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Keely Boom

University of Technology, Sydney

Dror Ben-Ami

University of Technology, Sydney

David B. Croft

Nancy Cushing

University of Newcastle

Daniel Ramp

University of Technology, Sydney

See next page for additional authors

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Keely Boom, Dror Ben-Ami, David B. Croft, Nancy Cushing, Daniel Ramp, and Louise Boronyak

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Daniel Ramp and Louise Boronyak**

THINKK, University of Technology, Sydney

Abstract: This paper presents an investigation into the legal history of Australia's kangaroos. It aims to provide a detailed analysis of how the law and policy governing the killing of kangaroos has evolved over time in response to changing public perceptions. This history begins with the pre-European period and traces the impact of European colonisation, early growth of the commercial kangaroo industry, and the increased role of science and regulation upon kangaroos. The paper critiques the historical designation of kangaroos as 'pests' that need to be 'managed' and argues that such an approach is inconsistent with current scientific understanding. As this 'pest' status has fallen in importance there has been a shift in regulatory goals from damage mitigation to resource utilisation, although government planning and policy continue to cite damage mitigation alongside objectives to maintain viable populations and a sustainable and commercially viable industry. While the kangaroo industry's current focus is upon the 'sustainable use of wildlife', the history of attitudes towards kangaroos as 'pests' is so deeply and widely entrenched that it is impossible for the industry to meet welfare standards. The article concludes that the commercial kangaroo industry does not have any clearly defined policy benefit and should be reassessed to take greater account of the impact it has on ecosystems and kangaroo welfare.

Keywords: law, history, kangaroos, Australia, welfare, animals, ecology, science

Introduction

Australia's kangaroo industry, or the commercial kill of kangaroos for meat and leather, is the largest consumptive mammalian wildlife industry in the world, harvesting ten times the number of harp seals taken in the Canadian seal hunt. Calculated on a ten year period an average of three million adult kangaroos are killed each year in the rangelands, which constitute nearly three-quarters of the Australian continent, for pet meat, meat for human consumption and hides (Altman). An estimated one million joeys are killed annually as a by-product of the industry, since they must also be killed alongside their mothers in accordance with the national code of practice for the industry (Hacker et al.). Commercial killing occurs in five states: Queensland (QLD), New South Wales (NSW), South Australia (SA), Western Australia (WA), and Tasmania. Four kangaroo species are commercially killed on the mainland: *Macropus rufus* (red kangaroo), *M. giganteus* (eastern grey kangaroo), *M. fuliginosus* (western grey kangaroo), and *M. robustus* (common wallaroo). The term 'kangaroo' refers to large and intermediate varieties of the *Macropus* genus, whereas the smaller *Macropus* members are considered wallabies. In Tasmania, the commercial kill is primarily for skins and includes non-kangaroo species *M. rufogriseus rufogriseus* (Bennett's wallaby) and *Thylogale billardieri* (Tasmanian pademelon).

This paper provides a detailed analysis of how the law and policy governing the killing of kangaroos has evolved over time in response to changing public perceptions. In this context, we review the sometimes contradictory understandings of the kangaroo amongst the Australian public (and international onlookers) by providing a legal history of the kangaroo and its encounters with people, particularly post-European settlement. This legal history seeks to critique the historical designation of kangaroos in legislation and regulation as 'pests' that need to be 'managed'. We will demonstrate that this history continues to have an inappropriate impact on the relevant laws and policies particularly in relation to kangaroo welfare. Current government planning and policy have evolved out of this history of human-kangaroo relations and have a substantial impact upon the welfare of kangaroos in the industry today.

To this end, this paper briefly describes the pre-European period including the evolution of kangaroos and the traditional use of kangaroos by Aboriginal people. It then explains the impact of European colonisation and the emergence of the 'pest' label being applied to kangaroos by landholders and governments. We describe the programs of extermination adopted by colonial governments and the related growth in the commercial trade in kangaroo skins. The paper provides an overview of the early growth of the commercial kangaroo meat industry and explains the emergence of scientific study of kangaroos. It highlights the increased regulatory action taken by the Commonwealth Government in response to a United States ban on kangaroo products and a growing concern for conservation of kangaroos. We explain the more recent shift in government policies in response to emerging scientific research that casts kangaroos as 'resources' not 'pests' in

the Australian landscape. Finally, we explain how this history of human–kangaroo relations impacts on the welfare of kangaroos in the industry today.

