

Submission  
No 241

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

**Organisation:** Australian Wildlife Shelters Coalition

**Date Received:** 25 April 2021

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# **SUBMISSION TO THE NSW PARLIAMENT INQUIRY INTO KANGAROOS**



**AUSTRALIAN WILDLIFE SHELTERS COALITION**

**APRIL 2021**

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## INTRODUCTION

The Australian Wildlife Shelters Coalition (“AWSC”) advocates for all species of native wildlife in Australia including all species of kangaroos and wallabies.

Australia’s brutal treatment of its kangaroos diminishes Australia as a nation and rightly calls into question this country’s willingness and ability to meet its legal and moral obligations to protect its wildlife at a time when drought, bushfires and the accelerating impacts of climate change present serious threats to the long term viability of kangaroo populations.

The world is watching. The world is acting. It is time for Australia to act too and put an end the relentless slaughter of our kangaroos and wallabies.

### Our submission

AWSC is grateful for the opportunity to make a submission to the NSW Legislative Council Environment and Planning Committee’s Inquiry into Kangaroos (“the Inquiry”).

In this submission, we have directed our comments and submissions to the Inquiry’s terms of reference:

The health and wellbeing of kangaroos, and other macropods, in New South Wales, and in particular:

- 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 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,
- 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 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,
- 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,
- 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,
- 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
- Current and alternative measures to provide an incentive for and accelerate public and private conservation of kangaroos and other macropods.

While we make this written submission, we are of course happy to provide further submissions, information or evidence to the Inquiry, if that should be necessary.

## EXECUTIVE SUMMARY

There is overwhelming scientific evidence of significant biodiversity loss and decline across the world and that these losses are accelerating with the rapidly accumulating impacts of climate change (*IPCC report 2018, IPBES report 2019, IPCC report 2019 WWF report 2018, WWF report 2020*).

Due to its isolation, Australia's native species are the most unique in the world (*Woinarski 2015*) yet Australia leads the world in mammal extinctions and the numbers of threatened species (*Senate Inquiry into Faunal Extinction Crisis interim report 2019*).

Australia's woeful record in relation to the protection of its environment and wildlife is a direct consequence of governments at all levels in Australia prioritising economic interests and in particular the sectional economic interests of the powerful agricultural sector over effective legal protections for native species and ecosystems and the long term interests of the broader Australian community.

In NSW, the agricultural sector have used their considerable political influence to shape the legislation and policy governing wildlife in NSW. This influence can be seen in the weak regulatory framework of NSW's biodiversity and wildlife protection laws and the priority given to the interests of landholders and the commercial kangaroo industry in NSW government programs, policies and decision-making in relation to kangaroo "management".

The NSW government wildlife agencies and the commercial kangaroo industry insist that these kangaroo management programs have strict animal welfare standards and that kangaroo populations are monitored to ensure they are ecologically sustainable.

If this were true, it is reasonable to ask why it is that the state's wildlife agencies have failed to intervene as kangaroo populations across the state have collapsed in the last 3 years due to drought and the rampant over-shooting that has taken place since the effective deregulation of non-commercial shooting in NSW in June 2018.

These collapses are stunning. Recent aerial surveys have confirmed that over 7 million adult kangaroos have perished since 2017, a decline of 41%. This figure does not include the losses of dependent pouch young and juveniles that are not detected by aerial surveys but that we know have up to 100% mortality rates during drought. We have estimated that this figure could be as high as additional 1.75 million young kangaroos.

This is nothing new. There is a long history of kangaroo killing in NSW. From the earliest days of settlement, NSW landholders saw kangaroos as competing with livestock for pasture. For over a century, with the full support of the NSW government, landholders exterminated kangaroos and wallabies as "vermin".

There is a through line from the eradication, bounty and baiting programs that the NSW government operated in the 19<sup>th</sup> and 20<sup>th</sup> centuries to the kangaroo management programs that the NSW government operates today.

That through line is the designation of kangaroos as "pest" animals. This designation has created a powerful narrative that landholders and the commercial kangaroo industry have weaponised to convince an ill-informed public that the industrial scale slaughter of kangaroos is necessary to protect agricultural productivity.

This narrative has laid the foundation for the development of a commercial kangaroo meat and skins trade that is now the largest slaughter of terrestrial wildlife on the planet with between three to six million adult kangaroos being allocated for slaughter each year. This figure does not include the hundreds of thousands of dependent joeys that are destroyed and discarded as "by catch" of the industry.



The NSW community is entitled to expect that its government enacts laws and policies that ensure wildlife is protected and managed for the diversity of interests represented by the broader community and not a just an influential minority. The NSW government programs and policies in relation to kangaroo management fail to recognise, let alone take the public interest into account.

The NSW community is also entitled to expect that that its government takes has strong and enforceable animal welfare laws and regulations to ensure that any lethal control of wildlife is carried out in a humane way.

That is not the case when it comes to the NSW government's kangaroo management programs. The relevant Codes of Practice institutionalise cruelty and the state wildlife authorities take no effective action to oversee or enforce animal welfare standards. Repeated studies over the last 40 years have shown that the use of sickeningly cruel practices in the killing of both adults and orphaned dependent young remains widespread.

Finally, the NSW community is entitled to expect that the state's wildlife management programs have legitimate ecological benefits. There is no evidence of this. In fact, there is growing body of evidence that indicates the removal of "common" species such as kangaroos from local ecosystems has significant long terms impacts on ecosystem persistence.

In this submission, we address the very significant issues raises by what we consider to be fundamentally flawed, unjustified, unethical and poorly governed kangaroo management programs in NSW that currently permit the industrial scale removal of kangaroos from the landscape.

We contend mismanagement of the state's kangaroo populations over the past 4 years demonstrates that that the NSW government wildlife agencies are not credible or competent regulators of either the commercial kangaroo industry or the damage mitigation permit system in NSW.

Further, we consider that the nature and extent of this mismanagement and the failures of governance we have identified in this submission warrant a full independent investigation, including an independent scientific review of the evidential basis for all NSW current kangaroo management policies and practices.

We make that recommendation as well as recommendations for a taskforce to investigate and assess strategies to transition from the current policy framework which is focused predominantly on a narrow set of economic interests, to one that prioritises the public interest and incorporates a broad-based landscape-level approach to wildlife and ecosystem management.

Kangaroo management in NSW is a controversial and complex issue. We consider that in order to ensure that the Inquiry has as complete a picture as possible, we have provided a comprehensive assessment of the issues that the NSW government's kangaroo programs and policies raise.

We refer to the comments made by Senator Norm Sanders in his minority report to the Senate Select Committee on Kangaroos in 1988:

***"The kangaroo debate must be removed from the province of experts defending special interest groups and opened up to the broader community. The welfare of the kangaroo, our national animal, must be placed ahead of commercial interests and inept bureaucrats. The present slaughter must cease."***

## FINDINGS

Following our review of the kangaroo management programs operated by the NSW government, we have identified multiple factors that contribute to the poor administration and management of both the commercial kangaroo industry under the current NSW Kangaroo Management Plan (“The KMP”) and the damage mitigation permit system. These factors include:

- Weak institutional capacity and competence within the state’s wildlife agencies;
- High levels of industry or regulatory capture by landholders and the commercial kangaroo industry;
- Poor co-ordination across regions;
- Low levels of inspections, monitoring and other compliance activity;
- The near absence of enforcement and prosecution activity;
- Lack of transparency and unjustified delays in the release of information and data;
- Lack of accountability across both the damage mitigation permit system and the operation of the commercial industry.

Specifically, we have identified the following significant failures in the governance and implementation of these programs:

- The fundamental conflict of interest between the state wildlife agencies roles as the both the agencies responsible for the protection of the state’s wildlife and as the promoters, financial supporters and regulators of both the commercial slaughter of kangaroos and lethal control of kangaroos under the damage mitigation permit system;
- The high levels of “industry capture” where the sectional interests of the agricultural sector and kangaroo industry have a disproportionately close and influential relationship with the state’s wildlife agencies as to the setting of policy and decision-making in relation to kangaroo management;
- The failure of the state’s wildlife agencies to take into account the public interest in their policy positions, management practices and decision-making in kangaroo management under the KMP and the damage mitigation permit system;
- The ongoing reliance by the NSW government and state government wildlife agencies on discredited, unsupported or incorrect assertions and out of date research to justify its policy positions, management practices and decision-making relation to the need for the lethal control under the KMP and in the damage mitigation permit system;
- The ongoing reliance by the NSW government and state government wildlife agencies on flawed and inadequate population monitoring and models to set quotas under the KMP;
- The failure of the NSW state government and its wildlife agencies to address and deal with the very significant issues relating to animal welfare raised by the slaughter of kangaroos and their orphaned dependent young under the KMP or the damage mitigation permit system;
- The reliance by NSW state government wildlife agencies on a fragmented, decentralised model of governance which leads to inconsistencies in the standards of governance and regulation applied between regions and contributes to already significant issues relating to lack of transparency and lack of accountability in decision-making;
- The failure of NSW state government wildlife agencies to address the significant deficiencies in its system of inspections, monitoring and compliance or its enforcement activities including the absence of any oversight at the point of kill;
- The failure to provide for any system of audits, evaluation or reporting to determine whether the use of lethal control under the damage mitigation permit system actually achieves the stated objective of mitigating damage to agribusiness.
- The failure by NSW state government wildlife agencies to adopt any active adaptive or risk management measures or to investigate and fund research to deal with the threats of

disease, drought, land clearing, bushfires or climate change to kangaroo populations and their habitats.

- The failure by NSW state government wildlife agencies to properly apply the precautionary principle in the development and application of its policy positions, decision-making or in its adaptive and risk management strategies.

More broadly, we find that the way in which the NSW state government regulates the lethal control of kangaroos under the KMP and in the damage mitigation permit system serves the economic interests of an influential few over the interest of the animals themselves or the broader interests of the NSW community. This should concern the NSW community for a number of reasons:

- There is no scientific validity to many of the justifications the NSW state government relies on in maintaining its support for both the commercial kangaroo industry and the widespread use of lethal control by landholders under the damage mitigation permit system;
- There is no conservation benefit in this industrial scale removal of wildlife from the landscape. These programs are run solely to benefit the economic interest of farmers and the tiny handful of processors and skin traders businesses that profit from the kangaroo meat and skins trade;
- These programs operate without regard to changing conditions including the drought that has impacted NSW since 2017, the massive and unabated levels of land clearing that have been taking place across NSW over the last decade and the mass mortality and displacement of wildlife including kangaroos and wallabies in the 2020 bushfires;
- Because there is no effective oversight or enforcement of the permit system, it is impossible for NSW state wildlife agencies to accurately assess how many kangaroos are actually being killed under these programs.
- There is no way to know what the impact of constantly removing hundreds of thousands of healthy wild animals from the landscape will have on the long term functioning of already vulnerable ecosystems in NSW.
- Neither of the NSW government's kangaroo management programs meets minimum community expectations in relation to the oversight and enforcement of proper animal welfare standards, particularly in the killing of orphaned dependent young;
- NSW government kangaroo management programs operate without regard to the precautionary principle. Drought and deregulation have resulted in the deaths of over 7 million adult kangaroos since 2017 and steep declines in kangaroo populations across central and western NSW. While the state government maintains these losses are all due to the drought, it has made no attempt to investigate or assess clear evidence of the widespread overshooting that has taken place since the deregulation of the permit system in 2018;
- NSW taxpayers subsidise these programs through the huge costs associated with the costs of administering and overseeing both programs across two government departments, the funding of expensive aerial surveys, population modelling and research to support the setting of quotas and the marketing and trade resources it allocates to the promotion of kangaroo meat and other products both within Australia and to overseas markets;
- The NSW state government has failed to address, let alone prepare to deal with the clear threats to kangaroo populations posed by the impacts of climate change.

It is our submission that the state government's management of kangaroo populations in NSW is so deficient in meeting its own goals and aims that there should be an independent and comprehensive investigation and review of all NSW kangaroo management policies and decision-making.

Photo: Ryan Pollack



## RECOMMENDATIONS

### Recommendation 1

**Establish an independent expert taskforce (composed of experts that are not affiliated with the commercial kangaroo industry or landholder interests) to conduct a full investigation, review audit and evaluation of kangaroo management in NSW including:**

- The degree to which the fundamental conflict of interest between the state government wildlife agencies role as the agencies responsible for the protection of the state's wildlife and as the promoter, financial supporter and regulator of kangaroo management prevents those agencies from providing effective oversight and regulation of its kangaroo management programs;
- The existence and role of "industry capture" in kangaroo management in NSW and the extent to which agricultural and kangaroo industry interests influence the setting of policy and decision-making in those programs;
- The ongoing reliance by the NSW government and its wildlife agencies on discredited, unsupported or incorrect assertions and out of date research to justify its policy positions, management practices and decision-making in relation to the commercial kangaroo industry and the lethal management of kangaroos under the damage permit system;
- The independence and objectivity or otherwise of the scientific evidence relied on to justify the large-scale slaughter of kangaroos in NSW;
- The adequacy or otherwise of the animal welfare standards which apply to the lethal control of kangaroos in both the commercial kangaroo industry and under the damage permit system, including an independent scientific review of the changes made to the commercial code in 2020 which allow the application of inhumane methods of killing orphaned dependent young;
- The adequacy and effectiveness or otherwise of the regulatory framework governing kangaroo management including the adequacy of the systems of inspection, monitoring and compliance in both the commercial kangaroo industry and the damage mitigation permit system;
- The adequacy or otherwise of the systems of auditing, evaluation and reporting on the effectiveness of the damage mitigation permit system in reducing damage to agricultural properties;
- The adequacy or otherwise of the NSW state government's wildlife agencies compliance with its obligations of transparency and disclosure in relation to the economic costs and benefits of commercial kangaroo meat and skins industry operations in NSW;
- The adequacy or otherwise of the NSW state government wildlife agencies use of adaptive and risk management strategies to prevent irreversible declines and local extinctions in kangaroo populations in NSW ;
- The extent to which, if at all, NSW state government wildlife agencies adhere to the principles of ecologically sustainable development, particularly the precautionary principle in the development of policy, in decision-making or in their adaptive and risk management strategies for kangaroo management.
- The NSW government's encouragement and subsidisation of exclusion and cluster fencing in the face of significant evidence this type of fencing is destructive to ecological processes.

## **Recommendation 2**

**That the independent taskforce also develop a comprehensive strategy or action plan to manage the transition from commercial kangaroo industry operations and the widespread use of lethal control damage under the mitigation permit system to a landscape level conservation and co-existence management model that incorporates:**

- Prioritising the broader public interest over the economic interests of landholders;
- Putting an end to the pest control narrative that drives landholder antagonism towards kangaroos and which encourages contempt and cruelty towards these animals;
- Withdrawing support for and phasing out the commercial kangaroo industry;
- Withdrawing support for and phasing out the damage mitigation permit system;
- Developing a range of alternative programs that encourage and support the use of non-lethal methods of wildlife management and co-existence;
- Re-allocating the resources it currently expends on supporting kangaroo management programs, including its administrative, regulatory, research, public education and technical resources to implementing that transition.

## **Recommendation 3**

**Institute an immediate moratorium on the NSW government’s encouragement and funding of exclusion and cluster fencing pending an independent scientific assessment of the potential impacts of that fencing on the movement of wild species and on broader ecological processes in NSW.**



## SECTION 1-THE PUBLIC INTEREST

The law recognises there are certain matters in which the public as a whole has a common interest. In NSW, the public interest has been formalised and incorporated into over 200 Acts of Parliament and is referred to in 50 sets of Regulations (*Wheeler 2016*)

One of the matters in which the NSW community has an intense and abiding interest is the health and welfare of the state's wildlife.

### What is the public interest?

The definition of the public interest varies depending on the circumstances but generally it requires that the government and its agencies are not only fair and impartial in the development of its policies and in the exercise of their powers and discretion but also that they are transparent in their decision-making and accountable for the outcomes of those decisions (*Wheeler 2016*).

Having examined the NSW government's kangaroo management programs, we have found overwhelming evidence that the way in which policy is developed and set and the way decisions are made is designed to meet the demands of the commercial kangaroo industry and their powerful allies in the agricultural sector without any reference to the broader interest of the NSW community.

### Who "owns" wildlife in NSW?

There is a positive assertion in 2.18 (3) of the Biodiversity Conservation Act (NSW) ("the BCA") that the state owns all wildlife in NSW.

While the state can make that claim, in the 1999 case of *Yanner v Eaton*, the High Court made it clear that while state "ownership" of wildlife creates a right to regulate and supervise, it does not constitute absolute ownership.

Instead, there is a compelling argument that wildlife is the "common property" of the NSW community and that as common property, the state's wildlife should be managed as a public or common good for the diversity of interests represented by the broader community and not just an influential minority.

### The public interest principle

To the interests of the broader community including of future generations in the way in which wildlife is managed should be recognised and incorporated into the BCA.

