

Submission
No 281

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

Organisation: Tree of Compassion

Date Received: 26 April 2021



Tree of Compassion

www.treeofcompassion.org.au

Charitable Fundraising Authority

CFN/22392

ABN 65331932350

Monday, 26 April 2021

SUBMISSION into the

INQUIRY INTO THE HEALTH AND WELLBEING OF KANGAROOS & OTHER MACROPODS IN NSW

Response to Terms of Reference for Portfolio Committee No 7

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

The populations of kangaroos and other macropods fluctuate depending on availability of water and food sources and climate variability. Whilst flooding and disease outbreaks can cause population decline, usually localised, the impact of drought can be devastating. The annual survey in NSW estimated in 2020 there were 10.5 million animals compared to 14 million in 2019. This is a decrease of just over 25%. In some regional areas, populations dropped more than 25%. Additionally, this estimated decrease of 4 million animals comes only after a record peak of about 17 million red and grey kangaroos and wallaroos recorded in 2016. And yet despite the devastating drought quickly followed by unprecedented bushfires, the quota for kangaroos increased from 1,838, 656 in 2019 to 2,126, 176 in 2020! Whilst the surveys took place prior to the bushfires, these figures should have been amended. And whilst a large part of the commercial zone was outside of the fire impacted area, kangaroos were still being killed by shooters in areas affected by fire or adjacent to them.

Whilst the general public may believe that kangaroos numbers have increased since European settlement, this is not uniform across the state. People have changed the landscape substantially. The idea that kangaroo numbers have increased due to artificial watering points completely ignores the fact that before there were dams everywhere on farms, there was water flowing in creeks and waterholes, many of which have since dried up due to an alteration of natural flow regimes by people. Irrigation, longwall mining, water extraction, all these have changed the available water that kangaroos would have previously had access to right across the state.

There are negative impacts from change in habitat and increased new threats such as cars and fences. Much of the coastal strip around the state as well as around major cities exclude kangaroos or pose a serious threat via roads. So whilst the range of these species, eg, Eastern Grey Kangaroos, may not be reduced, this development has resulted in fragmentation of meta populations. There are large areas of the landscape where one or more macropod species either no longer occur or are rarely sighted. Fertile land has largely been developed for agriculture and other rural activities. These cleared areas lack shelter and are fenced off, usually by barbed wire which frequently results in injured wildlife (not just of macropods but other species) or increasingly, exclusion fencing which kangaroos cannot cross and is

particularly dangerous during disaster like bushfires. And if they can get through the fence, they are often subject to shooting, given that much of NSW is included in commercial harvest zones, or chased by dogs.

A number of macropods are listed as threatened species in NSW being the Parma Wallaby (*Macropus parma*), the Red-legged Pademelon (*Thylogale stigmatica*), the Black-striped Wallaby (*Macropus dorsalis*), the Brush-tailed Rock-wallaby (*Petrogale penicillate*) and the Yellow-footed Rock-wallaby (*Petrogale xanthopus*).

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

Across Australia, the states use varying methods to estimate populations and there is no agreed methodology. The frequency of population surveys also varies.

The method by which macropods are counted has often varied and seems to have a history of inaccuracy and discrepancy. According to ecologist Ray Mjadwesch (2011):

But between 1979 and 1980 something strange happens – the figure increases by 30% in a single year, then by 13%, then by 25%. Over the next 2 years numbers crash by 50% p/a, but then between 1984 and 1985, they miraculously double! That's a 100% increase! Numbers have since been extremely erratic and increasingly implausible.

The best estimates of population growth for grey kangaroos seem to indicate that 9-11% growth is reasonable under standard conditions (eg: Arnold et al 1991, Banks et al 2000). A 30% increase in one year is given as possible in the wild under exceptionally good seasonal conditions (eg: Strahan 1995), however the only reference to growth rates of 30% (and higher) seem to be "calculated" growth rates, or being referred to population estimates based on aerial survey and application of various "correction factors", rather than observed population growth rates in detailed (small) population studies in the field.

