

A Kangaroo's Tale

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The realities of the kangaroo industry:
extensive and alarmingly unhygienic practices,
unacceptable suffering of young kangaroos and the
manufacture of false hope that kangaroo harvesting will
alleviate environmental degradation in rural areas.

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(Additional text from 'A Shot in the Dark' by Dror Ben-Ami)

It's early spring and temperate Australia is greening. Grasses that have lain dormant in the winter frosts are shooting anew. Grey backs bend into this succulent green pick with heads down amongst a garland of wildflowers. I'm in the Kosciuszko National Park in the Australian Alps, several hundred kilometres south of Sydney, where a mob of Eastern grey kangaroos is taking its fill. They've emerged from the lean winter months and are now facing the prospect of a long hot summer when the nutritious grasses will hay-off or burn in wildfire.

South-east Australia is in the grip of seemingly unrelenting drought and all the major cities are under a tight regimen of water restrictions. Drought is nothing new to the wide brown land of the Australian continent but climate change models predict a future of more intense and more frequent droughts in a warmer world. Large tracts of agricultural land will become unsustainable for traditional livestock that are dependent on good quality pasture fed by regular rainfalls. Aboriginal Australia endured the climatic extremes of the Pleistocene, including periods of hyper-aridity. The mega-fauna was lost but the then mid-sized kangaroos sailed through and appear to have prospered. Thus should we be going native?

Can a few widespread species of the now largest kangaroos replace traditional sheep and cattle as the red meat source on our farms and in our supermarkets?

This is a seductive idea and some land managers and ecologists are quick to claim that kangaroos tick all the boxes for sustainable use of a wildlife resource.

They foresee a time when native animals and plants feed the nation with a much gentler ecological footprint than livestock and food plants from other continents. They point to sustainable use by Aboriginal peoples over 50,000 years or more. But low technology hunting for subsistence is not the same as the proposed exploitation for food and other products on an agricultural scale. Australian agriculture currently feeds 50 million people in the domestic market and through production for export.

There may be millions of kangaroos amongst the four species commercially exploited but are there enough?



There is no argument that kangaroos have evolved to make the most of Australia's native vegetation and are superbly adapted to an environment vulnerable to drought.

Not only are they able to survive on less food than sheep – thanks to their low marsupial metabolism and proportionately small average body mass – they drink much less and don't belch methane, a greenhouse gas that is expelled in alarming volumes by cattle and sheep. Let's explore these adaptations and consider whether kangaroos can be exploited humanely on a scale commensurate with traditional sheep and cattle.




Hygiene surrounding the production of kangaroo meat is so poor that the Russian Federation has banned the import of kangaroo meat.

Most of the kangaroos I'm watching are feeding quietly, cropping and chewing the transient green pick. They cut the grass blades with an unusual dentition of a pair of long procumbent lower incisors occluding more typical chisel-like upper incisors. The clipped grass is manipulated with a very long tongue through a gap (diastema) to be ground on the back molars. Grasses are rich in silicates and grind down teeth like chewing on sand. All mammalian grazers have some adaptation to cope with tooth wear and these kangaroos have a system of attrition of the worn out front molars to be replaced with new ones from the back of the jaw. Unlike the ruminant livestock with whom they are said to compete, these kangaroos do all their chewing after cropping. There is no regurgitation and further chewing (rumination) as in ruminants. One in the mob rises up and displays a curious pumping motion with its fore-arms. This is merycism, where a bolus of usually coarse and dry food is regurgitated and swallowed to free a passage through the foregut.

The bolus of chewed grasses is passed into a foregut fermentation system which has some analogies to the anatomical and functional divisions of the complex stomach of ruminants. However, these kangaroos have a nifty groove which passes easily digested low fibre contents down to the hind-stomach while the high fibre contents are held in the fore-stomach for fermentation and breakdown by micro-organisms. Sheep and cattle do not have this bypass and feeding is halted by the filling of the forestomach when the diet is of poor quality and very fibrous. Their microbes receive a richer, albeit chunky, soup to ferment which may contribute to the now very uncouth methane belching habit.



