Kangaroo Industry Background

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Introduction

Whilst the sustainability of pastoral activities in much of the Australian arid rangelands is under constant investigation, the fact remains that they are currently supporting a large population of kangaroos which, if uncontrolled, would seriously threaten the economic viability of the pastoral industry and the environmental sustainability of huge tracks of land (Caughley 1998). These are extremely fragile areas which can support a limited number of grazing animals. Allowing the grazing pressure from all animals to increase is one of the most serious environmental hazards in the rangelands. The kangaroo Management Plan is the only tool currently available to exercise control over the kangaroo contribution to grazing pressure.

Furthermore, the kangaroo population represents a resource. There is extensive ethical debate concerning the morality of utilising wildlife as a resource. This debate however, rarely examines the moral imperative for nations to utilise their resources to the best effect in supplying the world with the food and commodities it needs.

Over the past 40 years a significant industry has developed which utilises the kangaroo resource. Initially its focus was largely on pest control for the pastoral industries. However over the last decade there has been a growing realisation that the kangaroo industry has significant economic and environmental benefits.

The kangaroo industry currently generates in excess of $270 million per year in income and employs over 4,000 people. The vast bulk of these jobs are in remote rural communities, many of which would not exist without the industry.

This document examines the scientific evidence indicating the kangaroo harvest is sustainable and the controls in place to protect the animals it utilises.

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1. Kangaroo Populations

There are 48 species of macropods (kangaroos) in Australia. Of these only 4 can be commercially harvested. In addition 2 species of wallaby are harvested in Tasmania.

Over 99% of the commercial kangaroo harvest occurs in the arid grazing rangelands. The populations of kangaroos in these areas are estimated every year in each State by well developed aerial survey techniques. It must be understood that these are sparsely timbered, if at all, savannah type ecosystems. Hence it is possible to fly over them and count the large animals such as kangaroos seen. Using either low flying fixed wing aircraft or helicopters, flying at heights of 2-300 meters the National Parks Authorities count the numbers of kangaroos seen over fixed transects. Thirty years of such monitoring have allowed them to develop sophisticated and accurate techniques of extrapolating out to total population numbers (Grigg and Pople 2001). Kangaroos are one of only a very few species (including humans) who have an annual census of their populations.

Current populations stand around the 27 million mark. This means there are similar numbers of kangaroos in Australia as there are cattle (28.7 million) (ABARE 2002).

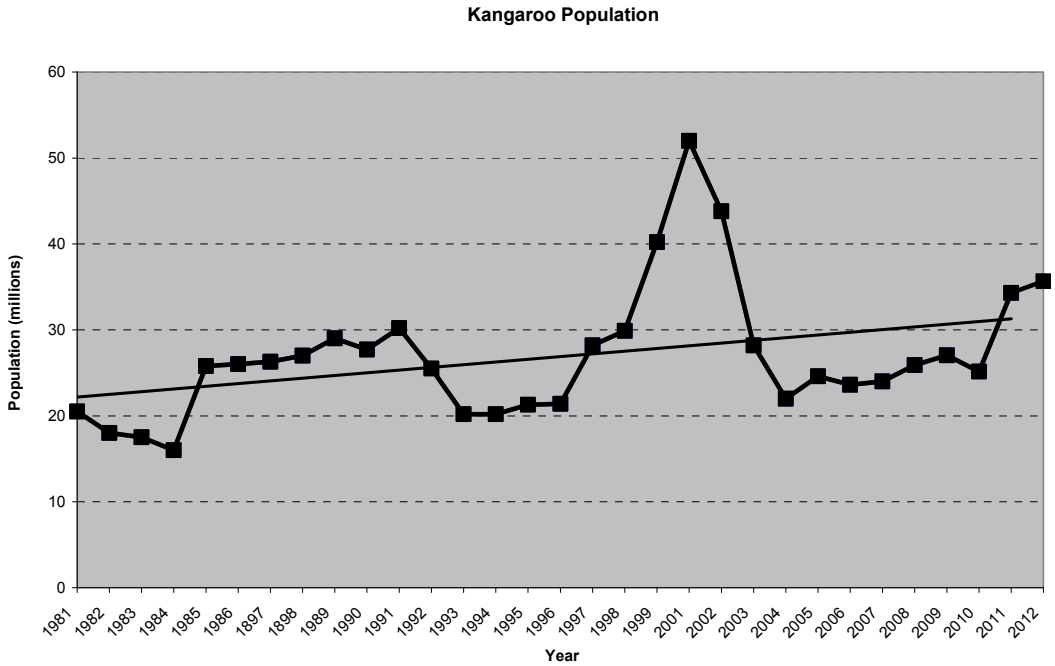

Fig 1: Kangaroos are one of the most numerous large wild land mammals on earth. (data source Australian government records)