Where do 100% increases come from? When you consider the data on a zone by zone and species by species basis, it becomes obvious something must be very wrong with the methodologies being applied by OEH and their consultants. Growth rates approaching and over 50% are common in the accounts of kangaroo populations in the Zone by Zone descriptions of species in the DECCW (2009) 2010 Quota Report. Note that a 50% population growth rate requires in a population with M:F parity, that every female successfully rears its young to independence, and no animals die, for 12 months

Anyone that is involved in ecological field research will know the value of long-term fauna monitoring and the importance of repeated surveys at regular intervals using standardised methods. Yet this is not occurring. One reason may be because of correction factors applied to NSW data, which have varied over the years, vary upwards which we believe gives an overestimate of numbers. The Queensland government, for example, does not use correction factors for its' aerial counts as considered that their helicopter line-transects are accurate and precise.

How can an accurate population and population trends be determined if correction factors are changed for various scenarios? The changing methodology means there is no continuity of data and therefore "it is not possible to draw conclusions about the underlying population size using the graphs" (p5, Herbert & Elzer, 2011)

There is also the issue of the timing of surveys.

A key risk associated with triennial surveys is that a population may decline significantly in the time between consecutive surveys and the quota system will not be able to take account of this (p15, Herbert & Elzer, 2011).

This is precisely what happened with the wallaroo population estimates in the Northern Tablelands in the 2007 quota year which occurred at the end of a three year block so that the quota was based on 2004 data but the wallaroo population had declined during this three year period resulting in the numbers harvested being almost 20% of the population.

While a 20% take is almost certainly sustainable, even if it were taken every year, the current survey methodology makes it difficult for wildlife managers to ensure they stay within the targeted harvesting rate outlined in the current Kangaroo Management Plan (p16, Herbert & Elzer, 2011).

Surveys in the NSW Tablelands (the Northern Tablelands since 2001, and the Southeast Tablelands since 2003 and Central Tablelands since 2008) still only occur every three years (one region being surveyed each year to create a three year monitoring cycle) whilst only surveys in the Western Plains region occurring annually using fixed wing aircraft.

Adding to the difficult of obtaining accurate figures is that each survey area is divided into unknown proportions of various habitat types based on biophysical attributes. This means that correction factors are applied variably across each kangaroo management zone.

Whilst it is impossible to replicate survey methods and graph the data, it is still possible to look at the data that is available and identify trajectories. Mjadwesch (2011) looked at the data from 1988 – 2010 and concluded that “the only data trends being shown are downward” and yet the regulators still claim that the industry is sustainable.

Inaccurate population estimates will obviously mean that there is a risk that the quotas will be set too low or, which seems to be more likely given the correction factors used, too high. This of course, influences the sustainability of the whole program.

There is no doubt that the kangaroo trade is a multi-million dollar industry. Are those conducting research funded by this industry? Why are researchers failing to provide adequate assessments of population estimates? Why are the methods constantly changing and correction factors revised?

In terms of the assessment of health and wellbeing of populations, minimum carcass weights are prescribed in licences and are meant to ensure the taking of animals does not impact on population dynamic. The weight is also used to determine population health with a sudden drop in weight a trigger for harvest suspension in the affected area. Whilst one can determine some aspects of the health of a kangaroo from its dead body, there is a lot more that cannot be determined in terms of health simply from taking the weight of the body. And the wellbeing of kangaroos is certainly not going to be ascertained once they are shot dead and hanging in a chiller.

(c) threats to kangaroo, and other macropod, habitat, including the impact of:

(i) climate change, drought and diversion and depletion of surface water sources

As mentioned earlier, drought greatly impacts on macropods. In terms of impacts from climate change, drought intensity and frequency is most likely to be the biggest impact. According to the CSIRO (2021), average temperatures in Australia will increase together with evaporation. Rainfall variability is

predicted to increase with winter and spring rainfall decreasing and the risk of drought increasing. This change in rainfall leading to changes in vegetation and water availability is highly likely to affect kangaroo populations (Jonzen et al 2010; Pople 2003). Drought, as has been shown, will cause kangaroo numbers to decline.

Whilst kangaroo numbers are dynamic and they can recover from episodes of drought, the long-term effect of this is unknown. If periods of dry climatic conditions are frequent, particularly if intense, then it is logical that numbers will take longer to recover and there may be populations that simply won't. It is convenient for the kangaroo industry to argue that episodic population declines do not affect the sustainability of macropod populations but given that the numbers used in NSW are inaccurate and cannot be compared over the long-term, then this is not necessarily true. And as Mjadwesch (2011) determined, the long term trajectory is actually a decline.

