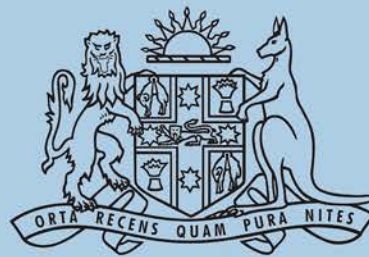




Local Land
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Western Lands Advisory Council

Western Region

Kangaroo Management Workshop

Final report

How can we best work together to manage kangaroos for a sustainable, viable and resilient Western Division?

Cobar, September 2016

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Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing November 2016. However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of Local Land Services or the user's independent adviser. This report was compiled by Western Local Land Services on behalf of all attendees at the Kangaroo Management Workshop. Release of this report does not imply endorsement of all of its contents by Local Land Services, its parent Department, other agencies represented at the workshop, workshop participants or other experts.

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“Landholders out here are caring for our natural resources.”

“Kangaroos are a part of our history and a source of food for Aboriginal people for thousands of years.”

Overview

Rationale

The Cobar Kangaroo Management Workshop was an initiative of the Western Lands Advisory Council (WLAC) with support from Local Land Services Western Region.

Currently, unsustainably high kangaroo populations in areas of the Western Division are leading to increasing pressure on rangeland ecosystems and pastoral enterprises, with subsequent negative impacts on rural communities. These high population numbers also create a potentially serious animal welfare issue of mass deaths during the next onset of dry times from starvation, thirst, disease and roadkill.

WLAC recognised the need to do something about the situation and decided to bring together pastoralists, support agencies, commercial industry representatives, policy makers, regulatory bodies and animal welfare organisations, with the goal of developing a more collaborative and effective way of addressing the issues. With this goal in mind, WLAC approached Local Land Services Western Region with the concept of inviting key stakeholders to a discussion forum in order to investigate what the current situation was, what could be done and how the various stakeholders could work better together to achieve positive outcomes.

Practical and acceptable kangaroo management is a long-standing and on-going issue, and it is clear that change is not going to happen overnight. It was recognised from the beginning that this workshop would be the start of a longer-term collaborative process, involving a wider cross-section of the Western Division community. It is the intention of WLAC and Local Land Services Western Region to continue this process of working together and involving a wider scope of stakeholders in the future to contribute to the discussions, fostering effective short and long term solutions.

Design

The format of the workshop was intentionally designed to make the best use of the attendees time and achieve the desired aim and objectives. The format was developed with this guiding question in mind:

How can we best work together to manage kangaroos for a sustainable, viable and resilient Western Division?

The overall aim of the workshop was:

To develop an informed and collaborative approach to kangaroo management in Western NSW.

Workshop objectives

1. Update stakeholders on:
 - i. Current reviews and proposed policies and legislation that will affect kangaroo numbers
 - ii. Current kangaroo statistics
 - iii. Kangaroo ecology
2. Identify factors and drivers that influence kangaroo numbers such as water, feed and fencing.
3. Provide recommendations on practical and achievable approaches to kangaroo management including commercial harvesting and on-farm management practices.
4. Develop a Western Division position on sustainable kangaroo management for submission to the NSW Government and review bodies.
5. Improve collaboration and co-operation between stakeholder groups and individuals.

A design working group involving representatives from WLAC, Local Land Services Western Region and an independent facilitator created a two-day format that allowed the best use of attendees' efforts in traveling and gave adequate time to start the process of addressing the issues.

The Day 1 program involved a series of presentations and Q&A sessions, to provide attendees with the latest thinking and information in kangaroo dynamics and management actions. Day 2 involved a series of collaborative dialogue practices, aimed at supporting attendees to design and develop practical and achievable actions to take away from the forum.

A workshop booklet was also produced and given to all attendees. This booklet contained the agenda, presenters' profiles and presentation summaries, and a list of all attendees with their profile and perspectives on the issue.

Table 1: Workshop Program

(refer to Appendix A for full workshop running sheet).

Session	Title	Presenter
Day 1	Presentations – What is the current situation?	
1	Landholder perspective – challenges, impacts, ideas	Panel
2	Kangaroo ecology and population dynamics	Dr Steve McLeod (DPI)
3	Impacts on pastoralism	Dr Ron Hacker (Consultant)
4	Animal welfare	Dr Tanya Stephens (AVA)
5	Cluster exclusion fencing	Amy Gunn (Local Land Services Western Region)
6	Landholder perspective – exclusion fencing	Panel
7	Commercial harvesting program & legislative reforms	Stephen Wolter (OEH)
8	Non-commercial kangaroo management	Alison Gibbins (OEH) Melissa Giese (OEH)
9	Industry perspective	Ray Borda (Macro Meats)
Day 2	Co-creating a way forward – What do we want and how do we get there?	
1	Looking forward	All attendees
2	Designing the future	All attendees
3	Getting into action	All attendees
4	Next steps	Geoff Wise (WLAC)

Outcomes

Forty-two people attended the workshop, representing nineteen different organisations. Ten of the attendees were landholders from the rangelands region (refer to Appendix B for full list of invitees).

Some of the topics attendees wanted to discuss at the workshop included:

- Industry viability on “both sides of the fence”
- Impacts to graziers and opportunities for industry
- Land management options
- Why population dynamics have changed
- Managing Total Grazing Pressure
- What do we do in the short term?

During Day 1 there were nine presentation sessions, involving thirteen presenters (including a landholder panel of five members).

During Day 2, eleven topic areas were discussed, leading to the development of eleven priority actions with time-frames and drivers (refer to Table 5 p32). These actions address areas such as:

- Influencing policy
- Representing views
- Involving Aboriginal perspectives
- Improving public awareness and image
- Developing markets
- Refining legislation and licencing
- Developing management tools and techniques

At the conclusion of the workshop, people gave positive feedback as to the value of attending. There was a general optimism that something was going to happen, and a strong feeling of collaboration between organisations and individuals.

Attendees indicated that they had increased their knowledge and understanding of the various aspects of the kangaroo management issue, and the linkages between those factors. People were also able to develop connections with a greater and more diverse network of organisations and individuals.

There was initial concern amongst some of the attendees leading up to the workshop that it would be another “talk fest” and no action would result. Feedback indicates that these individuals left the workshop with a sense of optimism that the actions which were developed would be implemented, and that changes will occur.

Points of Agreement

At the conclusion of the workshop, Geoff Wise (Chair, WLAC) proposed the following Points of Agreement to be used in future discussions:

1. Kangaroos of all species are currently in unsustainably high numbers across the Western Division.
 2. Decisions, policies and strategies must be evidence and experience based (not philosophically based).
 3. We need and must support a strong and expanding commercial harvest industry.
 4. We must aspire to an increased value for kangaroo meat.
 5. We acknowledge that neither commercial harvest nor non-commercial take will have any effective impact on population control, at least in the foreseeable future.
 6. Maintaining and ensuring animal welfare is practiced is paramount.
 7. We anticipate a huge kangaroo welfare issue is looming with the next long dry (drought) period across the Western Division, as kangaroos will be left unmanaged to suffer natural deaths from starvation, thirst, disease and road kill. The numbers anticipated to die can be expected to far exceed any currently shot through harvesting and damage mitigation strategies.
 8. We are not proud of this anticipated intolerable animal welfare outcome and we take no responsibility for it. We would prefer policies, Government and community support to allow for managed preventative intervention strategies.
 9. We acknowledge the welfare concerns for immature kangaroos of any strategies or actions which result in the death of breeding aged females, whether naturally or through any human intervention.
 10. There is a unique situation applicable within the pastoral zone regarding the impacts for grazing pressure caused by kangaroos on two other natural resources, namely native vegetation and water. Uncontrolled overgrazing can result in significant environmental harm to these biodiversity assets.
 11. Management intervention strategies using kangaroo proof fencing of watering points, partial property or whole property boundaries or cluster properties may have beneficial outcomes in specific circumstances and locations, but these options are not universally applicable.
-

Day 1- workshop presentation sessions

Session 1: Landholder Panel 1 – Challenges, Impacts, Ideas

Landholder panel	
Dave Allen (Nullogoola Station - Cobar)	Rick Taylor (Glen Hope Station - White Cliffs)
Phil Baird (Oakbank Station - Wentworth)	Graham Turner (Grasmere Station - Broken Hill)
Ashely McMurtrie (Gilgunnia Station - Cobar)	Leon Zanker (Laurel Vale - Tilpa)

The landholder panel was asked a series of interview questions and this was followed by a Q&A session. Below is a summary of the landholder responses.

Q1: What are the current challenges?

- Kangaroo numbers have been climbing since 2010 and they are currently unsustainable.
- Populations are as high as they've ever been. Livestock numbers have dropped as a result.
- Trying to reserve country for breeding stock - there's no point with the kangaroos the way they are.
- We have to manage a "national icon" on behalf of Australia, and we get no support.
- Harvesting and marketing of Kangaroo products is not well supported politically or by the general public.
- Massive over-population leads to kangaroo starvation and land degradation when drought conditions hit. We will be branded as poor land managers.
- In the short term we need to deal with grazing pressure and issues for this summer.
- Animal rights groups are holding back the industry and the potential improvement to kangaroo welfare. These groups don't see blind, starving kangaroos. Expecting "nature" to control populations is unrealistic and immoral.

Q2: What changes have you seen in Kangaroo impacts over time?

- Groundcover only improved after Total Grazing Pressure (TGP) fencing was established.
- TGP fences in past were to manage domestic stock, but we need fences to manage kangaroos going into the future.
- Numbers have been climbing since 2010. We have been using TGP fencing, but still can't manage our vegetation.
- An increasing grazing impact on bluebush and saltbush.
- A growing gap between actual kangaroo harvest and population numbers.

Editor's Note:

Session 1 involved a panel of landholders answering a series of questions from the facilitator and the floor. Landholder answers were recorded as closely as possible during this session and have been reproduced in this document to the best of our knowledge. Local Land Services Western Region and Western Lands Advisory Council acknowledge that some comments have been paraphrased and may not represent exact answers given during this session. No answers have been intentionally misrepresented in this document.

Q3. What are the impacts to your livelihood?