It is widely accepted that within the rangelands kangaroos are now more common than ever. This situation has arisen due to the increased food and water supply generated by the activities of the sheep and cattle industry. Prior to European settlement these areas had very few places of surface water from which kangaroos could drink. The pastoral industry has

tapped into below ground water supplies to the point where now very few points in the rangelands are further that 3 km from a permanent water source and no point is further than 10 km (Landsburg 1999).

In fact the graph at fig 1 indicates that outside of seasonal fluctuations (the troughs during the mid '80's, 90's and 2000's are the result of droughts, the peak the result of good seasons), the kangaroo population has been steadily increasing over the past 25 years. This in spite of the commercial harvest throughout that period and the recent 'worst drought in history'!

2. The Harvest Quota Setting Process

For any kangaroo species to be harvested the States National Parks Authority must have a detailed Management Plan approved by the Federal conservation Department, Environment Australia (EA). These Plans must detail the population monitoring and quota setting controls, the controls over the take and they must be renewed every 5 years.

Each year after the population estimate is obtained, each Management Plan will set a maximum allowable take (quota) of between 10-15% of total population. The populations fluctuate depending on seasonal conditions, during droughts they can decline, or they can increase dramatically during good seasons as has been the case in recent years. The States Authority will then issue individually and sequentially numbered plastic lockable tags. These tags are designed to ensure that once properly applied any tampering with them will be perfectly obvious.

Each kangaroo taken by licensed harvesters must have such a tag fixed to it and the harvester and processor must report back to the Authorities on a monthly basis the details of the exact numbers off the tags they have used, where the tags were used and what species, sex and weight of animal they were attached to. The Authority monitors the release and use of tags to ensure the harvest in any one area does not exceed the quota.

The complexity and detail of the controls in the Management Plans can be indicated by a brief examination of the NSW Plan. It divides the State into 15 different zones, 14 in which commercial kangaroo harvesting is allowed and one comprising over one third of the State in which no harvesting can take place. The population is estimated in each individual zone and a harvest quota allocated to it. An appropriate number of tags are then issued to the conservation authority Managers in each zone and these can only be obtained by kangaroo harvesters on two days of each month. The harvester must use and submit reports for all of his tags issued before more can be obtained and the issue of tags by zone is closely monitored. As soon as the harvest in any one zone approaches the quota it is closed to commercial activity for the rest of the year (NPWS 2001).

The quota setting process is independent of industry and commercial influences. For example in 1996 the New South Wales industry harvested virtually its full allocated quota. In fact in several regions the harvest closed well before the end of the year because the quota

had been taken. All market predictions indicated that during 1997 industry demand would actually increase because it could readily sell considerably more than the 1996 quota. Despite this and due to seasonal conditions the 1997 quota was set lower than that for 1996.

Clearly market forces have no impact on the quota setting process.

The chart below shows that quotas fluctuate significantly, not in response to industry demands but in response to population fluctuations due to seasonal conditions.