(ii) bushfires

It is generally known that the frequency of fires in Australia will increase with climate change. This has already been witnessed with the 2019/20 fires. Bushfires, particularly intense fires, will either directly or indirectly cause the death of macropods. Depending on the speed, intensity and location of the fire, some species may be able to escape to adjacent areas of unburnt vegetation. However, this is becoming increasingly difficult given that much of the landscape is dissected by fencing. For example, a Tree of Compassion wildlife rescue and veterinary team present at the 2013 Coonabarabran fires counted over 300 metres 75 kangaroos of various ages caught in ringlock fencing, burnt, trying to flee fire in the adjacent Warrumbungle National Park.

Tree of Compassion, together with partner Southern Cross Wildlife Hospital, has been active in wildlife rescue at fires and other disaster across the country since 1994. Most of the animals being brought in for treatment from fires have been macropods. Some have been directly burnt from the fire, others have been burnt whilst crossing hot ground, and many others have incurred injuries (for example, fractures) whilst fleeing a fire or been attacked by predators in fire ravaged areas.

Unfortunately, many of the animals coming out of fires are euthanised although they do not necessarily need to be. Our team has extensive experience in treating wildlife including those affected by fires but sadly, many others, including veterinarians, do not have this experience and consider that they cannot survive. This is an ongoing problem not just during bushfires, but day to day with veterinarians and some wildlife carers determining that animals should be killed rather than seek appropriate treatment. Many wildlife carers also think that they can treat injured (including burnt) macropods themselves rather than seek appropriate veterinary advice which leads to suffering for the animal and poor animal welfare outcomes.

It is also known that for some threatened macropod species, such as Brush-tailed Rock-wallabies, that high frequency and intense fire are critical threats.

(iii) land clearing for agriculture, mining and urban development

Land clearing is one of the main threats to wildlife. Vegetation is critical for all large macropods. Whilst in some rural areas, the clearing of vegetation to allow the growth of grasses and forbs has benefitted kangaroos, this also comes with the cost of fences, dogs on properties, disturbance from farming

activities, farmers with guns etc. Small stands of vegetation do not provide adequate refugia for macropods or most other wildlife.

In and around urban areas, kangaroo numbers have significantly changed. Obviously, where there are now houses and other buildings in towns and cities, kangaroos can no longer live. As mentioned earlier, whilst the range of some macropod species may not have been reduced, they no longer occur throughout that range and there are areas where they no longer occur at all. To say that there are more kangaroos now than at the time of settlement clearly ignores this. At that time, there were kangaroos in Parramatta, for example. There certainly aren't any now. In some areas bordering urban development, kangaroos may frequent due to the shelter of nearby forests and the appeal of managed areas of vegetation such as parks.

There is also the impact of road strike with kangaroos being killed or injured or/and orphaned. A significant number of patients presenting at the Southern Cross Wildlife Hospital are injuries incurred on the road.

Another significant impact of clearing is habitat fragmentation. This can impact not only population numbers but also the movement of genes. It can also mean animals are more prone to attacks from predators such as dogs and road strike as they try to traverse between habitats.

The impact of clearing on threatened species is recognised in programs such as the NSW governments, Saving our Species program. Whilst there are required impact assessment for threatened species, there is nothing for so-called common species like Wallaroos or Eastern Grey Kangaroos. The impact of clearing on these species is not taken into account when regulators are granting their approvals to clear.

(iv) the growing prevalence of exclusion fencing which restricts and disrupts the movement of kangaroos

Travelling across the NSW countryside it is difficult to find anywhere that is not fenced. This of course is an impediment to the free and safe movement of wildlife, particularly in the case of barbed wire fencing and exclusion fencing.