Incorporating a public interest principle into the provisions of the BCA that govern wildlife has the potential to transform and strengthen the protection of wildlife, through greater public engagement, improving both the transparency and accountability of state government wildlife agencies and providing access to justice to ensure that the state government's regulation of wildlife including the kangaroo management programs it operates serve the public interest.

### The State's obligations under the public interest principle

A legislated public interest principle would impose governance obligations on the NSW state government and its wildlife agencies and guide decision-making in relation to wildlife management. These obligations would include:

- An active and affirmative obligation to protect and preserve all species of wildlife;
- An obligation to ensure the diversity of interests held by the NSW community are given priority over private and sectional interests;
- An obligation to manage wildlife in a way that would not infringe on the rights and interests of future beneficiaries (future generations) of wildlife;
- An obligation to ensure that wildlife management decision-making is transparent;
- An obligation to ensure that wildlife management provides opportunities for effective public engagement and participation;
- An obligation to provide sufficient accurate and up to date information to allow the NSW community to evaluate the performance of the state government wildlife agencies in the management of wildlife;
- An obligation to provide a mechanism to enable members of the public to enforce their rights and hold state government wildlife agencies accountable for actions which result in a breach of the public interest principle.

### What would recognising the public interest in wildlife look like?

It is important to understand that while a public interest principle would create obligations, implementing it would not set unachievable standard for state government wildlife agencies.

Rather, these obligations would act as a guide as to how NSW state government wildlife agencies should meet their responsibilities to the community transparently and in a way that allows the agencies to be held accountable for their decisions and actions.

### Codifying of the public interest principle

Codifying the public interest principle would require language that clearly establishes that wildlife is held in the public interest and what complying with the public interest principle would mean for wildlife management in terms of the need for transparency and public engagement in the management of the state's wildlife. It would also need to create avenues for civil enforcement of breaches of the principle.

Clarifying both that the public interest is fundamental to the state government's management of wildlife and what obligations that principle imposes on the state's wildlife agencies would make implementing its substantive and procedural responsibilities significantly more straightforward.

**Transparency**-Implementing the public interest principle in wildlife management would require state government wildlife agencies to provide more transparency in relation to the reasons for its decisions. In order to meet this obligation, state wildlife agency decision-makers would be required to transparently document the rationale behind all wildlife management decisions, along with any associated trade-offs and implications and to promptly make that documentation available to the public. This level of transparency would allow for a more informed public discussion about the issues and conflicts involved and proper consideration of the merits and justification for the decision being made.

**Public participation**-Although NSW state wildlife agencies already have provision for public engagement and participation in wildlife management policies and programs, those same agencies pay little more than lip service to the views of the community, raising questions about how effective and consequential that participation is. Enacting a public interest principle would strengthen those commitments to ensure that the diversity of interests held by the community are properly represented.



**Enforceability**-Currently, only those directly affected by decisions relating to the refusal or cancellation of wildlife licenses under the BCA have access to merits review of state wildlife agency decisions. Incorporating a public interest principle into the BCA would provide members of the public with legal rights and mechanisms for third party civil enforcement to challenge decisions and actions of state wildlife agencies that contravene the state's obligations to act in the public interest.



Photo: Tina Lawrence

## SECTION 2-BIODIVERSITY LOSS

There is overwhelming scientific evidence that human activity, over exploitation and climate change represent an existential threat to biodiversity including terrestrial wildlife and ecosystems across the planet (*IPCC report 2018, WWF report 2018, IPBES report 2019, IPCC report 2019*).

The most recent World Wildlife Fund Living Planet report has confirmed the loss of up to 60% of wildlife across the planet since 1970 (*WWF report 2020*).

More recently, a scientific report released in February 2021, warned of the imminent collapse of 19 major ecosystems across Australia unless urgent action was taken to prevent further damage (*Bergstrom et al 2021*).

Australia is one of only 17 mega-diverse countries in the world. It has the most distinctive and unique mammal fauna on the planet (*Woinarski et al 2015*).

Yet Australia also has one of the worst records for deforestation, land clearing, mammal extinctions and species decline. NSW has played a major role in this destruction through its historical and current high levels of land clearing and poor land management practices.

In a review of Australia's environmental performance in 2019, the OECD found that the central reason for the poor state of Australia's biodiversity and ecosystems was that environmental decision-making was dominated by economic interests (*OECD 2019*).

The OECD report also made it clear that Australia needed to urgently address this issue and dramatically strengthen its climate change and biodiversity laws and policies if it wanted to improve its environmental record and prevent further species and ecosystem decline (*OECD 2019*).

The 2019 Senate Inquiry into Faunal Extinction and the Independent 2020 Review of the Commonwealth EPBC Act also confirmed that weak governance and regulation that allowed economic interests to easily circumvent its provisions were key reasons for Australia's ongoing failure to prevent biodiversity loss and ecosystem decline.

Legal protections for wildlife and their habitats are weak at the Commonwealth level. There are similarly weak protections at the state level in NSW under the Biodiversity Conservation Act 2016.

### Biodiversity loss in NSW

The BCA came into operation in 2017. It was designed to integrating conservation efforts with native vegetation management. It has not achieved its objectives.

The *State of the Environment report for NSW (2018)* documented significant declines in NSW's ecosystems and in both faunal and floral species native to NSW.

The report made damning findings about the declining state of NSW species and ecological processes, including that:

- Land clearing of the state's native vegetation remained a major threat to native vegetation and wildlife habitat;
- There was evidence of overall and long term declines in range and abundance in 64% of native species in NSW;
- Climate change was a major threat to biodiversity and to the persistence of many species;
- The impacts of climate change such as drought and bushfire would become more pronounced as warming continued.

Like the EPBC Act at the federal level, the reason the BCA has not achieved its objectives is because, of weaknesses in the governance and implementation of the Act, particularly in its focus on protecting threatened species rather than providing an umbrella of protection for all species ecosystems, the lack of rigour and accountability in the native vegetation offset permit system it established and fundamental weaknesses and gaps in the approval process for land clearing.

### The drivers of biodiversity loss

The threatening processes driving biodiversity loss across Australia are habitat loss, degradation and fragmentation, invasive species including predators like cats and foxes, changes to fire management and disease (*Senate Inquiry report 2019*).

These threats are being exacerbated by rapid climate change which is causing increased incidence of severe drought, increased fire intensity, more days of extreme heat and changes in foliage nutrient composition, all of which are contributing to ecosystem and species decline (*EPBC Act Independent Review report 2020*).

If evidence of this were needed, the disastrous bushfire season Australia experienced in 2020 provided graphic evidence of exactly how vulnerable Australia's ecosystems and wildlife are to the impacts of climate change.

The University of Sydney report into the bushfires confirmed that an estimated 3 billion native animals and birds perished in the bushfires which engulfed 11.46 million hectares in NSW and Victoria (*Dickman 2020*).

One study found that the level of habitat devastation caused by the 2020 bushfires, coupled with poor environmental protection laws had resulted in hundreds of mammal species being pushed to the brink of extinction. When invertebrate species were included, this estimate rose to over 700 species (*Lee 2020*).

### Commercial exploitation and shooting as a driver of biodiversity loss

The wildlife trade and the hunting, shooting and poaching of wildlife has been identified as a major driver of biodiversity loss in every major global reports on biodiversity loss published in the last two decades.

This issue has not been raised let alone addressed in any of the many commonwealth and state government inquiries and reports that have examined the extinction crisis, biodiversity loss and ecosystem decline in Australia.

The failure by Australian governments at both the federal and state level to acknowledge that their own endorsement of the widespread use of lethal force in the "management" of wildlife and in particular the management of common species such as kangaroos or its role as a major participant in the international trade in wildlife represents a significant blind spot in the current analysis of what is driving biodiversity loss in Australia.

In this submission, we examine how over two centuries of government programs that have sanctioned and supported the uncontrolled and unregulated killing of kangaroos and wallabies have contributed to the extinctions of and declines in many species of macropods in NSW.

We also examine the extent to which those government programs and the "pest control" narrative that has been used to justify the mass destruction of macropods species continues to dominate and shape the NSW state governments current approach to kangaroo management.

## Biodiversity Loss-Impact on Macropods

According to the WWF Action Plan 2011-2021 (*Burbidge et al 2009*):

- Seven species of macropod have become extinct since European settlement;
- A further ten species of macropod that were once widespread are now extinct on mainland Australia;
- All other macropod species have suffered dramatic reductions in their ranges and distributions;
- A disproportionately high number of kangaroo (macropod) species are at risk of extinction across Australia;
- A total of 76 species of macropod species are listed or currently in the process of being listed on the IUCN red list. More than 50% of these are listed as threatened with extinction.

In NSW, six of the sixteen species of macropod that existed at the time of European settlement are now extinct. Four further macropod species are currently listed as threatened in NSW.

In this submission we focus on the threats to the large species of kangaroo in NSW that are the targets of the commercial kangaroo meat and skins industry and widespread lethal control under the damage mitigation permit system.



## SECTION 3-THE IMPORTANCE OF “COMMON SPECIES”

By focussing almost exclusively on the conservation of rare and endangered species, conservation efforts in NSW have ignored the central role of “common species” such as kangaroos to the health, well-being and persistence of NSW’s ecosystems.

There is a growing body of scientific research and data that indicates common and widespread species are of critical importance to the structure and effective functioning of biological communities (*Gaston, Fuller 2007*) (*Gaston 2016*).

This evidence has established that common species are of significant conservation concern because:

- There is growing evidence that large numbers of presently common and widespread species are undergoing massive declines, with major ramifications for ecosystem functions and services, and potentially for many other species (*Gaston 2010*);
- The processes that underlie these declines are intensifying in many regions of the world through deforestation, land clearing and urban development accelerating climate change, exacerbating species declines (*Gaston 2011*);
- While there is a widespread public perception that common species are more resilient than others and are less at risk of decline and extinction, this is not the case (*Gaston 2016*).

These concerns have been amplified by the findings of two recent worldwide scientific reviews that found one-third of the 27,600 land-based mammal, bird, amphibian and reptile species reviewed had undergone significant decline both in terms of their numbers and territorial ranges which had resulted in extensive local extinctions (*Ceballos et al 2016/Ceballos et al 2020*) (“*The Ceballos reports*”).

The *Ceballos* reports confirmed alarming evidence that globally, populations of species generally thought to be “common” were declining at a rate and on a scale that the authors described as “biological annihilation”. The reports made the following findings:

- The loss of so many populations had caused major changes in the ecosystems they had inhabited and had contributed to the extinction of other species in those ecosystems;
- As the status of a species changed from common to endangered to being on the brink of extinction, its gradual loss brought pressures to bear on other species with which it interacted;
- The losses of common species had triggered extinction cascades and the substantial alteration of ecosystems structure and function;
- The wildlife trade (both legal and illegal) was decimating many endangered species and was a major cause of the population declines of many common species.

The *Ceballos* reports also highlighted the extreme urgency of taking action to save wild species given the magnitude of the extinction crisis at both the species and local population levels.

Importantly, the reports warned of the urgent need for a balanced consideration both of common and rare species, that conservation efforts needed to be re-assessed and orientated to prevent both the loss of rare species and to avoid the depletion of common species and for governments to take a broad scale landscape level approach to conservation and wildlife management.

### Kangaroos as ecosystem engineers

Kangaroos are a keystone species. Their grazing, breeding habits, movement and behaviour have evolved to be adapted to the Australian environment.

Over the last two decades, there has been a concerted effort by the kangaroo industry and their supporters and advocates to suggest that kangaroos overgraze and damage biodiversity. This effort should be seen for what it is-part of the broader effort by the commercial kangaroo industry-to maintain and perpetuate the narrative that kangaroos are destructive animals and to position its operations as contributing to conservation efforts.

In fact, there is strong evidence to suggest that the opposite is true and that kangaroos play a central role in the health and persistence of grassy ecosystems across Australia, do not overgraze where they are able to disperse and increase and not deplete species richness where they are present.

Kangaroo fur traps spores and seeds which can then be distributed throughout the landscape as they move around, leaving them in ready-made holes created by their large toes. Their toes also aerate compacted and depleted soils. In this way, they play an important role in maintaining levels of vegetation diversity (*Dawson 2012*).

There is evidence for the significant contribution of kangaroos to ecosystem health. A long term study in Mulga dry forests in Qld that had been chronically degraded by livestock grazing found that areas where kangaroos were present had the highest species richness and that there was evidence the presence of kangaroos had led to an increased range and abundance of native plants including perennial grasses as well as the regeneration of Mulga forest (*Fensham 2011*).

Similarly, a CSIRO Plants Industries study in 2014 which examined kangaroo impacts on the ACT's urban reserves, areas where kangaroos were present were found to have healthier ground level vegetation with higher levels of vegetation diversity (*Vivian, Godfree 2014*).

These findings and the importance of the role of kangaroos in ecosystem health and species richness was also acknowledged in a conservation research technical report published by the ACT government (*Snape, Caley et al 2018*) which described the key role of the kangaroo as follows:

*“As the overwhelmingly dominant herbivore in lowland grassy ecosystems, kangaroos occupy a central place in the ecology of such ecosystems (Fletcher, 2006) due to a strong preference for feeding on grass and other monocotyledonous species (Billing, 2007; Davis et al., 2008; Jarman and Phillips, 1989).*

*In some situations they are ‘ecosystem engineers’ as defined by Jones et al. (1997) and Wilby et al. (2001) due to their ability to modify both their own habitat and that of other species.”*

## Kangaroos and extinction

The commercial kangaroo industry and the state government wildlife agencies that support and subsidise its operations insist that the commercial exploitation of kangaroos is ecologically sustainable and does not pose a risk to kangaroo populations.

The NSW KMP repeatedly refers to the fact that there is no evidence the commercial kangaroo industry has had a negative impact on kangaroo numbers or distribution in the 40 years has operated in NSW in support of these claims.

The last three years during which the state's wildlife agencies have allowed the commercial kangaroo industry to continue operating while authorising a huge increase numbers of kangaroos to

be killed under the damage mitigation permit system during severe drought conditions in NSW has resulted in the deaths of over 7 million would appear to contradict that claim.

In addition, NSW wildlife agencies have steadfastly ignored the increasing body of evidence warning of the risks to common species posed by ecosystem degradation and climate change.

It is also notable that the state's wildlife agencies have not taken any steps to investigate the potential long term impact of extracting hundreds of thousands of healthy wild kangaroos from the landscape every year despite repeated assessments by their own scientific experts that these issues remain significant gaps in knowledge (*Olsen, Brayshaw 2000*) (*Olsen, Low 2006*) (*Herbert Elzer 2011*).

It is our submission that these are strategic decisions. It is not in the interests of the NSW government to investigate potential threats to kangaroo populations because any negative findings would both contradict the pest control narrative and risk the loss of public support and social licence for kangaroo industry operations and the damage mitigation permit system.

### Extinction and Populous species

NSW and other state-based kangaroo management program managers are generally dismissive of the idea that kangaroo populations are at risk of extinction on the basis the large species are abundant and widespread across NSW.

Given the repeated failures of state government wildlife agencies to halt or reverse biodiversity decline in NSW, we do not consider the public could have any confidence that will remain the case.

There are many examples in recent history of mega populous species suffering disastrous declines as well as local and broad-scale extinctions as a result of over-exploitation.

Globally, there are the obvious examples of the bison which once numbered around 30-60 million- now reduced to a population of 4,500 living within Yellowstone National Park and the passenger pigeon-once the most abundant bird in North America in the 19<sup>th</sup> century-wiped out in the space of just 50 years by commercial pigeon hunting and trapping.

Here in Australia the Thylacine was hunted to extinction in 1936. In addition, several previously widespread macropod and small mammal species have become extinct due to predation by invasive predators, habitat loss and historical eradication programs.

As we discuss elsewhere in this submission, koalas and platypuses were mainstays of the fur trade up well into the 20<sup>th</sup> century with devastating impacts for these species even today.

Finally, it is important to remember that the reason why we have federal and state-based wildlife protection laws today is because the uncontrolled killing of red kangaroos in the 1950s and 1960s had pushed that species towards the brink of extinction (*Frith, Calaby 1969*).

## SECTION 4-KANGAROO KILLING IN AUSTRALIA

The commercial kangaroo meat and skins industry represents the largest slaughter of land-based wildlife in the world.

Between three and six million kangaroos are allocated for slaughter every year. Based on figures provided by the Commonwealth government, an average of over two million kangaroos per year have been shot for the commercial trade in kangaroo meat and skins since 2000 (*Croft, Ramp, Townsend, Boronyak 2019*).

These figures do not include the estimated hundreds of thousands of dependent joeys that are shot, have their necks broken, are bludgeoned to death or decapitated and discarded as “by catch” of the kangaroo industry every year (*Ben-Ami, Boom, Boronyak 2014*).

