

**Submission  
No 108**

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

**Organisation:** Animal Welfare Institute

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# Animal Welfare Institute

900 Pennsylvania Avenue, SE, Washington, DC 20003  
awionline.org phone: (202) 337-2332 fax: (202) 446-2131

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Submitted by electronic mail via [portfoliocommittee7@parliament.nsw.gov.au](mailto:portfoliocommittee7@parliament.nsw.gov.au)

The Director  
Portfolio Committee No.7 – Planning and Environment  
Parliament House  
Macquarie Street, Sydney, NSW 2000

Re: Parliamentary inquiry to look at the health and wellbeing of kangaroos and other macropods in New South Wales

To Whom It May Concern:

On behalf of the Animal Welfare Institute (AWI), I submit the following comments on the above referenced inquiry regarding kangaroos in New South Wales. AWI commends the New South Wales parliament and, in particular, the inquiry committee for undertaking this inquiry given: the iconic status of kangaroos as a global wildlife ambassador for Australia, the decades of public controversy regarding kangaroo management, particular commercial and non-commercial killing, the significant legal and scientific questions underlying kangaroo management in New South Wales (and in other Australian states), and the cruelty inherent to the killing of kangaroos and their dependent young. This submission is also supported by Kangaroos Alive and was prepared with the assistance of Dr. Russell Leaper, Mr. Vassili Papastavrou, and Mr. Mick McIntyre.

The Animal Welfare Institute, established in 1951, is a nonprofit charitable organization headquartered in Washington, DC. The organization is dedicated to reducing animal suffering caused by people. It seeks better treatment of animals in the wild, in the laboratory, on the farm, at home, and in commerce. This is accomplished through public education, research, collaborations with like-minded organizations, media relations, outreach to agencies, litigation, engaging its members and supporters, and advocating for stronger laws both domestically and internationally.

This inquiry is not precedent setting. Indeed, over forty years ago Australia engaged in an independent inquiry into whales and whaling led by Sir Sydney Frost. The resulting report from the inquiry, which became known as the Frost Report, plainly and starkly noted the outcome of the inquiry in its first recommendation: Australia should oppose the continuance of whaling. That report and recommendation led to a sea change in Australia's position on whaling at both the domestic and internationally transforming the country from a whaling nation into a nation that advocated for strong protection of whales and against commercial whaling. Just as that inquiry propelled Australia to care and value whales as living animals, it is hoped that this inquiry may have a similar profound impact on kangaroo management in New South Wales.

It is clear from the available evidence, that kangaroo management in New South Wales should be significantly reformed to promote coexistence and humaneness over the current strategies that treat these unique, endemic wildlife species as subordinate to the interests and profits of Australia's livestock industry, particularly its domestic sheep industry. Indeed, it is the sheep industry, through

its desire to reduce competition for pasture forage and demand for predator (primarily dingo control or exclusion) that provides a purported justification for lethal control. The present inquiry is an opportunity to identify and rectify deficiencies in kangaroo management in New South Wales.

AWI has a long standing involvement in wildlife conservation and management. While much of this work has involved wildlife species in the United States, AWI was involved in past efforts regarding kangaroo management in Australia. This interest has been rekindled given the role of the United States in the import of kangaroo meat and leather primarily for the manufacture of pet food and athletic shoes, respectively. Over its 70 years in existence, AWI has engaged in a number of wildlife management issues, including those involving terrestrial and marine mammals, that involve many of the same fundamental issues that are relevant to kangaroo management in Australia (i.e., consideration of management objectives; determining population estimates and their coefficients of variation; determining catch limits to meet the management objectives; and determining total anthropogenic mortality). It is that expertise that provides AWI with confidence to engage in this inquiry and to offer its perspective on the deficiencies in the current management of kangaroos in New South Wales.

A cornerstone of effective and humane wildlife management is objective science whereby the foundation underlying management is based on credible scientific study that is not biased in favor of any particular stakeholder group or interest. In the context of marine species, including whales and fish, for example, much of the science has been subject to a substantial level of international scrutiny and attention, thereby generating very high quality science. In Australia, the goal of decision-makers and managers should be to base management decisions for kangaroos and other macropods on the same type of high quality, objective science.