According to McLeod and Sharp (2020) exclusion fencing:

- prevents access to sources of water, food and shelter
- disrupts social groups
- alters natural movement patterns
- causes injury and death from entanglement
- causes injury and stress from trying to go over or push through the fence
- prevents movement during bushfires and flooding

Barbed wire fencing can not only a death trap for macropods, but for many other species such as bats, gliders, and birds. At the Southern Cross Wildlife Hospital that we partner with, we regularly see injured animals from barbed wire fences. It is not only the direct damage from entanglement that these fences inflict, but also the impact incurred as the animal attempts to free itself as well as the impact of dehydration as it languishes there and predation. We have had countless macropods, both adults and joeys, who have come into care this way (as well as other species). We have also seen many instances where a joey is caught in the fence and the mother hangs around for days and even longer to be with the young one. Each year thousands of thousands of animals die a slow death on these fences. Many

nocturnal species like bats, gliders and owls fail to see these fences or cannot clear the height in windy weather. The top strand of barbed wire is most often the problem as well as placement of the fence, for example, on ridge lines, near feed trees (not an issue for macropods), and across wildlife corridors. Livestock really do not need barbed wire fences to keep them in. Using plain wire or electric fences is a better choice.

Kangaroos and emus can get caught on plain wire or mesh fences too if the fence is too high. Unfortunately, exclusion fencing is becoming increasingly popular. These fences are too tall for kangaroos to safely get over. And as they stretch right to the ground, they cannot get under either or through due to tighter mesh spacing. Some also have barbed wire at the top, making them even deadlier. Cluster fences extending for hundreds of kilometres present an even more dire animal welfare impact. Coupled with deliberately excluding water in these fenced areas, any animal trapped is likely to die an agonising death as recognised in McCleod and Sharp (2020):

Denying enclosed kangaroos access to water will cause extreme suffering and result in their death from dehydration over a period of days. In 'dirt tanks', kangaroos can get bogged in the mud as they try to access water, which also results in extreme welfare impacts and death.

Fences become particularly deadly when an animal is trying to flee such as during a bushfire or flood. The photos included here were taken during the 2013 Warrumbungle National Park fire near Coonabarabran. As mentioned earlier, we counted 75 trapped kangaroos along 300m of exclusion fencing that tried but could not escape the fire due to the fence. This was on both sides of the road. Some were adults and some were young animals. There were also emus in the area. We understand that the fence was erected to keep goats out. Yet had the fence been lower, it still would have kept the goats out but allowed the kangaroos to get over the fence safely and out of the way of the fire.

There is also the increasing number of conservation projects that want to put up fences to keep out all herbivores, including native ones. There are a number of actions under the NSW Government's Saving our Species program that list as actions fencing of particular areas to keep out kangaroos. Any such fencing need to be backed up by evidence that macropods are actually causing the damage that is perceived and that fencing will make a difference and secondly, any such fencing that is erected should be 'wildlife friendly', that is, not contain barbed wire or designed in a way that would entrap animals.

Whilst some will argue that exclusion fences are an important tool to manage grazing pressure, they are also a deadly tool. There are better and safer ways to manage grazing pressure than these fences such as appropriate mesh sizes, avoiding the use of barbed wire, ensuring water is available for trapped animals, installing monitoring systems, regularly inspecting fences. There is an urgent need to better consider the risks and welfare impacts of exclusion fences and come up with alternatives.

McLeod and Sharp (2020) consider that:

"Given the potential for significant negative welfare impacts of exclusion fencing, especially TGP and cluster fencing, research needs to be conducted urgently to understand these impacts and to develop strategies to prevent or minimise harm".

Or just prohibit their use altogether.

With the erection of fences, particularly exclusion fencing, macropods are increasingly having their movement disrupted or prevented all together. The standard design of fences seems to be made deliberately to ensnare kangaroos. There are few places outside of national parks they can now safely reside.



(d) current government policies and programs for kangaroo management, including:

(i) the method used for setting quotas for kangaroo culling,

One of the most important means by which quotas are derived is by using population estimates. As stated earlier in this submission, these are not accurate. It is often assumed that if the quota is not met, then the killing must be sustainable. But the quota is often met in smaller zone and sometimes exceeded. For example, the quota for Eastern Grey Kangaroos in the Upper Hunter and for Red Kangaroos in Bourke in 2006 were actually exceeded. In addition, the official quota does not take into account the killing of young animals and non-commercial killing (Boom and Ben-Ami, 2010).

There also appears to be no correlation between quotas and any perceived need to control numbers for the benefit of the environment. Quotas do not relate directly to damage mitigation and therefore if it is actually necessary to kill macropods but instead, these animals are being treated as a resource to be used. Indeed, the finances generated through the actual issuing of licences/tags goes back to the very government Department that issues them in the first place raising the question of how independent are these decisions.