The environmental benefits that may accrue from consumptive use of kangaroos have been modelled and reviewed in scientific papers and industry reports (Grigg, Hale and Lunney; Wilson and Edwards). This research has particularly focused upon increasing income to graziers from the kangaroo industry in order to promote the destocking of environmentally damaging cattle and sheep in favour of wild caught and free-ranging kangaroos (Grigg, ‘Kangaroos’). The impetus for such research has been the long-held view that the kangaroo industry is a necessary and cost-effective means to reduce kangaroo numbers (Whitley; Lunney; Senate Select Committee on Animal Welfare). A more recent argument has centred on conservation through sustainable use of kangaroos, whereby increased grazer participation in the kangaroo industry would ensure both the conservation of kangaroos, who might otherwise continue to be regarded as pests, and their habitats (Cooney et al.; Baumber et al.). Although broad base support currently exists for the industry, a number of commentators have questioned the scientific validity of the stated need to reduce kangaroo numbers (Auty; Croft, ‘The Future’), while also raising concern over the impacts of the commercial kill on individuals and populations of kangaroos (Croft, ‘Kangaroo Management’; Witte) and the effectiveness of policies governing the industry (Boom and Ben-Ami).

For example, two frequently cited reasons for kangaroo reduction are that they compete with livestock for resources throughout the rangelands of Australia and that their numbers have increased because of the installation of artificial waterholes. Evidence for both claims has been found to be minimal. Kangaroo management programs throughout Australia have not been correlated with increased pastoral productivity, and long-term observations in the rangelands of north-western NSW indicate that kangaroos and livestock compete only when pasture is drought-affected. In better seasons, kangaroos avoid livestock where possible, leading to no detriment in the case of wool and lamb production (S. McLeod; Edwards, Croft and Dawson). The most abundant rangeland species, the red kangaroo, does not show water-focused grazing as livestock do, and reliance on pastoral infrastructure such as artificial watering holes is likely over-estimated (Montague-Drake and Croft; Croft, Montague-Drake and Dowle). Red kangaroos and common wallaroos reproduce at rates similar to some sheep breeds (or lower if the latter produce twins) but grey kangaroos are slower to reproduce (Witte). There is high offspring mortality in red kangaroos and lifetime reproductive success is low (Bilton and Croft). Kangaroo population dynamics are principally driven by rain-fed pasture biomass, mainly grass (Caughley). Since rainfall is highly variable in the rangelands, the numbers of the four species exploited by the kangaroo industry are likewise highly variable with long periods of recovery after drought-induced mortality (Bayliss and Choquenot). Unlike livestock, whose populations are managed by graziers and can be rapidly increased or decreased, kangaroos in the rangelands undergo ‘boom and bust’ cycles, responding to

the cyclic fluctuations in resources associated with abundant rainfall events and drought periods. Such dynamics may vary in the crop areas of NSW and WA where food availability may be unrelated to climatic conditions (Caughley et al.).

The perceived environmental benefits of grazing kangaroos instead of sheep or cattle come with high welfare and potential population costs for kangaroos and joeys in the current commercial industry. Welfare issues have been recognised for some time and the Australian Government has attempted to mitigate the more destructive practices through a national *Code of Practice for the Humane Shooting of Kangaroos and Wallabies (Commercial)* adopted in 2008. However, where the kangaroo is shot in the field from a free-ranging population, compliance is not policed and so welfare issues remain unresolved, even though mechanisms exist to improve monitoring of compliance and avoid the mandated killing of joeys (Ben-Ami et al.).

Pre-European Period

It is estimated that the Macropodoidea (superfamily) first evolved around 20–25 million years ago (Meredith, Westerman and Springer). The radiation of the Macropodidae began about ten million years ago leading to the emergence of the modern large kangaroos (i.e. red, eastern grey, and western grey kangaroos, and common, Antilopine, and black wallaroos) over the last 2.5 million years (Jackson and Vernes). The modern fauna shows an absence of relatively large short-faced kangaroos and other very large diprotodont marsupials. Diamond and Johnson have suggested that the extinction of the megafauna in the late Pleistocene was as a result of hunting by Indigenous peoples. However, there is some uncertainty as to whether this was the case, particularly in relation to the continental species as opposed to island species (Johnson; Diamond; Grün et al.; Murray and Chaloupka). After the megafauna disappeared, the male red kangaroo became Australia's largest terrestrial mammalian wildlife, reaching 92kg (van Dyck and Strahan).

Aboriginal people had (and many continue to have) their own law and custom governing the killing of kangaroos. Prior to European colonisation, the traditional diet of Aboriginal people varied across Australia in keeping with the different landscapes and unique cultures that had developed. For many Aboriginal people, kangaroo meat was an important food source. For instance, Altman found that in 1979–80 the Gunwinggu, in western Arnhem Land, ate seven species of macropods and seven other mammal species. Together these mammals provided up to 91% of energy intake in the late dry season and 84% in the mid-wet season (Altman). In the pre-European period, kangaroos were hunted using a variety of methods including: pursuit by dogs, spearing and clubbing, ambush, battues and encirclement, stockages, pit-fall traps, and flushing out with fire. They were killed only as immediately needed and their meat was shared according to

kinship obligations. Kangaroo skins, sinews and other body parts were used by Aboriginal people for tools, utensils, clothing, and decorations (O'Connell; Meagher and Ride; Turnbridge).