- Feel that kangaroo numbers will cause environmental degradation and will bring us into drought 12 months earlier than we need to, like what happened in 2008 – 09.
- We now manage more conservatively, watching groundcover and destocking much earlier than usual.
- Nearly as many kangaroos as domestic stock. Effectively that equates to 30-40% loss in income.
- We're basically watering and feeding the kangaroos for no income.

Q4. What has worked in managing kangaroos?

- TGP fencing works, especially in smaller paddocks. Cost is \$3,000-\$6,000 per kilometre.
- Exclusion fencing and traps around dams is our strongest tool at present.
- Roos dig under fences that have no foot apron. They place enormous pressure on fences – weld mesh is the only success.
- 25 years ago when skin only shooting was a form of control we were harvesting roos all year around.
- Consistent take of population is the best control.

Q5. What hasn't worked?

- In some areas, shooting is too difficult and not effective because of invasive native shrub.
- Shooting on property was effective until kangaroos moved in from other properties when conditions got drier.
- In some areas, fencing and water control is a distraction rather than a solution – it doesn't work in our country.
- Mesh is torn up by roos in a matter of weeks.
- Non-commercial culling (shoot & let lie) is a waste of money, time and represents a lost valuable resource. This approach also encourages other pests like pigs, foxes and wild dogs.

Q6. What are the future opportunities?

- Long term we need to be utilising the resource and harvesting.
- Current commercial harvest is at an all-time low. A competitive, well managed industry could work.
- It is a waste of a valuable resource to shoot and let lie – we need to be harvesting and marketing kangaroo as a valuable product.
- Huge marketing potential – kangaroo is a healthy, naturally harvested product.
- National Parks have acquired more land in Western Division in recent years, this land is underutilised and there are opportunities for how that land is used.
- National Parks currently not marketing the tourism potential of kangaroos in NPs – need better access and facilities to attract people. This will increase the public awareness of kangaroo numbers
- If landholders, government, harvesters and processors work together we could have a sustainable, inclusive industry.
- To educate the public about the kangaroo industry and products.

*“There is a huge resource going to waste.
Decisions made at the top affect our livelihoods and businesses”
“If we can change the image of kangaroo management collectively,
we will see conservation benefits.”*

Q7: What needs to happen next?

Regulation

- Regulatory authority needs to deregulate industry, make it more open and competitive
- NPs licence to harm: 5-6 specification. We need to be able to trap, poison, etc - maybe enlarge the Code of Conduct, to give us more tools now to bring population down rapidly before environmental degradation and mass starvation events occur.

Understanding population dynamics

- “Male only” shooting upsets population dynamics.
- Leads to environmental degradation as well.

Commercial industry

- Need new markets into the future.
- Tap into players that know how to market and tap into world markets.
- Opportunity for shooters, landholders and NPWS to work together.

Management strategies

- Landholders need financial support for a range of tools (eg. exclusion fencing).
- There are no silver bullets. As landholders we need as many tools as we can get. Harvesting alone won't do the job, we need fencing as well.
- Legislation and regulation must change. We need to market the animals – the whole box and dice. Skins and meat. No quick fix – this won't happen overnight.

Public perception

- Long term underutilisation of resource, we need a positive public perception.
- Short term – drastic action needs to be taken now so that we don't have long term negative perceptions around animal welfare in the next drought.
- Commercial harvesting must be done with best-practice methods and harvesters must abide by human consumption regulations.
- Inhumane disposal of joeys is bad publicity. We need a new, positive story.
- We need to have the debate with animal rights groups.

Public education

- We need to educate the public about the impacts kangaroos can have on land management, and the benefits of kangaroo as a high-quality product. Need people on-side to market the products.
- Opportunity to drive a public campaign. City dwellers can't fathom idea of killing kangaroos. We need to develop education programs. Need better support for harvesting kangaroos.
- Harvesters operate under best practice and processors have a good story to tell.

“Kangaroos are a great resource, we need to promote products better and educate the public, but we also need to address the short-term issues.”

Session 2: Current Knowledge on Kangaroo Ecology & Population dynamics and trends

Steve McLeod

Vertebrate Pest Research Unit
NSW Department of Primary Industries

Key statement:

It is not known what impact the change to a male-only harvest will have on population size and the rate of increase of kangaroo populations.

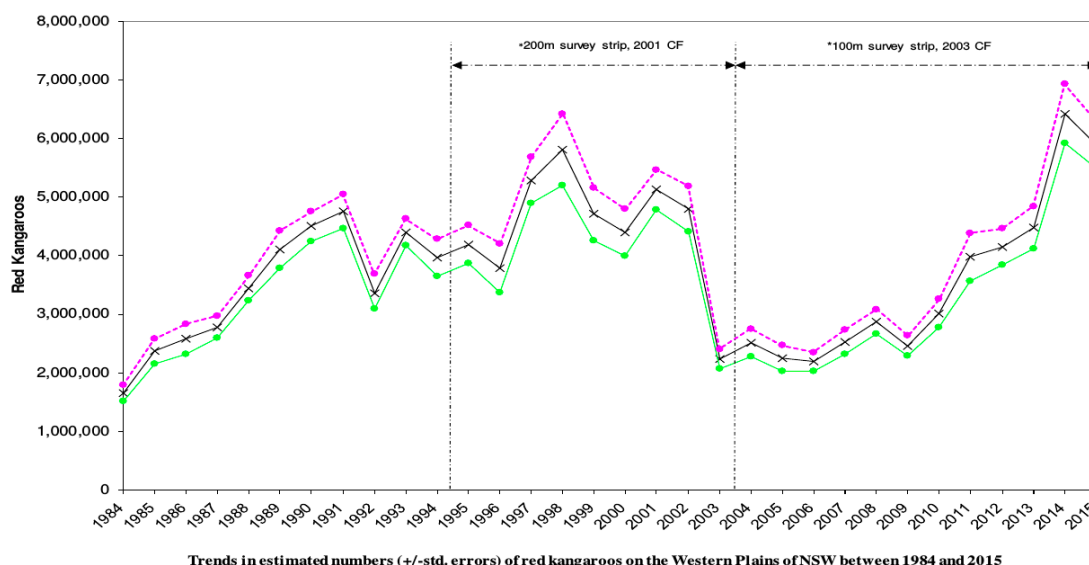
Topics:

- The main drivers of population change in kangaroos.
- How harvesting with a strategy can reduce population sizes.
- The viability of kangaroo populations.
- The impacts of climate change on the distribution and abundance of kangaroos.

Main points:

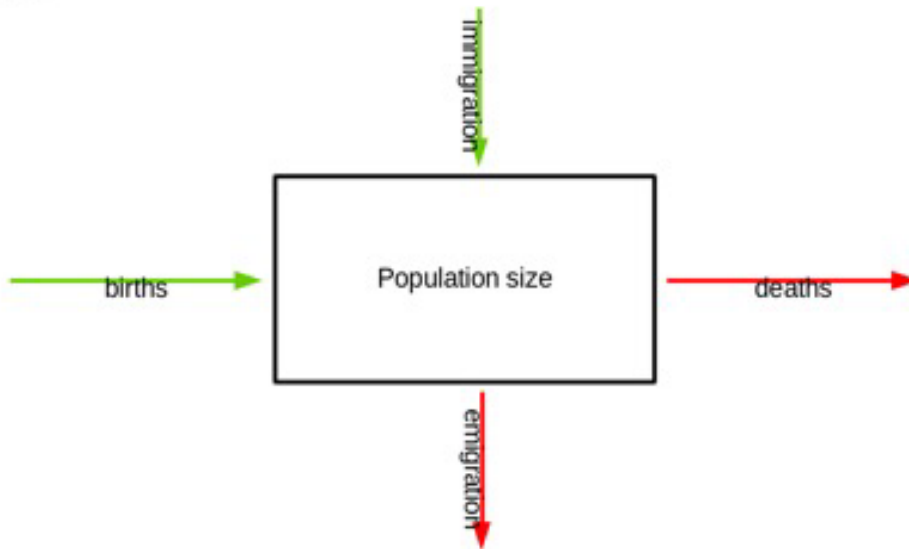
- Kangaroos are prolific breeders given the right conditions.
- Embryonic diapause (in Reds and Eastern Greys) means females can have 3 young at various stages of development (young at foot, pouch young and embryo in diapause).
- In rangelands pre-European densities thought to be much lower than present densities.
- The spread of pastoralism has resulted in an increased abundance and range of kangaroos.
- Landscape has changed from shrub dominated to more grasses and annual forbs, which favours kangaroos.
- Control of dingoes and the reduction of hunting by Aboriginal people and the provision of permanent watering points for livestock, all contribute to the increase in kangaroo population.
- The highest levels of red kangaroo density are in Western NSW.

Graph 1: Trends in the estimated number of Red Kangaroos on the Western Plains of NSW



- Population size will fluctuate with births and deaths, as well as kangaroos moving in and out of home ranges.
- Red kangaroos can cover a range of 370 ha in a week.

Figure 1: Fundamental equation of population dynamics



- Kangaroos are grass specialists and will preferentially graze young growing grasses and forbs.
- The relationship between kangaroo population and plant biomass is not directly correlated - increasing biomass in a pasture does not necessarily result in an equal increase in kangaroo numbers – there are different factors at play. This could be because kangaroo grazing stimulates the growth of some plants, compensating for the over-grazing of other plants.
- Kangaroos are highly efficient at water use – Red kangaroos drink only every 3-10 days and use about 50ml/kg/day, less than a third of what a sheep will use.
- Red kangaroos will travel 10-15 km from their home range for water.
- There probably won't be a “one size fits all” solution for kangaroo management.

Table 2: Water use in hot weather

Species	Frequency (days)	Water use (ml/kg/day)
Red	3-10	40-56
Eastern grey	2-4	72
Western grey	2-6	43
Sheep	0.5-1	173
Feral goat	2-3	115

Q & A

Q: On our property the population is increasing although we continually commercial harvest our full quota. Does a “male only” harvest impact on the rate of increase of the kangaroo population?

A: Male only harvest is a relatively new thing, there is no empirical study of the effect of male only harvest, but over 10-20 years it is possible it could skew the population to a higher proportion of females. Although with the current low harvest rate, can't see how the male-only harvest could be having this effect, unless shooters in your region have been using a male-only approach for a long time. Could be just a natural increase in the population. Don't need large dominant males to have breeding.

Q: What research is being done on the impacts of current high density populations, considering we've never had such high levels before?