And then there are the Special Quotas on top of the usual quota so essentially it a further increase in the commercial quota. According to the Department of Planning, Industry and Environment's "Commercial Harvest Management Plan for 2017-2021":

The sole purpose of special quota allocations is to provide for commercial utilisation of kangaroos that would be shot and left in the field under the normal non-commercial licensing system. The special quota will therefore minimise the number of kangaroos shot under non-commercial licences. The

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special quota can only be considered for release when the commercial quota for a particular kangaroo management zone has been fully issued, and will not be allocated in zones where the commercial harvest is reduced or suspended due to low populations.

It also seems that rather than seek to increase the commercial quota from the Commonwealth, the NSW Government is instead conveniently letting them know after the fact.

Special quota allocations and the use of the special quota will be reported to the Commonwealth in the Quota Report and Annual Report.

On top of all this, there is the non-inclusion of all the joeys that are also killed either directly or indirectly as a result. These animals are not included in the quota yet they are also killed as a result of the licenced shooting.

Together with the inaccurate figures, the management of kangaroos in NSW seems more akin to making money and appeasing a particular lobby group than it does about actual wildlife management and good environmental practice. Killing kangaroos is not management.

(ii) the management of licences to cull kangaroos,

Commercial Licences:

Licences to kill kangaroos are issued by the NSW Department of Planning, Industry and Environment. To be granted a kangaroo harvester licence under the *Biodiversity Conservation Act 2016*, a person must hold a valid driver's licence or other form of identification, have a valid firearms licence, and successfully complete the Use of Firearms to Harvest Wild Game within the last 5 years. They must also abide by the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes (AgriFutures 2020).

Compliance with licences is under-resourced. It is also possible that there may be undue influence on regulators, such as Ministerial interference, to continue the status quo. It is conceivable that there are vested interests in keeping the kangaroo cull going as it is and ignoring anything to the contrary, including anything that could potentially place the industry in a bad light such as breaches of licence.

Non-commercial Licences:

Licences for non-commercial killing of macropods seem to be pretty easy to come by. Landholders are meant to try non-lethal measures to deal with any perceived macropod problem on their property. How does NPWS actually assess whether this has been done?

How do the regulators assess impacts of kangaroos on a given property? It is our understanding that in most cases, the maximum cull number is set according to the property size. In the majority of cases, it appears that the landholder does not have to provide evidence of kangaroo related damage to which they are requesting a licence for. And in those limited circumstances where licences are assessed on a case by case basis, what sort of evidence is required and how is it assessed? In both cases, what is the system to assess whether damage mitigation is actually needed or has been achieved?

Non-commercial killing is even less likely to be checked for compliance. The codes have no legal effect in NSW and although they may be a condition on commercial shooting licences, there is nothing for non-commercial shooters, particularly with the "drought relief" policy (see below).

According to the RSPCA, there are “large numbers of kangaroos shot inhumanely every year, particularly under the non-commercial system with no on-the-ground animal welfare monitoring of shooters” (<https://kb.rspca.org.au/knowledge-base/is-there-a-need-to-kill-kangaroos-or-wallabies/>). It is clear that the management of licences has failed to protect kangaroos and other macropods.

(iii) temporary drought relief policies and programs

In August 2018, the NSW Government lifted restrictions on non-commercial licences making it even easier for landholders to shoot macropods on their properties. The reason given was that kangaroo numbers had exploded and had even caused the drought to establish earlier. This is, of course, not backed up by scientific fact. Kangaroo numbers, for starters, do not explode under any conditions, let alone difficult ones. They do not reach sexual maturity fast enough or produce and successfully raise young fast enough for this to happen.

Unfortunately, the NSW Primary Industries Minister at the time, Niall Blair, just encouraged this view by stating in *The Land*: (15 June 2018)

“We have heard loud and clear that farmers and also road users throughout regional NSW, are seeing more and more kangaroos,” Primary Industries Minister Niall Blair said. “Kangaroos are causing damage to farm fences, eating what little pasture is left on the ground and drinking the limited water resources,” Mr Blair said.