Systematic burning was undertaken by Aboriginal groups around Australia to clear undergrowth and encourage grasses. This created open pasture favoured by kangaroos, helping to ensure that there would be a convenient population to be hunted in the future (Gammage). Kangaroo populations were managed and harvested by Indigenous Australians on a sustainable basis. There is some evidence in central Australia of storage by catching and cutting Achilles tendons. This is a subsistence (immediate) use but not one with a high welfare standard.

European Colonisation and 'Pest' Status

The first indisputable European record of a kangaroo is from 1606 when the Spaniard Diego de Prado y Tovar described an animal (probably a Dusky Pademelon) at a landfall in San Millan Bay on the southern coast of New Guinea, which he and his companions consumed (Jackson and Vernes). Early European records of kangaroos variously described them as being like a dog, civet-cat, hare, monkey, squirrel, rat, and mouse (Whitley; Hawkesworth). Captain James Cook's description in 1770 likened the kangaroo to a mouse in colour, a greyhound in size and shape but a hare or deer in locomotion. The botanist Joseph Banks was of the opinion that it should not be compared with any European animal because it did not have the least resemblance to any of them (Cowley and Hubber). John Auty argues that the historical record shows that at the 'time of first European contact the kangaroo was numerous and abundant over the continent and Tasmania' (Auty 62).

After British colonisation in 1788, Europeans began killing kangaroos as a food source (Smyth; Rolls; Poole; Tench; Kirkpatrick and Amos; Livanes; Robertshaw and Harden). Governor Philip noted that kangaroos were frequently seen around the Sydney Cove but not readily killed because of their shyness. Kangaroo meat provided an occasional supplement to imported rations and was traded with Aboriginal people or sold privately and then through the public market from 1793, serving as a low-cost meat relative to that from introduced livestock. The well-to-do Macarthur family at Parramatta employed a hunter who supplied them with a hundred kilograms of kangaroo a week (Newling). In Van Diemen's Land (later Tasmania) kangaroo meat was used extensively in the first decade of colonisation from 1804 being issued as part of the convicts' rations. In the 1840s, the eastern grey kangaroos in Tasmania were reduced to relatively low numbers through large-scale killing (Barker and Caughley; but see Pople and Grigg).



Figure 1: Kangaroo hunting was a popular subject for colonial artists. Kangaroo hunt, New South Wales: the chase. Source: National Library of Australia, Rex Nan Kivell Collection NK809/A.

Once the colonies were in a position to import and raise sufficient livestock to meet their protein needs, kangaroos were killed primarily for recreational reasons (Croft, 'Kangaroos Maligned'). Landholders hunted kangaroos for sport with their dogs, mimicking the fox hunting parties of the British upper classes. While touring Australia in 1867 and 1881, royalty further aided the sport through participating in kangaroo hunts (Croft, 'Kangaroos Maligned'; Tucker). Kangaroos were viewed more sympathetically in some quarters, being kept as pets both in rural and urban settings across the continent and being employed symbolically on trademarks and crests to represent both private companies and Australians as a whole (Cushing and Markwell). Pastoralists generally viewed them as pest animals who competed with their livestock for feed. They argued that kangaroos had become more numerous in some areas since Europeans first arrived because of the dispossession of the Aboriginal people and the reduction in numbers of dingoes. However, it is unknown whether numbers had actually changed and if so, for what reason (Rolls; Jackson and Vernes; Stubbs). In the 1860s, John Gould reported that small nocturnal burrowing bettongs (*Bettongia lesueur*) were particularly destructive in the gardens of settlers in Western Australia

(Gould; also see Jones). In NSW, complaints were made to the Legislative Assembly in the 1870s that marsupials were overrunning many parts of the colony and rendering land virtually valueless (Jarman and Johnson; Stubbs 30). As a result, kangaroos were declared to be 'pests' to the pastoral industry (Pople and Grigg).

By the 1880s, all of the states in eastern Australia had introduced legislation for the destruction of macropods. In NSW, kangaroos and wallabies were declared vermin (Croft, 'Kangaroos Maligned' 26; Morris 312) under the *Pasture and Stock Protection Act 1880* (NSW). Bounties were offered for 'the head of each grass-eating marsupial' and it was the responsibility of land owners to arrange for the destruction of the declared pests on their land (Morris 312). The colony was divided into sheep districts with boards of directors who would pay the bounties. In 1884 in the Tamworth district alone, 260,780 macropods were killed, and bounties were paid for some 100,000 kangaroos for each year of the early 1880s in this district (Kirkpatrick and Amos). From 1883 to 1920, around three million bettongs and potoroos (Potoroids) were shot for bounties in NSW (Short); three of these species are now extinct, possibly due in part to the introduction of the red fox (Short). The brush-tailed rock-wallaby, which is now listed as vulnerable and is not found in most of its former range in NSW (Croft, 'Kangaroos Maligned'), was almost exterminated by this bounty program. From 1884 to 1914, at least 640,000 bounties were paid for heads of this species (Short and Milkovits; Short).