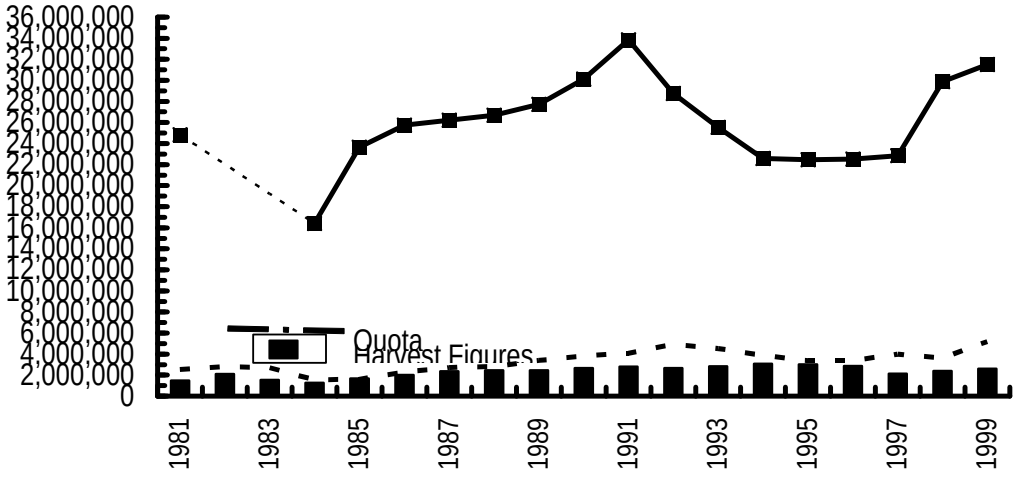

Figure 3: Harvest quotas fluctuate with population independently of demand. Population, quota and harvest levels for red and grey kangaroos only (Pople and Grigg 2001)

3. Licensing Controls over Kangaroo Harvesters

In order to purchase the tags issued by the Authorities an individual must be licensed as a kangaroo harvester. To do so they must undergo training delivered by government accredited agencies and approved by the Australian TAFE (Tertiary and Further Education) agency in the appropriate State. This training covers the regulatory controls and compliance requirements, the animal welfare controls and the hygiene controls each harvester must adhere to. They must then pass assessment in their knowledge and practices relating to these controls by two separate Government Departments. This will include assessment of their competency with their firearm. Then and only then will they be able to obtain the required licenses from the two Authorities concerned.

It is a condition of every kangaroo harvesters license that he adhere to the strict guidelines laid out in the Federal Government document 'Code of Practice for the Humane Shooting of Kangaroos'. This specifies the minimum high caliber firearms which can be used, it requires that all animals be head shot and documents procedures for the humane dispatch of any pouch young (CNCM 1990). In NSW for example adherence to this Code represents

condition one of the licenses which are issued under the National Parks and Wildlife Act - section 123 (NPWS 2001).

Any kangaroo or kangaroo product accepted by processors, be it for meat or skins, must have an approved tag applied to it and be supplied by a licensed harvester. Each processor must report on a monthly basis to the State Authority the numbers of kangaroos purchased, who from and the relevant tags numbers.

4. Monitoring of the System

The claim is often made by anti kangaroo industry campaigners that the level of compliance with the controls is not monitored. Compare this with the number of inspection made by the NSW meat hygiene authority, Safe Food NSW. This authority controls compliance with the meat hygiene requirements and as documented in the NSW Kangaroo Management Plan, has a statutory requirement to monitor compliance with the requirements of the Management Plan (NPWS 2001). For example during the 11 months prior to May 2002 Safe Food NSW made the following number of inspections of kangaroo industry facilities, the bulk of these are unannounced:

Facility Type	Inspections
Field Harvesting Vehicle	1056
Pet Food Harvesting Vehicle	16
Field Depot	299
Game Meat Processing Premises	13
Total Inspections	1384

(Safe Foods NSW 2002)

By anyone's standard a very high level of monitoring!

5. Environmental Impacts of Utilising Kangaroos

The Kangaroo Management Plans have been operating under strict and intensive supervision for almost 30 years. Over this period the average harvest per year has been in excess of 2 million animals. In many respects we know the **actual** environmental impact of utilising kangaroos. Intensive use and scientific effort have answered the questions of potential impact and enabled industry to defend itself based on demonstrated science.

5.1 Population sustainability

As already discussed Figure 1 shows data collected over a 27 year period by Environment Australia on the total kangaroo population. Despite harvests in excess of 2 million animals per year throughout this period the kangaroo population has consistently increased. Even

following the worse drought on record numbers are still at what could be considered historically typical levels. Their current population of 24 million is only marginally lower than the 25 year average of 26.7 million (which is skewed by the very high levels reached during a run of highly favorable years in the late 1990's). This is a very graphic representation of the sustainability of the harvest.

In terms of kangaroo population the harvest is sustainable on a national basis.

Extensive data indicates it is also sustainable on a regional basis and that the quota setting process allows for the effects of drought and other influences on the population. For example in NSW during the drought years of 1981-85 populations of red, eastern grey and western grey kangaroos fell by 57%, 72% and 54% respectively. During this period the quotas were reduced by similar levels. However following the good seasons of 1985-87 populations increased by 76%, 233% and 96% for the three respective species, more than making up the losses during the drought (Fletcher *et al* 1990).

