. Despite the recent severe drought across NSW, the annual quota remained at (10%-17%) for red kangaroos and (12-15%) for grey kangaroos, meaning that kangaroos are being killed beyond their reproductive capacity.

The 2019–20 bushfires were unprecedented in their extent and intensity, with the fire ground in NSW covering 5.5 million hectares (7% of the State), including over 2.7 million hectares in national parks (38% of the NSW national park system). After the bushfires, NSW was criticised for continuing the commercial and non-commercial slaughter of kangaroos, even though the number of kangaroos killed by the bushfires was unknown and the continued killing was detrimental to kangaroo populations. A WWF report concluded that 143 million mammals had been killed or displaced by the bushfires. The EPBC Act requires that an assessment of the activities (killing) is completed to ensure that the activities (killing) isn't detrimental to kangaroo populations. Such an assessment wasn't completed, and the killing continued unabated, in breach of the EPBC Act.

According to *New South Wales Deforestation Data Analysis Three Case Studies 2016-2018*, produced by Nature Conservation Council and WWF, bulldozing of native bushland has nearly doubled in three study areas in NSW – North West, Central West and Hunter regions – since the *NSW Native Vegetation Act 2003* (NVA) was repealed in August 2017. 71 threatened species lost habitat due to clearing over two years. This report's findings are consistent with earlier analysis of clearing in the Moree Collarenebri region in the northwest of the state.

The report, *Kangaroos*, tabled by the Select Senate Committee in 1988, recommends that kangaroo habitat is protected and cannot be cleared. Obviously, this recommendation was ignored. Kangaroo habitat needs to be protected, even if landholders are given incentives to protect kangaroo habitat and allow kangaroo grazing on their properties. We must learn to co-exist with wildlife, instead of committing the international disgrace of mass slaughter.

Many agribusinesses target kangaroos with exclusion fencing. The NSW Government considers exclusion fencing as a form of kangaroo "management" that "gives landholders complete control of grazing pressures", even though exclusion fencing kills hundreds of animals in the process.

Kangaroos are particularly prone to getting their limbs caught in the fence or on the barbed wire strands, which results in kangaroos being trapped, injured or killed. Trapped kangaroos are subject to exposure, dehydration, starvation, stress, and predation. Kangaroos fleeing stressful events or environments are more likely to injure themselves when being chased, desperately seeking food and water, or trying to escape from bushfires or human threats. Fence boundary checks are infrequent, and kangaroos are rarely found alive.

Governments often talk about drought as an animal welfare issue because kangaroos die without food and water. Yet, the same governments create these animal welfare events by not only allowing but advocating the use of exclusion fencing. It should be mandatory for all landholders to allow the

¹³ Jonzen et al (2009) Stochastic demography and population dynamics in the red kangaroo *Macropus rufus*

¹⁴ WDL Ride 1970 A guide to the native mammals of Australia. Oxford University Press

¹⁵ Caughley, J. Peter Bayliss and Jack Giles 1984. Trends in Kangaroo Numbers in Western New South Wales and their relation to Rainfall. Aust. Wildl. Res., 1984, 11, 41 5-22

¹⁶ Caughley et al. 1985 The effect of drought on kangaroo populations. Journal of Wildlife Management, 1985 - JSTOR

migration of Australian wildlife. Therefore, exclusion fencing should be banned or altered to ensure that wildlife can still migrate through the Australian landscape.

The number of kangaroos killed by fences isn't recorded.

d) Current government policies and programs for kangaroo management, including: (i) the method used for setting quotas for kangaroo culling, (ii) the management of licences to cull kangaroos, (iii) temporary drought relief policies and programs.

The *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021* states: “Maximum harvest quotas are set at 15 per cent of the population for grey kangaroo and common wallaroos, and 17 per cent of the population for red kangaroos (Hacker et al. 2004; McLeod et al. 2004).”

Kangaroo management options In the Murray-Darling Basin (Hacker et al, 2004) concludes that the abovementioned percentages are sustainable but only on kangaroo populations with a density greater than 10 kangaroos per square kilometre.

Density of unharvested populations in these simulations rarely fell below a minimum of 5 individuals/sq km. Although the critical minimum density is not clearly defined, populations below 2/sq km would generally be considered at risk of extinction. On this basis, Figure 19 suggests that any option resulting in an average long-term density of less than 10/sq km should be rejected since in all such cases the minimum density is likely to fall below the critical level¹⁷ (Hacker et al, 2004).