Farmers and regional road users “seeing more kangaroos” is hardly evidence that numbers have substantially increased. And if they were indeed eating “what little pasture is left on the ground” (even though during non-drought times we know that they do not actually compete with farm animals for pasture) and were drinking the limited water resources, rather than trying to help these animals who needed food and water, the Government’s answer was too make shooting them easier!

“We are making it easier for landholders to manage high numbers of kangaroos. The changes will reduce red-tape and streamline processes for non-commercial licences. These changes will make it easier for landholders to respond to kangaroos.” (The Land, 15 June, 2018)

Under these changes, whatever little checks and restrictions were in place, have now been removed. For example, carcass tags are no longer required meaning that keeping track of animals shot is no longer required, volunteer recreational shooters are now permitted to shoot (with landholders consent) who are unlikely to be as accurate as a commercial shooter and therefore more likely to lead to animal welfare issues, shooter details are no longer required with the actual licence application but provided by the landholder to NPWS after the shooting again meaning that there is no check on who is shooting (i.e., their experience and ability). Whilst there have always been cases of people shooting on private property without complying with the legislation and Codes, now it is an all out free for all basically. We have heard so many reports of horrendous killings of kangaroos yet nothing is done about it. The removal of what little accountability there was for non-commercial killing, will just lead to indiscriminate wounding and suffering of an untold number of animals.

By the start of this year, 98% of NSW was declared to be drought free or recovering and yet the legal restrictions on the non-commercial shooting of kangaroos have not been reinstated. Not only have kangaroos and other macropods been impacted by drought (and it is well known and documented that drought has a significant impact on macropod populations) and shot during the drought in numbers we will never know, but then countless were decimated by wildfires in 2019/20. And yet we are still legally allowing the largely unregulated shooting of kangaroos for non-commercial purposes. This needs to change.

(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

There are no NSW government policies or programs in regard to pouch or at-foot joeys. Instead, the NSW government relies on National codes of practice for commercial and non-commercial shooting. Both codes contain only minimum standards for shooting macropods. This does not equate to 'best practice'.

The code for commercial shooting also allows for decapitation but also cervical dislocation. The code described how both dislocation and cervical dislocation are likely to cause pain but because the code is of the view (from a single study) that unfurred joeys with their eyes still closed are unconscious and do not feel pain, then this does not matter. This is a big leap to make. Our experience with wildlife in care, when, for example, giving subcutaneous fluids to an unfurred joey with eyes closed is that they can definitely feel it. They react to the needle and the fluids going in.

The code for non-commercial shooting allows small, furless pouch young to be killed by a "single forceful blow to the base of the skull sufficient to destroy the functional capacity of the brain" or by "stunning, immediately followed by decapitation by rapidly severing the head from the body with a sharp blade".

Whilst for furred pouch young, for both commercial and non-commercial shooters it is a single blow to the head. The code for commercial shooting states:

The efficiency and humaneness of this method depends on the operator's skill and determination. The concussive blow must be delivered with sufficient force and be precisely on target to ensure that adequate damage occurs to vital structures of the brain to cause immediate and sustained unconsciousness and death.

If this procedure is not performed correctly there will be varying degrees of consciousness and it is likely that the animal will suffer prior to death. If the first blow does not hit the skull but hits, for example, the jaw or a limb, or if the brain is not sufficiently destroyed, then the animal will experience pain and distress.

The assumption that these methods will be carried out competently and efficiently as to render a sudden and painless death by both commercial and non-commercial shooters is fanciful. As stated above in the non-commercial code, this is highly dependent on the shooter's "skill and determination". How is this regulated? Neither commercial or non-commercial shooters are required to undertake any training on how to humanely kill joeys.

Young at foot are also required to be killed where possible. Non-commercial shooters are to deliver a single shot to the brain or heart where it can be delivered accurately whereas commercial shooters are recommended to kill a joey of 5kg or under when caught by hand with a concussive blow to the head. That is quite a large joey to accurately deliver a single blow to. Those that are mobile are to be shot in the head or the chest if the joey is stationary. Again, the efficiency of these methods is dependent on the skill of the shooter. It is highly likely that many joeys will not have instantaneous deaths. In addition to suffering at the hands of the shooter, there will be many more who escape either injured or uninjured to die slow deaths from their injuries, or from dehydration, starvation, exposure or predation.