On an even smaller regional basis harvest rates of up to 40% (much higher than the national average) have been shown to have no effect on red kangaroo populations on individual Queensland properties (Pople 1996).

A project conducted by NSW Dept Ag, which employed extensive field study and highly sophisticated computer modeling techniques, has provided considerable light on why kangaroo populations are so resilient to harvesting. The project examined harvester activity and modeled it in response to terrain and prices paid for kangaroos harvested. It demonstrated that in the areas investigated and at current prices, 20-40% of any one property will rarely be visited by a kangaroo harvester because the terrain is too rough or other limitations make it not economic for him to do so. These areas then become 'refugia', areas in which the resident kangaroo population is never harvested and from which the population expands to re-populate areas which are harvested (NSW Dept. Ag. 2002).

The project further demonstrated that on the broader scale there are more extensive regions in which it is not economic for kangaroo harvesters to operate. In NSW for example it suggests that even at highly inflated prices for kangaroos, some 5% of the kangaroo population will be contained in large regional refugia which are never harvested. Add to this the kangaroos in national parks (in which no harvesting can take place) and 8% of the states kangaroo will never be visited by harvesters (NSW Dept. Ag. 2002). These are in addition to the smaller property based refugia previously discussed and clearly shows a significant proportion of the population is always left behind to supplement normal breeding in the harvested areas.

Finally the computer modeling demonstrated that even at inflated prices, kangaroo harvesting can never threaten the species. It has shown that relative to the effort required to harvest them, kangaroos are never likely to be valuable enough to harvest them down to levels which would threaten species viability. Quite simply once numbers drop below certain levels it is no longer economic to continue harvesting. These levels are well above

threshhold levels under which the species would be consider under threat. The authors conclude:

"Models presented here suggest that kangaroo populations may be more resilient to harvesting than we had previously thought" (McLeod e*t al* 2001)

5.2 Effects on the species

The argument is often mooted that kangaroo harvesting selects the largest animals and will therefore affect the genetic fitness of the species. The scientific data strongly refutes this argument. Four separate reports have recently provided considerable evidence to show these claims are mere unfounded supposition.

1) An examination of the question submitted to the NSW National parks and Wildlife Service in 2001 concluded:

"Currently, there is no evidence of real or potential genetic 'deterioration' due to harvesting, nor any reason to suspect it. Indeed, indications are that kangaroo numbers would have to be reduced to extremely low levels for genetic impacts to become important and by then other impacts, such as demographic disruption, would be overridingly important" (Olsen and Braysher 2001)

2) A extensive report into factors affecting genetic makeup in kangaroos by the University of Queensland concluded that:

"The effects of the commercial harvest are therefore unlikely to produce genetic changes in the population. First, the heritability of the characters in question is low. Second, the selection differential is low because differences in fitness between younger and older adult males is small, older males do not appear to monopolise matings, only a small proportion of older males are selected against (so most animals are in the selected group), and only a small proportion of the population is harvested." (Hale 2001)

3) A study of Queensland kangaroo populations harvested at rates of 0 to 30% has shown no differences in the genetic diversity of the various populations. That is, intensively harvested populations show no reductions in genetic diversity compared to unharvested ones (Pople 1996). This study also cites information showing virtual uniformity of genetic codes across widely dispersed kangaroo populations, suggesting the extensive harvesting to date has had no effect on the species.

4) A study conducted by the NSW Dept. of Ag. has applied extremely sophisticated computer modeling techniques to kangaroo populations dynamics. It has demonstrated that even after several hundred years of intensive harvesting there would be no impact on the genetic makeup of the population. A large cause of this being that there are always areas of rugged terrain in which kangaroos are never harvested (refugia) and

migration of animals and their genetic material out of these areas offsets any selection which may occur through harvesting (NSW Dept. Ag. 2002)

Quite clearly the balance of credible opinion and evidence suggests kangaroo harvesting has no significant impact on the genetic makeup of the population. Further this is supported by real world, hard, industry data. In NSW **in 2006 the average weight of harvested kangaroos at 21.6 kg was actually a little higher than the 10 year average of 20.6 kg** (NSW Dept. Environment and Conservation Annual Report). Perhaps kangaroos are actually getting larger rather than smaller!