A photograph of a kangaroo sitting upright in a grassy field. The kangaroo is facing the camera, with its front paws resting on its chest. The background is a blurred natural setting with green grass and some brownish vegetation. The text is overlaid on the top right of the image.

The harvesting of kangaroos will not eventuate in livestock being replaced by kangaroos as the pastoralists' livestock of choice

Amidst this tranquil scene there is exuberant activity as the young - banished from their mothers' comfortable pouches after nearly a year - find their feet. To my right, a female joey is hopping around her patient mother, making high leaps and swift changes in direction by throwing out the large rudder of her enormous tail or pivoting on the tips of her toes. And what toes they are - eastern greys are members of the diverse *Macropus*, or 'big-footed', genus of kangaroos and brush-wallabies. The kangaroo's physique and hopping gait provides an incredibly energy efficient means of locomotion - ideal for covering long distances at a steady pace when food is scarce and widely distributed but also excellent for short dashes when danger threatens. It seems that it's an essential part of the toolkit if you want to live in this part of the world.

It's a vulnerable time for this joey. There may be a dingo lurking in ambush or a wedge-tailed eagle diving out of the sun. Despite these threats, she and her mother have chosen to stay in the zone between the open grassland and the protective eucalypt woodland, away from the rest of the mob. This may be because the mob tends to scatter in a mad rush when under attack - fine if you're an adult but potentially disastrous if, in the confusion, mother and sucking young become separated. Far better to stick together, come what may.

The challenges of disease control and hygiene regulation are exacerbated by the scale of the industry, the remote locations where harvesting takes place, and the conditions under which harvesting occurs.



The **protective pouch**, now vacated, is another key part of the kangaroo's armoury. Being a marsupial, most of this joey's growth and development was in the mother's pouch, tapped into the milk supply, rather than an umbilical cord in the womb. She was able to peek out and sample her mother's world and make brief excursions back and forth from the safety of the pouch. This contrasts with other grazing mammals, dumped on the veldt or prairie, to cope with predators and climate vagaries immediately on birth. Even now that our joey has permanently vacated the pouch, her mother continues to supply her with a final ration of lipid-rich milk from an elongated teat in her pouch. But her mother is not solely devoted to this boisterous daughter as she is perpetually pregnant. The pouch already has another occupant suckling on a different mammary gland supplying a more balanced milk of carbohydrates, proteins and lipids. This is generation two in a queue of three. The youngest is a 100-cell blastocyst in diapause in the uterus.



Another aid to survival is in the way mothers rear the sexes differently. Come weaning, the female joey I'm watching will be welcomed into the mob, closely associating with her mother and other female relatives. But on my left is a battered mother. No it's not time to call out the kangaroo carers! She has a son, and her ears and head are a tempting target for a bit of hit-and-hop sparring as he does his circuits. As an adult he will leave the mob and roam. He'll switch sparring partners from pummeling his mother to a range of other sized males keen to hone their skills, assess his and, if deficient, keep him out of the mating game. He will grow through life, and if he survives all the many hazards along the way, he will be more than double the mass of the females in his age cohort. Upright he will tower above them and his long muscular forearms will play a deadly role as he seeks a brief and glorious dominion amongst males over mating rights in the mob.



To fuel the rapid post-weaning growth and dispersal, a mother allows her son to suckle more than a daughter, often draining her own reserves so much that her next offspring fails to reach weaning. Even so, sons will eventually leave home, causing no further burden, while daughters will continue to graze on the maternal pasture, leaving less food for their mothers. It seems there's a cost for the mother with both methods of rearing young.

