

Advocating the consumption of kangaroo meat: towards ecological benefit or plunder?

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THINKK Science and Policy:

- Ecology and macropod experts:
 - Dr David Croft, Dr Dror Ben-Ami and Dr Daniel Ramp
- Sustainability experts:
 - Professor Stuart White and Louise Boronyak
- Animal welfare and policy experts:
 - Christine Townend and Keely Boom
- Indigenous elder:
 - Uncle Max Dulumunmun Harrison

THINKK's Ethos:

We believe that the well-being of kangaroo populations is inextricably linked to the well-being of Australia's landscapes and its people.

The big 4 (harvested) kangaroos



Eastern Greys



Western Greys



Reds



Euros



Macropus giganteus



Macropus fuliginosus



Macropus rufus



Macropus robustus

Distribution maps from Strahan (1998)

Prevailing thinking



Kangaroos are pests



Rangelands have become dysfunctional



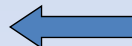
Commercial harvest of kangaroos (Grigg 1987,89)



Ethical and environmentally friendly product



Reduce GHG (Wilson and Edwards 2008)

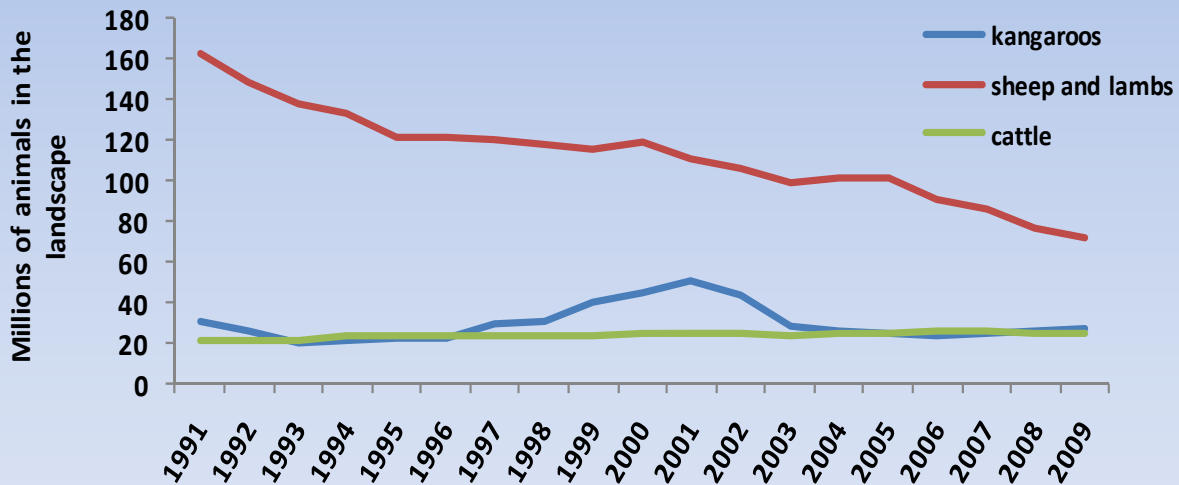


Reduce sheep in the rangelands



Twenty years later:

- No measurable environmental outcome
- Scientific evidence does not indicate that kangaroos are pests (Olsen and Low 2006 – Comprehensive review for government)
- No evidence of sheep replacement by kangaroos (Ampt and Baumber 2006; Thomsen and Davies 2008)
- Long term decline in livestock numbers and no increase in kangaroos



- Now kangaroos are a sustainable resource to be mined
- But at what cost?