Australia plays a critical role in the conservation and management of whales through its involvement in the International Whaling Commission. While kangaroos are obviously not whales, the IWC and the stellar work of its Scientific Committee demonstrates how, for whales, international collaboration and oversight, including from scientists from both whaling and non-whaling countries, strengthens the science underlying whale conservation and management.<sup>1</sup> AWI is not suggesting that kangaroo management be subject to international oversight. Nevertheless, it is clear that many of the issues relevant to the proper, responsible, and humane management of kangaroos (i.e., censusing methodologies, establishment of quotas, population estimation, population demographics, assessment of all forms of anthropogenic and natural mortality, compliance mechanisms, model development, habitat management, livestock management, coexistence strategies, and alternative management strategies) are applicable to the management of many wildlife species from around the world. This then provides a pool of high qualified and respected scientists who could provide a fresh examination of the strengths and weaknesses of kangaroo management practices in Australia and, specifically, in New South Wales.

Just as the United States and other countries have benefited from the wisdom of Australia's marine mammal/cetacean scientists, Australia may want to consider seeking international scientific expertise to provide an objective examination of its kangaroo management practices and policies.

**Transparency:** From top to bottom, kangaroo management in Australia is lacking transparency. While AWI appreciates that New South Wales produces a kangaroo management plan every five years and that it provides public access to its annual report, quota reports, and other relevant documents on its website, the content of these documents is lacking the full breadth of information and disclosure that should be required, that would improve public understanding of the program, and that would enable more substantive stakeholder input into the program component thereby

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<sup>1</sup> Punt, A.E. and Donovan, G.P., 2007. Developing management procedures that are robust to uncertainty: lessons from the International Whaling Commission. *ICES Journal of Marine Science*, 64(4), pp.603-612.

improving management. Some specific examples where the New South Wales Commercial Kangaroo Harvest Management Plan 2017-2021 (Management Plan) lacks transparency include:

1. Description of the methodologies used to census and develop population estimates for kangaroos: The Management Plan doesn't specify what specific methodology is used to census kangaroos and provide population estimates. Instead, that information is disclosed only in the Quota Report which indicates that Mark-Recapture Distance Sampling (MRDS)(2021 Quota Report at 4) is the current method used to census kangaroo population and provides a very basic explanation of the method, but fails to disclose the details of the method. Such details include: the level of experience of the trained observers used to survey kangaroos from the air; whether there are two or four observers on each flight (there should be four, two observers on each side of the aircraft) to give any legitimacy to the MRDS method; why some management zones are surveyed annually by fixed wing aircraft while others are surveyed triennially by helicopter; the type of aircraft used, the altitude flown, and airspeed; whether the observers can communicate with each other during the surveys; if any correction factor is used to account for kangaroos not seen during censuses; if alternate census methods are used for populations occupying more forested or topographically diverse terrain; and whether habitat quality is considered with extrapolating census numbers to obtain population estimates. In regard to this final point, without data on habitat quality within each management zone, assuming uniformity in kangaroo density at a regional or population level is biologically reckless as it will lead to an overestimate in numbers and density thereby permitting potential excessive kill quotas;
2. Quota establishment and thresholds: Depending on the population, it appears that the kill quotas generally range from 14-17 percent of the estimated population. The Management Plan, however, fails to disclose the scientific foundation for these percentages. Are they arbitrary or are they based on credible science? Such information must be disclosed and explained. Similarly, while the Management Plan notes that minimum thresholds are set for each management zone that, if triggered, would reduce kill quotas to ten percent of the estimate population or set the quota to zero. Management Plan at 10. The Quota Report, not the Management Plan, discloses the densities that would trigger a reduction or suspension of a quota, but the actual numbers are not provided in either the Quota Report of the Management Plan. For the public's benefit, all relevant information about the threshold triggers including the actual population numbers that would trigger reduced or suspended quota should be disclosed in the Management Plan;
3. Inherent biases: While the Management Plan notes the overall objectives of kangaroo management (Management Plan at 1 and 2) any biases whether political, economic, or historic, that may underlie management decisions should be disclosed. For example, the Management Plan and associated reports (2021 Quota and 2020 Annual Reports) make it clear that protecting Australia's sheep industry and ensuring that the sheep have access to high quality forage is a preeminent concern that influences kangaroo management decisions. To the extent kangaroo management decision-making is biased by that concern, this should be disclosed;
4. A more holistic review: At the very least, given the clear conflicts between the sheep industry and kangaroos, the Management Plan should provide data relevant to the industry (and other livestock industries) to aid the public and decision-makers in understanding industry dynamics in relationship to the management of kangaroos. For example, the number of livestock producers (by species) in each management zone should be disclosed along with, ideally, maps documenting the overlap between range used by livestock and kangaroos. The economics of the livestock industry (by species) should be provided both for New South Wales but also at the management zone and individual producer levels so that the public and decision-makers can understand the severity of the economic impact, if any, faced by a producer when kangaroo population numbers increase. Similarly, the location of