Situation Analysis Report Update on Current State of Scientific Knowledge on Kangaroos in the Environment, Including Ecological and Economic Impact and Effect of Culling (Penny Olsen & Tim Low) was prepared for the Kangaroo Management Advisory Panel March 2006. The report states:

Within individual management zones, there is no need for a quota when kangaroos are above a certain density. For example, quota-free at (fictional) densities greater than 20 kangaroos/km², a quota imposed at densities between 10–20/km² and no harvesting at all below 10/km². Such thresholds would protect kangaroo populations from improving economics in the harvesting industry whereby it became profitable to harvest a greater proportion of the population than is currently economically viable¹⁸ (Penny Olsen & Tim Low, 2006).

Given this research, red kangaroos should not be commercially or non-commercially killed in the following management zones: Tibooburra, Lower Darling, Cobar, Bourke, Coonabarabran, Griffith North and Griffith South.

Grey kangaroos should not be commercially or non-commercially killed in the following management zones: Tibooburra, Broken Hill, Lower Darling, Cobar, Bourke, Griffith North and Griffith South.

Wallaroos should not be commercially or non-commercially killed in the following management zones: Armidale, Glen Innes and Upper Hunter. No management zone has a large enough population of wallaroos to justify any killing.

Current kangaroo management uses proportional population management which means a fixed quota of the population can be harvested. Current management doesn't account for environmental stochasticity, such as drought, bushfires and climate change.

¹⁷ [Kangaroo management options In the Murray-Darling Basin](#) (Hacker et al, 2004) Page 37

¹⁸ [Situation Analysis Report Update on Current State of Scientific Knowledge on Kangaroos in the Environment, Including Ecological and Economic Impact and Effect of Culling](#) (Penny Olsen & Tim Low. 2006) Page 96

In NSW, a landholder simply has to complete a 2-page application form to kill kangaroos on their property. While the form asks for “impacts to property and/or safety”, there’s no requirement to provide evidence. Furthermore, no one from the NSW Office of Environment & Heritage bothers to check whether there’s a need for kangaroos to be killed by a landholder. The application is approved without the need for corroborating evidence or investigation.

No one polices or monitors the non-commercial or commercial killing of kangaroos at the point of kill, so no one knows whether shooters are abiding by permits or whether more kangaroos are being killed without authority. In 1988 the Select Senate Committee was provided with testimony that suggested that the number of kangaroos legally and illegally killed was about the same. Kangaroo killing must be better policed and monitored.

The fact that Australian Governments encourage the killing of kangaroos through commercial and non-commercial permits, as well as exclusion fencing, means that this attitude from the top creates an animal welfare and abuse problem. Kangaroos are regularly killed by people deliberately driving into them or setting their dogs on them. Australian Governments must set a new example of strict protection and conservation of kangaroos.

Instead of allowing landholders to kill kangaroos because of the belief that kangaroos destroy crops and compete with livestock, Australian Governments need to provide incentives for landholders to protect kangaroo habitat and to allow kangaroos to free range on their properties. However, there’s a need for evidence to prove that landholders are conserving habitat and allowing kangaroos to use their land. This system is open for abuse without monitoring and evidence.

e) Current government policies and programs in regards to 'in pouch' and 'at foot joeys' given the high infant mortality rate of joeys and the unrecorded deaths of orphaned young where females are killed.

The new Code describes two methods for euthanasia of unfurred pouch young, including cervical dislocation and decapitation. How to perform these methods is specified in the new Code. However, without policing or monitoring, it’s impossible to know whether shooters are performing these methods in the field. There’s no requirement for training. Therefore, it’s unlikely that shooters are performing these methods with any accuracy due to not receiving training.

The *AVMA Guidelines for the Euthanasia of Animals: 2013 Edition* outlines that the methods of cervical dislocation, decapitation and blunt force trauma have significant potential to be inhumane unless performed by highly trained and skilled individuals. In forums, the shooters confirmed that more training is needed if they are to perform these methods adequately. In addition, feedback from shooters revealed an unwillingness to read text – images/graphics were preferred. Therefore, it’s unlikely that humane killing of young kangaroos ever occurs.

Euthanasia of partially-furred to fully-furred pouch young requires a concussive blow to the head. An act of violence towards young kangaroos is sanctioned by the Code.

Wildlife carers often tell of young kangaroos abandoned by shooters in the field. Stories range from joeys left in the pouch and discovered in chiller boxes to Young at Foot found lost and calling for their deceased mothers.