In addition, each state also operates a large scale non-commercial destruction permit systems that allow private landholders to apply for a licence to shoot and kill kangaroos and other wildlife in the name of “damage mitigation”.

Based on the most recent annual reports from states that operate commercial kangaroo killing programs (NSW, Qld, Vic and SA) and release figures for non-commercial culling, permits were issued to landholders to shoot a total of 1,006,662 kangaroos in those 4 states in 2019.

In WA, the state wildlife agency does not record or publish figures for kangaroos killed for damage mitigation purposes because it operates an “open permit” system which allows landholders to kill kangaroos at any time within the state without the need for a permit.

In Tasmania, recent FOI disclosures indicated that between 2014 and 2018 crop protection permits were issued for around 900,000 wallabies and 51,000 Forrester kangaroos. No figures have been released for 2019.

In NSW, there has been a steep increase of around 558% in the number of kangaroos the NSW government has authorised for lethal control under damage mitigation permits in the last 3 years.

For context it is worth noting that in NSW, the commercial kangaroo meat and skins industry and damage mitigation permits system operates in addition to:

- The slaughter of kangaroos and their young by land managers every year;
- The illegal killing of a large but unknown number of kangaroos and joeys by landholders and others through illegal shooting and hunting, the illegal use of “drives”, the use of illegal traps and snares, the illegal use of hunting dogs, the illegal use of poisons and other deliberate acts of cruelty every year;
- The hundreds of thousands of kangaroos that are killed as a result of motor vehicle collisions and fence entanglements every year;
- The effects of the severe drought affecting large parts of south-eastern Australia over the past 3 years, causing millions of kangaroos to perish in NSW;
- The extensive use of government-funded cluster fencing which excludes kangaroo populations from access to habitat and water, causing mass deaths from starvation, dehydration and predation.

There are significant issues raised by the industrial slaughter of millions of kangaroos across Australia every year.

These include not only the very significant animal welfare concerns which we describe elsewhere in this submission but also the threat overshooting poses to the viability of kangaroo populations during drought when kangaroos already suffer significant population declines.



## Kangaroo Killing in NSW

In NSW, the commercial kangaroo industry is overseen by the Department of Planning, Industry and Environment (“DPIE”) and regulated in accordance with the NSW Kangaroo Management Plan (“KMP”).

The overarching goal of the KMP is to *“ensure the conservation of protected species by maintaining ecologically sustainable populations of kangaroos throughout their ranges.”*

Each year, DPIE publishes information and reporting in relation to the KMP and non-commercial shooting. These consist of:

- A “quota report” which sets out the maximum quota of kangaroos allocated for slaughter in each of the harvest zones created by the KMP, along with the population data on which those quotas are based (aerial survey results and population modelling). The quota report also details any limitations or suspensions of shooting where declines in populations in particular harvest zones have been detected.
- An “harvest report” confirming the “take” of kangaroos from the previous year together with details of the species, sex, weight of those animals. The annual harvest report also provides some scant details regarding the non-commercial damage mitigation permit system and comments on factors affecting the “harvest” as well as the overall state of commercial kangaroo industry operations.

## Killing under the damage mitigation permit system

The damage mitigation permit system is also overseen by DPIE but responsibility for assessing and issuing licences is delegated to regional offices of its directorate, the National Parks and Wildlife Service (NPWS).

There is no publicly available information about the criteria that NPWS apply to permit applications and the decision-making process except the specification that the size of the property involved dictates the upper limit on the number of kangaroos landholders are able to shoot. Licences that are granted are listed on a public register. The public register contains minimal details and none regarding the number of kangaroos either allocated to be killed under the permit or the number actually killed.

According to the 2020 Annual harvest report, 449,971 kangaroos were killed under damage mitigation permits in 2019. This figure is in addition to the 625,421 killed under the KMP. According to these reports, the total number of kangaroos killed in 2019 in NSW was 1,075,392.

Given there is no effective governmental oversight of any shooting activities under the permit system, we do not accept these figures accurately represent the number of kangaroos killed by landholders. Overshooting has always been a major issue in the damage permit system. It is likely to have been even more acute the deregulation that occurred in 2018.

The effective deregulation of the licencing requirements for landholders by NSW government in June 2018 in the name of “drought assistance” has removed many of previous controls including the requirements for tags and shooters returns and allowing landholders to engage amateur recreational sporting shooters to clear kangaroos from their properties.

These measures, which were opposed by the commercial kangaroo industry, have opened the door to the overshooting of kangaroos across NSW which has, in turn, contributed to the massive declines in kangaroo numbers across NSW in the last 3 years.

## The history of kangaroo killing in Australia

In the days before controlled pasture studies, it was orthodox belief that all herbivores competed for the same feed/pasture. This put kangaroos and wallabies in direct competition with sheep and cattle for pasture. As fencing became more common, farmers also began blaming kangaroos for damage to fencing (*Peterson 1979*).

In response to this perceived threat, in the late 1800s the NSW government created laws which first incentivised and later mandated the killing of kangaroos and wallabies as well as bandicoots, quolls and potoroos as “vermin”.

In 1879 NSW introduced the Marsupial Destruction Act (modelled on the 1877 Qld version). This Act did not pass but instead it was incorporated into the Pastures and Stock Protection Act 1880. This Act both mandated the eradication of all macropod species and set up a government-funded bounty system.

Over the next 20 years to 1901 the NSW state government paid bounties for around 21 million kangaroo and wallaby scalps as well as for around 3 million smaller macropods.

These eradication programs, the use of bounties and an unregulated fur trade that was operating in NSW at the time devastated wild kangaroo and wallaby populations in NSW and contributed to a number of species and local extinctions.

When the NSW state government discontinued the funding of bounties in 1901, landholders turned to widespread baiting programs to kill kangaroos and wallabies. To achieve this, tonnes of strychnine were dumped across NSW between 1901 and 1930 (*Peterson 1979*).

At the same time, the fur trade targeted kangaroos, wallabies and other native animals including koalas (referred to at the time as Australian sloths) and even platypus for their fur and skins which were then exported to overseas markets. This trade still operates today through the international trade in kangaroo skins and leather.

The eradication programs as well as land clearing, droughts and predation by foxes and cats resulted in a holocaust of native animals, leading to waves of extinctions and large scale reductions in ranges and numbers of macropods across NSW (*Dickman 2015*).

Although attempts had been made in the 1940s to provide limited legal protection for some wildlife species, it was only when evidence that red kangaroo populations were being reduced to quasi-extinction levels in NSW and under pressure from the Commonwealth government that NSW enacted legal protections for kangaroos (*HR Select Committee report-Kangaroos 1973*).

The following extracts from available historical records serve to illustrate the extent of the slaughter of kangaroos and the devastating impacts on many macropod species (*Boom, Ben-Ami 2010*):

- 1788-Early settlers in NSW used kangaroos for meat initially but once livestock was established, kangaroos were mainly hunted and killed for sport.
- 1840-1850-Eastern grey Kangaroos in NSW were reduced to low numbers by large-scale killing.
- 1887-1907-Eight million kangaroos and wallaroos killed for bounties in Queensland.
- 1880s-All states in Australia introduced legislation to eradicate all kangaroos and wallabies.
- 1880s-NSW declared kangaroos and wallabies “vermin” and established a bounty system.
- 1884- Bounties for 800,000 kangaroo scalps and 330,000 wallabies were paid in NSW.
- 1884-1890-Bounties for 8 million kangaroo and 4 million wallaby scalps were paid in NSW.
- 1890-1900-Bounties for 3 million kangaroos were paid in NSW

- 1890-1901-Bounties for 8.5 million wallaby scalps were paid in NSW.
- 1883-1920-Bounties for 3 million bettongs and potoroos were paid in NSW. Three of these species are now extinct in NSW.
- 1884-1914-Bounties for 640,000 brush-tailed rock wallabies were paid in NSW. This species is now listed as vulnerable in NSW.
- 1911-Bounties for 600,000 kangaroo scalps were paid in NSW.
- 1935-1936-1.25 million red kangaroo skins were traded from WA into the Sydney skins market.

Between the 1930s and the 1950's an unregulated commercial kangaroo fur trade operated across Australia. Kangaroos were killed for their skins only.

When rabbit populations collapsed in the 1950s as a result of the introduction of myxomycosis, pet food processors turned to kangaroo meat as an alternative source of cheap meat for pet food.

The commercial kangaroo pet meat industry and kangaroo skins trade remained unregulated until the 1970's when legal protections and regulation of commercial kangaroo shooting were introduced (*Grigg, Pople 1999*).

Kangaroos were not the only native species that were decimated by these programs and the fur trade. Wombats, dingos, wedge-tailed eagles, emus were shot and poisoned on an industrial scale. Possums too. In 1906 alone 4 million brush tail possum skins were marketed in New York (*Ben-Ami 2010*).

No native animal was spared. Koalas were nearly hunted to extinction. Between 1888 and 1927, approximately 8 million were killed to supply the fur trade. Nearly a century later the consequences of this slaughter can still be seen with current koala populations estimated to be 1% of their pre-settlement numbers and facing the very real threat of extinction within the next 20 years (*Australian Koala Foundation 2018*).

Even Platypus were labelled a pest and shot both commercially for their skins and as damage mitigation in the late 19<sup>th</sup> century and early 20<sup>th</sup> centuries. Between 754 and 2,356 platypus skins were sold annually between 1891 and 1899 in the Sydney market. One furrier had sold over 29,000 skins before 1914. In 1931, 2,000 skins were seized by government authorities before being exported. These activities continued until legislation was introduced to permanently protect platypuses in 1952 (*Hawke, Kingsford 2016*).

As with Koalas, the impact of the commercial and non-commercial shooting of platypus resulted in local extinctions and decimation of other populations from which they have never recovered (*Hawke, Kingsford 2016*).

### The need for protection –National Parks and Wildlife Act 1974

In the 1940s and 1950's the killing of kangaroos in Australia was largely uncontrolled and unregulated. At the end of the 1950's researchers first raised the possibility that the relentless and uncontrolled killing could lead to the extinction of the red kangaroo (*Waring 1956*).

These warnings were ignored and it was not until further research conducted in the late 1960s which showed that uncontrolled killing was decimating entire populations of red kangaroos (*Montgomery 1969*)(*Frith and Calaby 1970*) (*Marlow 1971*) that the Commonwealth and state governments stepped in to enact legislation to protect wildlife (*Poole 1984*). In NSW, this legislation was National Parks and Wildlife Act 1974. This legislation has since been replaced by the Biodiversity Conservation Act 2016.



Photo: Frank Jesse

## SECTION 5-THE KANGAROO INDUSTRY IN AUSTRALIA

The Kangaroo Industries Association of Australia (KIAA) is the peak representative body for the Kangaroo industry. It was formed in 1970 and according to its website and other promotional materials it claims the industry engages in the “sustainable, ethical harvesting of kangaroos”.

KIAA claims that animal welfare is a priority and that the kangaroo industry is more humane than other forms of red meat production. It is worth pointing out that in promoting the industry as humane on its website and elsewhere, the KIAA makes no mention at all of the fate of the orphaned dependent young.

KIAA’s claims about the humaneness of the kangaroo shooting have been exposed as lies by repeated research and studies by RSPCA (1985, 2000, 2002) and other animal welfare groups (ALNSW 2008) as well as the kangaroo industry’s own research and development researchers (McLeod, Sharp 2014) over the past 4 decades. These reports have revealed that:

- Kangaroo shooters have little or no understanding of kangaroo biology and development;
- Kangaroo shooters are largely ignorant of their obligations under the Code of Practice in relation to the humane killing of orphaned dependent pouch young and young at foot;
- The use of unauthorised cruel and inhumane practices by kangaroo shooters in the killing of both adult and dependent young kangaroos is widespread and chronic;
- Kangaroo shooters were largely indifferent to the suffering and welfare outcomes of the kangaroos, including the orphaned dependent young they killed.

The commercial kangaroo industry has a reputation as a violent, cruel and unethical industry. Animal welfare concerns a major issue for the kangaroo industry and a persistent obstacle to its efforts to secure and expand overseas markets for kangaroo meat and skins products.

To overcome its negative image and ensure it maintains its social licence to operate, the kangaroo industry has made public relations and marketing the centrepiece of its industry strategy (Kelly 2003) (Kelly 2016).

This strategy depends on maintaining the “pest control” narrative by constantly portraying kangaroos in overwhelmingly negative terms and re-inforce its public messaging that:

- Kangaroos are dangerous and destructive pest animals whose numbers are in “plague proportions”, threatening agricultural production;
- The kangaroo industry provides a necessary and important service to the community by controlling kangaroo numbers and protecting agricultural productivity.

The kangaroo industry has enlisted powerful allies in this effort. The farming lobby, rural politicians, rural and mainstream media outlets, state government wildlife agency representatives, wildlife management industry advocates and industry affiliated scientists are all active participants in propagandising the “pest control” narrative.

After decades of hearing nothing else, not surprisingly there is widespread community acceptance of this narrative. We examine how dishonest this narrative elsewhere in this submission.

### Secrecy

The commercial kangaroo industry relies on public ignorance for its survival. It is well aware of potentially damaging consequences of public scrutiny or exposure of the inhumane practices of commercial shooters, especially in relation to the killing of dependent young, including the loss of public support and social licence.

For this reason, the kangaroo industry operates under a veil of secrecy. Information about its shooting operations is tightly held and difficult to obtain.

This veil of secrecy extends to the kangaroo industry's economic value and profitability.

While the kangaroo industry regularly touts the value of its contribution to the Australian economy, unlike all other meat and animal industries, it does not release or publish any economic data or other evidence in support of those claims.

Why the secrecy? The most likely explanation is that the economic data does not support the industry's inflated claims.

We analyse and explore these issues in more detail below.

## Industry capture

Industry (or regulatory) capture occurs when vested interests in an industry have a disproportionately close and influential relationship with the regulators of that same industry in the setting of policy and in decision-making.

The influence of industry organisations in animal industries is of particular concern because the influence of industry interests, which are antagonistic to the interests of the animals subject to regulation, raises significant issues in relation to impartiality, transparency and accountability in the development of the codes of practice that govern those industries (*Goodfellow 2016*).

As a consequence of that influence, instead of being impartial and transparent, the NSW state government wildlife agencies act in the interests of the industry it is charged with regulating in ways that are inconsistent with the public interest (in this case animal welfare standards and ecological sustainability) the regulation is meant to serve.

The disproportionate influence the industry has can be seen in the extent to which the state wildlife agencies prioritise the economic interests and views of the kangaroo industry and landholders in all policy and decision-making in relation to kangaroo management including the animal welfare standards which apply to the industry and by the various other glaring regulatory failures and process deficiencies we identify in this submission.

## Economic and employment claims

For all the claims the kangaroo industry makes regarding its importance to regional economies and regional job creation, the industry does not publish or release any data or other evidence in support of these claims. The last limited economic data it published was in 2011-2012 (*Wilcox, Deane 2021*).

It is also worth noting that in the 50 years it has operated there has never been an independent comprehensive analysis of the value of the kangaroo industry to the Australian economy or if there has been, it has not been made publicly available.

The kangaroo industry regularly claims that the industry is worth \$200-270 mil per annum to the Australian economy and to be a major employer in regional areas employing anything from 2,000 to 4,000 people. The KIAA website currently puts the employment figure at 3,000.

If these claims were ever true, which is doubtful, it is likely they have not been true for a very long time.

Given the absence of data, it is not possible to verify any of these claims but independent analysis of the information that is available has suggested these claims are highly inflated.

For example, in 2012, the kangaroo industry claimed it was worth \$280 mil and employed 4000 people. Independent analysis based on information obtained from ABARE (Australian Bureau of Agricultural and Resources Economics and Sciences) suggested that the industry was worth far less than claimed, at around \$88.8 mil and employed far less people than claimed-possibly as few as 255 direct full-time jobs across Australia (*Boronyak, Ben-Ami et al 2013*).

Further independent analysis in 2015 found that a tiny number of processors and exporters were extracting all of economic benefit (rent) from the commercial exploitation of kangaroos as an open access public resource. This research also confirmed the earlier assessment that the kangaroo industry was worth far less (as low as \$80 million) and employed far less people (as low as 337 in direct full time employment) than the industry claimed (*Boronyak, Perry 2015*).

The KIAA claims about the jobs it creates are not supported by the most recent annual harvest report either which confirms that there were only 502 licensed kangaroo shooters in NSW in 2019.

The low number of licensed shooters in NSW is inconsistent with the kangaroo industry's claims about job creation.

On the other hand, it is consistent with the lack of supply particularly in Western NSW, the suspensions of quotas in several NSW harvest zones due to low numbers of kangaroos and the low price paid for kangaroo meat. Multiple rural media outlets have repeatedly reported that many of kangaroo shooters have left the industry since 2018, are inactive or are operating on a part-time basis until conditions improve.

More recent claims that the kangaroo industry is a major employer of indigenous people are also unsupported by any evidence or data and should be regarded in the same light as the other unsubstantiated and uncorroborated claims made by the kangaroo industry.