A: There has been very little work done on the impacts of kangaroos on pastoral production but some good work done on conservation, where (in the ACT) high numbers of kangaroos have been shown to have a negative impact on other species. So impacts on pastoral production remains an open question -- two main studies done reached opposite conclusions. Probably fair to say that more work needs to be done to understand their impacts.

Q: What research has been done into density-dependence in kangaroo populations and how populations might be regulated? What prevents the population from growing without limit?

A: The best information we have is that direct density-dependence (usually some type of behavioural regulation where, for instance, there might be territoriality) is not strong but an indirect form of density-dependence might be operating via the impact that kangaroos have on available food. It is much more likely that regulation occurs via indirect density-dependence - but the work to support these ideas was done many years ago (more than 20) and there have been important advances in statistical methods in that time so re-analysing the data with up-to-date methods would be useful.

Session 3: Impacts of kangaroos on pastoralism

Ron Hacker

Ron Hacker Rangeland Consulting Services

Key statement:

A realistic appreciation of the nature and magnitude of the problem on the part of all stakeholders is fundamental. Kangaroos cannot be blamed for all the management difficulties faced by pastoralists, but neither should they be protected from reasonable control efforts given the top end predator (the dingo) has largely been removed from the ecosystem in Western NSW.

The major impact of kangaroos on pastoralists in the long term is the limitation they impose on the capacity of those landholders to manage for improved land condition, and therefore carrying capacity.

Topics:

- Kangaroo impact on pastoralism varies in time and space.
- Commercial harvesting does have the capacity to deliver economic benefits in the short term.
- The limitation imposed on the regeneration of degraded land is a major impact in the long term.

Main Points:

- Traditionally, research considered that 1 kangaroo = 0.7 DSE; recent research indicates 1 (20kg dry, red) kangaroo = 0.35 DSE and water use of kangaroos = 13% of sheep rate.
- Pastoral production is only likely to be affected by kangaroo competition when pasture biomass is below approximately 300kg/ha.
- Kangaroo harvesting can reduce the frequency of low forage conditions.

The modelled results below are based on a study conducted at Lake Mere, in paddocks with continuous moderate sheep grazing. The model indicated an increase in the long-term average clean wool weight/head of approx. 25% when kangaroos were harvested for maximum yield.

Table 3: Effects of harvesting kangaroos on pasture biomass levels

Kangaroo population	% time <300 kg/ha
No Kangaroos	63
Max yield harvest	73
No harvest	78

- Kangaroos can strongly influence land management and are a major impediment to grazing management.
- Preferential grazing of destocked paddocks is probably not deterred by commercial harvesting.

Kangaroo impact in the short-term:

- Direct effect on production, damage to fences, etc.
- Relatively small cost but direct and occurs under poor seasonal conditions putting higher stress on an already stressed system.

Kangaroo impact over the long-term:

- Puts limits on resource recovery and carrying capacity.
- Has a much larger cost but it is delayed and indirect (income foregone).

Implications:

- Short term impacts are important but research and policy development that focus on long term impacts will better meet the needs of pastoralists, the kangaroo industry and conservation groups.

Q & A

Q: How does your research account for interaction between domestic stock and kangaroos in the paddock? Kangaroos always go for the “best”, most productive, parts of paddocks en masse.

A: The model didn’t account for area-selective grazing by kangaroos. What you’re saying though reinforces the view that what kangaroos do in paddocks is an incentive for us to improve the long term management.

Q: is there room for more research to be done on the types of grasses they eat and how that affects the environment?

A: No, we know enough – we just need to work out some practical methods to overcome that preferential grazing pressure. For example, some anecdotal evidence suggests that leaving a few sheep in a ‘destocked’ paddock may prevent kangaroo incursion. It is also likely that kangaroo incursion will be most severe when you have only a little land spelled, as kangaroos will be concentrated on a small area. But if your livestock grazing management allowed for spelling most of the property at any time, as in rotational grazing, then the concentration effect should be reduced. There is much opportunity for useful research on these topics.

Session 4: Animal Welfare

Dr. Tanya Stephens

Australian Veterinary Association

Key statement:

The Australian Veterinary Association (AVA) believes it is appropriate to harvest meat and meat products from kangaroos. However, harvesting must be based on current scientific data on population dynamics and habitat, to ensure maintenance of viable ecosystems and population numbers, and the killing method must be rapid and humane and carried out by trained skilled operators.

Main points:

- Early on worked with a kangaroo shooter in Coonamble and was impressed by how humanely they were killed and the use of the whole animal.
- It is important to understand the difference between animal rights and animal welfare.
- AVA is an Animal Welfare group. We believe it is morally acceptable to use animals as long as they're well cared for. Animal must be fit, healthy, happy = wellbeing.
- Animal Rights groups see an individual animal as having intrinsic rights. These groups supported the ban of kangaroo products in California and the closing down of the industry there.
- There are lots of petitions against kangaroo culling and many views against any culling or use of kangaroos. We will probably not change the minds of animal rights activists but we need to educate everyone else to give an alternate view.
- Refer to Appendix E p67 for AVA Position Statement

Q & A

Q: When marketing kangaroo meat we've looked for organisations that might endorse quality, humane product – would you be one of them?

A: We support "welfare labelling" on appropriate products.

Q: What about the "crash" of kangaroo populations during droughts – how does that sit with animal welfare?


A: That's why we support culling for animal welfare.

Q: Our weak link is animal rights groups going forward – are they prepared to come and take care of the blind, weak kangaroos impacted by drought?

A: It is hard to have a debate about practicalities with animal rights groups. It is really important that people understand the difference between animal welfare and animal rights.

Q: What can AVA and RSPCA do to help educate people about kangaroo welfare eg allowing nature to take its course.

A: AVA is not a big organisation and does not have the resources [to run programs].



Q: The AVA is now a member of the Kangaroo Management Advisory Panel (KMAP). Is that a worthwhile organisation for getting your message out?

A: I'm very new to KMAP, but glad to be involved, as I think AVA is an under-utilised resource and has something to offer.

Session 5: Cluster fencing to manage kangaroos

Amy Gunn

Local Land Services Western Region

Key statement:

Incentives are required for further utilisation of the tools we know will assist with management. There is also a need for improved accuracy of the kangaroo population data. There are three things we grow really well in Western NSW – kangaroos, goats and woody weeds. Kangaroos are a valuable source of meat and leather, we need to be able to utilise these resources, not waste them.

If it's difficult to manage groundcover with the stock numbers we can account for, the movement we can restrict and the seasonal variances we can roughly predict; how do we successfully budget and become 'drought resistant' with so many variables we cannot accurately predict, restrict or manage?

Key points:

- Pest Exclusion Cluster fencing is a group of landholders getting together and fencing the perimeter of a number of properties with essentially a higher than average fence (not dissimilar to the old dog netting boundary fences).
- This might not be a feasible option for everyone, but it has been a great success for some producers. Look at the cost:benefit for your business.
- There is no silver bullet for pest animal management. Strategic and regular action using a suite of techniques is the key. This fencing does not eliminate the need to continue pest animal management activities, but it does over time minimise it.
- The intention of cluster fencing is not to eradicate native animal populations, but over time, to revert to more sustainable and manageable levels.
- Due to the higher costs associated with this fence (\$4500-\$6000/km), cluster groups with a greater area demonstrate stronger economies of scale, greater public benefit and better value for money.
- The major challenge is not so much the upfront cost, it's getting neighbours to agree and enter into legally binding arrangements.
- Cluster fencing has had the following outcomes:
 - Reports of a 100% return on investment within 18 months.
 - Increased ability to manage groundcover and produce feed budgets.

The "Morven" Cluster Group in South West QLD is one example that is working well:

- *Area 1.1 million acres*
 - *Length of fence 409km*
 - *Cost relative to area fenced: \$2/acre*
 - *50:50 in-kind contributions from landholders to project funding*
 - *Formation of Management Team for maintenance & Body Corporate to resolve*
- Huge public & private benefit promoting sustainable landscapes and rural communities.
 - Increased productivity, enterprise diversification, profitability and land values.

Q & A

Q: How do you overcome challenges arising from country with a lot of watercourses, large creeks or floodplains.

A: Fence the ridgelines. Other techniques using fixed knot, poly belting, heavy felt. Increase frequency of strainers.

Q: What is the optimum size for cluster fencing?

A: For dog control – as large as possible, for kangaroos – as small as possible.

Comments

The Gilgunnia cluster project is a new initiative in the Western Region and on one side uses the Western Division boundary, and the other side a fire trail - this makes it easier to implement and manage.

Cluster fencing in some areas has meant that Macro Meats are moving chiller box sites away from the cluster areas because commercially viable concentrations are not available. However, there is an opportunity for better branding of kangaroo meat (eg. "Sustainable Morvern Cluster Roo").

Currently tags are issued to landholders on an individual basis. 25 years ago Tilpa group put forward a concept of allocating tags to a group. Shooters then operated within the group, which gives an assurance of work and is good for the commercial harvest. This is a more strategic approach, but needs changes to the regulatory framework to make it work.

Session 6: Landholder Panel 2 - total grazing pressure (TGP) exclusion fencing

Landholder Panel (as per Session 1)

Q1. What are you currently doing?

- We are in the process of establishing TGP fencing. It is having an effect on the roo movement but certainly not excluding them.
- We are identifying the most productive run-on areas for fencing. Just done 13 paddocks. Focusing on getting more of a result from a smaller area. We now get a better response to isolated rain events. Paddocks range from a few hundred to a few thousand acres.
- Over 6 years we have put in exclusion fencing to all of our boundaries – this has improved grazing pressure from domestic stock but can't totally control kangaroos – they're now one of our biggest problems.
- Where we have paddock fences which share a water point, we can set trap-yard gates so that when they exit they go into a smaller paddock where they can be harvested more easily. Similar management method as goats.
- Since moving into TGP fencing which affected roo movement, we've now got a six-foot fence around the house paddock – it's progressing well without roo pressure. We're using mesh in these gullies and it seems to handle the roo pressure. It's too early for us to say if there are any benefits to our country.
- Started off in 1998 with TGP fencing using 670 hinge joint. More than 15,000 hectares fenced in six paddocks now, using a variety of different fence types. Helped a little but not hugely - added traps later on. Now using "Tuff" posts and reo mesh. Roo's and pigs destroy the sheep mesh. There is a collection of methods for controlling TGP. Using fencing, rotational grazing, water point control. It all depends on the landscape type. Different types of kangaroos (euro's, greys and reds) apply different types of pressure at different times.