When female kangaroos are shot during commercial harvesting, it is a requirement that dependent young-at-foot are euthanased. However, there are anecdotal reports that harvesters either cannot euthanase young-at-foot (eg they do not see them or they flee) or will not (eg they do not think it is

necessary)¹⁹. (T.M. Sharpe and S.R. McLeod, 2016)

Furthermore, joeys remain dependent upon their mothers up to the age of two years old. These dependents can easily be mistaken for adults.

The *NSW Commercial Kangaroo Harvest Management Plan 2017 – 2021* implies under the heading "Male-only harvesting" that the industry adopted male-only commercial killing. This implication is false and misleading. In 2019, 23% of commercially killed eastern grey kangaroos, 23% of commercially killed red kangaroos and 24% of commercially killed western grey kangaroos were females.

On average, some three million kangaroos are commercially killed annually (Table 2). A projection based on the above considerations (as there is no formal assessment) and the national commercial kill statistics (Department of Sustainability, Environment, Population and Communities [DSEPC] 2010) for the period 2000–2009 estimates that approximately 840,000 females, 210,000 young-at-foot and 590,000 pouch young were killed annually (Table 2)²⁰ (Dror Ben-Ami et al, 2014).

The only way to avoid the risk of abandonment and violence against young kangaroos is to prohibit the killing of female kangaroos.

Recent evidence suggests that the 'evolutionary potential' (development and transferral of genes) of individuals is likely to be affected by the fitness level and quality of mothers (East et al 2009). Female kangaroos are generally most reproductively successful between the ages of 6–15 years (Bilton & Croft 2004). The death of these larger females not only impacts nutritionally dependent offspring but may be detrimental to other group members due to a variety of social interactions and dependencies. Social learning from the mother is likely to be a key factor to survivorship into adulthood (Higginbottom & Croft 1999), particularly as diet preferences and the ability to discriminate amongst plants are likely to be learnt from the mother (Provenza 2003). Female kangaroos also invest in training offspring to discriminate among stimuli used to assess predation risk (for a review, see Higginbottom & Croft 1999). Females that associate frequently with the same individuals are able to graze longer because they can afford to be less vigilant (Carter et al 2009). Social learning also occurs in male groups. Play-fights often occur between mixed-age groups to assist training and to assess potential competitors (Croft & Snaith 1991). Adult male kangaroos, particularly the more social eastern and western grey kangaroos, are thought to be important in maintaining group cohesion (Pople & Grigg 1999). The loss of larger and older adults from a population through a size-selective commercial killing (Pople 2004; Pople et al 2010) may have consequences for the fitness of the remaining individuals and destabilise social structures, (as already expressed by Grigg 1997; Croft 2004)²¹ (Dror Ben-Ami et al, 2014).

The only way to avoid negatively impacting on the genetics, evolutionary potential and social behaviour of macropods is to prohibit commercial and non-commercial killing.

¹⁹ [Kangaroo harvesters and the euthanasia of orphaned young-at-foot: applying the theory of planned behaviour to an animal welfare issue](#) (Sharp, TM; McLeod, SR, 2016)

²⁰ [The welfare ethics of the commercial killing of free-ranging kangaroos: An evaluation of the benefits and costs of the industry](#) (Dror Ben-Ami et al, 2014)

²¹ [The welfare ethics of the commercial killing of free-ranging kangaroos: An evaluation of the benefits and costs of the industry](#) (Dror Ben-Ami et al, 2014)

f) Regulatory and compliance mechanisms to ensure that commercial and non-commercial killing of kangaroos and other macropods is undertaken according to the Biodiversity Conservation Act 2016 and other relevant regulations and codes.

Commercial and non-commercial shooting isn't policed or monitored at the point of kill. Any regulations and codes are meaningless.

g) The impact of commercial and non-commercial killing of kangaroos and other macropods, including the difficulty of establishing numbers killed by landholders since the removal of the requirement for drop tags.

In NSW, a landholder simply has to complete a 2-page application form to kill kangaroos on their property. While the form asks for "impacts to property and/or safety", there's no requirement to provide evidence. Furthermore, no one from the NSW Office of Environment & Heritage bothers to check whether there's a need for kangaroos to be killed by a landholder on a property. The application is approved without the need for corroborating evidence or investigation.