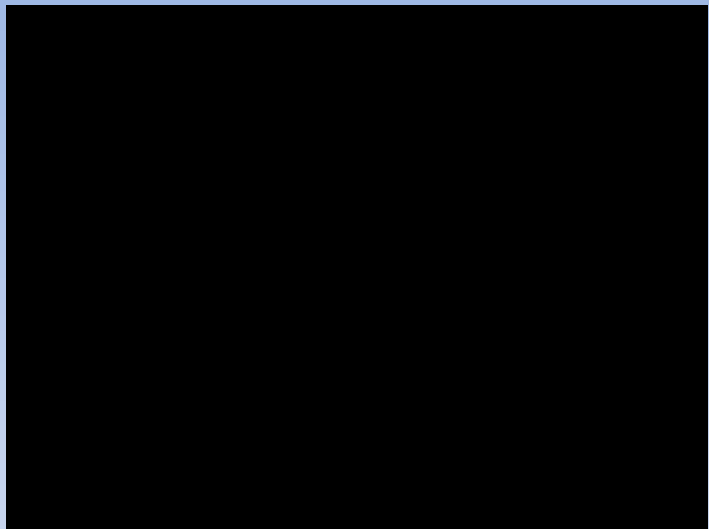
Current concerns

Welfare

- Pouch young bashed
- Young-at-foot abandoned
- Adults miss-shot

Drought

- Rapid decline of kangaroo populations
 - Easier to harvest
- Increased risk of over-exploitation



This lecture: does the increased popularity of kangaroo meat increase future concerns?

Key assumptions relating to kangaroo harvesting

Assumption 1: Increased consumption by humans will lead to increased value of kangaroo meat

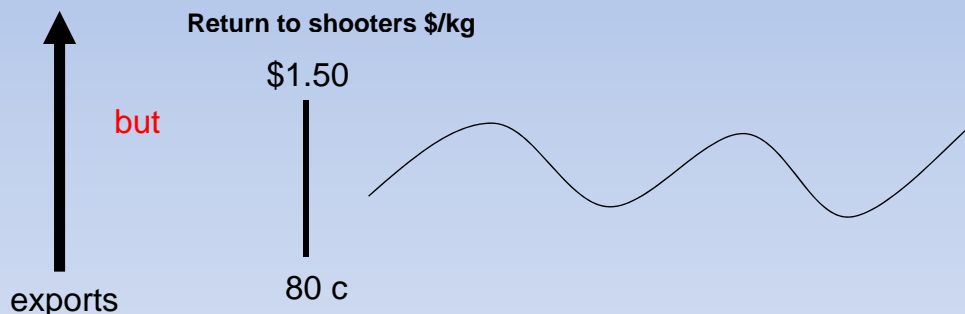
Assumption 2: Increased value in kangaroo meat will lead to sheep replacement

Assumption 3: Destocking will lead to a sufficient increase in numbers of kangaroos to service demand for red meat currently supplied from sheep

Assumption 4: Robust regulatory mechanisms are in place to counter increased market demand for kangaroo products that may result in over-exploitation.

Assumption 1: Will increased human consumption lead to an increased value of kangaroo meat?

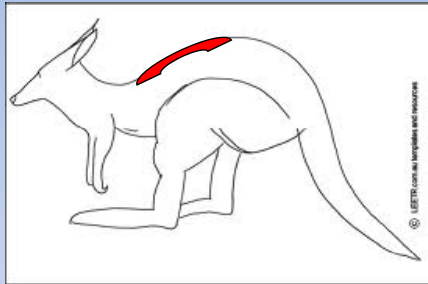
- Lack of alignment between commercial and ecological strategies – (Thomsen and Davies 2007; Ampt and Baumber 2010).



- Under-pricing of beef and lamb is good for distributors but undermines returns to shooters
- 70% of previously exported kangaroo meat (Russia) sold as low grade replacement meat in sausages

Assumption 1:

- Limited and finite supply of quality kangaroo meat



- 12 kg per adult kangaroo on average
- 1.5 kg is high quality (Hardman 1996; Hacker et al 2004; Kelly 2005)
- 10.5 kg mince meat or pet food

- Product quality impedes economic returns:



- NOW, Russian trade ban due to repeated contaminations

→ The value of kangaroo meat to the shooter/grazier is suppressed

Assumption 2: Will an increased economic value of kangaroo meat lead to sheep replacement?

- Minimal competition between sheep and kangaroos
(Dawson and Ellis 1994; Edwards et al. 1996; McLeod 1996; Pople and McLeod 2000; Grigg 2002; Witte 2002; Jonzen et al. 2005; Olden et al. 2006)

- Uncertainty about next year's population (Shepherd 1983)
 - Dramatic population decline during drought
 - prolonged recovery when concurrent with a commercial harvest