### Poor performance

According to assessments made by the NSW government in each of the NSW KMP Annual reports from 2010 to 2019, the kangaroo industry has in fact been performing poorly for at least the last decade.

In each of these reports reference is made to the under-performance of the industry. This assessment from the 2018 Annual Report is typical and confirms:

*"The industry continued to operate at a low level...and has achieved limited export of kangaroo meat throughout ..., limiting the industry's capacity to utilise the full commercial quota. Many chiller premises were closed down for various periods throughout the year or placed limits on the number of carcasses accepted each week so as to manage supply to processing plants."*

These negative NSW government assessments are consistent with a range of other indicators that suggest the industry has been underperforming over the last decade due to:

- The lack of "supply" in NSW and Qld which have the largest and most established commercial kangaroo operations;
- The increased costs of production;
- Weak and falling demand for both meat and skins, particularly in major overseas markets.

## Lack of supply

The lack of supply has been primarily due to low and declining numbers of kangaroos due to prolonged and severe droughts in southern and western Queensland and western NSW as well as an increase in shooting under non-commercial “damage mitigation” permits within commercial harvest zones in those states.

Aerial surveys conducted in NSW in have confirmed dramatic declines in kangaroo numbers in these zones in 2018, 2019 and 2020 due to a combination of drought and starvation and overshooting under damage mitigation permits. These declines have resulted in the suspension of commercial shooting in several harvest zones.

Low numbers of kangaroos, in combination with the low prices paid for kangaroo meat over the last decade (of around 60-65c per kilo) has led to an exodus of kangaroo shooters from the industry, further impacting supply.

## Weak and falling demand

In addition to having less kangaroos available for slaughter, external factors have also contributed to the kangaroo industry’s poor performance.

Not only is there a weak and falling international demand for kangaroo meat, skin, hides and leather but over the past decade the kangaroo industry has lost a number of important overseas markets (including Russia and California) (*Boronyak, Ben-Ami 2013*).

It has also been unable to gain traction in potential new markets (including China) due to food hygiene and animal welfare concerns (*Boronyak, Ben-Ami et al 2013*).

We note recent comments by the KIAA that during Covid, exports of kangaroo meat have effectively stopped.

As a result of contractions in kangaroo populations and harvest zone suspensions in NSW and Qld, the commercial kangaroo industry has been desperately seeking ways to expand its reach in other ways to maintain its market position and maximise its profits. It has done this by:

- Lobbying for and obtaining significant changes to kangaroo management policies in Qld, NSW, SA and WA over the past 3 years including adding harvest zones and target species;
- Abandoning the “male only” policy it had adopted in 2012 to reduce the controversy over killing females and their dependent young in 2018;
- Lobbying for and obtaining changes to the commercial code of practice to allow shooters to target female kangaroos, increasing the number of animals available for slaughter;
- Establishing a permanent commercial kangaroo industry in Victoria;
- Doubling the price paid for kangaroo carcasses to retain commercial shooters and stimulate acceptance of and demand for human consumption of kangaroo meat;
- Positioning the kangaroo industry as assisting in “general conservation” efforts to better market kangaroo products to overseas markets.

## International bans

The kangaroo industry’s efforts to launder its image and reputation in order to expand its operations have intensified since moves made by overseas governments to seek to ban or restrict imports of kangaroo meat and skins/leather in the last 18 months.



Both the current Bill before the House of Representatives to ban imports of kangaroo products into the USA and efforts by members of the EU Parliament to exclude kangaroo meat and products from the EU-Australia Free Trade Agreement currently under negotiation have the potential to cause serious damage to the commercial kangaroo industry.

### The costs

Given its poor performance over the past decade and the loss of major overseas markets, the kangaroo industry has depended and continues to depend on significant government financial and administrative support in order to continue operating.

Because of the lack of publicly available information, it is impossible to determine the degree to which the Commonwealth and state governments are propping up the industry but these supports and subsidies are likely to run into the tens of millions of dollars. In NSW, at a minimum, those supports include:

- The costs of administering and regulating the kangaroo industry across the state including the human, technical and IT resources allocated across the DPIE and NPWS, as well as overseeing meat hygiene requirements;
- Funding the Kangaroo Management Advisory Panel and other paid advisors and “experts” on kangaroo management as well as stakeholder engagement and participation supports;
- The costs associated with estimating of kangaroo numbers and setting quotas, including the high costs of aerial surveys and kangaroo population modelling;
- The costs associated with reporting and publishing monthly and annual reports on the operations of the kangaroo industry within NSW under the KMP;
- The costs associated with developing, updating and publishing KMPs every 4 years as well as submission of Wildlife trade Operation plans to the Commonwealth government under the EPBC Act (Cth) 1999;
- The costs of funding extensive research and development and other supports provided by the NSW DPI and government agencies;
- The costs of the subsidies and tax concessions to operators within the industry;
- The costs of the marketing and public relations as well as diplomatic and trade resources in promoting kangaroo products to both domestic and overseas markets;
- The costs associated with funding the Kangaroo harvester training program and other educational and promotional resources to the agricultural sector.

The fact that the commercial kangaroo industry and its operations are subsidised to this degree by the taxpayers of NSW should be of concern to every member of the NSW community.

## SECTION 6-JUSTIFICATIONS FOR THE LETHAL CONTROL OF KANGAROOS

### Early history

In the days before controlled pasture studies, it was orthodox belief that all herbivores competed for the same feed/pasture (*Peterson 1979*).

In response to this perceived threat to the economic interests of farmers, kangaroos were classified as vermin to be eradicated from the landscape.

In the 1800s the NSW government created laws which first incentivised and later mandated the killing of kangaroos and wallabies as well as bandicoots, quolls and potoroos (*Dickman 2015*).

In 1879 NSW introduced the Marsupial Destruction Act (modelled on the 1877 Qld version) which was incorporated into the Pastures and Stock Protection Act (1880) and paid bounties for around 21 million kangaroos and wallabies as well as 3 million smaller marsupials over the next 20 in NSW.

While these extermination policies and the bounty system have long since been abandoned, the central narrative that kangaroos and wallabies are destructive agricultural pests requiring lethal control has not. We examine the central role of this narrative in modern kangaroo management.

### Eradication Policy and its consequences

The origin of the belief that kangaroo numbers have been or are in “plague proportions” can be traced back to the legislation introduced in all Australian states in the 1880s that mandated the eradication of all species of kangaroos and wallabies as “vermin”.

Because of the historical and economic significance of farming in Australia as well as the fact that these policies were endorsed and supported by all levels of government, the belief that kangaroos were pest animals whose numbers needed to be managed through lethal control solidified and became ingrained in Australian culture.

The long shadow of the efforts of governments across Australia to exterminate all species of macropods and the power of the pest control narrative are both very much in evidence today in NSW kangaroo management policy, in the attitudes and perceptions of landholders and in many Australians attitudes towards kangaroos.

### Kangaroos as pest animals-damage mitigation

Underpinning the government extermination policies of the 19<sup>th</sup> and 20<sup>th</sup> centuries was the designation of kangaroos and wallabies (along with many other native species) as “vermin”.

The designations of kangaroos and wallabies as “vermin” or “noxious” or “pest” animals has been and continues to be a powerful weapon in the kangaroo industry’s longstanding propaganda war against kangaroos.

These labels and their modern equivalent of “overabundance” have been used to justify the sustained and large scale extraction of millions of these animals from the landscape for the last two centuries.

These designations and claims that kangaroo numbers are “out of control” or in “plague proportions” are have allowed landholders and the commercial kangaroo industry to drive the narrative that the mass slaughter of these animals is a necessary land management tool.

These designations have also had important implications for animal welfare because labelling an animal as vermin or a pest has the effect of demonising that species and encouraging hostility and cruel practices against those animals (Caulfield 2008).

Over the 20 years or so, changing public attitudes towards wildlife have forced state government wildlife agencies and the wildlife management industry to stop using the word “pest” to describe native animals. Instead, they have adopted the concept of “overabundance” to justify the continued widespread use of lethal control in the management of kangaroo populations.

### The concept of “Overabundance”

There is a through line from the designation of kangaroos as vermin to the designation of kangaroos as pest animals to the current sanitised version of “overabundance”.

Our examination of this concept reveals that it has no agreed definition and no scientific validity. It is best described by Dr David Lavigne, Science Advisor to IFAW as follows:

*“In my humble (scientific) opinion, the term “hyper-abundant” has absolutely no scientific validity...it is a propaganda word, promoted by individuals masquerading as scientists...and passed on to bureaucrats, managers and politicians...none of whom seem to know that the term has absolutely no basis in science. Regardless, the term has been used so often that it has become part of the mythology and is used almost universally to justify the culling of animals” (McKay 2017).*

### Artificial watering points as an explanation for “overabundance”

One of the standard justifications used by the commercial kangaroo industry and its supporters for overabundance of kangaroos is that kangaroo numbers have increased significantly both in distribution and numbers since settlement.

The kangaroo industry claims this occurred because the expansion of agriculture created permanent artificial water sources like dams and year round grazing which greatly benefitted the large kangaroo species.

This argument is not supported by the scientific evidence. Research carried out in Sturt National Park in 2004 made it clear that kangaroo distribution was not related to water focused grazing patterns but determined by the best grazing. It also confirmed that low biomass near artificial watering points were actually attributable to sheep grazing pressure-not kangaroo grazing pressure (Montague-Drake and Croft 2004).

In a separate Phd thesis, the same researcher noted while it was commonly believed that kangaroos had increased in both abundance and distribution since European settlement, there was no consensus for this conclusion. She noted that previous research by Robertshaw and Harden (1989) and Denny (1981) had found after examining data from 1881 to 1981 and 300 other historical references that kangaroo numbers were as high at settlement as they have been since (Montague-Drake 2004).

Other research has also suggested that a comparison between historical records and current stocking capacities demonstrate that kangaroos could well have been more widespread throughout Australia and in greater numbers than they are today (Auty 2005) (Croft 2005).

More recent research has again confirmed that artificial watering points are a poor predictor of kangaroo abundance (Letnic, Crowther 2012).

It is also important to bear in mind that an increase in range or distribution does not necessarily mean an increase in numbers (*Menkhorst 1995*) and that the distribution of a particular species is limited by climactic factors such as temperature and rainfall (*Roberts et al 2016*).

Another example of how the kangaroo industry relies on unsupported assertions to justify the continued commercial exploitation of kangaroos are the constant claims that kangaroo numbers are in “plague proportions”.

### Kangaroo reproduction as an explanation for “overabundance”

One of the major myths about kangaroos is that they are prolific breeders. The kangaroo industry deploys this myth to explain how kangaroo numbers are “out of control” across Australia.

Extensive research on this issue has established that in fact it is biologically impossible for kangaroo populations to rapidly increase or “explode”. This research has established that:

- Kangaroo abundance is primarily regulated by natural processes-particularly the amount of rainfall in any year-which determines the availability and quality of feed and nutrition as well as other factors such disease, and predation (*Short 1983*);
- Kangaroos are slow-growing with males taking up to 5 years to reach sexual maturity and females taking up to 3.5 years (*Dawson 1995*);
- Kangaroos have relatively low reproduction rates (at one joey per year);
- Kangaroos have high juvenile mortality rates (70% in the first year under normal conditions (*Arnold 1991*) and up to 100% under drought conditions (*Shepherd 1987*) (*Bilton, Croft 2004*);
- Kangaroo populations have a low natural replacement (vital) rate of between 8-10% per annum even in optimum conditions (*Arnold, Grassia 1991*).

### Justifications for killing kangaroos-Claims of competition and damage

There is no substance to the claim that kangaroos compete with stock for water or pasture and/or damage grazing lands (except under the most severe drought conditions).

Research by the governments own scientists has confirmed that:

- Kangaroos do not compete with sheep for pasture under normal circumstances (*Edwards et al 1995, 1996*);
- Kangaroos do not have a significant impact on wool production (*Grigg 2002*);
- There is no correlation between kangaroo control and damage mitigation on pastoral properties or the landscape generally (*S Mcleod: Edwards, Croft and Dawson 1996*).

Despite overwhelming evidence that kangaroos do not compete with livestock for pasture except in the most severe drought conditions, the narrative of kangaroo as competition remains the strongest and most persistent of all the justifications still used by the agricultural sector and the kangaroo industry for the lethal control and management of kangaroos.

### Damage to fencing

Landholders and the kangaroo industry claim that kangaroos do extensive and costly damage to fencing, costing agricultural businesses hundreds of millions of dollars every year.

In its 1988 report the Senate Select Committee into Animal Welfare noted graziers negative attitudes towards kangaroos meant that they nearly always mistakenly attributed damage done to pasture and fencing by other animals, by insects and even by weather events, to kangaroos.

The first attempt to properly investigate and properly assess fencing damage claims did not occur until 2004. That analysis found that claims by the pastoral industry of the costs of damage caused by kangaroos were significantly overstated and that kangaroos in fact had a very low monetary impact on the agricultural sector (*R. McLeod 2004*).

The overstatement of kangaroo impacts by landholders was again confirmed in a 2011 report commissioned by the National Farmers Federation which forced it to revise its own estimate of the economic impact of kangaroos on the rural sector across Australia down from \$200 million pa to \$44 million pa (*Sloane Cook and King Pty Ltd 2011*).

### Crop damage

Like the claims made in relation to the nature and extent of the damage done to fencing by kangaroos, there is little support for the claim that kangaroos eat or destroy crops.

Research has instead confirmed that wheat crop damage was overstated and that in any case, kangaroo killing largely takes place in regions which do not produce crops (*Arnold CSIRO: 1980*).

### The Role of DPIE and NPWS in perpetuating these discredited arguments

Despite being discredited, DPIE and NPWS still rely on these discredited arguments to justify endorsing the large scale lethal control of kangaroos under its kangaroo management programs.

The fact that NSW state wildlife agencies continue to perpetuate discredited arguments for killing kangaroos is inconsistent with their stated commitment to transparency and evidence-based decision-making.

Continuing to rely on these arguments and the pest control narrative also “muddies the waters” and prevents the public from gaining a better understanding of the rationale for NSW kangaroo management programs, policies and decision-making.



## SECTION 7-THE ROLE OF SCIENCE IN THE COMMERCIAL KANGAROO INDUSTRY

The NSW state government wildlife agencies claim to be committed to evidence-based decision-making.

When it comes to the evidential basis for the management of the states kangaroos populations, it is important to understand how that evidence is sourced and funded.

It is also important to examine the development and the role of the “wildlife management industry” in providing advice and consultancy services to the state government wildlife agencies and to landholders and the kangaroo industry on kangaroo management.

### Early Research

Prior to the 1950’s there had been little interest or any serious research into any native species of wildlife or the dynamic inter-relationships within ecosystems in Australia (*Lunney 2018*).

During the 1950’s farmers demanded a more aggressive government response to what they claimed was a kangaroo “plague” affecting the majority of NSW. At the same time, rabbit numbers and the rabbit meat trade collapsed after the introduction of myxomatosis. Pet food producers turned to kangaroo meat as a cheap and easily accessible substitute (*Poole 1978*) (*Lunney 2018*).

The merging of interests between landholders and pet food processors drove the urgent need for research and reliable data the government could use to regulate kangaroo numbers and the trade in kangaroo meat.

This early research was conducted by the CSIRO and funded by the Commonwealth and NSW governments for the purposes of establishing a scientific basis for a permanent commercial kangaroo pet food industry for both domestic and potential overseas markets.

### Threats to the Red Kangaroo

In the mid-late 1960s there was growing public concern about the mass slaughter of kangaroos in NSW. This concern became alarm when in 1969, CSIRO researchers produced research that overshooting was putting the red kangaroo was at serious risk of extinction in NSW (*Frith, Calaby 1969*).

The demand for stronger protections for kangaroos led to the establishment of a House of Representative Select Committee Inquiry into Wildlife Conservation in 1972 (*HR Select Committee Report, 1972*) which recommended the states take responsibility for regulating wildlife.

In NSW this led to the enactment of the NPW Act 1974 and the development of the NSW first kangaroo management program.

### The development of NSW kangaroo management programs

In order to establish figures baseline upon which to establish a permanent commercial kangaroo industry the NSW government invested significant resources into designing and developing aerial surveys to estimate kangaroo population numbers during the 1970’s.

This research laid the scientific foundations for much of what the NSW government still relies on estimate kangaroo numbers and set quotas.

## Funding for Kangaroo management research

The KIAA was established in 1970 to protect the interests of shooters, processors and skin traders which were profiting from the commercial kangaroo meat and skins industry.

With the support of the farming lobby, it has successfully sought and obtained significant political and financial support from the NSW state government ever since.

This support includes a wide range of taxpayer-funded subsidies, grants and tax concessions as well as extensive assistance in trade and diplomatic missions to market and export kangaroo products to overseas markets.