In 1884, more than 250,000 bounties were paid for kangaroo scalps (Jarman and Johnson) and more than 86,000 bounties were paid for 'scrub wallaby' (red-necked wallaby) scalps. In Queensland, nearly 8 million kangaroos and wallaroos were killed from 1877 to 1907 as part of a bounty program (Hrdina) and 65 million kangaroos were killed from 1877 to 1987 (Robertshaw and Harden 735). The primary justification for this mass killing was the protection of the pastoral industry which was regarded as playing a central economic role, especially in terms of exports. One NSW parliamentarian stated that he had killed 18,000 kangaroos in the early 1890s because they were eating grass that would have supported some 30,000 sheep. Another advocated killing all native animals to prevent them from 'using up the grasses of this country upon which our salvation almost depends' (Stubbs 36).

The other benefit to be gained from hunting native animals was their skin. With so many kangaroos being killed, there was a large supply of skins for footwear, clothing, floor rugs and souvenirs (Livanes; Grigg, 'Kangaroo Harvesting'; Jackson and Vernes; Kirkpatrick and Amos). In the 1890s, when 66,152 bounties were paid for brush-tailed rock-wallaby scalps, a further 144,000 skins were traded in Sydney (Lunney, Law and Rummery). In the two years from 1934, after



Figure 2: Killing kangaroos for a bounty under the Queensland Marsupials Act of 1877 was portrayed as an amusing pastime in this illustration for a popular magazine. The 'trophy' is the scalp which had to be provided in order to receive payment. Source: *Australasian sketcher with pen and pencil*, 9 September 1886, State Library of Victoria, Image No.: mp009870.

marsupials were removed from the list of noxious animals in NSW, 1.25 million red kangaroo skins were traded from Western Australia into the Sydney market (Poole; Prince; also see Kirkpatrick and Amos; Gould; Jones; Stubbs).

This systematic killing continued while early steps towards a conservation movement began with the Committee for the Protection of Native Birds and Mammals being established in 1888 (Robin 159). The first animal protection legislation antedated this move towards conservation. The legislation assumed the continuation and validity of hunting and sought conservation of species at least in part to ensure that such hunting was sustainable. Colonial governments enacted game or animal protection acts which listed native and introduced animals to be protected through creation of an 'off season', during which hunting of particular species was not permitted (e.g. *Game Act 1867* (Victoria)). The preamble to the *Animals Protection Act 1879* (NSW) stated that it aimed to 'prevent the destruction of Native Game during the breeding season' (New South Wales 56). Yet even with these protective measures, massive levels of exploitation of both native and introduced animal species continued. For example, in 1906 over four million possum and sixty thousand wallaby skins were marketed in New York and London (Troughton, *Furred Animals*).

The killing of kangaroos for their hides attracted more criticism than their killing as a pest, partly because excessive exploitation threatened the long-term viability of the fur and skin export industry itself. In 1903 the Premier of NSW, John See, introduced a *Native Animals Protection Bill* noting that millions of skins of native animals including kangaroos had been exported for profit, placing native animals under threat of extinction. Two decades later Frederick Wood Jones expressed concern about the possible impact of killing on macropod populations. Jones noted that in 1919 and 1920 more than 1,763,826 pelts entered the fur market (Jones). Naturalist Charles Barrett's book *Save Australia: A Plea for the Right Use of our Flora and Fauna* included chapters on the decline in numbers of Australian animals and on the fur and plumage trade (Lloyd 46). The response to such pleas for animal protection was limited in the face of the perceived interests of the pastoral industry.

Early Growth of the Commercial Kangaroo Meat Industry

While they were far from a staple of the Australian diet, kangaroos continued to be killed and eaten by rural residents and some urban dwellers throughout the nineteenth and twentieth centuries. The first Australian cookbook included over a dozen recipes for kangaroo dishes and numerous subsequent general cookbooks included advice on its preparation (Symons). Urban gamesellers included whole wallabies and kangaroo tails in their wares (Abbott, qtd. in Symons, 50, 54, 258). In Western Australia, the *Fauna Protection Act* of 1950 had a provision for licensed hunters to kill one kangaroo a week for food purposes. However, it was not until the 1950s that a trade in kangaroo

meat developed. Most of the kangaroo meat was sold for pet food but there has also been an export trade for human consumption since 1955 (Corrigan; Macfarlane). In South Australia the sale of kangaroo meat for human consumption has been legal since 1980, but in other states this was not legalised until 1993 (Pople and Grigg).