No one polices or monitors the non-commercial or commercial killing of kangaroos at the point of kill, so no one knows whether shooters are abiding by permits or whether more kangaroos are being killed without authority. In 1988 the Select Senate Committee was provided with testimony that suggested that the number of kangaroos legally and illegally killed was about the same. Kangaroo killing must be better policed and monitored.

Our organisation has heard numerous stories of people moving to rural areas for the benefits country living provides over city living. However, their "seachange" turned into a nightmare when they were confronted by regular shooting of kangaroos on neighbouring properties. The new country dwellers were frightened by the spotlighting and shooting which infringed on the enjoyment of their properties. Worse still, the shooters threatened and harassed the new country dwellers, so much so that they moved back to the city.

Any efforts to attract city dwellers to move to rural locations is wasted, when shooting turns peaceful country living into something out of a horror movie.

(h) Current and alternative measures to provide an incentive for and accelerate public and private conservation of kangaroos and other macropods.

Kangaroos cannot continue to be "managed" for the sole purpose of providing carcasses to a commercial industry. The concepts of conservation and commercialism are directly opposed. The current management, which favours commercialism over conservation, is risky and detrimental to kangaroo populations, in breach of the EPBC Act.

NSW needs an independent organisation, which is fully funded (possibly from tourism), to accurately count kangaroos and ensure conservation of our national icon. NSW already spends almost one million dollars annually on the "management" of kangaroos. This money could be reallocated to an independent taskforce. Money needs to be prioritised to preserving Australian wildlife, including kangaroos, especially when we're already facing the impacts of climate change.

If farmers can demonstrate crop damage to a responsible wildlife management official, subsidies should be paid for loss. Farmers should be discouraged from clearing marginal areas, now kangaroo habitat, for cropping.

Kangaroo habitat must be protected, restored and expanded. NSW needs wildlife corridors.

Corridors are critical for the maintenance of ecological processes including allowing for the movement of animals and the continuation of viable populations. By providing landscape connections between larger areas of habitat, corridors enable migration, colonisation and interbreeding of plants and animals.

When native vegetation is cleared, fragmented patches or islands are created. These patches may become increasingly cut-off from other areas of habitat resulting in many plant and animal species becoming isolated, especially when land between the patches is permanently altered for human activities. As these vegetation patches are reduced in size and become increasingly isolated, the on-going viability of ecosystems and individual populations of species within them is severely affected. This ultimately leads to a break down in ecological processes such as species migration, dispersal, recycling of nutrients, pollination of plants and other natural functions required for ecosystem health²². (Department of Infrastructure, Planning and Natural Resources, 2004)

One of the excuses used to justify the commercial killing of kangaroos is that the industry creates employment and brings income into regional communities. NSW aims to be premier visitor economy of the Asia-Pacific by 2030 with a new focus on the day trip market, worth an estimated \$10 billion, and growing opportunities in regional NSW as a key to the future, to contribute \$25 billion²³.

Kangaroos and koalas were much more popular than any other types of animals, with 43.2% of all international tourists wanting to see a kangaroo during their visit (and 44% wanting to see a koala). There are currently at least 192 tourism enterprises in Australia that include opportunities for kangaroo viewing. An estimated 80% of these enterprises involve mainly free-ranging (rather than captive) wildlife. The survey of advertising material showed that kangaroos feature in wildlife tourism enterprises more frequently than any other type of wildlife, with kangaroos featuring in 65% of captive wildlife tourism enterprises and 41% of those involving free-ranging experiences²⁴ (Higginbottom et al, 2004).

Kangaroos in tourism has the potential to bring in billions of dollars. Landholders could be encouraged to protect kangaroos and kangaroo habitat for regional tourism. Government investment in regional tourism can include incentives for landholders to preserve wildlife for local tourism.

NSW should promote the use of wildlife friendly fencing. Instead of giving grants for exclusion fencing, the NSW Government should ban the use of barbed wire in fencing and offer grants for wildlife friendly fencing, which doesn't injure or kill wildlife and enables easy migration.

The NSW Government should invest in virtual fencing in areas where collisions with wildlife are a problem. Virtual fencing made its Australian debut in Tasmania where the technology is utilised to help protect the vulnerable Tasmanian devil, resulting in a 50% reduction in road-kill events across the common species recorded.

The NSW Government should also fund or offer subsidies for wildlife detection devices to be fitted to motor vehicles in locations where collisions with wildlife are known to be a problem.