Q2. What are the challenges?

- Our over-flow flood country doesn't lend itself to cluster fencing. Massive challenges and opportunities for changing regulations.
- We have rivers and creeks so water point control isn't relevant.
- Collectively the fencing helps, but we're still a long way from TGP control. Got good programs for managing dogs, and hopefully pigs soon too, but for roos we don't have a tool for managing such big numbers.

Q3. What are your future plans?

- Our TGP fencing works for what we originally fenced for, but thinking now of putting a skirt on the bottom and an offset high wire – looking at new ideas for roo management. The Highway dissects our place in half – looking at \$30,000-50,000 to amend the fences.
- We're looking at cluster fencing in our region (Wentworth) and using the two natural barriers of the Darling and Murray rivers.

Q & A

Q: How successful has electric fencing been?

A: About 10 years ago we did a lot for goats, not roos. Roos have weak hearts and electric fences will often kill them, then they learnt quickly to jump over the top. They're very smart at working out where parts of the fences weren't powered – eg near stays. We had maintenance issues with kangaroos dying in the fence.

A: At Fowlers Gap we set up a kangaroo exclusion area for monitoring kangaroo/sheep interaction. Seven plain wires – earth, live, earth live etc. – that was effective in keeping roos out. It works but it's high maintenance.

A: We fired up some at home. Relocation of roos was instant. Need 2.8 wire in a Weston fence. Earth stake every kilometre. 10 line Weston for dogs – 8 line for everything else. A LOT of maintenance.

A: It depends what phase you're in with ALL your fencing infrastructure.

A: There is potential for electric fencing on water points at night only to manage access.

A: We use some electric fencing – that seems to work more for the local roos (western grey) but they will eventually learn to dig under it. Useless for the red kangaroos - when they come down from the North, they just plough through the electric fences.

Session 7: Current commercial harvest and proposed legislative reforms

An overview of the commercial kangaroo harvest program and information on biodiversity reforms with a focus on the commercial kangaroo program.

Stephen Wolter

Senior Team Leader, Kangaroo Management
Office of Environment and Heritage

Key statement:

The primary goal of the NSW commercial kangaroo harvest management plan is to ensure that the commercial harvest of kangaroos is ecologically sustainable. This is achieved by monitoring populations and setting quotas that ensure the viability of kangaroos.

Topics:

- The history of the kangaroo program.
- The management of the kangaroo program and how it works.
- Biodiversity reforms and a new kangaroo management code.

Main points:

History

- Kangaroos have been hunted and shot throughout history for skins and meat.
- Modern harvest began in 50's/60's, regulated since mid 1970's, surveys began in 1974.
- Main goal of regulation has always been conservation of the species.
- Moved away from damage mitigation to sustainable use in 2002.

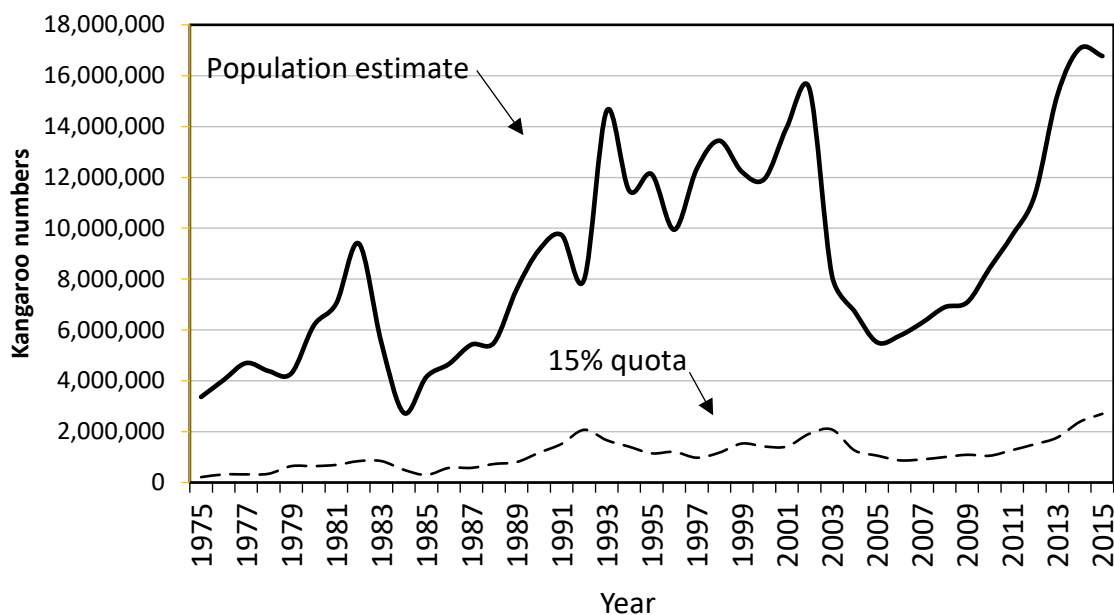
Program

- NSW Commercial Kangaroo Harvest Management Plan 2012-2016.
- Needs to demonstrate that the harvest is sustainable and humane.
- Specifies how we do reporting through Annual and Quota reports.
- Current Legislative framework: S125 Skin dealer licence, S123 commercial harvester, S121 Occupiers licence, S124 fauna dealer licence.
- National Code of Practice for the Humane Shooting of Kangaroos & Wallabies for Commercial Purposes – details the required harvest method and conditions.
- All professional harvesters must complete accreditation every five years.

Current industry scope

- 300 commercial harvesters (long term average is 700).
- 10 fauna dealer wholesalers (current policy restriction).
- Three restricted fauna dealer licences.
- 82 registered chiller premises.
- Four skin dealer licences.
- 2,000 occupier's licences for an approximate total to date of 300,000 tags in 2016.
- Quotas are set by aerial surveys conducted annually or tri-annually depending on the zone.
- Separate quotas are set for each species in each zone. (max 17 per cent for reds and 15 per cent for other species)
- In the graph below, the dashed line is the 15 per cent quota that is set for each year based on the previous year surveys. These proportions are considered by scientists to pose a negligible risk to the conservation status of kangaroos, because quotas are adjusted as kangaroo populations respond to changes in seasonal conditions.

Graph 2: Quota numbers compared to population fluctuations



Challenges

- Commercial industry relies to a large extent on the export of human consumption meat. The domestic human consumption and pet food markets are comparatively small.
- There are many objections to the industry by lobby groups and there is much miss-information and false research being put into the public domain.
- Collapse of overseas markets progressively from July 2008 caused virtual cessation of operation for most dealers and this has not changed to date.
- Flow on effects for other licensees including landholders, as harvesters have been unable to sell carcasses.
- The commercial harvest has declined.
- The number of shooters has declined and chiller boxes are closing.
- \$/kg the same as 20 years ago.

Lessons learnt

- The kangaroo harvesting industry does nothing to reduce overall kangaroo numbers or grazing competition to livestock.
- The inability to rest or spell paddocks from grazing pressure compromises the overall biodiversity values in mixed-use or shared landscapes.
- The solution to effective management is exclusion fencing

The future

- Biodiversity Conservation Bill
- <https://www.landmanagement.nsw.gov.au/native-plants-and-animals/>
- Will involve a review of licensing and developing a risk based approach to compliance.
- Improve population monitoring and survey design
- Rewrite trade assessment plan incorporating risk based approach to compliance.
- Objectives are to; Cut red tape, facilitate ecologically sustainable development, and conserve biodiversity

Q & A

Q: Over what period of time is the “footprint survey”?

A: Four weeks annually

Comment

Landholders want to see a freer and more transparent process with Fauna Dealer Licenses – in order to encourage competition.

Session 8: Non-commercial kangaroo management

Alison Gibbins

Senior Manager, Nature Conservation Section, OEH

Melissa Giese

Team Leader Wildlife, Nature Conservation Section, OEH

Key Statement:

Kangaroos and wallabies are protected in NSW, however over abundant kangaroos can cause economic hardship. In order to mitigate damage by macropods, NPWS regulates a system for the non-commercial harvesting of kangaroos and wallabies across the state.

Topics:

- Kangaroos and wallabies are protected and valued differently within the NSW community.
- The primary objective of the non-commercial system for managing over abundant kangaroos is damage mitigation.
- Biodiversity reforms provide an opportunity to implement a risk-based approach to managing non-commercial take of kangaroos.

Main points:

- People are encouraged to coexist with wildlife.
- OEH will promote non-destructive solutions and long-term management responses where this is feasible.
- Issuing a licence to harm is a valid management option, when other options are not practical or economically viable.
- Decisions are evidence-based, taking into account population sustainability.
- Numbers harmed are commensurate with the scale and severity of damage.
- Animal welfare is not compromised.