Another major support provided by both the Commonwealth and NSW state governments was a substantial amount of funding for scientific research through the RIRDC to counter public and market concerns about the ethics and sustainability of the kangaroo industry.

The RIRDC (Rural Industries Research and Development Corporation) was established in 1990. It assumed responsibility for research and development for the kangaroo industry from the CSIRO. Funding was (and still is) sourced through a macropod slaughter levy imposed on each kangaroo carcass of around 3-7 cents and collected from kangaroo meat processors. This funding is then matched by the Commonwealth government, capped at 0.5% of Gross value of Productions (GVP).

The large amounts of government funding allocated for research into kangaroos to the CSIRO, the RIRDC, state government wildlife agencies and academic institutions in the 1980s and 1990s led to the development of the “wildlife management industry”.

This has allowed many of those same government funded and academic researchers to monetise their expertise through consultancies providing advice to and advocating on behalf of landholders and the commercial kangaroo industry. We discuss the significant ethical issues the inter-relationship between governments, academic institutions, research agencies and these consultancies create below.

## Industry funded science and research bias

Biases are systematic errors that undermine the credibility of the research and the validity of the scientific evidence it produces.

One of the major sources of bias in many areas of scientific research is industry funding of research.

All research into kangaroo management is funded by the commercial kangaroo industry and the state governments that support the industry. This has a substantial influence on the science that is produced and published, raising serious concerns about its objectivity and validity.

## Industry funding and scientist advocates

On its website, the KIAA uses selective research and testimonial evidence from what it says are “reputable and qualified” scientists to promote the kangaroo industry as both an ethical and sustainable use of wildlife.

Using advocate scientists to promote commercial wildlife killing as conservation is a tried and true strategy of the powerful trophy hunting lobby which has, for decades, funded research by prominent wildlife researchers to obtain the scientific “evidence” and imprimatur it needs to advance its goals.

Difficulties arise when those scientists fail to disclose these funding sources. In a recent example a number of prominent wildlife scientists wrote an open letter to the magazine “Science” opposing a ban on trophy hunting in Africa, instead saying that trophy hunting encouraged wildlife conservation.

What the letter failed to mention was that four of the scientists that had signed the letter had significant financial links with several wealthy trophy hunting bodies (*Webster 2019*).

The failure to disclose these sources of funding and the clear conflict of interest it generated illustrates how industry funding can be used to co-opt scientists in efforts to achieve that industry’s strategic goals.

The same dynamic operates in the commercial kangaroo industry which uses the research it funds to influence public opinion and market perceptions in its favour. At the same time, it ignores, downplays or orchestrates negative campaigns against any scientific opposition or research that undermine its claims.

### Influence over the research agenda, the design and conduct of research

The kangaroo industry influences the research that it funds in a number of ways. The first is the way in which it controls the research agenda.

Repeated studies have found that when industry or corporate interests fund research, they dictate the research agenda by prioritising the topics that support its policy positions and strategic goals and advance their interests and by avoiding subjects that are unlikely to support desired outcomes (*Fabbri, Lai 2018*).

Industry funding also influences the design (including the way the questions are framed) and the conduct of the research. In many cases, through restrictive terms in funding agreements, it can also determine whether or not that research is published (*Bero 2019*).

The commercial kangaroo industry has used these tactics to great advantage.

Review of the funding priorities of the kangaroo industry over the last 20 years confirms that the only research that has been funded is research that endorses the strategies of the kangaroo industry and promotes their products.

This kind of influence raises serious concerns about the objectivity and validity of the evidence that is produced.

### Funding bias in kangaroo management science and research

The NSW KMP plans contain a commitment to adaptive (responsive) management. An important component of adaptive management is conducting research on issues where there are gaps in knowledge.

In the last 20 years the NSW government have undertaken three major reviews of the scientific literature relating to the commercial kangaroo industry. These literature reviews occurred in 2000, 2006 and 2011 (*Olsen, Low 2000, Olsen, Braysher, 2006, Herbert, Elzer 2011*).

Each review highlighted significant gaps in knowledge particularly in relation to the methodologies used to estimate kangaroo populations and the lack of investigation into the emerging threats to kangaroo populations posed by the impacts of climate change and ecological declines.



The commercial kangaroo industry and the NSW state wildlife agencies have completely ignored these research priorities. Instead funding for research has exclusively focussed on supporting the expansion of the commercial industry, public relations efforts and marketing opportunities.

Examination of the NSW KMP Annual reports reveal that the NSW government has not funded or undertaken any research to address the issues raised by the 2011 scientific literature review in the last 10 years.

Instead, the limited funding available went to a self-congratulatory project celebrating 40 years of monitoring kangaroo numbers in NSW (*Lunney 2018*).

The NSW government also made in kind contributions in 2012, 2013 and 2014 which represented the costs of two of its employees in the DPI Vertebrate Pest Research Unit undertaking research for the RIRDC on the use of inhumane practices in the commercial kangaroo industry.

### Agrifutures (previously RIRDC)

According to its website, Agrifutures goals are explicitly to fund research and development that “achieves significant benefits to industry” and persuade the Australian public that the kangaroo industry is “an essential and valuable environmental management service”.

Agrifutures is not an independent scientific agency. It is an active promoter of and advocate for the kangaroo industry. The problem is that the kangaroo industry and the NSW state government wildlife agencies present Agrifutures research as independent and objective scientific evidence when this is clearly not the case.

To illustrate how Agrifutures research is used to benefit the kangaroo industry, we examine the way in which research projects were funded and designed to justify changes to the commercial code of practice review to benefit the commercial kangaroo industry.

### Commercial code review

In 2012, the Kangaroo Industry adopted a male-only policy to address public and market concerns about the killing of female kangaroos and their dependent young.

This policy was not popular with either commercial shooters because they had to be selective in the animals they targeted or landholders who complained that male-only killing did not sufficiently reduce kangaroo numbers.

To address these complaints, the kangaroo industry funded research designed to justify changes to the commercial code to abandon the male only policy and allow shooters to directly target female kangaroos.

This research was conducted over seven years between 2013 and 2020. Much of this research can only be classified as junk science. We cite a particularly egregious example of this below.

On the basis of this research, the same industry researchers reviewed and made significant changes to the commercial code of practice. The sole beneficiary of the proposed changes was the commercial kangaroo industry.

Agrifutures held a public consultation into those proposed changes in 2019. This consultation was overseen by the industry researchers and a “Project Reference Group” the majority of which had direct financial or other affiliations with the kangaroo industry.

The public consultation attracted 17,000 or so submissions. The vast majority of these submissions objected to the proposed changes on the basis they raised serious animal welfare concerns about the killing of female kangaroos and their orphaned dependent young.

These submissions were completely ignored in the final version of the new code which came into operation in November 2020. There is no serious question that the outcome was going to be anything other than one that supported the elimination of the male-only policy.

We examine one particularly egregious example of how the use of a pseudoscientific model and methodology and an assessment by an expert panel dominated by kangaroo industry players was used to manipulate the outcome of that assessment in the kangaroo industry's favour.

### The assessment of humaneness of the various methods of killing kangaroos

In one of the projects funded by Agrifutures to justify the changes it had proposed to the commercial code, the researchers established an "expert" panel to carry out the assessment of the humaneness of the various methods of killing kangaroos (*McLeod, Sharp 2020*).

This "expert panel" consisted entirely of members with direct interests in the kangaroo industry or longstanding working relationships or affiliations with that industry.

The inclusion of the head of the KIAA, a landholder and a kangaroo shooter not only raises serious questions about obvious bias and blatant conflicts of interest but what qualified these people as "experts" in animal welfare sufficient to entitle them to participate in assessing the issue of humaneness.

The assessment of humaneness of the various methods of killing kangaroos employed the use of a model that had little scientific rigour and was so elastic that it could easily be primed to ensure the preferred outcome.

That is what occurred in this case. Clearly unsupported assumptions about the levels of competence and accuracy of kangaroo shooters, assumptions which had been directly contradicted by decades of research—including the research undertaken by the same researchers in the 2014 RIRDC report—were applied to the model. This skewed the assessment and ensured that the particular method favoured by the commercial industry—shooting by commercial kangaroo shooters—emerged as the most humane ways to kill kangaroos.

It is worth noting that none of the brutal methods for killing the dependent young were assessed in accordance with this model. This fact is not made clear in the discussion or the outcomes of the assessment or in kangaroo industry promotional materials which cite this assessment as support for the kangaroo industry's animal welfare credentials.

This type of blatant manipulation is typical of the "science" generated by the kangaroo industry. The research is built around the outcome the kangaroo industry is seeking.

There is no oversight of the researchers. There is no independence in the composition of any of the expert and advisory panels. There is no disclosure of conflicts of interests and industry affiliations. There is no independent peer review of any of the research that is published via Agrifutures.

If confirmation were needed about how the RIRDC/Agrifutures research and the changes made to the commercial code resulted in direct economic benefits to the commercial kangaroo industry, the most recent report from Agrifutures lays it out in black and white (*Wilcox, Deane 2021*).

Published in February this year, this report is a costs-benefit analysis of the research projects that led to the changes to the commercial code in 2020.

The report confirms that the \$385,000 that the kangaroo industry and the NSW government invested in the research on humaneness and the changes made to the commercial code would provide a “moderate to high return on investment” and the following benefits to the kangaroo industry:

- The removal of the male only policy and protections for female kangaroo and their dependent young would result in both increased supply for commercial shooters and create opportunities for kangaroo shooters to access more pastoral properties by meeting the demands of farmers that females also be cleared from properties;
- The changes to the code would allow the industry to improve its poor image and track record on animal welfare, influence public opinion to secure social licence for its activities and be of benefit in promoting itself to domestic and overseas markets, creating demand for kangaroo products (*Wilcox, Deane 2021*).

It is clear from this report that this research was never intended to deal with the urgent need for improvements to animal welfare outcomes in the kangaroo industry but to enable the kangaroo industry and the Commonwealth government to project an image of governmental and corporate responsibility that it could use to market its products more effectively.

### A word about the RSPCA and the AVA

One of the major ways the kangaroo industry promotes itself as ethical and humane is by claiming to have the support of “animal welfare groups”.

Both the Australian Veterinary Association and the RSPCA (NSW) have longstanding consultancy roles on the expert and advisory panels used by the kangaroo industry and the NSW government. Information relating to the terms of these consultancies, including the payments involved are not in the public domain.

What seems clear is that despite their involvement, these animal welfare organisations have no influence over the any of the policies and decisions-making processes in kangaroo management or in the conduct of kangaroo industry operations.

The fact that neither of these organisations made any objection to the resumption of killing females in the new code despite the serious welfare issues raised by the AVMA Guidelines and that neither organisation is recorded in any of the minutes of the meetings of the KMAP in the last 10 years as having made any contribution to any discussion on any animal welfare issue is an indication of how little influence they have in these settings.

The RSPCA played a major role in exposing cruelty in the kangaroo industry in the 2000s. It is disappointing to see it now provide the kangaroo industry with the legitimacy and credentials that support its operations and marketing efforts.

## SECTION 8-CRUELTY

### The Codes

As a result of the Commonwealth's power in relation to the export of kangaroo products, it has a role in overseeing the humane treatment and welfare of kangaroos through two national codes of practice which govern the permissible methods of killing kangaroos and their dependent young.

These codes are:

- The National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for commercial purposes ("the Commercial code")
- The National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-Commercial purposes ("the Non-Commercial code")

The purpose of both of these codes is not to guarantee or ensure the humane treatment of kangaroos in commercial killing operations but to

*"...set an achievable standard of humane conduct and is the minimum required of persons shooting kangaroos and wallabies in order to minimise their pain and suffering".*

Despite codes of conduct being in operation for 35 years there is no verifiable evidence animal welfare outcomes in the kangaroo industry have improved in that time.

This is because not only is there no oversight of shooters activities including at the point of kill but also that the codes are not legally enforceable and therefore provide no deterrence to wrongdoing.

### Evidence of cruelty

Over the past 4 decades research conducted by animal welfare organisations has exposed the fact that non-fatal body shots are a regular part of the commercial kangaroo industry.

In 1985, the RSPCA found that only about 86% of adult kangaroos were head shot. In 2000 and 2002 further research undertaken by the RSPCA confirmed that although this figure had risen to 95.9%, this still meant as many as 120,000 kangaroos are not killed humanely but shot in the neck or body across Australia every year (*RSPCA reports 2000 and 2002*).

The research by the RSPCA in 2002 has also found high levels of non-compliance in the killing of joeys, with shooters using a variety of unauthorised and cruel methods that did not result in a quick or painless death. The report found that in particular, shooters had difficulty catching young at foot and that many of these dependent young were left to suffer from exposure, starvation or predation.

These findings led to the development of the 2008 Commercial Code of Practice. This code had little impact on the widespread use of cruel and inhumane methods being used by kangaroo shooters.

The problem was such a significant issue for the kangaroo industry that further research into the issue was undertaken between 2012 and 2014. In 2014 the RIRDC published a report which documented the extent of the cruel and inhumane practices employed by shooters in killing both adult and dependent young kangaroos (*McLeod, Sharp 2014*).

## Institutionalised Cruelty

Both Codes legitimise and condone extreme cruelty to kangaroos in a number of ways. The brutality of the methods proscribed for the killing of joeys in particular would be considered clear breaches of animal welfare law if committed against other animals (*Ben-Ami, Boom 2014*).

These inhumane practices have attracted criticism from animal welfare groups both in Australia and overseas and led to key markets including California banning kangaroo products. Cruelty in the kangaroo industry remains a significant barrier to the kangaroo industry's marketing efforts.

This is why the kangaroo industry and its government backers spend such an inordinate amount of time, effort and money attempting to improve its poor image and reputation.

## Legalised Cruelty - Adult kangaroos

The codes stipulate that kangaroo shooters aim so as to hit the target to "cause instantaneous loss of consciousness and rapid brain death".

The reality of kangaroo shooting is that it takes place in the dark and even with spotlights, shooting at night as well as weather and wind conditions affects the ability of shooters to aim precisely and to comply with the requirement of an instantaneous death by head shot.

If the shooter does not kill the animal instantaneously or misses, that animal may escape before being shot again and suffer a prolonged death.

The codes require shooters who miss or wound a kangaroo to "make every reasonable effort" to locate that animal and kill it before moving onto killing of the next kangaroo. However, chasing or tracking down an animal is a cost in terms of time and money to shooters and there is ample evidence that many of these animals are not found and are instead left to die from their injuries.

As well, in reality there is nothing stopping licence holders from shooting at kangaroos in order to maim or immobilise them before finally killing them.

## Legalised Cruelty - Joeys

Under the Codes, shooters are directed to search the pouches of shot female kangaroos and destroy any dependent orphaned young.

Both Codes recommend the following methods of killing dependent orphaned young:

- For small furless young-"...stunning, immediately followed by decapitation by rapidly severing the head from the body with a sharp blade" or "a single forceful blow to the base of the skull sufficient to destroy the functional capacity of the brain."
- For furred pouch young-"a single forceful blow to the base of the skull sufficient to destroy the functional capacity of the brain". This is usually performed by swinging the joey so that its head strikes the tray of a utility or a fencepost or rock.
- For at-foot joeys-"A single shot to the brain or heart."

As RIRDC and other research has found at foot joeys are highly mobile and difficult to catch and are often left alive to die of exposure, starvation or predation.

## The 2020 commercial code

The new National Code of Practice for the Shooting of Kangaroos and Wallabies for Commercial Purposes came into operation in November 2020.

The changes to the code directly benefit the commercial kangaroo industry by weakening the standards and welfare protections that were available under the previous 2008 Code of Practice, especially the direction against targeting female kangaroos with obvious pouch young.

These changes include:

- A significant weakening of the standard of accuracy for shooting kangaroos, with the replacement of the requirement that shooters aim for the brain in the 2008 code with the less rigorous requirement that shooters are only obliged to aim for the head;
- A significant weakening of the protections for both female kangaroos and their dependent young with the removal of the direction in the 2008 Code that shooters avoid targeting female kangaroos with obvious dependent pouch young;
- The introduction of a definition and assessment of sentience in unfurred pouch young which does not reflect major advances in the science and understanding of sentience and its application to neurologically immature, foetal and neonatal animals over the last 10- 15 years,
- The endorsement of physical methods of killing pouch young including cervical dislocation, decapitation and blunt force trauma in the face of clear scientific evidence and warnings in the AVMA Guidelines (2013) that each of these methods has significant potential to be inhumane.

## The killing of orphaned dependent young under the 2020 Commercial Code

The new code contains a substantial revision of the methods of killing orphaned dependent young kangaroos.

We contend that these changes make it more and not less likely that inhumane practices will continue. We examine these revisions and the scientific evidence upon which the new code bases its assessments and recommendations below.

## Sentience

For the first time the commercial code introduces the concept of sentience as a determinant of the applicable method of destruction or dependent young.