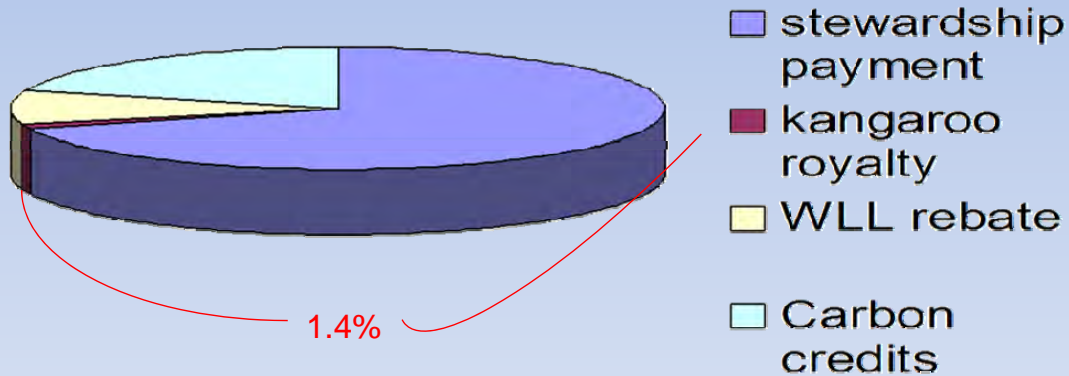


→ No impediment to harvesting both

Assumption 2:

- A sheep replacement model (Ampt and Baumber 2010)

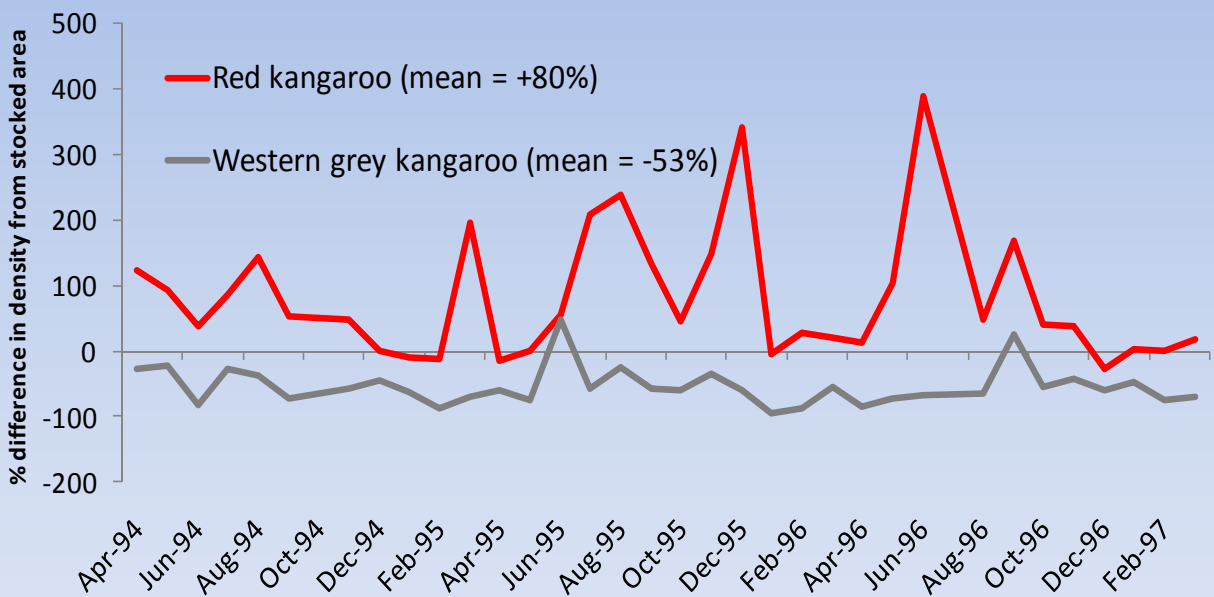
Property Income from 23% of land destocked



- Total Income from conserved land ≈ \$29,000 (approximately)
 - Environmental credits ≈ \$28,570
 - Kangaroo income ≈ \$430
 - These results used an estimate of 300% kangaroo increase in the destocked area

Assumption 2:

- Long-term destocking is likely to yield only marginal kangaroos population increases