I'm mellowed by the gentle nature of the mob intent on filling their substantial gut as the sun dips crimson to the horizon. My observation time is almost over but the mob will forage through to a midnight nap after a day lazing in dappled shade. Foraging mostly at night is another adaptation for coping with the heat of the day and perhaps past human hunters. Both sexes intermingle without rancour. Entranced males, led by the gargantuan alpha roo, relentlessly cruise around the females, seeking out a perfume of oestrogens from the cloaca and urine that signals oestrus and receptivity to a mating attempt. While the hopefuls look on, the alpha male uses a language of gentle clucks to seduce the females, warning off rival males with harsh grunts. These superfluous males form a team of reserves should the top roo come to harm or not pass a female's way.



The flexible breeding strategy and social organisation ensures the mob's persistence in the unpredictable and harsh Australian bush. When times are tough there is always a generation of young in reserve to recruit when it rains. Males can segregate from females and take on the taller ranker vegetation to serve their greater bulk and opt out of the mating game for a time. Females, safe in the collective vigilance of their kin, continue to crop a short grazing lawn maintained by themselves, and smaller wallabies and wombats. This is a specious dense mat of grasses and herbs; biodiversity at its best. The plants weave a blanket that has protected thin and ancient soils before ploughs and trampling hooves harrowed them.

But despite their peaceable nature and superb adaptations for life in a dry landscape, Eastern grey kangaroos, like so many kangaroo species, are regarded as outcasts in their native Australia. They are largely unwelcome in a landscape fragmented by urbanisation, agriculture, horticulture, forestry and pastoralism. We are repeatedly told there are too many of them – plague proportions; never not enough. They are said to have been favoured by expansion of the grasslands as woodlands were felled and cleared. Farm dams and bores supplying stock troughs provide them with reliable water. Predators, like dingos, are strongly suppressed. But the reality is that native grasslands are now threatened ecological communities, invaded by weeds and introduced grasses for livestock or ploughed under to grow monocultures of grains and oilseeds. The water resources are over-exploited and largely diverted to water-hungry human uses. Rain rapidly runs off barren and degraded landscapes rather than ponding and soaking into wetlands as in more pristine areas. Even the modest-sized camp follower, the dingo, has lost out to genetic introgression from domestic dogs. Of these, much larger and more ferocious hunting breeds have been introduced and ‘lost’ in the bush to ravage both wildlife and livestock.



Worse still, kangaroos have also become the scapegoats for human-induced damage to the natural landscape.

From my vantage point, the Blowering Reservoir valley is clearly visible, its lower reaches punctuated by the willows, briars, blackberry bushes, and thistles introduced by colonial European farmers. Such exotics have overrun large areas of quality grassland across the country, driving out the wild grazers, such as kangaroos and emus (which are sometimes blamed for the spread of the invasives). When these wild grazers then forage on people’s lawns or as in the case of the capital city Canberra, invade the spacious green areas surrounding the nation’s monuments, they are treated as pests and culled. In a recent measure, hundreds of kangaroos marooned on remnant grasslands were felled with tranquillisers and despatched with lethal injections. Here real estate values ruled the roo.



The Australian tribe has largely rejected kangaroo meat for daily consumption and about 80 percent of consumption still goes down the maw of carnivorous pets.

Such persecution has made kangaroos wary of humans, which becomes evident as I move quietly through the mob to my car at the end of the day. Despite taking careful steps, I am almost instantly detected, the unique double-foot tap of the grey kangaroo sounding out as the wary mob flees my presence. The bolder males soon pause to watch me, while mothers and young race for the protective cover of the trees.



It is a fear rehearsed over 50,000 years, since the first aboriginal hunters began stalking and killing kangaroo prey on foot. But recent decades have seen a massive increase in kangaroo hunting, first as pest control then by turning it into a commercial industry and beyond the national park's protective boundaries, the eastern grey has even more reason to be vigilant. In the local commercial zone a quota of 15% of the Eastern grey population is offered to licensed shooters, anomalously dubbed 'trappers' by the regulatory authority in a throwback reference to the fur trade. In 2008, for example, over a million Eastern grey kangaroos from New South Wales and Queensland were killed for meat and skins.