It provides a definition of “sentient” as follows: *“...the capacity to perceive sensations originating from sensory outputs which is present from a certain developmental stage onwards”*

We reject the use of this basic, narrow and out of date definition of sentience in place of more recent, expansive definitions that more accurately reflect current the scientific evidence and understanding of the issue.

## How the new code describes and assesses sentience in kangaroo joeys

The new code provides the following assessment of sentience in pouch young:

*“To experience pain, suffering or distress an animal must be both sentient and conscious. This means that they must have the required neural system in place and the brain must be developed enough to*

*process sensory nerve impulses into sensations. They must also be in a state where they are aware of these sensations.... Research examining the brain responses to harmful stimuli provides strong evidence that marsupial young—which are neurologically extremely immature at birth—may not have the capacity to experience the sensation of pain until they start to develop fur and open their eyes...therefore methods used to kill unfurred pouch young are not likely to cause suffering.”*

Appendix 2 of the new code explicitly confirms this position and that sentience commences when joeys open their eyes and /or begin to grow fur:

*“Since unfurred young (with closed eyes) are considered to be still in a state of unconsciousness (and therefore not capable of experiencing pain), these methods are unlikely to cause suffering and are therefore considered acceptable”.*

The first point we would make is that the new code conflates two quite distinct developmental stages here. Kangaroo joeys’ eyes can start opening up to several weeks before they begin to develop fur.

This statement relies is based on 40 year old research rather than more recent and detailed information available on these issues and reflects how little those responsible for developing the code know and understand the various stages of development in kangaroo young.

In any case, we reject the assessment of the sentience of unfurred joeys contained in the new code on the basis that this assessment is not supported by the current scientific evidence on the issue of sentience nor the lived experience of the vast majority of specialist wildlife veterinarians and rehabilitation experts.

We are happy to provide the inquiry with detailed video evidence and statements from experts in the care and rehabilitation of unfurred joeys to demonstrate that unfurred joeys, even those with their eyes closed are indeed sentient, conscious and capable of experiencing pain.

### Selective use of the available scientific evidence

The new code relies on research conducted in 2008 and 2010 to justify its position that unfurred joeys are not sentient and therefore unable to experience pain.

We take issue with the reliance on this out of date and limited research and question the value of its findings or its application in setting welfare protections in the new code.

Review of the 2010 study referred to in the new code by Deisch and Mellor reveals that the findings of that research were heavily qualified by the authors themselves who acknowledged that:

- While it was clear that most neurological development occurred post-natally in macropods there was no scientific research to determine precisely when neurological development was sufficient to permit conscious sensory perception in these species;
- The use of EEG was only possibly useful in measuring and determining pain perception in macropods;
- The results found DID NOT directly indicate whether unfurred tammar wallaby joeys were able to experience pain but only allowed them to draw inferences regarding possible pain experience.

Given the extent of the qualifications the authors themselves placed on the findings of this research, we reject the characterisation that this study constitutes “strong evidence” that unfurred marsupial young are not sentient and therefore unable to experience pain.

We further contend that the new code has been selective in the scientific research relied on to justify its positions, noting that the new code has ignored extensive highly relevant further research carried out by the same author-(now retired) Professor David Mellor-as well as other major scientific developments in relation to both the concept of sentience and the assessment of onset of sentience in foetal and neonatal animals over the last decade.

None of this more recent evidence and opinion has been referred to or included in the new code. We provide an assessment of that evidence here.

## Developments since 2010

In 2014 researchers, including Professor Mellor, investigated the ethical implications of the assessment of sentience of pre-natal farm animals (*Mellor et al 2014*)

In that paper, the authors reviewed the science in relation to whether animal foetuses can suffer, and argued that extant regulations did not fully reflect current scientific understanding.

The authors argued that regulators should adopt the precautionary principle and consider the possibility that foetuses and neurologically immature postnatal animals may suffer due to subcortically based 'raw basic affects' (i.e. relatively undifferentiated experiences of discomfort generated by neural processing at levels below the cerebral cortex).

They argued that these findings meant that these animals should be given the "benefit of the doubt" with regard to their sentience and that their welfare should be protected in the same ways as those animals that are accepted as being sentient are.

Even more recently, Professor Mellor published an opinion paper in July 2019 in which he substantially revised his earlier position regarding the onset of sentience in neurologically immature animals.

In that paper, Professor Mellor expanded the criteria for the assessment of sentience to include the capacity for positive subjective experiences and goal-directed behaviours (*Mellor 2019*)

*"As the scientific understanding of key features of sentience has increased markedly during the last 10 to 15 years, a major purpose here is to provide up-to-date information regarding those features. Eleven interconnected statements about sentience-associated body functions and behaviour are therefore presented and explained briefly.*

*These statements are sequenced to provide progressively more information about key scientifically-supported attributes of welfare-aligned sentience, leading, in their entirety, to a more comprehensive understanding of those attributes. ... the following succinct definition is offered for consideration: Welfare-aligned sentience confers a capacity to consciously perceive negative and/or positive sensations, feelings, emotions or other subjective experiences which matter to the animal."*

In omitting these very significant developments in the science and understanding of sentience in neurologically immature animals, the new code does not present an accurate and balanced presentation of the scientific evidence on sentience.

The failure of the new code to take these developments into account raises serious questions about a number of the positions taken in the new code including the appropriateness and humaneness of the methods of killing dependent young.

For this reason, we consider these matters should be referred to an independent scientific panel for review and further opinion.



## The methods of killing orphaned dependent young under the new code

The code prescribes the following methods of killing pouch young and their application:

- Cervical dislocation (“CD”)-method for use on unfurred joeys under 5 cm in length (from head to tail)
- Decapitation -method for use on unfurred joeys over 5 cm until furred (from head to tail)
- Concussive blow to the head (Blunt force trauma) (“BFT”) for use on furred joeys (up to 5 kilograms)

The AMVA (American Veterinary Medical Association) Guidelines (2013) which provide assessments of a range of euthanasia methods make it clear that there are significant issues relating to the humaneness of each of these methods.

In the Guidelines, each of these methods is classified as “acceptable with conditions” and that these are techniques:

- That have greater potential for error by the person carrying them out;
- That require certain conditions to be met such as training; or
- That may require a secondary method of killing to ensure death.

The Australian Veterinary Association policy for the euthanasia of wildlife, ratified on 14/6/19, also raises significant concerns about the use of CD and decapitation to kill wildlife, noting:

*“Procedures such as cervical dislocation or decapitation are problematic and there are inadequate guidelines for their suitability in some species. More research is needed to establish and evaluate more suitable methods of euthanasia for wildlife”*

## The selective use of scientific evidence in relation to the humaneness of the methods of killing the revised code

In the same way the new code employs the selective use of scientific evidence to justify its positions in relation to the sentience of unfurred joeys, it is also selective in the scientific evidence it relies on to justify its endorsement of use of CD, decapitation and blunt force trauma as the most humane methods of killing dependent pouch young.

In doing so, it ignores the explicit conditions placed on the use of these methods in the AVMA Guidelines and the extensive recent scientific research that has raised concerns that all three of these methods are demonstrably inhumane, particularly when performed in a field setting by those who have no training and are not subject to any oversight.

We examine the extent to which the new code fails to present a fair and balanced assessment of the scientific evidence on the humaneness of the methods of killing it recommends shooters use to kill dependent pouch young below.

### Method 1-Cervical dislocation

The AVMA Guidelines caution that there are few scientific studies to confirm that CD is in fact humane. In fact, the Guidelines note that the available evidence suggests that CD may not cause immediate unconsciousness and that electrical activity in the brain can persist for up to 13 seconds (in rats) but much longer (e.g. 43 seconds) in turkeys.

This position is supported by a 2012 study in which researchers found that of the 81 mice that underwent CD, 17 (21%) continued to breathe after the method was applied and euthanasia was scored as unsuccessful. The authors concluded that CD of mice had the potential for unsuccessful euthanasia (Carbone, Carbone 2012).

In addition, according to the AVMA Guidelines, cervical dislocation appears to be humane only when performed well by well-trained people on suitable animals, under-scoring the importance of expertise in using the method. It cautions that when poorly performed, cervical dislocation can lead to animals experiencing significant pain and distress. These requirements are not mentioned, let alone mandated in the new code.

We also note that there is no requirement under any of the KMPs that shooters undergo any form of training in applying this method.

It is also worth noting that AVMA Guidelines recommend that this method should only be used on animals that are anaesthetised and are under 200g. Neither of these requirements is mentioned let alone mandated in the new code.

## Method 2-Decapitation

Although the AVMA Guidelines accept the use of decapitation as a method of euthanasia, this acceptance is conditioned on the person performing the method having high levels of training and being monitored for competence to ensure it is done as humanely as possible.

This is because of the long running controversy surrounding the interpretation of brain activity after decapitation and whether testing indicates that the animal is still conscious and capable of perceiving pain in the period between decapitation and death.

The new code itself acknowledges that this method involves the risk that animals experience significant pain for between 15 to 29 seconds (in other species) before becoming unconscious. In fact, there is ample scientific evidence confirming that decapitation causes extreme pain.

In a 2010 review of the scientific literature on the issue, the author concluded that:

*“Viewed in toto, the almost inescapable conclusion...is that decapitation is a painful procedure and that conscious awareness may persist for up to 29 seconds in the disembodied heads. This comports poorly with the strict definition of euthanasia”. Not addressed here is the fear or mental distress that would plausibly accompany sudden severe pain and loss of motor control following decapitation.*

*Moreover, all of the preceding has presupposed flawless execution of the decapitation procedure...that cannot be assumed to occur in every instance, especially where small, squirming, difficult-to-position animals are involved; mistakes resulting in serious mutilations and additional discomfort will occasionally happen. Although the science is still not definitive on what exactly transpires inside the brains of decapitated animals (and may be inherently unknowable), common decency dictates that where the strong possibility exists of inflicting great suffering, animals are entitled to the benefit of the doubt”. (Bates 2010)*

On the basis of this evidence, we reject the endorsement of this method of killing unfurred pouch young (up to 1.2kgs) in the new code because this procedure has the potential for inflicting significant pain and suffering on sentient pouch young, especially when performed by untrained or in experienced kangaroo shooters under field conditions.

This method should be removed from the new code on the basis it is an inhumane method of killing dependent young kangaroos.

### Method 3-Blunt force trauma

The use of blunt force trauma to kill animals has been challenged in a number of scientific studies including research carried out in 2017 and 2018.

The research in 2017 assessed the humaneness of BFT in killing commercial meat rabbits. The researchers found that blunt force trauma was neither a humane nor an aesthetically acceptable method for killing meat rabbits of any age and recommended it not be used for on-farm euthanasia (*Walsh, Percival, Turner 2017*).

The same concerns were raised by research into the use of BFT to kill neonate piglets in the UK in 2018. The researchers in that study found that the application of blunt force trauma, either through swinging the animal against a wall, or hitting it with a weighted object had significant implications for the animal in terms of welfare, instantaneous effect and reproducibility (*Grist, Lines, Knowles, Mason, Wotton 2018*).

The AVMA Guidelines also confirm that blunt force trauma (BFT) should only be used when there are no other methods available and then it is only acceptable for use on neonatal animals with thin craniums.

The new code allows for the use of blunt force trauma not just for neonatal (pouch young) but for larger furred joeys up to 5 kilos in size. We submit that this is inconsistent with the requirements under the AVMA Guidelines and like all of the other methods permitted under the new code should be subject to an independent scientific review.

### Application of BFT in the new code

The new code requires that the joey be removed from the pouch, held around the top of the back legs and base of the tail and swung in an arc so that the joey's head is hit against a large solid object such as the tray of a vehicle.

It also specifies that if the first blow does not kill the joey and the animal remains conscious, the shooter should follow up with a second BFT blow or by cutting the joey's throat or decapitation.

The new code acknowledges that a high degree of skill is required if the procedure is not performed correctly, with sufficient force and precision, the joey will not be killed and will experience pain and distress and will suffer prior to death.

Allowing these secondary methods to be used on still conscious animals is inconsistent with the express prohibition on using these same very methods on conscious animals on the following page.

### The need for strengthened oversight and regulation

If the NSW government was serious about the issue of cruelty in the commercial kangaroo meat and skins industry, it could develop and incorporate the following provisions into the KMP:

- Provision for transparent monitoring systems and the quantitative reporting of animal welfare outcomes;
- Mandatory reporting of the numbers of dependent young killed as a consequence of shooting female kangaroos be included in tag allocations and shooters returns;
- Mandatory shooter training and accreditation in the use of the physical methods of killing dependent young set out in the code;
- The amendment of state regulations to ensure that the code of practice is enforceable against all parties in the commercial kangaroo industry;

- The introduction of harsher penalties including higher fines and imprisonment and the strengthening of licence suspensions and revocations to ensure that those penalties act as a sufficient deterrent for wrongful behaviour.
- The allocation of sufficient resources for the proper oversight and enforcement of kangaroo shooter activities.

The fact that the NSW government has made no effort to implement these basic systems to monitor animal welfare outcomes indicates that animal welfare is not a priority under the NSW KMP.



**Photo: Tina Lawrence**

## SECTION 9-THE NSW KANGAROO MANAGEMENT PLAN

The current NSW Kangaroo Management Plan (2017-2021) states that the main goal of the plan is to manage the commercial killing of kangaroos in NSW to ensure that kangaroo populations in NSW remain ecologically sustainable.

### “Sustainable use”

The concept of “sustainable use” was developed as a strategy to protect wildlife by giving it a commercial value. It is a strategy that has been a failure globally (Hoyt 1996).

Instead of providing a profit incentive to conserve and protect wildlife, it has increased pressure on wildlife populations and done nothing for the conservation of species (Jones MLC, 1997) (WWF report 2019).

In his 1996 book, *“Animals in Peril: How sustainable use is wiping out the world’s wildlife”*, John Hoyt, the then President of the Humane Society International wrote:

***“The biggest problem with the notion of “sustainable use” is there is no such thing. It is only defensible in theory. It is unworkable in practice and usually results in the over exploitation and decimation of the species involved.”***

***“Profit incentives have never protected wildlife. When money and jobs are involved in exploiting the natural world, including its wild animals for the benefit of the few individuals and companies involved, it creates expectations of ongoing expansion and profit that becomes difficult to control.”***

### “Sustainable use” under the KMP

The NSW state government maintains that its kangaroo management policies and programs including the permit system and the commercial kangaroo meat and skins industry represent an ecologically sustainable use of wildlife based on the population estimates and modelling it uses to determine the quotas for commercial slaughter every year.

There have been a number of reports from respected non-government ecologists that suggest that kangaroo populations are at risk largely due to the mismanagement of state kill quotas (Boom, Ben-Ami 2012).

These independent assessments of the methods used by the NSW government to estimate kangaroo populations confirm:

- The methods used and the use of inappropriate correction factors artificially inflate population growth estimates beyond normal numbers in targeted populations of kangaroos, making them unreliable methods of accurately assessing kangaroo populations (Boom, Ben-Ami 2012).
- The way in which the quota is set does not provide a reliable tool for managing the sustainability of the killing because the population estimates relied on do not take into account a range of other significant causes of kangaroo mortality (Ben-Ami 2009).

### Scale of the killing

The NSW KMP Annual Reports published by DPIE contain details of the quotas and commercial takes of kangaroos. According to these reports commercial shooters have killed a total of 4,112,638 kangaroos across NSW over the past 10 years (2010-2019)

The Annual reports also confirm that since the beginning of the drought in 2017, the annual commercial take has risen by about 66% from 375,899 to 625,421 despite clear evidence that kangaroo populations have been collapsing across the state.

This is in addition to the massive increase in the numbers of kangaroos being killed under damage mitigation permits which have also risen by around 558% during that same time period.

What these figures reveal is that far from achieving its stated aim of maintaining ecologically sustainable populations of kangaroos throughout their ranges, DPIE have allowed both commercial and non-commercial shooters to increase shooting at a time when kangaroo populations are already declining steeply due to drought and starvation.

### Monitoring and enforcement under the NSW KMP

There is an important difference between animal industries that say animal welfare is a priority and those that actually demonstrate that it is by implementing transparent and effective systems of inspection and monitoring.

As highlighted in the repeated investigations conducted over the past 4 decades, there is very clear and compelling evidence of the inhumane treatment of kangaroos and in particular the orphaned dependent young of shot females in the commercial kangaroo industry.

Inspections play a major role in the detection of offences within animal industries because in the absence of whistle-blowers or reports from the public, the victims are unable to report offences or cruelty to the regulatory authorities (*Boom, Ben-Ami, Boronyak, Riley 2013*).

The NSW KMP fails to provide for any proper system of inspections or monitoring and most critically, inspections at the point of kill that would detect and penalise cruel or inhumane killing methods and practices. The lack of consistent and uniform inspections represents the most significant gap in the regulatory framework governing the commercial kangaroo industry (*Boom, Ben-Ami 2013*).