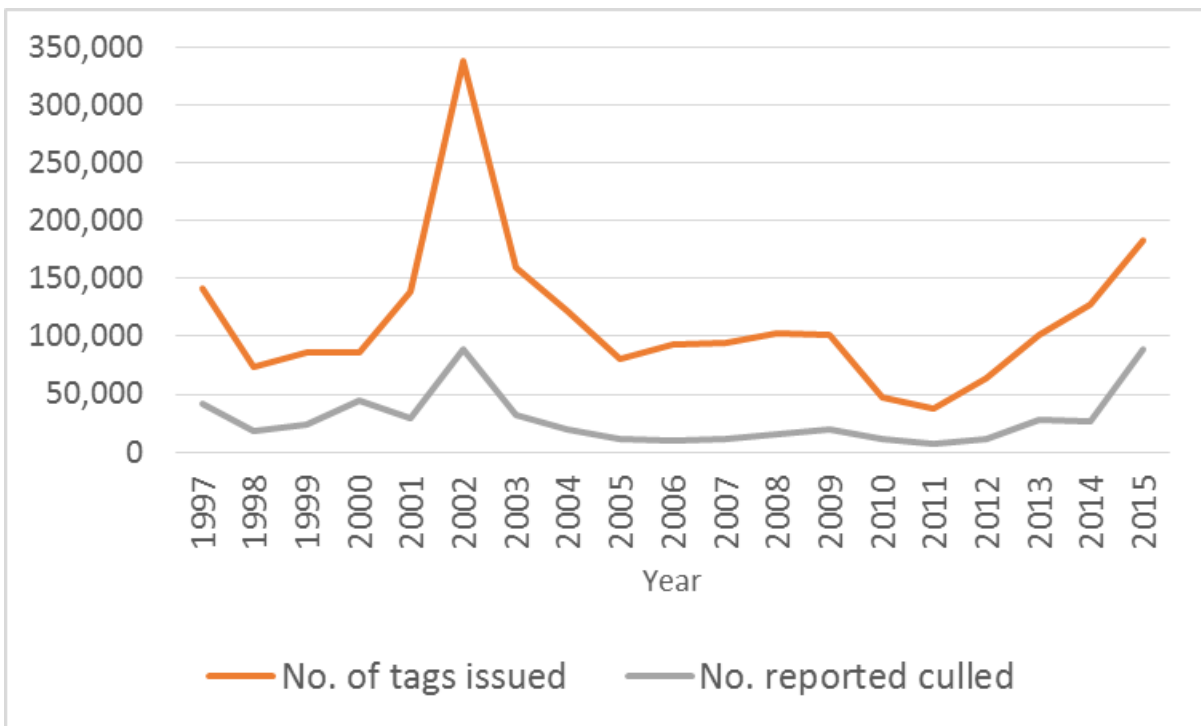
Licensing

- 121 owner/occupier licence for landowners to shoot a specified number of kangaroos on their property.
- S120 general harm, or S123 commercial harvester Licence enable landowners to contract the services of a licenced shooter to shoot a specified number of kangaroos on their property.
- Licences are available across both commercial and non-commercial zones.
- Animals taken must not be offered for sale.
- National code of practice must be followed.
- Tags must be used for each animal shot.
- Returns must be provided back to NPWS.

Current status of program

- S121 licences:
 - 1,265 licences granted
 - for 930 properties
 - covering over 600,000 ha
 - 121,000 tags issued (i.e. 121,000 macropods authorised for harm)
 - 42,000 macropods reported as culled

Graph 3: Comparison of the number of non-commercial tags issued per year and the actual number of kangaroos reported being culled.



Challenges

- Reporting information from licence holders is not reflecting the number of issued tags, making it difficult to determine the actual take of the program.

Comment

- We need approaches to work on both the upside and downside of population curve.
- We are not managing populations so much as minimising impacts in the non-commercial program.

Session 9: An industry perspective

Ray Borda

Macro Group Australia

Key statement:

There are significant implications to the industry from the draft Biodiversity Conservation Bill 2016, and the draft Code of Practice for the Commercial Kangaroo Harvesting in NSW. In particular, the draft code is implicit in the concept that kangaroo harvesting is wildlife interaction of moderate risk, which is contrary to the recommendations made by the independent Biodiversity Legislation Review Panel in its final report of December 2014, and is also contrary to the principles of the existing NSW Commercial Kangaroo Harvest Management Plan 2012-2016.

Topics:

- The position of the Kangaroo Industry Association of Australia.
- Why we want a male only harvest.
- The importance of animal welfare and sustainability.

Main points:

Male only harvest

- The code of practice states that females should be avoided if they have young –it is too hard to determine that in the field.
- Meat and leather quality is more consistent.
- Better hygiene levels.
- Less wastage when processing.
- Better public perception.
- Greater sustainability of the population.

Product

- Super lean, less than 2% fat.
- High in iron and protein.
- Full of flavour.
- Natural, All Australian product.
- Healthy alternative to other meats.

Challenges

- The attempts of animal right groups in shutting down the industry.
- Shrapnel contamination from un-licensed shooters.

Future

- We need to work together.
- We need to increase the value of the resource.
- We need to agree on animal welfare as the Number 1.
- Kangaroos are magnificent and unique animals and should be held in the greatest respect.



Q & A

Q: How can we deal with animal right groups?

A: We need to focus on sustainability and animal welfare when addressing issues from animal rights activists. We need the support of landholders in facing animal rights activists.

Comment

Because of the high numbers of kangaroos, there is a looming animal welfare issue when the season changes. We need good media preparedness to make sure our story is told in the public arena.

Day 1 Reflections

A small group session where people could reflect on what they had got out of the day and what their thinking was now. Discussions were focused on the question below and people chose their three most important points to feed back to the group.

What are you taking home from today?

Feelings

- Frustration at the lack of cooperation in the industry.
- Public fear around wiping out roo populations – but a market will help sustain them.

Realisations

- The difference between animal rights and animal welfare, and the importance of vets.
- The need for a collective will to influence decision makers right at the top.
- A cooperative effort is needed to promote industries based on kangaroo products.
- We need Indigenous input and support.
- We need to change from a “pest mentality” to a “resource mentality” - need a whole framework to enhance this.
- Current management options and tools have limited application.
- Because of such high numbers, there is a looming kangaroo welfare issue when the season becomes dry.
- We need to build community acceptance and educate the public.
- No silver bullet – regular and strategic action is required.
- Tomorrow we can walk away with results or excuses, but we can't have both.

Next Steps

- Need practical solutions for stakeholders – both macro and micro.
- Need sustainable market opportunities.
- Need kangaroo to be recognised as a valuable resource.
- Need positive view of potential in this region.
- Need media eg ABC and SMH as allies to spread our message.
- Annual kangaroo count – shoot & lie tags.

Questions

- What will the practical solutions for all the stakeholders look like?
- What do we need to do to address the macro issues?
- How do we engage with existing conservation groups?
- Frustration that this is perceived as a landholder problem – how do we share the responsibility with others?
- Time controlled water points - should we switch off between dusk and dawn when kangaroos access them?

Day 2 - co-creating a way forward

Session 1: Looking forward – how do we want our future to be?

Small group discussions at tables of four people - to mix ideas, hear others views and develop a collective vision. This was done in three rounds, with people mixing and moving to other tables after each round. The discussions were focused on two questions:

Round 1: What does a sustainable, viable, resilient Western Division look like?

Round 2 and 3: In that ideal world, what would our kangaroo management look like?

What does a sustainable, viable, resilient Western Division look like?

Healthy, functioning ecosystems

- Good ground cover.
- Conservation of rangelands as a whole rather than conservation of individual species.
- Options for responses – integrated responses.
- No non-management of land – lifting production from degradation.
- Support of innovation and change in land management.
- Improved soil carbon and groundcover to increase long term environmental and farm production.

Vibrant communities

- People & towns surviving and thriving.
- People are in the landscape.
- Welfare of rural people and drought preparedness.
- Strong connections between country-city.
- Support of knowledge sharing.
- Partnerships with the Aboriginal community.
- Decentralisation of population and infrastructure into country/western areas.
- Strong collaboration between landholders.

Resilient, productive businesses

- Profitable enterprises – farm income viability.
- Promotion of diverse income streams.
- Opportunities for “value adding” within the region.
- Many marketing case studies and good news stories.
- Long term approach.

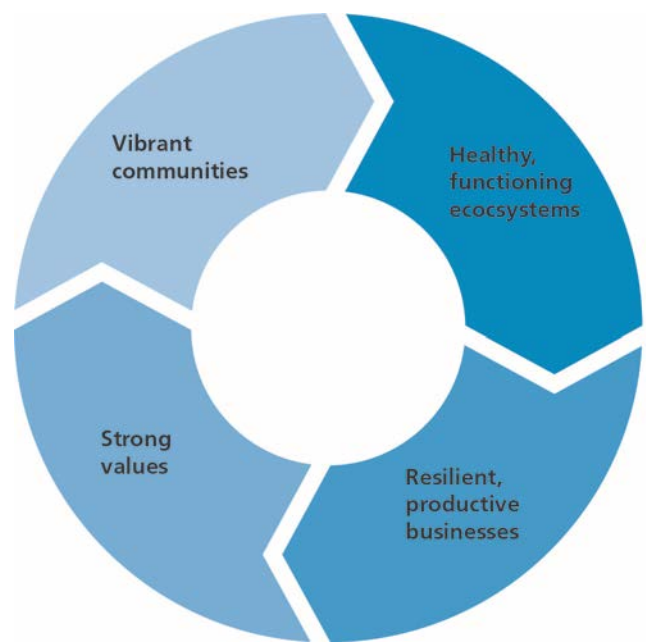
Strong values

- Landholders are custodians of land and wildlife.
- Humane management of all animals.
- We do what we do, well.

In that ideal world, what would our kangaroo management look like?

Thriving industry

- Financial return to landholders.
- Indigenous involvement.
- Training programs and avenues for Aboriginal youth in the kangaroo industry.
- No waste – use of whole carcass – no shoot and let lie.
- Viable commercial industry – recognition of kangaroos as a resource, not a pest.
- Better distribution avenues.
- Need more wholesalers located in the region.
- Sustainable resource – meeting standards acceptable to all in the chain – landholder to consumer.



Innovative marketing

- Kangaroo known as a sustainable source of protein.
- Australia leads by example by normalising consumption of kangaroo meat.
- Mc Skippy burger!?
- Food provenance.
- Involve Aboriginal Medical Service (AMS) to promote kangaroo as a healthy food.

Excellent public perception

- Public education campaigns to explain why and how kangaroos need to be culled (use ABC, SMH, Radio, etc.).
- Recognition of kangaroo as good resource.
- Connection between public perception and reality.
- Need proactive approach on welfare issue rather than reactive.
- Use AVA endorsement & indigenous spokespeople.
- Developing counter-narrative including Aboriginal endorsement.
- Balanced media views.
- Use of media to realistically portray use of rangelands as an ethical, environmental and sustainable resource for agriculture, commerce and Aboriginal culture.
- Counter animal rights & welfare perceptions of declining roo populations.
- New narrative including Aboriginal endorsement and support from welfare groups like AVA.

Effective management tools

- Better management of boom/bust cycles in kangaroo numbers.
- More tools available to manage kangaroos including new innovations (eg reproductive control?).
- Local Land Services Western Region can gather case studies of innovation and management approaches.
- Fencing helps with immigration and emigration and harvesting.
- Opportunities with cluster groups to further market product and manage cohesively.

Creditable research

- Must be underpinned by good scientific information including: population number; monitoring ground cover response; cull levels.