6. Environmental Impacts of NOT Utilising Kangaroos

The rangeland environment of Australia, in which the vast bulk of the kangaroo population lives, also supports a wide range of other domestic, indigenous and feral grazing animals. It is a fragile region highly susceptible to overgrazing and resultant land degradation. In order to manage this environment the concept of total grazing pressure (TGP) has been developed. This sets for any one region the upper grazing pressure it can sustain and the mix of various animals which will generate that pressure. This management system requires that all animals contributing to the grazing pressure be controlled. Kangaroos typically represent 30% of TGP (Pople and Grigg 2001). If domestic stock numbers are set at estimated sustainable levels yet kangaroo numbers are uncontrolled the total grazing pressure will also increase and the environmental sustainability of the region will be placed at risk.

Thus the kangaroo industry actually plays a significant role in ensuring the environmental sustainability of these regions by providing a tool for managing one of the largest contributors to total grazing pressure. In its absence, the kangaroo population would be at least 30% higher (Caughley *et al* 1987) and the risk of desertification and wide spread loss of biodiversity high. The kangaroo industry plays a positive role in protecting biodiversity in the rangelands.

Indeed several trials have clearly indicated that an uncontrolled total grazing pressure presents a major extinction threat to a huge range of biodiversity (Caughley *et al* 1987). This has clearly been demonstrated in work done at Hattah-Kulkyne National Park. Kangaroos can not be commercially harvested in National Parks, as a result their numbers often rise to staggering levels which sometimes require culling programs to be used. In biodiversity monitoring done following a cull at Hattah-Kulkyne increased abundance of 20 rare or threatened plant species was recorded in culled areas compared with unculled areas (Sluiter *et al* 1997).

7. Animal Welfare

The kangaroo industry is often subject to claims from that it is inhumane. These claims are rarely backed up with any scientific evidence, in the few cases where scientifically obtained data is cited it is invariably misrepresented.

7.1 The regulatory controls over kangaroo harvesting

All kangaroos are harvested by professional shooters. Strict State and Federal Government controls ensure that no kangaroo can enter the commercial industry unless they have been taken by a licensed kangaroo harvester who has passed a TAFE accredited training course which includes training in the animal welfare aspects of kangaroo harvesting. In addition anyone wishing to harvest kangaroos for human consumption must undergo assessment of their accuracy with their firearm. The accreditation and competency assessment are controlled by State Government regulations in each State.
All kangaroos must be taken according to the strict guidelines laid out in the Federal Government document 'Code of Practice for the Humane Shooting of Kangaroos'. This specifies the minimum high caliber firearms which can be used, it requires that all animals be head shot and documents procedures for the humane dispatch of any pouch young (CNCM 1990).

7.2 The evidence concerning welfare outcomes

The kangaroo industry has been subject to considerable scrutiny over the years with regard to animal welfare. In fact it has encouraged this. In 1999 the Kangaroo Industry Association of Australia (KIAA) successfully lobbied the Federal Minster for Environment to fund a survey carried out by the Royal Society for the Prevention of Cruelty to Animals (RSPCA) which audited current welfare outcomes in the kangaroo harvest. This is discussed further below. A similar report conducted by the RSPCA in 1985 states:

"If achieved correctly, kangaroo culling is considered one of the most humane forms of animal slaughter. An animal killed instantly within its own environment is under less stress than domestic stock that have been herded, penned, transported etc." (RSPCA 1985)

The report however did consider that the methods used at the time could be improved and made a series of recommendations. At the time they found 85% of kangaroo were head shot. The vast bulk of the remained were heart shot. The RSPCA commented that a heart shot could be considered a humane outcome, but was clearly less desirable than a head shot.

With regard to the dispatch of pouch young the RSPCA concluded:

"The dispatch of pouch young by professional shooters was generally by a sharp blow to the head or by decapitation. There is no reason to consider this as a cruel act." (RSPCA 1985)

Since 1985 the industry has implemented most of the recommendations put forward by RSPCA to improve the harvest, as well as others which they didn't think of. The accreditation and assessment of harvesters and an absolute requirement for head shot animals for meat production have seen major improvements.

In 1999 the KIAA lobbied the Federal Government to fund a new audit to document the current outcomes. This was conducted during 2001 and the report released in July 2002. It concludes:

"These results demonstrate that there has clearly been an improvement in the humanness of the commercial killing of kangaroos compared with that recorded in the 1985 Report. In 1985 the overall proportion of head-shot kangaroos in Australia was estimated to be 86%. In 2000/2002, it was 95.9%". (RSPCA 2002).