- exclusion fences should be disclosed given their considerable impact on the distribution, number, and well-being of kangaroos;
5. Explanation of fluctuating kangaroo population numbers: According to the 2021 Quota Report there are several examples of staggering declines in kangaroo number in the past few years or even between years (e.g., Tibooburra (red and gray kangaroos), Cobar (red and gray kangaroos), Bourke (red and gray kangaroos), Narrabri (red kangaroo), Coonabarabran (red kangaroo) as well as some biologically implausible increases in numbers (e.g., Narrabri (gray kangaroo). Instead of merely disclosing the numbers, New South Wales authorities should provide an explanation for such changes. Some of these increases and/or declines may not be real (see section below on confronting uncertainty). While natural fluctuation in response to environmental conditions may be one such explanation, the public should be advised if other factors including disease, other forms of anthropogenic mortality (i.e., vehicle collisions, attacks by feral dogs, fence entanglements), natural mortality, impacts of flooding, deficiencies in the population census/estimation methodologies, or over exploitation (by the commercial and/or non-commercial killing program) are contributing to such severe population declines;
  6. Other mortality factors: The 2020 Annual Report notes the number of non-commercial licenses distributed for the killing of kangaroos in 2020 (222,214) and provides an estimate of the number of kangaroos killed under such licenses (76,463) (Annual Report at 19) but there is no comprehensive compilation of the number of kangaroos known or estimated to be killed annually as a result of anthropogenic and/or natural factors (also see section below on anthropogenic mortality). Not only should such data be disclosed but there must be some explanation as to how kangaroo mortalities, that are not a product of the commercial kangaroo killing industry, are considered in the context of overall kangaroo management? Are such mortalities factored into the quotas set for the commercial industry? If not, why not? Responsible management requires the estimation or collection of data on all forms of mortality and for that information to be used to inform management decisions;
  7. Predators: The available evidence makes it clear that dingoes and other avian and terrestrial predators can kill kangaroos and, depending on the circumstances, such natural mortality can exert some control on kangaroo population growth. The Management Plan, however, fails to disclose any credible information about predators within occupied kangaroo habitat in New South Wales. To be credible, the Management Plan should identify: where predators live; which predators are present on the landscape; if predators are excluded from certain zones and, if so, why; how predators are managed (i.e., lethally and/or non-lethally); predator removal numbers (by species and management zone); strategies (if any) undertaken by ranchers to humanely and non-lethally reduce predator impact on their stock; and what impact predators, particularly dingoes, can have on kangaroos. Instead of continuing to lethally control predators, including dingoes, the management authorities in New South Wales should consider a new, holistic, wildlife management paradigm whereby predators are able to flourish and exercise their critical role in the ecosystem while addressing livestock-predator conflicts on a case-by-case basis relying primarily on non-lethal strategies, including economic reimbursement for lost stock, to mitigate such incidents;
  8. Population modelling: To the extent that models are used to make short or long-term predictions of how particular management strategies may impact kangaroo numbers, the actual model or models utilized must be disclosed. In general, the predictions obtained through population modelling are only as good as the model itself, the model parameters, the quality of the data available to populate those parameters, and whether the assumptions inherent to the model are (or are not) met by the population being modelled. At present, the Management Plan contains virtually no information about models used to predict population responses to management interventions. This deficiency should be rectified by fully disclosing all model details starting with the name of the specific models or