Supportive regulations

- Remove the word “harm” from regulations (means injure as a deliberate action) use destroy, kill, cull or destroy humanely.
- Legislation to support the management of the species, industry and resource.
- Better links between commercial and non-commercial – including same welfare standards.
- Competitive licensing.
- More flexibility in regulation.
- Manage populations according to vegetation biomass to preserve groundcover – could that be trigger to S96 as a short term management option?
- Quota needs to be variable and follow population numbers.

Whole-property focused

- Regain control of grazing pressure.
- Absentee landholders – need people actively managing kangaroos, pests and TGP.
- Focus should be grazing management.
- Kangaroos must always be part of the landscape but not in such high numbers.
- Replacing the top predator in the landscape.



Session 2: Designing the future – what are the important issues to resolve now?

This was an Open Space session designed to allow people to bring up the issues and questions that they most wanted to talk about – that they felt were the most vital in moving forward. People then decided which discussion they wanted to attend, depending on their level of interest and motivation. Participants were able to move between discussions if they desired, thereby adding cross-fertilisation of ideas and sharing information. The intention of this session is that people follow their passion and take responsibility for how discussions progress. In this way, there is greater ownership of initiatives and ideas, and a greater chance that action will occur.

Discussion topics were generated from the group in response to the following question:

What topics, issues or questions must we now address to create the future we want?



The group generated eleven discussion topics which were run over two sessions and are summarised in Table 4 below (refer to Appendix D for the full discussion record sheets).

Table 4: Summary of topics discussed

Grouped in theme area, refer to Appendix D: Open Space Recording Sheets for further detail.

No.	Issue/Topic/Question	Host	Who else was involved?
D1	Policy input into reforms	Erlina Compton	Ken Harrison, Leon Zanker, Amy Gunn, Sam Gunn, Adair Moar, Shaun Barker, David O'Shannessy
D2	Creating an independent group to promote and defend the kangaroo industry	Ray Borda	Ken Harrison Dave Allen Michael Williams Erlina Compton Adair Moar
D3	Indigenous endorsement	Julie Knight	Simone Richardson Dennis Hall Steve Wolter Reg Eade
D4	Public relations and perceptions	Geoff Wise	Rick Taylor, Amy Gunn, David O'Shannessy, Jim Maynard, Tanya Stephens, Leon Zanker, Greg Rogers
D5	Create public awareness of kangaroo dynamics by immediately informing public of current situation and inevitable welfare issues that will arise from it	Suggested by Geoff Wise (but unavailable to host)	Melissa Giese, Julie Knight, Graham Turner, Fiona Harris
D6	Educational programs	Ashley McMurtrie	Dave Allen, Greg R, Russell Grant, Cathy Waters , Reg Eade
D7	Growing International and domestic markets	Lachlan Gall	Doug Jobson, Phil Baird, Tanya Stephens, Michael Williams, Jim Maynard
D8	How effective is the existing non-commercial licence system?	Alison Gibbins (OEH)	Lachie Gall, Cathy Waters, Graham Turner, Phil Baird, Sharron Hawke, Geoff Wise
D9	Wholesale licence numbers	Robert Kemp	Steve Wolter, Alison Gibbins, Ray Borda
D10	Innovative infrastructure to enable better kangaroo management	Russell Grant	Kyra Roach Robert Kemp Ashely McMurtrie
D11	Alternative Management Techniques	Sam Gunn (LCAG)	Doug Johnson, Fiona Harris, Shaun Barker

Session 3: Getting into action – how will we make it happen?

This session focused on developing rapid action plans for specific and achievable actions which will help achieve the desired outcomes of the group. Small groups worked together to fill out the action plan templates, and once again, people were encouraged to give input into those actions which most interested them. The major objective of this session was to enable people to take responsibility for ensuring that the actions are completed. The session was focused on the following questions:

What are the specific, measurable, realistic actions that need to happen in the next 12 months?

How will we make sure these actions happen?

Eleven actions plans were developed, generally related to the major Open Space discussion topics (p31). Table 5 below summarises these action plans (refer to Table 6 for further details).

Table 5: Summary of Action Plans

Grouped in theme areas

Action Title		Driver	Completion date
Working groups and forums			
A1	Report to the WLAC on workshop outcomes	Geoff Wise (WLAC chair)	13 September 2016
A2	Convene “Policy Input into Reforms” Working Group	Ken Harrison (DPI)	31 December 2016
A3	Create Independent panel to advise government on Kangaroo Industry	Ray Borda (Macro) Ken Harrison (DPI)	30 September 2017
A4	Hold an Indigenous Kangaroo Forum	Julie Knight	30 September 2017
Promotions and marketing			
A5	Develop promotions program to improve public perceptions and relations	Geoff Wise	30 September 2017
A6	Establishment of marketing campaign to help access ‘new audiences’	Western Landcare WLAC	31 March 2017
A7	Develop new markets for kangaroo products	PAWD Macro Meats WLAC	31 March 2017
Legislation and licencing			
A8	Investigate options for inter-agency management to meet “special circumstance conditions” for kangaroo management	Melissa Giese (OEH) Alison Gibbins (OEH)	31 December 2017
A9	Increase the number of wholesale licences	Robert Kemp	31 December 2017
Management options			
A10	Develop and define an economic analysis tool (calculator) for fencing options	Phil Baird Russell Grant	31 May 2017 (ahead of schedule - calculator developed and workshop held)
A11	Implement alternative kangaroo management options and techniques	Sam Gunn	31 March 2018

Table 6: Action Plans
Grouped in theme areas

Action		Driver	Who else will be involved?	Specific Steps	Who will do it?	When by	Resources needed	What are the success measures?	How will progress be communicated?
A1	Report to the WLAC on workshop outcomes	Geoff Wise (WLAC chair)	Shaun Barker Jim Maynard Sharon Hawke Ken Harrison	1. Overview/report and WLAC members providing key messages and outcomes/issues to be progressed	Geoff Wise	13 Sept 2016	Time allocation	Report delivered to WLAC	To members of WLAC and Minister Has been completed
				2. Opportunity for response from WLAC members to the report ie. Acceptance	WLAC				
A2	Convene "Policy Input into Reforms" Working Group	Ken Harrison	Jim Maynard, Lachie Gall, Leon Zanker, Tanya Stephens, David O'Shannessey, Erlina Compton, Ken Harrison, Julie Knight	1. Check if input is possible on code of conduct	Ken H	31 Dec 2016	Permission	Input into policy	Within forum subgroup/working group
				2. Can input come from the forum as a collective	All	31 Dec 2016	Brief Minister	Working group establishment	
				3. Establish a sub-group from forum – to follow up on outcomes of forum	Group	31 Dec 2016			
A3	Create Independent panel to advise government on Kangaroo Industry	Ray Borda Ken Harrison		1. Talk to NSW Food Authority (how can DPI assist)	Ken	30 Sept 2017	Funds for panel	Establishment of panel	Ken to liaise with Ray
				2. Determine if panel is at state or national level	Ray				
				3. ABC interview to float idea	Ray				
				4. Talk to Barnaby Joyce (regarding idea for panel)	Ray				
				5. Find funds for resourcing	?				
				6. Develop Terms of Reference	?				
				7. Float idea past NSW Farmers/NFF	?				

Action		Driver	Who else will be involved?	Specific Steps	Who will do it?	When by	Resources needed	What are the success measures?	How will progress be communicated?
A4	Hold an Indigenous Kangaroo Forum	Julie Knight	NPWS Land Councils (Local/state) Traditional Owners/elders Tribal Councils, Activists, Local Land Services Western Region	1. Organise link up	Julie Knight	31 Mar 2017	Venue Equipment (video conferencing) Facilitator	Forum happens Good representation at forum	Through Local Land Services Western Region
				2. Set an agenda – Value of kangaroo to different mobs Use/consumption rights Acts and Regulations How do other states do it? Animal Rights perceptions					
				3. Organise a date, location and facilitator for forum					
A5	Develop promotions program to improve public perceptions and relations	Geoff Wise Small group of representatives from: landholders, AVA, RSPCA, harvesters, Local Land Services Western Region	Stakeholders: NPWS, Harvesters, Processors, Landcare	1. Welfare assessments – find credible scientist to undertake objective study	Tanya S. (AVA)	30 Sept 2017	Funds Social media expert Credible scientist and information Ambassadors	Outcomes of assessment Public feedback Policy and reviews/changes Market development	Media releases Reporting Feedback: ie. Likes on facebook
				2. Engage NPWS in the project	David (RSPCA)				
				3. Commence media campaign – tv, newspapers, social media, radio	Geoff Wise				
				4. Identify target audience	Group				
				5. Form action plan with short and long term goals	Group				
				6. Delivery and costs	PAWD and Local Land Services Western Region				

Action		Driver	Who else will be involved?	Specific Steps	Who will do it?	When by	Resources needed	What are the success measures?	How will progress be communicated?
A6	Establishment of marketing campaign to help access 'new audiences'	Western Landcare	RSPCA, Aust. Vet Assoc.	1. Meeting of interested parties to determine plan of action	Regional Landcare Facilitator to arrange initial meeting to form Steering Committee	31 Mar 2017	Project funding for marketing campaign	Facebook "likes" Change in perception Increased popularity of kangaroo meat	Media releases, Landcare networks, Social Media, Newsletters
		WLAC	Western Lands Advisory Committee	2. Develop scope of campaign					
			Macro Meats	3. Investigate funding opportunities for campaign					
			CWA	4. Resource marketing contractor	Contractor to complete				
			Jonathon Thurston?						
			Western Landcare						
A7	Develop new markets for kangaroo products	PAWD Macro Meats WLAC	Policy Group Tanya Stephens Michael Williams Western Landcare	Regional Landcare Facilitator will organise initial meeting of interested parties	Pastoral Assoc. West Darling	31 Mar 2017	\$1m over three years for promotion	100% utilisation of commercial quota	Through Kangaroo Management Advisory Panel representatives Rural print media Rural radio