Whilst commercial shooters are required to undertake training in shooting and must pass a shooting competency test, they are not required to undertake any training on how to humanely kill joeys. This is even more apparent in non-commercial shooters where competency is not tested at all and there is very little regulation since animals shot no longer need to be tagged and carcasses are not processed.

All shooters must comply with the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-Commercial Purposes, however, unlike commercial harvesting, there is very little monitoring of compliance with this Code. Additionally, it is not a requirement to undergo competency testing; therefore, shooters conducting non-commercial shooting can have a wide range of skills and experience.

Although the Code requires that in most circumstances kangaroos must be head shot (i.e. killed by a shot to the head that destroys the brain), there is a higher incidence of animal cruelty with non-commercial shooting than with harvesting by professional shooters (RSPCA Australia, 1985; The Parliament of the Commonwealth of Australia, 1988). As for commercial harvesting, any dependent young of females that are shot during non-commercial shooting are required to be euthanased. (McLeod and Sharp 2020).

All shooters, whether commercial or non-commercial should be required to undergo mandatory training and assessment for shooting accuracy and killing methods for joeys. This is to continue, and there should be mandatory animal welfare monitoring of shooters in relation to not just the treatment of joeys, but adult macropods too.

Expecting shooters to confirm death by checking for a heartbeat, breathing, corneal reflex and response to a toe pinch is highly ambitious. And if death cannot be confirmed, the secondary methods recommended, such as bleeding out by cutting the carotid arteries and jugular veins in the neck, for example, are even less likely to be carried out effectively and humanely.

Both codes require that if a female with dependant young is killed, then the young are also killed. Why does this always have to be the case? Perhaps some of these joeys can be passed on to wildlife carers. Members of our charity have approached shooters numerous times to make arrangements for the safe delivery of orphaned young.

The codes are purported to protect the welfare of macropods but their provisions just end up legalising cruelty. We recognise that the non-commercial code discourages shooters from shooting females carrying large pouch young, but this is not enough. In practice we know that females with joeys are shot. We have seen countless joeys rescued from shooters or found following a shooting event. The only solution to completely avoid the cruelty associated with orphaned joeys is to not shoot (both commercially and non-commercially) females at all.

(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

As mentioned, several times in this submission, we consider that compliance to ensure that commercial and non-commercial killing of kangaroos is poor. We also consider that there are serious animal welfare concerns with this shooting. Having a code of practice does not solve the problem of inherent cruelty particularly as there is very little enforcement of compliance.

All species of macropod are protected in NSW under the *Biodiversity Conservation Act 2016*. As such, they cannot be harmed without a licence. The issue is, that gaining a licence to harm a kangaroo is not

that difficult. The usual protection for animals is essentially lifted to allow for kangaroos to be shot under commercial licences.

It is noted that the *Prevention of Cruelty to Animals Act 1979* provides a defence under section 24b against cruelty for shooting for the purposes of producing food for human consumption if it is done in a manner that inflicted no unnecessary pain upon the animal. What pain is actually necessary? We are sure that the kangaroo industry would argue that all their shooting was done without inflicted an unnecessary pain and therefore they are exempt.

There is no effective monitoring of animal welfare in the kangaroo industry, both commercial and non-commercial. No statistics are available for the animals who are wounded or escape, including joeys. Much of the shooting takes place at night making it even less visible to others, hidden from public scrutiny.

A fundamental problem is that carcasses are not inspected at the point of kill. Without inspections at the time of killing, there is no way to ensure compliance with the conditions in the Codes on killing adults and joeys.

Whilst commercial shooting is more regulated than non-commercial, it still relies on the shooter to “do the right thing” and comply with the code and submit the correct information in their monthly returns. We know that this does not always happen and even more so with non-commercial shooting. Signatures have been forged, false information has been submitted, returns have not been submitted, animals have been shot in the body, animals have been shot in zones where shooting is suspended, tags have been attached to animals from other zones, numbers permitted to be shot have been exceeded and so on. This has been documented in the minutes from the Kangaroo Management Advisory Panel.