- models used, disclosing the assumptions inherent to the model/models, and provided the source of the data used to run the model;
9. Habitat quality: The quality of the habitat for kangaroos is not uniform across New South Wales. The Management Plan should disclose, based on the best available scientific evidence, the characteristics of high, medium, and low quality kangaroo habitat in New South Wales. It should then provide an estimate of the amount of high, medium, and low quality kangaroo habitat within each management zone and, ideally, maps graphically depicting these habitat areas should be produced and disclosed. Understanding the amount of high, medium, and low quality kangaroo habitat within each management zone is critically important for providing credible management zone-specific kangaroo population estimates particularly since census data extrapolation is used in New South Wales to provide kangaroo population estimates. Indeed, if habitat quality data at the management zone level is not available that calls into serious question the veracity of the kangaroo population estimates. For example, if the census data is collected from high quality habitat when the management zone contains a mixture of high, medium, and low quality habitat, any extrapolation of the census data will lead to an overestimate of population numbers and density;
  10. Ecological and economic role of kangaroos: All wildlife species occupy a unique niche in the ecosystems in which they are found. Every species plays a role in the proper functioning of those ecosystems as, for example, predator, prey, scavenger, detritivore, nutrient transfer, seed dispersal, ecological engineer, and, upon their death, providing nutrition to a host of organisms while also adding important nutrients to the soil. In Australia, kangaroos are of considerable importance culturally, spiritually, as a global wildlife ambassador for the country, and from a utilitarian perspective as a source of meat and skins (although AWI opposes the ongoing slaughter of kangaroos for these purposes) and given their immense value in ecotourism given their immense popularity amongst foreign visitors to Australia. The Management Plan fails to disclose the ecological role of kangaroos in Australia. It is important for that information to be available so that the public and decision-makers can weigh such benefits against concerns associated with kangaroo numbers to determine which should most influence management decisions. Similarly, the full economic value of kangaroos should be disclosed in the Management Plan. This value extends well beyond their value as a source of meat or hides for industry, or the value of their removal as competitors for forage consumed by livestock, to include both their ecotourism value and their ecological value. From an ecotourism perspective, it is well established in many situations that wildlife is far more valuable alive than dead as the living animal can provide a source of ecotourism revenue throughout its lifetime while a dead animal has a finite value that can be obtained only once. The economic value of the ecological role played by kangaroos, while more difficult to quantify, is just as real as the value of kangaroos to industry and for ecotourism and must be fully assessed, evaluated, and considered in the Management Plan. If such economic data tied to the ecological role of kangaroos on the landscape is not available, the relevant authorities in New South Wales should endeavour to engage ecological economists in research to quantify such values;
  11. Compliance measures: The Management Plan and associated documents provide some data relevant to compliance matters, including the number of compliance matters investigated annually, but significant details are lacking preventing any substantive review of the compliance processes. Based on what little is disclosed, compliance measures to ensure that every entity with the commercial (and non-commercial) kangaroo killing industry is complying with all relevant laws, regulations, and policies (including the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies) is woefully inadequate. For example, despite the objective of conducting two field audits of license harvesters each year, no field audits of commercial “harvesters” have been conducted over the past two years (and perhaps longer). 2020 Annual Report at 26 and 2019 Annual Report at 21. Chiller facilities are supposed to be inspected once per year, but it is unclear if those are random or pre-arranged inspections. For processing facilities, the objective is to conduct three