Action		Driver	Who else will be involved?	Specific Steps	Who will do it?	When by	Resources needed	What are the success measures?	How will progress be communicated?
A8	Investigate options for inter-agency management to meet “special circumstance conditions” for kangaroo management	Melissa Giese (OEH) Alison Gibbins (OEH)	Steve Wolter (OEH) Russell Grant (Local Land Services Western Region) Ken Harrison (DPI)	1. OEH to investigate potential for making regulations more flexible to better manage infrequent, extreme high number events 2. OEH to investigate how to improve the credibility of the current regulatory approach 3. Russell Grant and Ken Harrison to liaise with OEH	Melissa Giese Alison Gibbins Steve Wolter	31 Dec 2016	Allocation of time	Landholders engaging more positively with the non-commercial regulatory process BMP for infrequent extreme high number events	Through the Policy Working Group
A9	Increase numbers of wholesale licences	Robert Kemp	Policy Group NPWS	New policy working group to investigate opportunities for increasing numbers of wholesale licences	Policy Group	31 Dec 2017	??	Increase in licence numbers	Through the Policy Working Group
A10	Develop and define an economic analysis tool (calculator) for fencing options	Phil Baird Russell Grant (Local Land Services Western Region)	Consultant – Jon Grant Angus Whyte	1. Accept quote	Phil	15 Sept 2016	Funds from Local Land Services Western Region Time from landholders	Uptake by landholders Accuracy predicted versus actual	By Local Land Services Western Region This action is already well progressed with the calculator developed and a workshop held
				2. Trialling and running	Landholder & Local Land Services Western Region	30 Feb 2017			
				3. Refine	Jon Grant	31 Mar 2017			
				4. Redistribute	Local Land Services Western Region	31 May 2017			

A11	Implement alternative kangaroo management options and techniques	Sam Gunn	Regulator Processor/Harvester R & D Institution Neighbours	<ol style="list-style-type: none"> 1. Fencing 2. Contain population 3. Engage interested parties 	Sam Gunn	31 Mar 2018	Allocation of time	Viable suitable product	Cash for products
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Acknowledgements

Workshop organisers:

- Russell Grant – Local Land Services Western Region
- Fiona Harris – Local Land Services Western Region
- Ken Harrison – Department of Primary Industries
- Shaun Barker – NSW Department of Industry – Lands
- Geoff Wise – Western Lands Advisory Council

Workshop presenters:

- Dave Allen
- Rick Taylor
- Phil Baird
- Ashley McMurtrie
- Graham Turner
- Leon Zanker
- Dr Steven McLeod
- Dr Ron Hacker
- Amy Gunn
- Dr Tanya Stephens
- Stephen Wolter
- Alison Gibbins
- Melissa Giese
- Ray Borda

Further reading and resources

Draft Code of Practice for Commercial Kangaroo Harvesting in NSW

<https://www.landmanagement.nsw.gov.au/assets/Uploads/Draft-code-of-practice-for-commercial-kangaroo-harvesting-in-NSW.pdf>

Kangaroo Management Program – NSW Office of Environment & Heritage

<http://www.environment.nsw.gov.au/wildlifemanagement/KangarooManagementProgram.htm>

Kangaroo Management Advisory Panel – member organisations

<http://www.environment.nsw.gov.au/wildlifemanagement/kangaroo-management-advisory-panel.htm>

Article on conflict between commercial industry and animal rights groups

<http://www.bordermail.com.au/story/4064304/kangaroo-meat-puts-commercial-industry-and-animal-welfare-groups-into-conflict/>

Appendices

Appendix A: Workshop Running Sheet

Day 1

Welcome

Acknowledgement of Country

Julie Knight: Nulla Nulla Local Area Land Council

Welcome and workshop intent

Geoff Wise: Chair, Western Lands Advisory Council

Overview - process for the workshop and ground rules

David Newell: Facilitator

Session 1

Impacts of kangaroo pressure - management and control

Landholder panel:

Dave Allen

Phil Baird

Ashley McMurtrie

Rick Taylor

Graham Turner

Leon Zanker

Q & A session - landholder panel

Lunch

Session 2

Current knowledge on kangaroo ecology

Population dynamics and trends

Dr Steve McLeod: Senior Research Scientist, NSW Department of Primary Industries

Session 3

Impacts of kangaroos on pastoralism

Dr Ron Hacker: Ron Hacker Rangeland Consulting Services

Session 4

Animal welfare

Dr Tanya Stephens: Australian Veterinary Association

Day 1 (cont)

Afternoon Tea

Session 5

Cluster fencing

Amy Gunn: Local Land Services
Western Region

Session 6

TGP fencing lessons learnt and panel Q&A

Landholder panel

Days wrap up

David Newell: Facilitator

Dinner

Dinner speakers

Current commercial harvest program and proposed legislative reforms

Stephen Wolter
Senior Team Leader - Kangaroo Management, OEH

Non-commercial cull

Alison Gibbins: NSW OEH
Melissa Giese: NSW OEH

Industry perspective

Ray Borda
Managing Director/Founder, Macro Group Australia

Day 2

Welcome - 8am

Review of day one and outline of day two

David Newell: Facilitator

Session 1

Looking forward - what do we want the future to look like?

Forum

Session 2

Designing the future- what are the important issues to resolve?

Forum

Morning tea

Session 2 continued

Forum

Session 3

Getting into action - how will we make it happen?

Forum

Session 4

Next steps - where to from here?

Forum

Wrap up and close

Geoff Wise: Chair, Western Lands Advisory Council

End of workshop

Appendix B: List of workshop invitees

Name	Affiliation
Dave Allen	Landholder
Shaun Barker	NSW Dept. Industry - Lands
Jennifer Bates	South Aboriginal Community Advisory Group
Phil Baird	Landholder
Ray Borda	Macro Meats
Erlina Compton	Local Land Services Western Region
Randall Crozier (apology)	Landholder and Local Land Services Western Region LCAG
Brian Dohnt	Local Land Services Western Region
Reg Eade	Riverina Local Land Services
Lachie Gall	Landholder, Pastoralists Association of West Darling
Russell Grant	Local Land Services Western Region
Alison Gibbins	OEH
Melissa Giese	OEH
Amy Gunn	Landholder, Local Land Services Western Region
Sam Gunn	Landholder, East Local Community Advisory Group
Ron Hacker	Rangelands consultant
Dennis Hall	Far West Aboriginal Community Advisory Group
Fiona Harris	Local Land Services Western Region
Ken Harrison	Western NSW, Dept. Primary Industries
Sharon Hawke	NSW Dept. Industry - Lands
Doug Jobson	Macro Meats
Robert Kemp	Kangaroo Harvester
Julie Knight	Nulla Nulla Local Area Land Council
David Lawrence	Local Land Services Western Region
Jim Maynard	Western Lands Advisory Council and Western Local Board
Stephen McLeod	DPI
Ashley McMurtrie	Landholder
Steve Millington	National Parks and Wildlife Service
Adair Moar	NSW Farmers Association
Andrew Moriarty (apology)	NSW Dept. of Primary Industries
David Newell	Independent facilitator
David O'Shannessey	RSPCA
Simone Richardson	South West NRM
Kyra Roach	Local Land Services Western Region
Greg Rogers	NSW Farmers Association, Western Division Council
Ray Scott (apology)	Landholder
Tanya Stephens	Australian Veterinary Association
Rick Taylor	Landholder
Graham Turner	Landholder
Ken Turner (apology)	Western Lands Advisory Council
Cathy Waters	NSW Dept. of Primary Industries
Michael Williams	Regional Development Australia, Far West
George Wilson (apology)	Australian Wildlife Services & ANU
Geoff Wise	Western Lands Advisory Council
Steve Wolter	OEH
Leon Zanker	Landholder and Western Landcare

Appendix C: Australian Veterinary Association position statement

Kangaroo and wallaby population control

- Population management of large macropods is necessary to prevent significant welfare or environmental issues arising from overpopulation.
- Management and control methods must be humane and consistent with legislation relating to kangaroo and wallaby protection and control.
- Shooting is the preferred method of control, but other methods may sometimes be required.
- There must be heavy penalties for contravention of legislation relating to kangaroo and wallaby protection and control.
- Research into alternative methods of population management, such as fertility control is also supported.
- Decisions to use, harvest or cull kangaroos and wallabies must be based on objective scientific data.
- Any method used must be rapid and humane, with the preferred technique being shooting by an accredited operator using a high-velocity rifle, as described in the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies (2008). Shooting kangaroos and wallabies for population control is considered the most acceptable on animal welfare grounds.
- Pouch young must also be killed by a shot or heavy blow to the head to cause instant death.

AVA Policy

Control of native and introduced animals causing damage to agriculture or habitat

- The control of over abundant animals, both native and introduced, may be justified to prevent and address adverse impacts on agriculture or the environment.
- Methods can involve harvesting, culling, poisoned baits or biological control, or combinations of these, provided they are highly effective, and applied at times when populations are naturally at their lowest to minimise the number of individual animals impacted over time.
- Further research is required to identify new control options for pest animal species.

Harvesting and culling of native fauna

- Both harvesting and culling of overabundant populations of native fauna are accepted subject to the use of rigorous population assessment methods and the use of humane techniques in accordance with current scientific knowledge, legislative frameworks and agreed management plans, and so as not to adversely affect threatened or endangered species.
- The harvesting of non-abundant species is opposed and vigorous conservation of threatened and endangered species is supported.
- Harvesting and culling programs for native animals must be based on current scientific data on population dynamics and habitat to ensure maintenance of viable ecosystems and population numbers. Where appropriate, efforts should be made to harvest meat and meat products from culled animals.
- Killing methods must be rapid and humane, and carried out by trained, skilled operators.
- If it is suspected that an animal remains alive after the killing procedure, then every reasonable effort must be made to locate it immediately. The dependent young of killed adult female animals should be humanely destroyed without delay. Harvesting and culling activities should be carried out to avoid circumstances which require the consequential killing of dependent young animals.
- Where harvested animals are used for human consumption, adherence to relevant carcass processing, packaging, transport and storage and meat hygiene and inspection protocols is necessary to ensure public health and product quality.
- Free-living fauna may harbor diseases transmissible to humans or other animals. Harvesting and culling protocols must be designed to prevent disease transmission.

Appendix D: Open space discussion record sheets

D1: Policy input into reforms

Host: Erlina Compton

Who else was there?

Ken Harrison, Leon Zanker, Amy Gunn, Sam Gunn, Adair, Shaun, David O'Shannessey

Main Discussion Points:

- Need independent look/study on wildlife welfare
- Find advocates/champion
- Risk adverse policy
- Develop linkages in government to convince ministers to take risks
- Ready to take blame if it goes wrong
- Need to offer a cohesive policy option
- Commercial harvest management plan
- Collective input – who should lead it?
- Workshop outcomes to Kangaroo Management Advisory Panel
- Put forward views of forum

Key insights:

- Politicians need a good policy option

Unanswered questions:

- What are the timeframes for input?
- Who leads input?