Science and Increased Regulation

Scientific study of macropods developed through the twentieth century (Croft, 'Kangaroos Maligned' 28; Grigg, Hume and Jarman; Troughton, 'The Truth'; Waring). In a context of rising conservation activity, academics began reporting declines in the abundance and/or range of various macropod species (see generally Lines). To some extent, these scientific developments led to an increasing concern for the conservation of macropods (Montgomery 226; cf. Cairns and Kingsford 260). Leading scientists argued that the red kangaroo had become endangered due to 'uncontrolled meat hunting and drought' (Frith and Calaby 33; Marlow; cf. Kirkpatrick and Amos). Prominent CSIRO researchers like Harold Frith and John Calaby feared that the red kangaroo would become extinct, stating in 1969 that:

...Red Kangaroos are not nearly so abundant as is generally thought and that they are subject to great and sudden decline in numbers due both to overshooting and to drought; where both occur together there seems to be a very real chance that the species could be reduced to a level from which it cannot recover. (Frith and Calaby, 60)

In contrast, Marion Hercocock argues that these were 'subjective claims' that 'belied the population figures during the 1970s' (Hercocock 76). However, the big decline was in the 1960s not the 1970s. Between 1957 and 1966, Central Australia and the adjoining regions of QLD, SA, WA, NSW, and the Northern Territory were all affected by drought, and in the mid-1960s, south-eastern Australia was also badly affected. Many workers who lost jobs in the wool industry turned to kangaroo shooting in an unregulated system. There was a large La Niña event in the 1970s leading to exceptionally good pasture conditions until a drought in 1977. Thus, Frith and Calaby's concern for the decline of the red kangaroo is likely to have been mitigated by favourable environmental conditions.

Between March 1968 and May 1970, members of both sides of the House of Representatives presented eighty-four petitions that expressed concern about the commercial exploitation of kangaroos and called for an immediate ban on the export of all kangaroo products (O'Riordian and Cameron). From the 1970s, there has been a growing opposition among some members of the public to both commercial and non-commercial killing of kangaroos, in keeping

with Franklin and White's more general finding that in this decade there was a rise in sentimental attitudes to animals and a shift away from putting human beings at the centre of all considerations (Rawlinson; Wilson and Croft; Franklin and White; Arnold; Grigg, 'Roo Harvesting'; Preuss and Rogers). The source of this opposition has been an increased concern in much of the community about conservation, animal welfare and animal rights and grew in part out of the developing scientific knowledge of kangaroos (see O'Brien).

In response, a House of Representatives Select Committee tabled the report *Wildlife Conservation* in October 1972. While the report supported the commercial exploitation of kangaroos on the basis that kangaroos are 'pests', it also noted a number of problems with the industry. For example, the report states that 'the kangaroo has in many areas become visually extinct' due to 'habitat change, the spread of settlement and the operation of commercial harvesting' (House of Representatives Select Committee 47).

Eventually, a crisis point was reached politically which resulted in State governments enacting legislation to protect wildlife in general and to manage kangaroo populations (Poole; cf. Kirkpatrick and Amos, who argue regulation preceded community concern). The United States and Europe raised concerns about Australia's killing of kangaroos, and in 1974 the United States Government banned the import of kangaroo products (Shepherd and Caughley). As a result of vocal public opposition to uncontrolled killing, the Commonwealth banned the export of kangaroo products and assumed some power over State government kangaroo management plans in relation to the commercial harvest and export of kangaroo products (Croft, 'Kangaroos Maligned' 29). At the same time, most of the State governments placed a ban on the sale of kangaroo meat for human consumption (Jackson and Vernes).

However, in 1975 the Commonwealth Government allowed exports once more (Jackson and Vernes 171; see also Commonwealth, *Trafficking*) with numbers limited through annual quotas, which have regulated the industry since this time (Pople and Grigg). Consequently, administrative appeals were brought by dissatisfied interest groups to challenge government decisions sanctioning the continued killing of kangaroos, while the ban introduced by the United States Government continued until 1981 and some states still maintain a ban (Jackson and Vernes, 172; Corrigan; Shepherd and Caughley; Macfarlane).

In 1988, the Senate Select Committee on Animal Welfare tabled a report entitled *Kangaroos*. The report found that '[t]o some extent, cruelty to kangaroos has become institutionalised through the system of kangaroo management' (Commonwealth, *Kangaroos*, 149). Senator Norm Sanders, one of six members of the Committee, published a minority report in which he states that:

For the welfare of the kangaroos, the industry should be closed ... The welfare of the kangaroo, our national animal, must be placed ahead of commercial interests and inept bureaucrats. The present slaughter must cease. (Commonwealth, *Kangaroos*, 201-03)

However, the majority supported the continuation of the industry principally due to the view that ‘regular killing reduces the number of kangaroos’ and ‘reduces the pressure on farmers’ (Commonwealth, *Kangaroos*).