²² [Wildlife Corridors](#) (Department of Infrastructure, Planning and Natural Resources, 2004)

²³ <https://nsw.liberal.org.au/Shared-Content/News/2021/NSW-AIMS-TO-BE-PREMIER-VISITOR-ECONOMY-OF-THE-ASIA-PACIFIC-BY-2030>

²⁴ [The role of kangaroos in Australian tourism](#) (Higginbottom et al, 2004)

The NSW Government needs to invest in research on how to best co-exist with kangaroos, given that nature balances kangaroo numbers. In good conditions, kangaroo numbers increase. In poor conditions, such as drought, kangaroo numbers crash. For instance, the estimated number of red kangaroos in NSW in 2017 was 5,132,654. As a result of the 2017-2020 drought, the estimated number declined to 2,924,368 in 2020.

Attitudes toward kangaroos begin at the top. The NSW Government endorses and oversees the non-commercial and commercial killing of kangaroos. The message is that kangaroos should be killed. Apparently, there's no other option. Therefore, millions of kangaroos are killed each year, legally and illegally, as if they are an introduced pest species. The NSW Government needs to stop endorsing and overseeing the wide-spread slaughter of kangaroos. Instead, the NSW Government needs to change the dialogue to conservation and co-existence.

Conclusion

The *NSW Kangaroo Management Program 2021 Quota Report* reveals serious problems with the NSW commercial killing of kangaroos. Estimated populations increase by percentages which are biologically impossible. While kangaroo numbers are known to decline during drought, based on the best available science, NSW kangaroo populations regularly defy the odds and allegedly increase during drought. Kangaroos are also known to stop breeding or breeding is substantially reduced to be negligible. Yet, NSW kangaroo populations often experience large increases during drought, which is biologically impossible.

The population estimates are all over the place and cannot possibly be accurate. In addition, current kangaroo "management" uses proportional population management which means a fixed quota of the population can be harvested. Current management doesn't account for environmental stochasticity, such as drought and climate change. Methods of counting kangaroos and setting quotas, which may have been appropriate back in the 1970's, are no longer suitable for the 2020's.

The report – *Kangaroos* – by the Senate Select Committee, tabled 1988, is still relevant today. So much hasn't changed. So many recommendations have been ignored. The time for change is well overdue.

Internationally Australia is condemned for killing millions of kangaroos every year. The US has introduced the *Kangaroo Protection Act* which will ban the importation of kangaroo products. The EU is also working on banning kangaroo imports into the EU. Many international activist groups campaign against the trade in kangaroo products, including Viva!, Eurogroup for Animals, Center for a Humane Economy, PETA and so on.

The rest of the world views the massive killing of our unique macropods with disgust. Australia is regarded in most respects as an advanced and technologically adept nation. However, the continuing decimation of our unique wildlife demonstrates to the world that we are unwilling to address our international responsibilities. (Kangaroos, Senate Select Committee, 1988)

There's no doubt that kangaroos are in decline. Our organisation often hears of people driving from A to B and back again without seeing any kangaroos, dead or alive. Sometimes people mention seeing one or two kangaroos. The mobs seem to be disappearing. Human interference has had a detrimental impact on macropods. Instead of living in large mobs, kangaroos now seem to be so scattered and fragmented that normal practice is to see individual kangaroos or small groups, such as

a mother and joey or a mother and young at foot. To say that the mass slaughter of kangaroos isn't causing any negative impacts to kangaroos is as ridiculous as the biologically impossible increases.

The kangaroo killing machine says what it needs to say to justify killing kangaroos. In truth, there is no justification for turning Australia's identity – the kangaroo – into a killing industry. The killing machine claims that history tells us that killing kangaroos is sustainable. In fact, history tells us the exact opposite – that killing kangaroos places them at risk of extinction.

Fox (2008) recorded that the Great Drought of 1901- 03 produced fears in the media for the red kangaroo, and legal protection was given for a period of five years²⁵ (Daniel Lunney, 2010).

During the latter half of 1964 and over 1965 the Fauna Protection Panel staff in common with the CSIRO Division of Wildlife Research, certain kangaroo meat operators and other interested people has become aware of the red kangaroo population crash. On advice from the Fauna Protection Panel measures have been introduced by State Cabinet which it is hoped, will stop, or significantly, slow down this decline²⁶ (Daniel Lunney, 2010).