Yes, from time to time compliance officers inspect carcasses, vehicles, chillers and other premises. The NSW Commercial Harvest Management Plan 2017-2020 only requires that processing plants are inspected three times a year and chillers only once a year. Letters may even be sent out with warnings for non-compliance but how many actually lead to licence suspension or prosecution? Rarely have prosecutions occurred despite numerous breaches and animal welfare issues.

Regulatory and compliance mechanisms for non-commercial shooting is even more loose. As already stated, compliance with the national code is likely to be hit and miss. Having mechanisms where it is up to the landholder as licensee to keep a register or all the shooters operating under their licence and keep records of all animals shot under their licence and only produce it on request or just prior to their licence expiry is unlikely to be reliable. It is effectively unregulated and allows any number of animals to be shot (either dead or wounded) as no one is really keeping track.

Whilst there are several agencies responsible for non-compliance, it is rare in our experience that anything is ever done. We regularly have wildlife carers and other landholders tell us how hard they tried to get someone to do something over the shooting of kangaroos that is likely to be illegal. This includes NPWS and the police who are usually the people who are called. People are often just told to forget about it and that nothing can be done. We have seen many patients at the Southern Cross Wildlife Hospital who have been shot and injured and/or orphaned from shooting. Often those who bring in these patients know who the perpetrators are but have had no response from authorities to do anything and often get told “they’re just kangaroos”.

Complaints need to be taken more seriously and acted upon. There needs to be harsher penalties, includes higher fines, imprisonment and strengthening license suspensions. More resources need to be allocated for inspections, particularly at the time of killing. And video surveillance technology should be introduced to aid inspections and report on injured kangaroos.

(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

We are not in a position to determine if the removal of the drop tag system for non-commercial licences has had an impact on establishing numbers killed by landholders but we consider that it is highly likely. Whilst it is recognised that even with the tag system, occurrences of shooters exceeding their authorised number were not immediately apparent but more likely to be reported by a third party, the tag system still meant that there was some regulation and accountability.

As long as people are allowed to shoot kangaroos with little consequence, there will be difficulty ascertaining the numbers killed. If the Department of Planning, Industry and Environment is relying on the figures provided by shooters/licensees to determine the number of macropods killed, then the one thing we can be certain about is that these figures are going to be an underestimate.

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

The government has its programs that it considers are incentives such as Saving our Species and programs under the Biodiversity Conservation Trust. Whilst some of these programs definitely have a positive effect on public and private conservation, they really are only targeted at threatened species. As far as the more “common” macropod species are concerned, there are no incentives, at least from the government.

There needs to be a shift in attitudes to kangaroos and other macropods which is led by the government and media. The myth perpetuated for decades that kangaroos are pests or vermin does nothing to help conservation or animal welfare. Those working on kangaroos in government departments such as NSW Primary Industry sit within the “Vertebrate Pest Research Unit” and in the Department of Planning, Industry and Environment either in the “Kangaroo Management Unit” or the “Pest and Weeds Unit”. Does this not set the tone for the rest of the community when those who govern regard kangaroos as ‘pests’?

There needs to be more done to stop this inherent bias about kangaroos. On the one hand, farmers are allowed to shoot kangaroos because they supposedly cause damage yet where is the overwhelming evidence that shows this? They scream that they compete with their sheep for pasture yet we know that this is not true (unless there is absolutely no food left anywhere else). Just because native animals are in conflict (or perceived conflict) with agriculture does not mean they are a ‘pest’ or should be labelled as such. They are native animals who persist in the environment, their own and only home where they have uniquely evolved trying to survive in a landscape that has been substantially altered by humans.

Others complain that native herbivores are damaging fragile ecosystems so have to be shut out. Yet the government does not shout out loudly about the damage that sheep and cattle do to the landscape which has a much greater impact on the survival of many flora and fauna species.

The whole notion that kangaroos and other macropods need to be killed to keep them at a level to mitigate damage to farms etc is just a charade. It is obvious that kangaroos are being killed purely for profit and to appease the certain sectors of the rural community because it is politically convenient. It is not the kangaroos that are the problem but the way that consecutive governments have marked them.

Perhaps we are still driven largely by a colonial mentality that sees things that are native as something to exploit or to get out of the way, rather than things that have pre-existing rights and important roles in the wider ecology that deserve greater respect.

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Please let us know if you require any clarification or further information.

Yours sincerely,

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Tree of Compassion