In June 1998, the Senate Rural and Regional Affairs and Transport References Committee (RRAT) tabled *Commercial Utilisation of Australian Native Wildlife*. This report also supported the commercial exploitation of kangaroos but called for ‘a move away from the image of “pest control” towards the development of an image based on resource management’ (Commonwealth, *Commercial*). Table 1 provides an overview of the Commonwealth parliamentary inquiries that have dealt with the issues of kangaroo management and the commercial use of kangaroos.

Report	Year	Body
Wildlife Conservation	1972	House of Representatives Select Committee
Trafficking in Fauna in Australia	1976	House of Representative Standing Committee on Environment and Conservation
Kangaroos	1988	Senate Select Committee on Animal Welfare
Commercial Utilisation of Australian Native Wildlife	1998	Senate Rural and Regional Affairs and Transport References Committee (RRAT)

Table 1: Parliamentary Inquiries related to kangaroo management and the kangaroo industry

A number of Australian environmental organisations have expressed opposition to the commercial harvest of kangaroos, due to perceived problems around both sustainability and animal welfare. For instance, the Australian Conservation Foundation (ACF) opposes the commercial harvest of kangaroos. ACF’s policy states that:

Wildlife populations have rights of their own to exist and flourish independently of human needs. Kangaroos and other wildlife species should not be regarded merely as a resource and

commercial exploitation should never be contemplated. Internationally the widespread protests against sealing and whaling and the growing protests against the commercial slaughter of kangaroos shows this is a widely held belief. (ACF)

Although the World Wide Fund for Nature is a 'technical partner' of the CITES Secretariat, which supports the sustainable use of wildlife, WWF Australia does not support the commercial use of wildlife in Australia. In the RRAT Inquiry, WWF Australia considered that consumptive use of wildlife in Australia was inevitable but stated that it wished to ensure that this consumptive use approaches ecological sustainability (Nias).

In its submission to the RRAT Inquiry, TRAFFIC (the wildlife trade monitoring network) expressed strong disapproval to the concept of commercialising Australian wildlife, and stated that:

... it would seem unreasonable to expect the general public to scrutinise, through taxes or other means, an industry from which it is unlikely to receive any benefit, and may even jeopardise the survival of some species in the wild. (TRAFFIC)

In 2001, the Total Environment Centre, on behalf of ACF, Humane Society International and others, objected to the NSW kangaroo management plan and expressed a number of concerns (Angel). The submission argues that the new kangaroo management plan is driven by the kangaroo industry; that the NSW National Parks and Wildlife Services' role should be to protect and care for native wildlife not facilitate its killing for commercial gain; that effective monitoring and policing of kangaroo numbers is impossible; and that the kangaroo management plan cannot be ecologically sustainable.

In 2009, Greenpeace Australia Pacific made a statement that it 'does not advocate killing kangaroos or the consumption of kangaroo meat for any environmental purpose' (Greenpeace). The media release further stated that there had been inaccurate reports that Greenpeace was calling for an increase in the consumption of kangaroo meat. Clearly, the commercial killing of kangaroos has been controversial and subject to strong views about animal welfare and environmental conservation. Prominent ecologists no longer view kangaroos as pests in need of management (S. McLeod; Grigg, 'Conservation'; Croft, 'Sustainable'). However, a strong push has been made to recognise kangaroos as a product of value that should be utilised in conservation through a sustainable use framework (Grigg, 'Conservation'; Wilson and Edwards) facilitated by the existing commercial harvest mechanism. In effect, this would reposition kangaroos from their status as wildlife pest to an analogue of wild fish stocks to be kept from harm until they can be commercially killed.

However, popular perceptions of kangaroos as pests persist in some quarters, particularly in the rural sector which continues to perceive kangaroos as an economic threat in terms of fencing

damage and resource availability to livestock. The killing of kangaroos is still viewed in this context as a land management tool. These views are, to an extent, supported by a number of national- and state-based government policies, such as: the National Kangaroo Management Plan, which still refers to damage mitigation as a key aim of managing kangaroos (Pople and Grigg); the Western Australian Department of Agriculture and Food, which is responsible for the WA Kangaroo Management Plan and still manages kangaroos for damage mitigation (DEC, *Fauna Notes*); and the NSW Western Catchment Authority (the jurisdiction of which encompasses prime kangaroo habitats), which indirectly incentivises graziers to remove kangaroos by requiring that ground cover be maintained at specific thresholds, without referring to how this might be achieved (WCMA 13). Hence, land management policies catering to the livestock industry have been at odds with emerging ecological and environmental perspectives of the relationship of kangaroos to their environment.