In summary, we provide the following quote: *Any wildlife management program should be organised to err on the side of conservation. Such is not the case with the kangaroo program.* (Kangaroos, Senate Select Committee, 1988)

Appendix 1

Ben-Ami, D., Boom, K., Boronyak, L., Croft, D., Ramp, D., Townend, C. (2011). *Welfare implications of commercial kangaroo harvesting: Do the ends justify the means?* THINKK, the kangaroo Think Tank, University of Technology, Sydney

²⁵ [A history of the debate \(1948-2009\) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg](#) (Daniel Lunney) Page 387

²⁶ [A history of the debate \(1948-2009\) on the commercial harvesting of kangaroos, with particular reference to New South Wales and the role of Gordon Grigg](#) (Daniel Lunney) Page 390

THE ENDS

- 1) Damage mitigation: Although kangaroos are largely perceived as pests in the rangelands current research does not indicate that they are overabundant in the landscape. The estimated annual costs incurred by farmers due to kangaroos is placed at AUS \$44 Million (M) or \$1.67 per kangaroo/year. This is markedly lower than previously estimated at over \$200 M due to long-term research showing that there is minimal loss in pastoral property productivity due to competition between livestock and kangaroos for resources.
- 2) Commercial value: The kangaroo industry estimated its worth to the Australian economy in 2005 at \$200 M, providing approximately 4000 jobs. Recent low revenues of \$50 M for 2008/2009 (for meat, pet food and skins) and reports of financial hardship to shooters due primarily to quality control issues and extreme climatic fluctuations suggest that industry worth is over-valued.
- 3) Environmental value: In recent years the commercial killing of kangaroos has been considered to be environmentally friendly due to the perception that there are too many kangaroos and that they can replace livestock in the landscape. There is no convincing data to support claims of overabundance. Moreover, kangaroos are mostly shot by shooters in a separate activity to the livestock industry, and we have not observed convincing evidence that replacement is likely to occur in the future. Finally, consideration of the full environmental/ecological costs of the industry has not been properly canvassed.

THE MEANS

- 1) Young: Every year over a million dependent young die as collateral damage to the commercial kill (approximately 300,000 young at foot and 841,000 pouch young per year). This would be unacceptable in the livestock industry. There is currently no routine field auditing of compliance with the National Code of Practice for the Humane Shooting of Kangaroos (Commercial Purposes and termed the "Code") into the manner of killing of pouch young or to the fate of dependent young. Ecological data suggests the young are highly unlikely to survive without their mothers and will die of starvation, dehydration, exposure or predation.

- 2) Adults: Field data suggests that anywhere from 120,000 to over a million kangaroos are miss-shot annually. There is virtually no monitoring of killing in the field and given the field conditions of the killing it impossible to do so.
- 3) Evolutionary potential of individuals and genetic integrity: The social structure of kangaroo groups is likely to have evolutionary significance in maximising the ability of individuals and ultimately populations to persist. Research is necessary on the impact of the kills on the various species' social systems and their long term genetic integrity.
- 4) Compliance: There is increasing awareness that the Code is both impossible to regulate and unsatisfactory in its provisions. It is within the gap between what the Code says and what occurs in practice that the strongest welfare concerns emerge. The Code provides that kangaroos are to be brain shot, yet it would appear that kangaroos shot in the neck are regularly processed. The Code provides that injured kangaroos are to be euthanized quickly and humanely, yet shooters are permitted to shoot more than one kangaroo in a group before retrieving the carcass. Furthermore, although the Code prescribes methods of killing joeys, there is considerable doubt about the humaneness of these methods and the capability and/or willingness of shooters to perform them.
- 5) Public attitudes: The comparative study of commercial kangaroo killing with the killing of other wildlife such as Harp Seals, whales and White-Tailed Deer has revealed that three key drivers are found in public attitudes to wildlife kills: commercial value, 'pest' status and ecological concerns. The parallels between these industries and increasing awareness to animal welfare indicates that without a resolution of the outstanding welfare issues of the kangaroo industry, an Australian moratorium and/or international trade ban on commercial kangaroo killing may eventuate.

DO THE ENDS JUSTIFY THE MEANS?

The legitimacy of the ends of the kangaroo industry is questionable, particularly the much inflated perceptions of kangaroos as pests (damage caused to farmers and the landscape) and as a panacea for Australia's land degradation and green house gas emissions. The 'means' by which kangaroos are killed carry a high welfare cost to both adult kangaroos and dependent young that is below the mandated welfare standards in the Codes. Therefore the ends of the kangaroo industry do not justify its current means.