inspections per year but, according to the 2020 data, only 1.1 inspections were conducted per facility in 2020. While an astounding 98.4 percent of commercial harvester monthly returns were submitted in 2020, it is not clear if the authorities have ever engaged in an effort to determine the veracity of the reported information. Furthermore, the performance indicators for compliance measures are not clear. For example, in regard to compliance with the National Code, compliance responses to identified non-compliances are “proportionate to the risk to program objectives.” 2020 Annual Report at 25. It is not at all clear what that means in a practical sense and if or how that standard affects actions taken against those responsible for non-compliance. Similarly, for self-reported compliance items (for which no data is disclosed), the performance indicator indicated that such reports “are prioritized using the compliance risk assessment framework and investigated.” 2020 Annual Report at 26. Again, it is not clear what the compliance risk assessment framework is and how it is implemented to determine if a non-compliant item should be investigated. Fundamentally, with an estimated 380,298 kangaroos and wallaroos killed by commercial “harvesters” in 2020 (2021 Quota Report at 3), only 61 compliance outputs were pursued and only a single prosecution was commenced. It is inconceivable that all of the entities engaged in the commercial slaughter of kangaroos in Australia fully comply with the relevant standards as these data suggest. Instead, such data reveal a compliance process that is highly deficient and in need of substantial review and overhaul.

A lack of transparency breeds public controversy and distrust. While full transparency will not address the ongoing controversy surrounding kangaroo management in New South Wales, it would provide the public and decision-makers with more information on which to judge the strengths and weaknesses of the management program. In turn, this should help improve the scientific and social credibility of management actions and their purported need or it should result in a fundamental reevaluation and reconfiguration of the management program to one that promotes coexistence and the well-being of kangaroos.

**Recommendation: Fully disclose and explain all relevant data, standards, and practices in future Management Plans which should represent a single-source document that contains all the information about census and population estimation methodologies, quota establishment and thresholds, inherent biases and confidence limits, other mortality factors, predators, the ecological and economic value of kangaroos, livestock industry data, habitat quality assessments, modelling data, and compliance statistics as part of a holistic overview of kangaroo management. This may require compiling the data presented in the annual and quota reports for each of five years of the Management Plan and presenting that information in the revised Management Plan for public review. Such comprehensive Management Plans should also be subject to peer review to obtain independent input from scientists, including scientists who are experts in all relevant disciplines who reside outside Australia, as to the strengths and weaknesses of the Management Plan.**

For the remainder of this review, and based on information obtained from the Management Plan, I provide the following summary regarding a number of elements that should be considered when managing the exploitation of kangaroos which indicate the lessons that can be learned and the questions that now need to be addressed.

**Management Objectives:** When free living species are exploited commercially, it is critical to specify management objectives that balance commercial interests and environmental impacts. Fully specified management objectives allow scientists and policy makers to establish procedures to ensure that these will be met.

One management objective of the NSW-CKHMP appears to be “ecological sustainability” (Section 5.2 P13).

Objectives for ecological sustainability. Ecological sustainability has been defined as, “the maintenance of the structure and function of ecosystems over time and space”<sup>2</sup>. The use of this term implies that all anthropogenic activities compromising ecological sustainability (such as over-grazing by farm animals, conversion of wildlife habitat for urban development, agriculture or mining, or the control of natural kangaroo predators such as dingoes) would be addressed, yet this is not the case.

**Recommendation: Objectives for ecological sustainability need to be defined so that they can be measured and assessed. Likewise, any other management objectives also need to be defined.**

Developing and testing a management procedure: Methods for setting thresholds for human-caused mortality in marine mammals (either through directed hunting or accidental takes such as bycatch) have often used a management procedure approach. The process of evaluating such approaches involved the construction of a broad range of hypothetical, but realistic, scenarios, designed to cover the plausible span of alternative possibilities for the dynamics of populations and human-caused mortality. Procedures were tested by simulating their operation for different scenarios and recording their performance against different management objectives. Although this approach was developed for marine mammals it has since become more widely used in fishery management in Australia, under the name Management Strategy Evaluation<sup>3</sup>. Whilst there are currently trigger points for the cessation of killing of kangaroos below a certain density, this is only one of a number of possible measures and its effectiveness in the face of uncertainty in estimates needs to be tested.