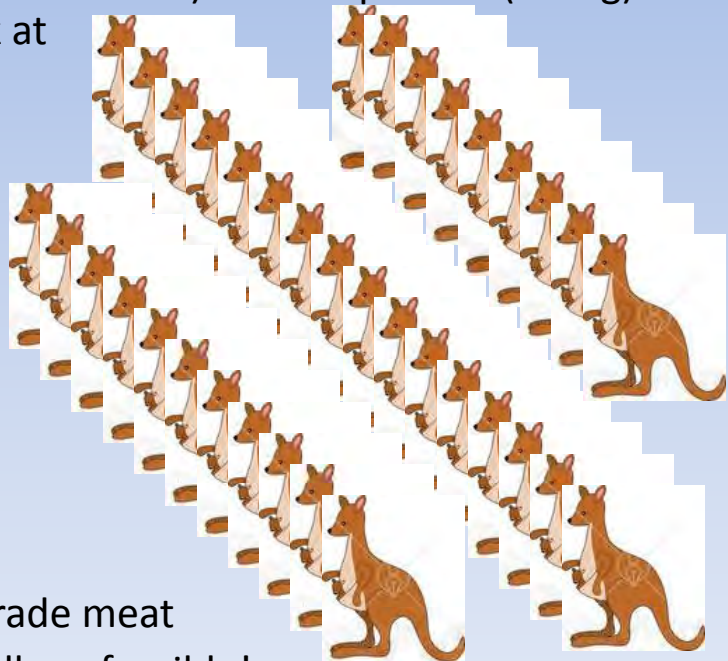
→ Killing kangaroos for tax payers money

Assumption 3: Will destocking lead to a sufficient increase in numbers of kangaroos to service demand for red meat currently supplied from sheep?

- If every Australian (about 21 million) ate one portion (0.5 kg) of kangaroo meat a week at 12 kg/carcass ...



27 million



131 million

- Only 1.5 kg is premium grade meat
→ Replacement is ecologically unfeasible!

Assumption 4: Are proper regulatory mechanisms in place to counter an increased market demand for kangaroo products?

- Two ownership models of kangaroo populations:
1. No ownership



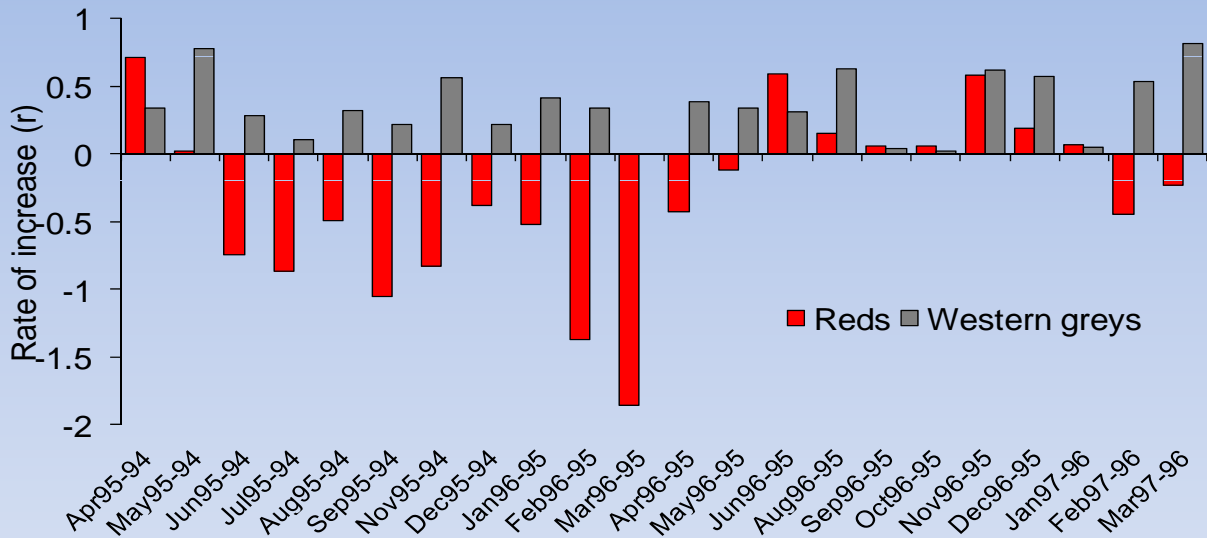
Increased value
+
Get it while
You can



“Tragedy of Commons”
(Harding 1968)
Increased risk of over-
exploitation

Assumption 4:

2) Single ownership cooperatives:



- Non replaceable
- Dramatic response to climatic conditions
- Free ranging movement
- increased discount rate for kangaroos (McCallum 1995)
- **i.e. worth more dead than alive**

Assumption 4:

- Stringent regulatory mechanisms required
 - Negate the more relaxed regulation required by cooperatives to increase profit
- Current regulatory systems are largely untested
 - However, in some areas shooters have already exceeded quota levels
- Only in NSW are there ‘bottom-level’ population trigger points
 - As a result of a court case challenge by kangaroo protection organisations!