A Change in Status: No Longer a 'Pest'

More recently, consecutive reviews of the state of knowledge on the management of kangaroos have failed to correlate kangaroo control to meaningful damage mitigation to pastoral properties or the landscape in general (Olsen and Low; Olsen and Braysher; Herbert and Elzer). This view is reflected by managers of the kangaroo industry (Gilroy) and in the revised aims of the state based kangaroo management programmes (OEH, 'CHMP'; DEHP; DEH). Furthermore, formal economic assessments of costs incurred by kangaroos to pastoral properties have been revised from approximately \$200 million (Sloane Cook and King Pty Ltd) to \$44 million (R. McLeod). There is minimal evidence for the two key reasons cited to support the view that kangaroos are 'pests': firstly that they compete with livestock for resources in the rangelands, and secondly that their numbers have increased due to the installation of artificial waterholes. Long-term studies in semi-arid conditions indicate that competition between livestock and kangaroos is intermittent and occurs only during a period of climatically driven food depletion (Dawson and Ellis; Edwards, Croft and Dawson; S. McLeod). Also, kangaroos and livestock have different foraging styles that lead to ecological separation (Clancy and Croft; Croft, 'Locomotion'). This, and the relatively low monetary impact kangaroos have on the agricultural sector, is highly significant as '[t]he main reason an industry is approved is almost certainly because of the extent to which kangaroos are regarded as a pest' (Pople and Grigg). It is this construction of the kangaroo as a pest that has facilitated the growth of the kangaroo industry, yet the view is based on ignorance, mistaken assumptions, and the influence of vested interests in current practices.

As a result of more recent research, therefore, the goals of government kangaroo management programs (KMPs) have shifted. For example, the goal of the NSW KMP 1998-2001

was ‘to minimise the adverse effects that certain densities of [kangaroos] may have on rangelands, on pastoral and agricultural production and other land uses’ (DECC, ‘KMP’ 27). Under this system, licences were only granted if the killing could be justified on the basis of damage mitigation (OEH, ‘Circular’). Section 1.8 of the NSW Kangaroo Management Plan 1998-2001 provided:

Applications to take kangaroos must be justified on the basis that the numbers of kangaroos are such that significant damage to crops or pastoral production or rangeland is occurring or likely to occur. Landholders thus have no prima facie right to take kangaroos independently of this need to protect their rangelands, agricultural lands or pastoral production. (DECC, ‘KMP’ Section 1.8)

While it would be expected that such a system would require proof of damage and that killing kangaroos had improved the situation, the NSW KMP 1998-2001 ‘contained *no mechanisms* to identify where kangaroos had caused or would cause damage’ (emphasis added, Gilroy 5). In particular, the regulation did not contain any mechanisms to audit whether damage mitigation outcomes had been achieved through the authorised kill (Gilroy 5). While Gilroy argued that this ‘core element of the program *could not* be audited’ (emphasis added, Gilroy 5), an assessment of damage mitigation outcomes is a core feature of ‘pest’ control programs. For example, the NSW plan for red foxes includes monitoring programs which measure the response of threatened species to fox control (NSW National Parks). Thus the absence of such mechanisms in the kangaroo management plan rendered it incomplete and constituted a key limitation of the regulations.

However, the goal of the current KMP is to ‘maintain viable populations of kangaroos throughout their ranges in accordance with principles of ecologically sustainable development’ (OEH, ‘CHMP’). The change in goals instituted in NSW reflects a comprehensive scientific review which found that the killing of kangaroos cannot be justified simply on the basis of damage mitigation (OEH, ‘Circular’). In particular, a comprehensive study by Olsen and Braysher found that:

Although studies are few, kangaroos do not appear to impact greatly on wool production and compelling evidence of competition between kangaroos and sheep is lacking ... Simplistic removal of kangaroos will not necessarily allow replacement with the equivalent in stock or improvement of productivity (e.g. wool production). (Olsen and Braysher 77)

Similarly, the central goal of the kangaroo management plans of QLD and SA is ecologically sustainable development. Only WA maintains a goal of damage mitigation (DEC, ‘Management Plan’). This is a significant shift in the law and policy governing the killing of kangaroos, and is due to three key reasons. Firstly, the shift reflects the fact that kangaroos should not be treated as a

‘pest’ in the Australian landscape if conservation and sustainable use is a goal (Grigg, ‘Conservation’ 53-76). However, the perception that kangaroos are ‘pests’ and need to be killed to sustain cropping and pastoral industries is still widespread even within the government (Scott). This status has important implications for animal welfare because labelling an animal a ‘pest’ has the ‘effect of demonising that species, and potentially encouraging cruel practices against those animals’ (Caulfield 148).

Secondly, the shift signalled that kangaroos are to be treated as a resource to be exploited. The change in goals provided a prima facie right for licences to be granted provided that the killing is ecologically sustainable (Dorman et al.). It may be that Australia is seeking to establish the kangaroo industry as a leader in ‘sustainable use’. However, there is strong opposition in parts of the Australian community where the killing of wildlife has no basis in damage mitigation. This public opposition is found primarily amongst animal welfare groups (RSPCA, ‘Need? ’), but also amongst landholders who believe that kangaroos are ‘pests’, not a resource.