However the overall head shot ratio needs a little clarification. The vast majority of non-head shots (reported by RSPCA as body shots) were high in the neck at the base of the skull and it appears the result of harvesters deliberately targeting this site. Of 5083 kangaroos surveyed by RSPCA, only 10 (0.2%) were actual body shots in neither the head nor neck. Industry can claim that 99.8% of kangaroos are shot in the head region exactly where the harvester aims.

Throughout the report the RSPCA clearly recognise and endorse industries animal welfare approach. For example at 3.2 RSPCA state:

"It was clear from the responses given that, not only have the kangaroo management agencies adopted the criteria of head-shot only, but the industry also uses a similar standard."

Some very well informed organisations support the kangaroo industry for a wide range of reasons, mostly because they see kangaroos as a more environmentally friendly way to produce meat in Australia than introduced sheep or cattle. However the support of the Australian Veterinary Association is telling in recognition of the animal welfare outcomes of the harvest. The AVA reported to the 1998 Senate Inquiry into Wildlife Utilisation:

“The Australian Veterinary Association believes that the Australian kangaroo population is a unique and valuable resource and that harvesting is a legitimate and humane use of that resource". (AVA 1998)

7.3 The ‘evidence’ of cruelty

Where ‘evidence’ of cruelty in the kangaroo industry is presented it invariably misrepresents the studies referred to above. For example it is regularly claimed that, “an RSPCA report demonstrated 15% of kangaroos are not killed cleanly and crawl away to die of their wounds.” This is a misrepresentation of the 1984 RSPCA study referred to above. The only place in it where the figure 15% is mentioned in the RSPCA report is stating that at the time,15% were not head shot. The study found that most of these were heart shot and that, whilst less desirable than a head shot, “any placement of a bullet in the chest cavity causes instantaneous death” (RSPCA 1985). As mentioned previously things have improved dramatically since this study and the more recent audit demonstrates head shot rates now above 98%.

Other evidence of cruelty often cited is a video of a kangaroo shoot obtained in 1986. This video was taken by an NGO who encouraged a unlicensed shooter, who did not have

permission to shoot on the property in question to commit gross acts of cruelty to kangaroos whilst they quietly stood by and filmed. The man has since been prosecuted, as probably also would have the animal liberation film crew if they hadn't left the country. This video is portrayed as representative of the commercial industry, however the shooter was not involved in it in any way involved in the commercial industry. In the court case in which he was prosecuted it was revealed that he was actively encouraged to commit his illegal actions by the film crew. They told him they were from an American game shooting magazine. The final hearing of the case in which penalties were handed down was in Dubbo District Court 31 July 1997 NSW NP&WS v Eichner.

8 Public Support for a Model of Sustainable Utilisation

Numerous professional and credible environmental management organisations have published guidelines for the sustainable utilisation of wildlife resources including:

* CSIRO
* Australasian Wildlife Management Society
* International Union for the Conservation of Nature (IUCN)
* World Wide Fund for Nature.

In all cases the kangaroo harvest fits perfectly or very tightly to the criteria for sustainable utilisation. Indeed the first two organisations have openly endorsed the kangaroo industry as fitting their criteria. For example CSIRO (Australia's peak scientific research body) states:

"Kangaroo harvesting clearly meets most of the principals of sustainable use of wildlife" (CSIRO 1998).

The Australasian Wildlife Management Society, the peak representative body for professionals actively involved in wildlife management, state:

"AWMS supports the idea of achieving a conservation benefit from a government regulated, high value, sustainable kangaroo industry" (AWMS 1998).

Even many non government 'conservation' groups are vocal in supporting the utilisation of kangaroos. The South Australia Nature Conservation Society told a Senate Inquiry into Wildlife Utilisation that:

"We are in full agreement that regulated commercial utilisation eg. Kangaroo harvesting, on private lands are a potent driving force for the retention of habitats." (SANCS 1997)

Indeed many Australian NGO's dedicated purely to wildlife preservation support commercial kangaroo harvesting as delivering conservation benefits. The Australian Wild Life Preservation Society is actually the oldest conservation NGO in Australia, and regularly comment on the industry.