Review of the NSW Annual Kangaroo Harvest reports from 2010 to 2020 (a period during which over 4,000,000 adult kangaroos were killed in the commercial industry) confirms extremely low levels of direct inspection and compliance activity.

Although there were regular inspections of chillers and processing facilities, there were no inspections, monitoring and enforcement of the activities of shooters in the field in those 10 years. Instead, almost all of the compliance activity carried out was incidental inspections of shooters vehicles during chiller inspections and the industry returns submitted by kangaroo shooters.

Similarly, the vast majority of enforcement outcomes for breaches such as non-compliance with the Code of Practice were low level, consisting of cautions, warning letters and infringement notices. There was only 1 licence cancellation and total of 4 prosecutions (3 in 2011 and 1 in 2014) in the 10 year period from 2010 to 2020. Details of what those prosecutions were for and the outcomes of those prosecutions were not provided.

The failure to strengthen regulatory control to ensure adequate levels of inspections and monitoring of the operations of the commercial kangaroo industry is both a reflection of the lack of priority and resources allocated to these activities but also a part of a considered strategy to avoid confrontation and imposing penalties on operators in the commercial kangaroo industry over cruelty issues.

## SECTION 9-POPULATION MONITORING AND QUOTAS

The NSW KMP claims that the commercial slaughter of kangaroos in NSW is sustainable on the basis of population counting methodologies that are fundamentally flawed, lack scientific rigour and that change so often that they have little real value or credibility.

### Population Surveys and Correction factors

Kangaroo population surveys do not provide real numbers but rather estimates that are derived, in part, by using correction factors (*Pople 2004*);

Correction factors vary and are dependent on a number of survey conditions including habitat type, vegetation density, canopy cover and kangaroo species (*Pople and Grigg 1999*).

As a result of efforts to better estimate kangaroo populations, the correction factors have a history of changing upwards, thus continuously increasing the population estimates (*Mjadwesch 2011*).

The gradual upward shift in correction factors results in artificially increasing population estimates over time, casting doubt on claims that kangaroo populations are thriving (*Ben-Ami 2009*).

Another issue is that aerial surveys are also based on data that is taken from protected areas and remnant forests where kangaroo numbers are higher, and then extrapolated to agricultural and unprotected areas where kangaroo numbers are low (RM). This also serves to increase actual numbers and mask ongoing decline.

### The population model used in the NSW KMP

There are a number of incorrect assumptions, theoretical flaws and biases in the population modelling used to set quotas under the KMP. We summarise these as follows:

- The modelling relies on the incorrect assumption that European land-use had increased the amount of water available to kangaroos, and therefore the number of kangaroos, an assumption for which there is no consensus (*Montague-Drake 2004*);
- The modelling relies on the incorrect assumption that all the kangaroo species under consideration breed to the maximum unless prevented from doing so by natural catastrophe, big predators and human culls for commercial or other reasons;
- The modelling relies on the debunked biomass-dependent population theory that asserts that kangaroos wear down grasslands and then starve to death (*Fletcher 2006*);
- The modelling underestimates the real geographical range of kangaroo populations which risks skewing the estimation of population numbers by confusing seasonal or reactive population movement with permanent populations (*Newman 2017*);
- The modelling assumes an undifferentiated 'meta-population' of kangaroos, ignoring local populations that make up that meta-population and which have their own local characteristics of endogamy, exogamy and dispersal within that meta-population (*Newman 2017*);
- The modelling does not consider the discrete dynamics that occur within local kangaroo populations and their interactions with other populations within the overall area. The model only seeks to predict when and where populations are at the greatest density and easier to harvest economically (*Newman 2017*);
- Does not consider temporal and spatial kangaroo population movement (*Newman 2017*).

The population modelling used to set quotas under the KMP is also inadequate because it omits information about other significant causes of kangaroo mortality, including drought, flooding and extreme temperatures or:

- The large number of kangaroos killed by farmers under non-commercial destruction permits killed in NSW every year (discussed below);
- The large number dependent young that are killed and discarded as “off cuts” of the commercial kangaroo industry;
- The large number of kangaroos killed by land managers in NSW reserves and national and state parks every year;
- The large number of kangaroos killed illegally every year. This is an issue that has never been investigated but anecdotal evidence suggests could be at least the same numbers as the commercial slaughter (*Senate Committee report-Kangaroos 1988*).
- The large number of kangaroos killed on rural and regional roads in NSW every year.

Steep declines in kangaroo numbers across NSW in the last 3 years call into question the reliability of the population counts and undermine claims by state wildlife agencies and the kangaroo industry that the commercial exploitation of kangaroos is ecologically sustainable.

In our submission, these methods of estimating kangaroo numbers require urgent independent review and assessment.





## SECTION 10-DAMAGE MITIGATION PERMIT SYSTEM IN NSW

Killing kangaroos, whether justified or not, whether related to damage mitigation or not, has become normalised as a land management tool in NSW over the last two centuries.

In kangaroo management in NSW, lethal control is the entrenched default position rather than a last resort in resolving human wildlife conflicts. The state's wildlife agencies make little to no effort to enforce the requirement that non-lethal methods of control be attempted before a permit is issued.

The non-commercial damage mitigation permit system in NSW allows landholders to apply for permits to kill wild animals and birds which they claim pose a physical threat or are causing damage to property or are causing "economic hardship". There is no clarification of what any of these broad and highly subjective terms actually mean.

In 2018, already weak regulatory controls under the existing damage mitigation permit system were discarded when the NSW government effectively deregulated kangaroo shooting under these permits by as part of a "drought assistance" package for landholders and farmers.

### **Following review, we have identified the following concerns about the operation and regulation of the damage mitigation permit system in NSW:**

- The fundamental conflict of interest between NPWS role as the directorate responsible for both the protection and the authorisation of lethal control of kangaroos;
- The reliance on justifications for lethal control that are not supported by current, objective and independent evidence-based science and research;
- The reliance on the perceptions and unverified accounts of landholders as to both the damage being done and the number of kangaroos to be removed;
- The myriad qualifications and exemptions available that allow applicants to circumvent many of the evidentiary and other requirements that justify the issuing of an permit;
- The failure to require the provision of proper substantiation and evidence of the claims made about damage or economic hardship in applications for lethal control;
- The failure to require training or accuracy or competency testing for those applying for permits;
- Allowing and facilitating the involvement of amateur shooters in carrying out lethal control under permits without requiring
- The absence of any system of oversight, monitoring or inspection of the killing that takes place under permits including at the point of kill;
- The failure to require that applicants keep proper records of all killing undertaken under permits including returns and accounting for the destruction of pouch young and young at foot.
- The absence of any system of audits and evaluation to determine if the use of lethal control is actually achieving the stated objective of mitigating the claimed damage to agribusiness.

### **The scale of the killing**

According to the Kangaroo Harvest annual reports published by the NSW government, there has been a massive increase in the numbers of kangaroos being killed under permits since 2018 when the NSW state government discarded a range of restrictions and regulatory controls on non-commercial shooting of kangaroos.

2011	49,015
2012	65,056
2013	77,630
2014	89,830
2015	No figure provided
2016	71,796
2017	68,379
2018	282,927
2019	415,152
2020	449,971

In 2017 permits for lethal control were issued to kill 68,379 kangaroos in NSW. In 2020, that figure had increased to 449,971, an increase of 558%.

Because there is no oversight of shooter activities under these permits, the NSW government cannot verify that these figures are an accurate assessment of how many kangaroos are actually being killed or ensure that landholders do not kill more animals than nominated under their permits.

The absence of oversight of shooter activities or the requirement to submit returns raises the question-if the NSW government do not know how many animals are actually being killed under these permits, how can it be confident that these activities are “sustainable” and do not pose a threat to local kangaroo populations?

### Cruelty-the Non-Commercial Code

Permit holders in NSW are only required to comply with the **Non-Commercial Code** in carrying out lethal control of kangaroos on their properties.

Research by the RSPCA and other animal welfare organisations has uncovered evidence to demonstrate that there are much greater rates of wounding, cruelty and inhumane treatment of kangaroos and cruelty under the non-commercial code because:

- The non-commercial code allows for the use of shotguns instead of centrefire rifles that are required under the commercial code, leading to greater risks of wounding and poor animal welfare outcomes.
- There is no requirement for any competency or accuracy training or testing under this code. Any shooter, no matter how inexperienced or incompetent is able to shoot kangaroos under this code.

In addition, the deregulation of the damage mitigation permit system in 2018 allowed farmers to engage multiple “volunteer” amateur sporting shooters to clear their properties of kangaroos. This has effectively created an unregulated open season on kangaroos and opened the door to massive overshooting on properties across NSW.

## Non-lethal methods

The DPIE webpage refers to the need for landholders to discuss non-lethal methods of control with local NPWS officers before applying for a permit for lethal control.

When the entrenched culture among landholders and within NSW wildlife agencies is that lethal control is the quickest and cheapest way for landholders to rid their properties of kangaroos, there is a serious effort to provide advice on alternative methods of control.

## The Application

Landholders are required to provide a range of information in the permit application form including details of:

- The species of wildlife involved;
- The number of animals involved;
- The nature and extent of the damage being caused by that species;
- The extent to which the land owner has “attempted” non-lethal methods to “manage” the “problem”.

The problem is there is no requirement that the landholder provide evidence to substantiate the claims being made.

## “Estimates” and Evidence of damage

Applicants for a damage mitigation permit in NSW are only required to provide an “estimate” of the numbers of kangaroos on the property and the number to be “controlled”.

Given that landholders have a vested interest in removing as many kangaroos as possible, it is inappropriate for NPWS to rely on a landholder’s self-assessment of kangaroo numbers without requiring independent or corroborative evidence such as video or remote camera or even drone evidence to substantiate their claims.

In the Senate Inquiry into kangaroos in 1988, it was made clear in the Committee’s final report that it should not be left to the “perceptions of landholders” which were often wrong, to determine the effects or potential effects of kangaroos on their properties.

The same unacceptable lack of rigour and zero requirement of evidence applies to claims made about the nature and extent of the damage and the identity of the species that is in fact causing that damage.

## Assessment of permits

According to the Minutes of the NSW Kangaroo Management Advisory Panel from the meeting in 4/20 applications for damage mitigation permits are not assessed by authorised officers but by clerical staff in regional NPWS offices. This signifies the low priority given the proper assessment of these applications.

There is no publicly available information indicating the criteria NPWS takes into account in the assessment of whether or not to issue a damage mitigation permit. There is also no information available about when and in what circumstances property inspections are carried out to verify the claims made or if and in what circumstances, applications are rejected.

The criteria and guidelines for decision relating to the granting or refusal of applications for permits should be publicly available so that the public can determine the appropriateness or otherwise of both the application and the decision-making process.

### Competency testing

NSW wildlife agencies do not require any form of accuracy or competency testing for landholders who apply for damage mitigation permits.

The failure of the NSW state wildlife agencies to impose even minimum standards of competency undermines any claim they might make about their commitment to animal welfare.

### Monitoring and compliance in the NSW damage mitigation permit system

Animal welfare laws can only be effective when government agencies demonstrate both a willingness and an ability to enforce them and provide sufficient resources to enable this to occur.

In order for NSW state wildlife agencies to be satisfied that the conditions under which damage mitigation permits are being complied with and that breaches including cruel and inhumane practices are detected, proper oversight is critical (*Boom, Ben-Ami 2013*).

The absence of any minimum, consistent or uniform system inspections or other monitoring of the activities undertaken under damage mitigation permits presents a significant gap in the regulation of the non-commercial slaughter of kangaroos in NSW.

### The absence of proper oversight in the NSW damage mitigation system

Review of the Annual Kangaroo Harvest reports from 2010 to 2020 confirms low levels of inspection and compliance activity in the commercial kangaroo industry.

These reports do not provide any information about what, if any, oversight is carried in relation to the shooting activities of landholders and their agents under damage mitigation permits. There is no other publicly available data in relation to compliance and enforcement in the NSW permit system.

Where there is no system of inspections, landowners know their chances of being caught and punished for breaches of permit conditions is low to non-existent. The practical effect of this is that there is little or no any deterrent for wrongful behaviour or overshooting (*Ben-Ami, Boronyak 2013*).

### Oversight and Enforcement - the consequences of systemic failures

Our review of the NSW damage permit system supports the findings made in previous research on these issues (*Ben-Ami, Boom 2014*). Without an adequate system of inspections and in particular, inspections at the point of kill, it is impossible for NPWS to ensure that shooters are complying with the conditions of their permits including how many animals are being killed or that the killing is being carried out in a humane way.

### Accountability - No requirement for record-keeping (“shooters returns”)

The requirement that damage mitigation permit holders submit returns or utilise tags was removed in 2018 as part of the deregulation of the permit system.

These changes mean that landholders are not accountable to the NPWS at all for the shooting activities they carry out under damage mitigation permits.

### Accountability - Auditing, evaluation and reporting

Proper administration of a government program such as the damage mitigation permit system requires that there is a system of auditing, evaluation and reporting to establish whether the system is actually achieving its stated objectives of reducing kangaroo damage to landholder properties.

There is no requirement for any such evaluation or reporting in relation to the damage mitigation permit system in NSW. This is yet another example of the absence of even minimum levels of accountability for landholders under the NSW damage mitigation system.

### Adaptive management

The NSW government actions in endorsing a dramatic increase in the numbers of kangaroos being killed under permits in the past 3 years rather than taking steps to mitigate the steep declines in kangaroo populations across the state undermine any claim it might make that it applies either the precautionary principle or adaptive management strategies to its kangaroo management programs.

Photo: Tamara Keneally Photography



## SECTION 11-THREATS TO KANGAROO POPULATIONS

Kangaroo populations across Australia face a range of potential threats. The KMP contains a list of those potential threats but devotes just a paragraph or two of comment and references to out of date research, some of which is decades old.

The table setting out the threats to kangaroo populations was first included in the 2007-2011 KMP and has not been updated since. The superficial treatment of these potential threats reflects the extent to which the NSW state government has failed and continues to take these threats seriously.

The failure of the NSW government to commission research into any of these potential threats over the last decade underlines the fact that the objective of the KMP is to ensure the commercial kangaroo industry remains viable not to address the long term welfare and viability of kangaroo populations in NSW.

### Drought

The most critical determinant of kangaroo densities is rainfall. During drought kangaroo populations decline due to starvation (which mainly effects adult males and juveniles) and suppressed reproductive activity (*Short 1983*).

These die-offs can be both rapid and dramatic as can be seen from historical data from previous droughts in NSW in which populations crashed resulting in the deaths of millions of kangaroos.

Contrary to the claims of landholders and the commercial kangaroo industry, kangaroo populations do not “bounce back” quickly but make slow recoveries which can take many years (*Herbert, Elzer 2011*).

The KMP treats droughts as events, limited in time and area. That might have been the case in the past but there is consensus in the most recent scientific evidence that climate change will result in permanent reductions in average rainfall, increased and more prolonged droughts and more extreme heat events (*Bergstrom 2021*).

Research undertaken in relation to red kangaroo population dynamics in 2010 suggested that if average rainfall dropped by more than 10% in the NSW commercial harvest area, the massive reductions in kangaroo populations that would follow would mean no level of commercial shooting would be sustainable and the end of the commercial industry in NSW. (*Jonzen et al 2010*).

Instead of addressing this threat, the NSW government continues to endorse increased commercial and non-commercial shooting during drought.

This approach is inconsistent with the available scientific evidence and with the proper application of the precautionary principle.

### Bushfires

The WWF report into the impact of the 2020 bushfires confirmed 3 billion animals died, were injured or were displaced by those fires. This figure included an estimated 5.5 million kangaroos and wallabies.

Every report on the potential impacts of climate change on biodiversity and ecosystems in Australia over the past two decades has warned of the increasing frequency and severity of bushfires.

This threat to local kangaroo populations is not addressed with any seriousness in the KMP. Shooting under damage mitigation permits has continued in areas within the hardest hit bushfire zones

## Disease

While the KMP acknowledges that there have been unexplained mass die-offs in local kangaroo populations, it does not consider disease a significant risk at a meta-population level.

Wildlife Health Australia reviewed 18 mass mortality events in kangaroo populations that had been recorded between 1979 and 2015. It found that these epidemics had occurred at times of extreme weather conditions, indicating climate was a factor in most of those events (*Wildlife Health Australia 2016*).

International research has indicated that the number of mass mortality events in wildlife populations across the world is rising and there is evidence that higher temperatures may be a contributing factor to these mass deaths (*Kock 2015*) (*Fey, Siepielski, Nus 2015*).

Other research has confirmed that as temperatures rise to levels that push wildlife populations beyond their niche physiological limits, this will trigger sudden, abrupt and severe biodiversity and ecological disruptions, causing local extinctions and threatening species survival (*Trisos, Merow, Piget 2020*).

This emerging evidence suggests that climate change, increasing temperatures and extreme weather conditions is likely to play an increasing a role in wildlife disease epidemics and mortality events.