**Recommendation: Management objectives need to be defined in a specific enough way that a management procedure approach could be used to set limits on kills and that this approach can be adequately tested (by simulation) to ensure that management objectives are met in the face of all the uncertainties.**

Confronting uncertainty in population estimates: Most of the population estimates referred to in the Management Plan are presented as a simple point estimate without their confidence limits, with large differences between point estimates from one year to the next. However, it has long been recognised that the confidence limits on abundance estimates are more useful from a management perspective than the point estimates on their own.<sup>4</sup> If the confidence limits are wide this indicates uncertainty in the estimate and apparent differences in the point estimate may not represent a real change in abundance. With estimates of kangaroo numbers, the differences between estimates that are hard to explain suggest very imprecise estimates.

**Recommendation: Management procedures should use a time series of estimates, and explicitly take uncertainty into account. This approach has been shown to perform much better than calculating catch limits using simple proportions of the point estimates.**<sup>5</sup>

Total anthropogenic mortality: When considering the exploitation of any species it is important to consider total anthropogenic removals. The IWC has endorsed this approach for whales. Should

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<sup>2</sup> Lavigne, D 2006. A brief Introduction, In: Gaining Ground, In Pursuit of Ecological Sustainability. Galway Ireland 425pp

<sup>3</sup> Smith ADM, Sainsbury KJ, Stevens RA. 1999. Implementing effective fisheries management systems—management strategy evaluation and the Australian partnership approach. ICES Journal of Marine Science 56:967–79.

<sup>4</sup> Wade PR. 1998. Calculating limits to human-caused mortality of cetaceans and pinnipeds. Marine Mammal Science 14(1):1–37.

<sup>5</sup> Punt, A.E., D.S. Butterworth, C.L. de Moor, J.A.A. De Oliveira, M. Haddon. 2016. Management strategy evaluation: best practices. Fish and Fisheries. 17 pp. 303-334



commercial whaling resume, deaths due to entanglement in fishing gear or collisions with ships would be deducted from any catch limits that are been calculated.

One other source of anthropogenic mortality is listed (indigenous hunting P10). No totals for indigenous hunting are presented, or even proposals for monitoring this cause of mortality. Additional mortality caused by the erection of fences, including entanglement in fencing and exclusion fencing, poisoning, non-commercial culling and mortality on the roads all need to be assessed and included in limits on total mortality due to anthropogenic causes. Commercial catch limits can then be set to ensure that the total mortality is not exceeded.

**Recommendation: Total additional anthropogenic mortalities should be calculated and subtracted from catch limits**

**Non-anthropogenic mortality due to drought:** It is stated that drought “is the single most important factor affecting kangaroo populations and “...can greatly reduce kangaroo numbers” (Management Plan, Table 2 p. 9). Management measures to reduce quotas after major declines need to be fully evaluated through simulations to explore the risk of depletion and potential for population recovery under different scenarios.

A management procedure approach can be tested for its performance in response to environmental events such as drought. The quota reduction and suspension measure that are listed (Annex B Low population thresholds applicable for 2021<sup>6</sup>) could be incorporated into a number of simulated scenarios to allow an assessment of how well the management procedure would meet the objectives.

**Recommendation: Conduct simulations to determine the consequence of substantial natural mortalities.**

**Localised depletions or extinctions:** A common conservation objective related to exploitation of wildlife is to avoid the risk of localised extinction or serious depletion. This may require allocation of limits to the numbers of animals that can be killed to smaller areas than were used to estimate the population size and calculate an overall catch limit. The IWC has investigated different ways of doing this for commercial whaling, and a similar approach could be taken for kangaroos.

**Recommendation: The effectiveness of the existing approach in avoiding localised depletion or extinctions needs to be independently reviewed. Any deficiencies should be addressed by re-defining appropriate small areas and the allocation of catches to those areas.**

Conclusion:

Based on the foregoing information, a significant reassessment of kangaroo management in New South Wales is required. This parliamentary inquiry represents a first step to achieve such an outcome. AWI is pleased to provide this input into the review process and would welcome an opportunity to continue to engage in this process including by responding to any questions that may be generated by this submission or by providing more information for consideration by the committee.

Respectfully submitted,

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<sup>6</sup> NSW Government, Department of Planning, Industry and Environment 2021 Quota Report. New South Wales Commercial Kangaroo Harvest Management Plan 2017-2021

DJ Schubert  
Wildlife Biologist  
Animal Welfare Institute