Next Steps:

- Brief Kangaroo Management Advisory Panel
- See if opportunity for codes input.

D2: Create an independent group to promote and defend the kangaroo industry

Host: Ray Borda

Who else was there?

Ken Harrison, Dave Allen, Michael Williams, Erlina Compton, Adair Moar

Main Discussion Points:

- Advise Government on policy
- National Scale
- Scientific, all stakeholders, landholders, Aboriginal people, RSPCA, food safety, ecology, nutritionists
- Purpose is to advise on standards
- No industry representative
- Harvesting – export?
- Arm's length panel from industry
- Representative from regulators in government

Unanswered questions:

- Name of group?
- What authority does it have?

Next steps:

See if federal and state governments have an appetite for establishing panel/group

Host: Julie Knight

Who else was there?

Simone Richardson, Dennis Hall, Steve Wolter, Reg Eade

Main Discussion Points:

Education

- Kangaroo is an accepted food source
- Politics
- Realities of what kangaroo means to different indigenous groups across NSW – tribes/Totems
- Forums – spokespeople
- Importance – CULTURE, HEALTH
- Accessible information to both the general community and Aboriginal communities
- Rise above animal rights movements
- Damages caused by roos

Endorsement

- Develop strong network (ie. Regional council) – western region to endorse kangaroo harvest and consumption
- Need a leader/public face – speak for our region (rather than misinformation by others for the whole indigenous community)
- Aboriginal health
- Connect with landholders

Employment

- Viable commercial industry – training package for indigenous to work in the industry in a variety of roles
- Should be more indigenous people in the kangaroo industry
- So many benefits – industry, community, individual

Unanswered questions:

- Rights for aboriginal people to hunt? For consumption? Methods? (non-commercially)

Next steps:

- Indigenous kangaroo forum
- Input from a variety of indigenous communities
- Education (starting in schools? NAIDOC week?)

Host: Geoff Wise

Who else was there?

Rick Taylor, David O'Shannessy, Jim Maynard, Tanya Stephens, Leon Zanker, Greg Rogers, Amy Gunn

Main Discussion Points:

- Taking Action Early – Proactive approach to educating the public on current and future issues (and past experiences)
- Delivery of message – strategic agenda – Ambassadors: RSPCA, Vets, Indigenous...based on the facts
- Long term objective to transition in to valuable commercial industry = no waste
- Importance of presence on social media; where youth get their information

Key insights:

- Proactive NOT reactive
- The facts
- Small coordinated group with skiLocal Land Services Western Region in social media/PR
- Strategic delivery
- Big picture

Unanswered questions:

- Gaps in information: wildlife welfare data and research
- Challenges: National Parks and Wildlife capacity
- What are the policies and politics that fuel controversy?

Next steps:

- Form group; identify spokesperson to deliver message: ie. Vet, RSPC, Indigenous community or scientists
- Media releases/social media; to education not react
- Identify short and long term activities

D5: Create public awareness of kangaroo dynamics by immediately informing public of current situation and inevitable welfare issues that will arise from it

Host: Put forward by **Geoff Wise** - but unavailable to host

Who was there?

Melissa Giese, Julie Knight, Graham Turner, Fiona Harris

Main Discussion Points:

- This initiative is linked to any “rapid response” regulation/funding package
- Use hard data collected by kangaroo count
- Needs to be communicated in non-jargon language
- Need new audience
- Media SMH, ABC TV backroads
- Social media – younger generations
- How can we fund media campaigns? (professional campaign)
 - Negative campaign versus positive campaign (may need to include emotive elements)
 - ‘Get up’ - Change organisation - WWF?
 - Crowd funding ie. Kick Starter, Pozible,
 - More ideas for spreading the word
 - Films/stories – Lauren Wilbo
 - Reality TV – Jamie Oliver
 - Need Australian hipster butcher
 - Ambassadors
 - Aboriginal
 - Huffington Post
 - Sunrise
 - Youth food movement
 - Modern Farmer
 - CWA
 - Smith Journal
 - Outback beds

Key insights:

- Broaden message –to incorporate rangelands sustainability generally ‘social, economic and environmental’
- Use social networks of locals

Next steps:

- Telling Stories
- Indigenous health stories

Host: Ashley McMurtrie

Who else was there?

Dave Allen, Greg R, Russell Grant, Cathy Waters , Reg E

Main Discussion Points:

- Public education at primary/secondary level – also tertiary
- Promote agriculture as a whole as positive
- It's their future (12-35 years)
- 90% population don't know understand current situation
- Education module on best practice become part of curriculum – DPI, Local Land Services Western Region, Landcare, AWI, MLA
- No informed decisions, media ignorant

Key insights:

- Development of markets
- Needs Government support (Federal)
- Pet food?

Unanswered questions:

- Is getting into the curriculum too hard?

Next steps:

- Rangeland alliance/PEW foundation as partners in progressing issues
- Cementing position as NRM experts in rangeland

D7: Growing International and domestic markets

Host: Lachlan Gall

Who else was there?

Doug Jobson, Phil Baird, Tanya Stephens, Michael Williams, Jim Maynard

Main Discussion Points:

- Macro: 15% Export
- 85% Domestic
- 15 expressions of interest on file with OEH
- Levies required, but no one wants to pay them

Key insights:

- Development of markets
- Needs Government support (Federal)
- Pet food?

Unanswered questions:

- Who would pay a levy?
- Landholders should receive an income form kangaroos.

Next steps:

- Have discussions with federal government

D8: How effective is the existing non-commercial licence system?

Hosts: Alison Gibbins and Mel Giese

Who else was there?

Lachie Gall, Cathy Waters, Graham Turner, Phil Baird, Sharron Hawke, Geoff Wise

Main Discussion Points:

- Effectiveness of regulations to mitigate short term, infrequent, extreme high numbers
- How to improve the credibility of the current regulatory approach?
- Bringing together regulation and resources to better manage infrequent, extreme high number events

Key insights:

- Differential between number of kangaroos authorised and those reported as non-commercial take
- Importance of funding and support for on-ground work (in addition to regulations).

Unanswered questions:

- Using existing KMP surveys ; identify key thresholds (kangaroo density); TGP context; using landholders as a part of reporting (cut tails); role of tags (necessity).

D9: Wholesale licence numbers

Host: Robert Kemp (kangaroo harvester)

Main Discussion Points:

Wholesale licence numbers

Key insights:

Kangaroo industry - inability to meet quota numbers

Next steps:

Government needs to increase wholesale licence numbers to reflect the quota

D10: Innovative infrastructure to enable management

Host: Russell Grant

Who else was there?

Kyra Roach, Robert Kemp, Ashley McMurtrie

Main Discussion Points:

- A management tool
 - Control lines to facilitate management
 - Exclusion fencing v's porous
 - TGP fencing
- Passive management tool
 - Welfare benefits
 - Perception
- Water point exclusion
 - Harvesting aid
- Cost
 - Need to do economic analysis
- Funding opportunities
 - Incentives for innovation, reduce risk
- Look globally for solutions

Key insights:

- Establish control line to facilitate management
- Every situation is DIFFERENT

Unanswered questions:

- Animal welfare implications – exclusion impacts on movement

D11: Alternative Management Techniques

Host: Sam Gunn (LCAG)

Who else was there?

Doug Johnson (Macro), Fiona Harris (Local Land Services Western Region), Shaun Barker (DPI)

Main Discussion Points:

- Product normalisation
 - Regular consumption
- Commercial form
- Marketing opportunities

Key insights:

“Open range” – develop new language to tell the story/provenance of food

Cluster benefits – can identify exactly where product (kangaroos) are from and assure customers there’s been no exposure to chemicals etc.

Unanswered questions:

- Legality of “farming” kangaroos
- Organic certification
- Halal certification – animals killed on site so can’t be “blessed” before-hand – but product is better – not stressed by transport and abattoirs etc.

Next steps:

- Sam Gunn - Go home and do it! Easier to beg for forgiveness than ask for permission!

Appendix E: Good ideas, insightful comments and interesting questions

Notes from the “Fridge Door”

- Kangaroo number trends over time – temporal changes in numbers are linked to adaptive management of populations
- Partner with Aboriginal communities to use meat and skins
- Management of kangaroos must be considered in context of TGP
- We should start our own Getup campaign
- Need to highlight inevitable welfare concerns with next drought. How can welfare be minimised?
- Advocacy for kangaroo management
- Reach the younger generations through social media
- Do animal rights people have any concept or desire to come up with a solution?
- There are serious implications of animals fenced out through TGP or exclusion fencing – we need an advocate!
- Has to be a range of management practices in place – in conjunction with harvest approach.
- Recently been working with World Wildlife Fund – they are redefining themselves. There is a lot of ignorance about Rangelands environments, but they are very keen to learn.
- They have a hunting industry in other countries. We have an opportunity to sell our native fauna as a trophy hunt.
- What knowledge do we have of control of native animals overseas?
- A few years ago worked with coyotes in the U.S. They are trying to condition dogs to avoid sheep by feeding them mutton baits which made dogs sick. Opportunity for lateral thinking along those lines. We’re sitting here saying fencing isn’t really the answer.
- Some old wethers with Maremma dogs attached to them kept wild dogs away.
- A fellow up in Hughenden is using guard dogs to take back the sheep industry
- Issues of kangaroo numbers are central. Perception that they’ve increased in comparison to domestic animals. Need to know what the actual numbers are.
- Make school leavers come into outback rather than Gold Coast – will help educate.
- Western “pokemon go” to engage the public.
- Beware of what’s happened to greyhound industry. Wildlife sustainability conference – new management program isn’t through in NSW. Have you put pressure on government to make sure new program goes through? Otherwise there’ll be no kangaroo exports after end of 2016.
- The more changes we make, the more chance that the reforms won’t go through.
- Financial cost of water trap is one load of goats now. We’re putting in traps where goats are minimal because improvement to sheep management is good.
- Cameras set up on different troughs – one night between 6pm and 6am there were never less than 12 kangaroos around the trough. Old bucks stayed a while but young ones came and went.
- Roos only drink once every 3-4 days so that has to be considered when determining numbers.