→ **Trend of increased human consumption of kangaroo meat raises conservation concerns**

Summary:

- Market forces are not necessarily compatible with the conservation values
- Sheep replacement attractive but unfeasible concept
- Increasing popularity of kangaroo meat is likely to increase conservation concerns



- Scientific evidence does not indicate that kangaroos are pests
(Olsen and Lowe 2006 – Australian Government review of kangaroos and the environment)
- Sheep numbers are decreasing due to market forces

Way forward:

→ Functional landscapes that include kangaroos:

- Alternative or supplemental land use for ecotourism

(Croft 2000; Higginbottom et al. 2004)

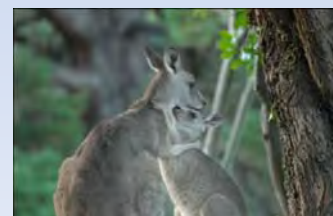
- Carbon offsets for destocking

(Wilson and Edwards 2008; Baumber et al. 2009)

- Light impact livestock management techniques

(Tyndale-Biscoe 2005)

→ Kangaroo management policy that is property specific and regulated



END

Thank you to our sponsors: ISF, Voiceless, UTS and the Sherman Foundation

Thank you to Kelly Blainey, Christine Townend, Geoff Russell, Uncle Max, Louise Boronyak, Brian Sherman, Ondine Sherman and Stuart White



How many females???

How many young???

- 3,000,000 adult kangaroos harvested every year (DEWAH 2010)
- 40% females in harvest = up to 1,200,000 females (Hacker et al 2004)
- 25% of females are likely to have young at foot = 300,000 young at foot/yr (Bilton and Croft 2004, Witte 2005)
- 70% of females also have pouch young = 840,000 pouch young/yr (Bilton and Croft 2004, Witte 2005)
- Total **estimate** > 1,000,000 dependent young die annually as a result of harvesting

Available literature on welfare

Not harvesting

- Nutritionally deprived individuals (Grigg 1997)
- Over grazing impacts on other biota (Grigg 1995, McLeod 2010)

Harvesting

- Shot females result may result in inhumane death of dependent young (RSPCA 2002, Pople and Grigg 1999, McLeod 2010)
- Unprofessional shooters increase welfare issues (Pople and Grigg 1999)

- At least 100,000 kangaroos miss-shot and die inhumanely (RSPCA 2002)
 - Maybe more but no auditing
- Up to 40% may be miss-shot from evidence in chillers (Des Sibraa 2009)
- Killing methods of captured young may not be as humane as possible (RSPCA 2002)

Behavioural ecology

Dependent young – pouch young and young at foot (to weaning)

- High metabolic requirements (Dawson 1989, Munn and Dawson 2003)
- Vulnerability to predation (Banks et al 2000)
- Low recruitment, particularly in drought (Newsome 1977, Shepherd 1987)
- Low recruitment at average rainfall levels (Newsome 1965, Bilton and Croft 2004)
- Lactational demand peaks at permanent pouch exit (Croft 2004)
- Female kangaroos are most reproductive at older/larger age group 6-15 yrs (Bilton and Croft 2004)

Roo mothers do alot!

- Social learning by young from mother influences survival rate of young (Higgingbottom and Croft 1999)
- Diet preferences and ability to discriminate against plants learnt from mother (Provenza 2003)
- Training of offspring to perceive predation risk (Higgingbottom and Croft 1999)



Social welfare

- Matrilines build amongst reproductively successful females (Johnson 1986, Stuart-Dick 1987)
- Known grazing partners enable better feeding (Carter et al 2009)
- Playfights between mixed age groups - training and assessment of potential competitors (Croft and Snaith 1991)

Fathers do alot too – maybe ...

- Shooting of large males may destabilise social structures (Grigg 1997)