This issue has significant implications for kangaroo populations and deserves more attention than the brief, dismissive mention it receives in the KMP.

## Climate change

The biggest threat to the long term viability of kangaroo populations in NSW is climate change. There is no question that kangaroo populations especially those that inhabit the semi-arid and arid regions of western NSW will be significantly impacted by warming temperatures.

More frequent and extreme temperatures have the capacity to push many macropod and other native species beyond their physiological capacity to cope and constitute a major risk to the welfare and persistence of kangaroo populations.

Scientific research which directly addressed the issue of the potential impact of climate change on kangaroo populations has warned of the potentially dire consequences of increased global temperatures on northern kangaroo species (*Ritchie, Bolitho 2008*) including:

- Climate change had the capacity to cause large-scale contractions in kangaroo ranges;
- An increase of two degrees could shrink kangaroo ranges by up to 48 percent;
- A six degree increase could shrink ranges by up to 96 percent;
- The most significant effects of climate change were not necessarily on the animals themselves, but on the amounts of available water and food sources;
- If dry seasons were to become hotter and rainfall events more unpredictable, habitats may become depleted of available pasture for grazing and waterholes may dry up;
- The reductions in food and available water may result in starvation and failed reproduction for those species that are less mobile;
- Although kangaroo species may be mobile enough to relocate as the climate changes, the vegetation and topography for which they are adapted are unlikely to shift at the same pace.

These findings are supported by more recent international research that confirms that environmental stress resulting from climate change increases will cause mass die-offs unless species can shift ranges as the temperatures increase (*Fey 2015*).

One specific threat to kangaroo populations is the impact of drought and increased temperatures on the survival of juveniles, which are particularly vulnerable to dry and extreme conditions:

- Juvenile kangaroos are more likely to die during drought, due to lesser body weight and a commensurate higher requirement for water (*Munn & Dawson 2006*);
- Juvenile red kangaroos have the highest drought related mortalities of any cohort because the juvenile kangaroo respiratory system must work considerably harder than that of adult animals to maintain heat balance (*Munn 2007*);
- Juvenile kangaroos are more sensitive to extreme conditions, not only with respect to long term stresses, such as food limitation but also to short term extremes, such as severe cold or heat. (*Munn & Dawson 2006*).

There is no acknowledgement in the KMP or in any of the documentation we have reviewed in relation to the governance or administration of the NSW government's kangaroo management programs of the significant threat climate change poses to the long term viability and persistence of kangaroo populations in NSW.

The failure to address these issues or to commit funding to research in order to investigate the potential implications of climate change for the long terms health and welfare of NSW kangaroo populations are significant failures of governance by the NSW government and its wildlife agencies.

### Gaps in Knowledge

The most recent Review of Scientific Literature Relevant to the Commercial Harvest Management of Kangaroos confirmed that there were still significant gaps in knowledge about the impacts of the large scale commercial slaughter of kangaroos that needs to be addressed (*Herbert, Elzer 2011*).

The review noted the lack of proper research into kangaroo population dynamics and their response to resource availability and the potential risks to kangaroo populations and in particular:

- The absence of a model that can predict population responses to resource variability over broad geographical ranges to better understand the relationship between kangaroo density and rainfall in order to better predict the response of kangaroo populations to climate change;
- The lack of studies investigating the likely impact of climate change on kangaroo populations given that climate change models suggest that there will be significant range contractions for some species and generalised widespread reductions in rainfall, or increased variability of rainfall that may influence the sustainability of the commercial kangaroo harvesting industry;
- The absence of modelling that can accurately predict kangaroo population size over broad geographical ranges to assess and set harvest quotas.

These are significant gaps in knowledge that should be but to date have not been addressed by the NSW government. The failure to investigation these issues once again underscores the inadequacy of its adaptive management strategy under the KMP.

### Adaptive management

No amount of research will mitigate the conservation, animal welfare or sustainability concerns about the industrial levels of kangaroo slaughter that occur in the commercial kangaroo meat and skins industry and under the damage mitigation permit system in NSW.



That said, none of the research undertaken over the past 50 years has questioned any aspect of kangaroo industry operations or attempted to address the long term implications of climate change or other risks to kangaroo populations.

Instead, the focus of all the research and studies undertaken by NSW state government wildlife agencies and Agrifutures has been directed to reinforcing the legitimacy of the kangaroo industry and supporting the marketing of kangaroo products to domestic and overseas markets.

### The Precautionary principle

There is already significant evidence that climate change is having devastating impacts on kangaroo populations. The collapse of kangaroo populations across NSW due to drought since 2017 and the massive numbers of kangaroo and wallabies that were killed, injured or displaced by the 2020 bushfires are just a precursor of what is to come in the next few decades.

In the face of compelling evidence of these gathering threats, the NSW government and its wildlife agencies have taken no action to impose further controls over either the large scale commercial or permitted shooting of kangaroos across the state.

Instead NSW state government wildlife agencies has adopted a “business as usual” approach, albeit with some adjustments to quota numbers and suspensions in a limited number of harvest zones.

The failure to consider, let alone apply the precautionary principle in the face of these clear threats to the state’s kangaroo populations reflects poorly on the NSW governments ability to properly manage the state’s kangaroos populations.



## SECTION 12-EXCLUSION AND CLUSTER FENCING

Yet another example of how NSW state government and its wildlife agencies prioritise the short term economic interests of landholders over the longer term interests of the broader community in maintaining healthy and viable wildlife populations and ecosystem processes is their support and funding of exclusion or cluster fencing across large areas of regional NSW.

The massive surge in the use of this fencing across NSW is being driven by the Federal and NSW governments which are promoting and subsidising this fencing to assist landholders in “protecting” their properties from dingoes, emus and kangaroos and wallabies.

These fences are also used to reduce kangaroo populations by cutting them off from access to food and watering points. These animals are then left to die slowly of dehydration, starvation, exposure or predation. There is also evidence that the fences are being used to trap kangaroos inside properties so that they be more easily shot and killed (including from helicopters) or poisoned.

The use of cluster fencing (where multiple landholders install fences on multiple properties) is even more insidious-trapping and cutting off access to water and food sources over huge areas.

The electrification of these vast fences and the use of barbed wire poses additional threats of death and injury and of prolonged suffering for those smaller animals such as echidnas, reptiles, birds and bats that get entangled or caught on or in the fences.

While there is no question these fences kill and injure large numbers of wildlife, potentially the most devastating impact is that these broad scale barriers prevent the free movement and migration of wildlife across large areas of natural ranges-an essential part of maintaining the health of wildlife populations.

Exclusion fences have the potential to reduce the genetic interchange between populations of wildlife separated by the fences which could have significant flow on impacts on local biodiversity as well as ecological communities and systems (*Laurence 2019*).

The NSW governments support for landholders installing these fences without conducting any investigation or research into the implications for local wildlife populations is completely irresponsible.

In Africa, the use of this fencing has caused many migratory routes to collapse entirely, leading to steep declines in ungulate populations like wildebeest and zebra (*Ogutu 2021*).

A recent global review found that this type of fencing is a major problem for migrating wildlife worldwide. This research found that exclusion fences prevent migration movements, limit the range of species, prevent wildlife from accessing food and water and fragment vital habitat and ecosystems (*Jakes, Jones et al 2018*) (*Laurence 2019*).

Australia is a pioneer of the use of fencing to exclude wildlife. It has the longest exclusion fences in the world with the “dingo fence” (5,600 km) in and “the rabbit proof fence” (3,300 km). Since their construction over a century ago, these fences have cause recurring ecological disasters such as mass die-offs of emus and other species seeking out water and food sources during times of low rainfall and drought (*Laurence 2019*).

More recent research indicates that the dingo fence has and continues to cause trophic cascades including negative impacts on arid ecosystem responses (*Fisher, Mills 2021*).

The significant issues raised by the use of this type of fencing need addressed as a matter of urgency. We call for a moratorium on the funding and installation of exclusion and cluster until there has

been an independent scientific investigation and assessment of the potential long term animal health and welfare impacts and the broader ecological consequences.



## SECTION 13- THE TRANSITION FROM KILLING TO CO-EXISTENCE

The problems associated with managing human-wildlife conflicts are not confined to Australia. Human-wildlife impacts (and conflicts stemming from them) are one of the biggest threats to wildlife conservation across the world (*Dickman 2010*).

Human-wildlife conflict also has significant consequences for human health, safety, and welfare, as well as biodiversity and ecosystem health (*Nyhus 2016*).

The combination of the growing global population and the increasing impacts of climate change is likely to result in major increases in these kinds of conflicts in Australia and across the world (*Konig 2020*).

It is the large and highly visible species like kangaroos that bear the brunt of the majority of hostility in human wildlife conflicts. These species tend to generate disproportionate hostility and become sources of enormous resentment and scapegoats for poor land management practices.

As a result, there is often a mismatch between the perceptions of damage these species do, the actual degree of damage they do and the proportionality of the response by landholders (*Nyhus 2016*). As we have discussed elsewhere in this submission, there is ample evidence that landholders in Australia have grossly inflated perceptions of the impact kangaroos have on grazing and fencing (*McLeod 2004*).

The ingrained hostility and resentment landholders have towards kangaroos has resulted in over two centuries of relentless slaughter, slaughter which continues today through widespread use of lethal control against kangaroos both for commercial purposes and in the name of damage mitigation.

This approach to kangaroo management is not just unethical and unjustified but unsustainable. If we are going to stem the tide of biodiversity loss and ecosystem decline, we can no longer justify our anthropocentrism or our treatment of nature as utilitarian without intrinsic value or the prioritisation of economic interests over the interests of the broader community and those of future generations (*Konig et al 2020*).

The current collapses in kangaroo numbers across NSW and Western Queensland serve as a warning as to what could occur as the impacts of climate change begin to take a toll. The assumption that kangaroo numbers will always “bounce back” cannot and should not form the basis of the policy governing kangaroo management.

There is an urgent need for the NSW government to re-assess its entire approach to wildlife management and in particular, the way in which it manages kangaroo populations.

### Co-existence

Coexistence has been defined as a dynamic but sustainable state in which humans and wildlife co-adapt to living in shared landscapes and where human interactions with wildlife are governed by effective institutions that ensure long-term wildlife population persistence, social legitimacy, and tolerable levels of risk (*Carter & Linnell 2016*).

There has been a huge increase in academic and practical research into how to manage human wildlife conflict and the transition to co-existence over the last 20 years. What is clear from that research is that there no single management strategy that can prevent all conflicts.

Instead, the research suggests that the goal of management should not only be to reduce the levels of conflict but also raise the acceptance and tolerance of wildlife by lessening its impact on landholders.

Economic incentives are widely used to achieve this. Four common economic tools include compensation, insurance, performance payments, and incentives. We provide an outline of these incentives below.

We urge the inquiry to establish an independent taskforce to review and assess all current NSW government wildlife policies and practices, including the state's kangaroo management policies and develop a policy framework for the transition to a broad-based strategic landscape-level approach to wildlife and ecosystem management and co-existence policies that integrate the public interest and principles of good governance.

For those that say that phasing out the commercial kangaroo industry and lethal control under damage mitigation permits is impossible, it is worth noting that in the 20<sup>th</sup> century, NSW successfully ended other lethal and destructive wildlife industries including the whaling industry, the sealing industry and the massive fur trade which had caused catastrophic declines in many previously populous species including koalas and platypuses without massive political or economic disruption.

### Government leadership

No transition away from the lethal management of kangaroos can occur without the strong leadership and support of the NSW state government.

The NSW state government has a critical role in leading the development of a state-wide landscape level approach to the protection and conservation of wildlife and ecosystems by:

- Prioritising the broader public interest over the economic interests of landholders;
- Putting an end to the pest control narrative that drives landholder antagonism towards kangaroos and which encourages contempt and cruelty towards these animals;
- Withdrawing support for and phasing out the commercial kangaroo industry;
- Withdrawing support for and phasing out the damage mitigation permit system;
- Developing a range of alternative programs that encourage the use of non-lethal methods of wildlife management and co-existence;
- Re-allocating the massive resources it currently expends on supporting current kangaroo management programs, including its administrative, regulatory, research, public education and technical resources to implementing a comprehensive transition to alternative mitigation strategies and broad scale conservation efforts;
- Putting an immediate end to its encouragement and funding of exclusion and cluster fencing.

Public policy and strategies to promote coexistence of people and wildlife and a diverse suite of policy responses can be used to address human-wildlife conflict in kangaroo management.

These policy responses need to include stronger state laws, effective enforcement, and wildlife friendly economic and agricultural policies as well as the development of programs designed to promote co-existence.

## Landholder involvement

The starting point for any discussion of a new model for resolving human wildlife conflict is the acknowledgment that the participation of the agricultural sector, as the largest land user in NSW, will be crucial in driving change.

Phasing out the widespread use of lethal control will require addressing and overcoming the ingrained beliefs, hostility and resentment landholders have towards kangaroos and other wildlife.

## Incentives and penalties

To make the kinds of fundamental cultural changes that would be required to move to a model based on conservation and co-existence will require introducing a range of government funded landholder supports and incentives while at the same time ensuring there is adequate oversight and enforcement measures.

Encouraging landholders to see the protection of wildlife (including kangaroos) and wildlife habitats as a shared responsibility would be assisted by developing and funding a range of different programs including damage prevention measures, damage compensation schemes and a “tool box” of financial and other concessions to incentivise conservation and co-existence over lethal control.

We do not provide a detailed assessment of those programs and measures in this submission but note that these include the following:

**Prevention**-Government funded damage prevention and mitigation programs which emphasise the use of non-lethal methods of control and other effective damage prevention tools can be used to reduce losses to farmers but reduce the costs of mitigating those losses.

**Compensation**-Where preventative measures are not effective, the state government should establish a wildlife damage compensation scheme to ensure that losses are compensated. Wildlife damage compensation schemes which cover the damage done by predators and other species operate in many parts of the world and can be easily adapted to work in NSW.

**Incentives for conservation and co-existence**-There are many ways of incentivising landholder collaboration and co-operation in conservation efforts. These include the use of context-specific and results-oriented payment and concession schemes such as stewardship payments and incentives, tax incentives and concessions and government funded education and technical assistance to improve land and farm management practices.

## Public participation

While landholders are clearly critical to driving change, any new approach to wildlife conservation and management also needs to take into consideration the public interest in the setting of policy and in decision-making and ensuring that there is effective public participation in policy development and decision-making.

## Strengthening regulation and enforcement

During any transition period and beyond, there is a need for strong and consistent enforcement and deterrence measures to deter wrongdoing. These measures would include strengthening inspection regimes, oversight, reporting requirements and enforcement actions as well as substantially increasing penalties to detect non-compliance and penalise wrongful conduct.

Stringent regulation and enforcement could be enhanced by the introduction of quality assurance measures such as the use body cameras, remote wildlife cameras and GPS trackers as well as the re-introduction of returns and the use of audits to evaluate program performance.

### Wildlife corridors and connectivity

There is overwhelming scientific evidence to support the use of interconnected areas rather than isolated protected areas in a fragmented landscape to protect and conserve wildlife, landscapes and ecological processes.

The IUCN released its *“Guidelines for Conserving Connectivity through Ecological Networks and Corridors”* in 2020. The guidelines were designed to assist countries in developing practices that conserve the movement ecology of species across landscapes. The Chair of the IUCN Connectivity Specialist group (CCSG) in launching the guidelines said that ecological connectivity was rapidly emerging as a critical strategy to protect the dynamic processes that sustain nature (*Debus 2020*).

Australia already has a strategy for preserving and connecting habitat at a continental scale in the form of the *“National Wildlife Corridors Plan: A Framework for Landscape-scale Conservation”* which was developed and adopted by the Commonwealth government in 2012 but has yet to be implemented (*Debus 2020*).

There is no reason the NSW government could not use this framework to develop an effective state wildlife corridors action plan to provide a focus for the government programs we have set out in this submission.

### Ecotourism

This is not a management solution for all kangaroos or other wildlife but given the popularity and high profile of the kangaroo as a draw card for tourism, it is an option that should be considered as an economically viable alternative land use where current lethal control currently occurs (*Higginbottom 2004*).



## CONCLUSION

Nature is declining at an unprecedented rate in NSW and this, together with the threats posed by climate change is putting entire ecosystems and species, including kangaroo populations, at risk of dramatic declines and local extinctions within the next few decades.

To stop these declines we need transformative change in the way we value and protect our wildlife and ecosystems. That transformative change includes prioritising the health of ecosystems and wildlife populations, including kangaroo populations over short term political expediency and the economic interests of an influential few.

After more than 200 years of slaughter and commercial exploitation, it is time for NSW to re-assess the way it manages its kangaroo populations and take the lead in developing strategies to foster collaboration in broad scale conservation efforts and co-existence with wildlife, including our kangaroos.

Thank you for consideration of this submission.

**Tina Lawrence**

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