Thirdly, there remains an ongoing issue that the kangaroo management programs are built around the notion that kangaroos are ‘pests’ and cultural and social perceptions tend to lag behind scientific understanding. The applications for non-commercial occupier licences still ask landholders to list what damage kangaroos are causing to their land (OEH, ‘Application’) and there is no system to check whether damage mitigation is needed or achieved (RSPCA, ‘Need? ’). It would appear as though many landholders still perceive kangaroos as ‘pests’ despite the current state of scientific knowledge. In this situation, government agencies are seeking to ‘strike a balance between [the] ...aim of conserving all macropod species and the interests of landowners’ (DECC, *Kangaroos*). Unfortunately, the notion that kangaroos are ‘pests’ (or at least overabundant and a threat to their ecosystems) also remains widespread amongst the Australian public (Anonymous; Des Purcell and Associates; Braddick) making it difficult for the public to engage in an informed debate as to whether the current law and policy is justified.

Furthermore, the perceptions of farmers and graziers suggest that, if the commercial industry ceased, some landowners may take matters into their own hands leading to increased non-commercial killing. This is a substantial risk, particularly because research by the RSPCA found that the general opinion given by those associated with kangaroo management is that there is a far higher degree of cruelty in non-commercial killing than in commercial killing (RSPCA, ‘Difference’). Clearly, further research is needed to provide graziers and farmers with management alternatives for their properties.

The difficulty in changing public perceptions of kangaroos as pests is curious given that such changes had been accepted for most other native mammals by the mid-twentieth century. As Australia developed its independent identity and environmental consciousness, it became increasingly important that animals unique to Australia be protected. At the same time as this

overall revaluation of native animals there was a turn against species that had been deliberately imported but no longer served their original human ends, such as camels, donkeys, rabbits, and common mynahs. Franklin describes the eco-nationalism that privileged all native species because of their indigeneity and demonised introduced wild species as feral pests to be eradicated as a form of environmental cleansing, echoing the longstanding intolerance of hybridity in the human population (Franklin, 15-17, 140-41, 48).

Even the dingo, which, like the kangaroo, has long had a price on its head as a menace to livestock, has been accepted as a native animal since 1990 (despite its introduction some 4000 years ago) and a symbol of wild nature (Franklin, 157) and there is now tension over whether the dingo should be reintroduced as top predator in regulating faunal communities (Glen et al.; see also Claridge and Hunt). While kangaroos have been included in the symbolic redemption of native species, being represented on the federal coat of arms since 1908, the Australian Olympic flag, and the aircraft of our national airline, the living animals continue to occupy an unusual position as both valued icon and pest. Instead of strategic management to return an audited benefit in landscape function and rural economies, they are still subject to widespread killing on an industrial scale, with ongoing tensions as to whether they are the most destructive and despised of wild species or the most ecologically friendly and valued source of red meat.

Conclusion

Kangaroos or Macropodoidea (superfamily) first evolved in the Australian landscape around 20-25 million years ago. They now inhabit almost all terrestrial habitats including rock faces and trees. Six species have become extinct since European colonisation and many have had massive reductions in their geographical ranges. This is not surprising given that, from the time of European colonisation, they have frequently been labelled as 'pests' that need to be eradicated. The settlers went so far as to enact legislation that offered bounties for the head of each kangaroo. Anomalously, the largest and most common species have persisted through this period of intense destruction and they remain abundant across broad geographic ranges.

The failure of eradication has, however, only seen kangaroo killing gradually commercialised until it has become the largest consumptive mammalian wildlife industry in the world. In recent times the cloak of 'pest' status has begun to fall from the kangaroo and so there has been a shift in regulatory goals from damage mitigation to resource utilisation. Yet the kangaroo's history as a 'pest' retains a grip on public imagination and government policies. At the same time, there is growing concern about the welfare of kangaroos, leading to a polarisation of the debate and at times contradictory approaches in government planning and policy.

Although there have been a number of inquiries regarding the management of kangaroos, state and federal governments continue to assume that the killing is necessary without any clear justification. The pest view of kangaroos facilitated the growth of the kangaroo industry, but did so based on the erroneous underpinnings of the pest assumption and failed to acknowledge other equally valid views of kangaroos – as contributors to ecosystem functioning, as sentient animals with rights, and as animals highly significant to Indigenous people. The historical perceptions of kangaroos as pests, the lack of evidence of the former, and the more current views about welfare and sustainable use of kangaroos (for and against, lethal and non-lethal) have not been reconciled in policy and law governing the industry. It therefore seems timely to review both the legal and policy frameworks governing the kangaroo industry.

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