"There is no problems with harvesting native wildlife given adequate controls as well as no cruelty in the gathering." (WLPS 1998)

The level of support for the kangaroo harvest amongst professional Australian ecologists and conservationists sometimes astounds international commentators. Public groups vocal in supporting the industry or with position papers in support of kangaroo use include:

- The Australian Veterinary Association
- The Australasian Wildlife Management Society
- Australian Association of Veterinary Conservationists and Biologists
- Ecological Society of Australia
- Wildlife Preservation Society of Australia
- Wildlife Preservation Society of Queensland
- Conservation Council of South Australia
- Nature Conservation Society of South Australia

8.1 Public support for the kangaroo harvest

Research has indicated that the majority of the Australian public also support the sustainable utilisation of kangaroos. Market research published by RIRDC has shown that in response to the question "Do you think kangaroos are a valuable natural resource and we should make use of their meat and leather", **77% of Australians said yes, 16% had no opinion whilst only 4% said no** (RIRDC 1998). The study also demonstrated that over 50% of Australians have tried kangaroo meat.

The results of a range of public surveys on attitudes to the kangaroo industry are given below. Some of these are media generated response polls, these types of surveys need to be interpreted carefully. However they do suggest overwhelming public support for kangaroo harvesting in Australia.

Public surveys on attitudes to the kangaroo industry

date	source	question	number surveyed	result
Mar 97	RIRDC	Kangaroos are a valuable natural resource and we should use their meat and leather?	503	77% yes 8% unsure
July 00	publicdebate.com	Should we be eating kangaroo meat?	7540	75% yes 5% unsure
Mar 02	60 Minutes	Is it barbaric to cull kangaroos?		81% no
May 02	Herald Sun	Should state laws allow commercial use of slaughtered kangaroos?	1698	87% yes
June 11	Canberra Times	What's your view on the commercial use of culled	730	85% yes

Roo carcasses?

8.2. Kangaroo utilisation and a new ecological model.

Australia is a vastly different environment to the 'Old World'. The major influence on its weather patterns is the El Nino effect. This produces extremely variable and unpredictable seasonal conditions. The Northern Hemisphere in contrast, although subject to wide variations within a year has a very repeatable set of seasons between years. The unpredictability of an El Nino climate has resulted in vastly different environmental systems than those of the Northern Hemisphere (Flannery 1996).

To date agricultural development in Australia has largely been based on modified European systems, using European animals. In recent decades this Eurocentric view has come under considerable academic question. A ground swell of opinion is developing that we should develop management systems adapted to our specific environmental conditions, not impose systems adapted to the Old World.

Under this philosophy utilisation of free ranging populations of native animals adapted to the environment makes enormous environmental wisdom.

To this end the Australian Museum has implemented a major new project aimed at encouraging the development of farm enterprises based on utilising native plants and animals. The project intends to monitor the environment benefits that accrue from doing so.

9. And Finally there's methane

Kangaroos don't emit methane. Cattle and sheep do by the tonne lot and methane is 21 times worse than carbon dioxide as a global warming gas. It's estimated that kangaroo meat has one third the carbon footprint of beef. Perhaps replacing beef with kangaroo in our diet can help save the planet! (Wilson, 2008 Garnaut, 2008).

10. Conclusion

Kangaroo harvesting is a controversial topic and inspires considerable passion and debate both for and against. Those for, can demonstrate that it is both sustainable and a necessary tool in environmental management. They argue that in a protein starved world it is morally indefensible not to utilise animals that must be culled anyway. Many are also now coming to the view that kangaroo production offers a more sustainable method of land use in the rangeland environment than grazing sheep or cattle, that it has the potential to offer greater conservation benefits past those which it currently delivers. It offers the opportunity to release Australia from the shackles of Eurocentric management systems.

The kangaroo industry believes it is a model of wise environmental management and this belief is supported by the analysis extensive scientific data and the support of a wide range of professional scientific bodies. Further the industry believes that it points the way forward for a bright new future in the environmental management of this land. It believes that producing our food from the animals and plants which belong here and are adapted to this country makes enormous environmental wisdom.

Internet based information on the kangaroo industry

For detailed Government fact sheets on the industry and its controls see:

http://www.kangaroo-industry.asn.au/morinfo/fs023.pdf

http://www.ea.gov.au/biodiversity/trade-use/wild-harvest/kangaroo/harvesting/kangharv1.html

For a significantly more extensive and eminent discussion of the sustainability of kangaroo harvesting see the background discussion paper to the federal governments Management Plans for kangaroos at:

http://www.ea.gov.au/biodiversity/trade-use/wild-harvest/kangaroo/harvesting/index.html

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