The regulators of this commercial industry have rebadged a pest as a sustainable resource. This was convenient as they never deployed the personnel to audit whether 'pest reduction' was achieved anyway, given the vastness of Australia's agricultural and pastoral zones.

Their decision has been buoyed by scientific advocates that claim Australia needs 'sheep replacement therapy' to restore the rangelands and kangaroo should be the red meat of choice. Thus markets for the human consumption of roo have opened nationally and internationally for an industry which once solely produced pet meat. Sounds like win-win, or is it?

Firstly, the yield from a wild harvest is far too low to satisfy the country's red meat consumption. The average kangaroo is 25 kg not the 40 kg of sheep or hundreds of kilogram of a bullock. Four species – Red, Eastern grey and Western grey kangaroos, Common wallaroos – form the commercial kill but in reality the offtake is dominated by two, Red and Eastern grey kangaroos. Common wallaroos are too small and their habitat inaccessible and male Western grey kangaroos have a taint (like boars and billy goats) making them less attractive as meat for people. Apart from some wallabies in Tasmania, the commercial industry operates in only four of the seven mainland states and territories and only Red kangaroos are common to all. The others deem their kangaroo population too small to sustain a commercial harvest or it is reserved for indigenous use.

Furthermore, Australia feeds more than its own modest population through valuable export industries from livestock traditional to the majority, non-indigenous population, hailing from European herders. The Australian tribe has largely rejected kangaroo meat for daily consumption and about 80% of consumption still goes down the maw of carnivorous pets.



Most consumers misunderstand the source of kangaroo meat and think they are farmed. They don't hear the forlorn calls of another young-at-foot orphaned as its mother's brain is pulped by a high-powered bullet piercing through the glare of the spotlight.

They don't see the pouch young yanked out, its skull bashed in, and the carcass thrown in the bush. Its mother is beheaded, dismembered, gutted and hung on a hook to travel uncovered through the night to a chiller (refrigerated container). Sure the industry follows a code of practice to ensure the target kangaroo is killed almost instantaneously by a shot to the head but the by-catch from the perpetually pregnant females is largely ignored. The code is never policed at the point of capture; rather it is only after the kill when the carcass is delivered to the chiller. So this is a wild harvest conducted largely at night out of the public's gaze. Traditional farming is not possible because of the very adaptations that give kangaroos their survival skills. They don't form herds. They cannot be mustered but rather scatter, not coalesce, when driven. They are easily stressed when captured and highly prone to debilitating injury when confined by barriers and thus cannot be live transported. An industry based on an offtake of 'surplus males' would avoid the main issues about inhumane treatment to female's offspring. The much larger males yield more meat and skin and selection could be by the simple expedient of a size limit higher than the average female weight. Most of the industry already operates with a minimum size limit. Such an industry would be smaller but could target a more lucrative game meat market with value added to an exclusive product.





Image: David B Croft

In our reality check we need to remember that the commercial industry evolved from pest management not the equitable taking of a valued resource.

They are the last to dissuade their clients, the farmers and graziers, that kangaroos are not pests or should not be reduced to meet natural resource management targets for grazing pressure. After all they then get the kangaroos for free apart from a very modest levy paid to the industry regulator. While kangaroos remain a pest in the minds of the landholders and shooters, humane treatment slips to irrelevant. Not one sheep or cow has been removed from Australian farms because people are now served up kangaroo at the supermarket or restaurant. In fact, the cattle herd in Australia continues to grow and the sheep herd has only diminished because the value of wool has declined and drought has taken its toll on productivity.

Kangaroos as always are just scapegoats for mismanagement and their killing is no salvation for the environment.

So why are Australians, who mostly live in cities on the coastal fringe of the continent, indifferent to the kangaroo's plight? Well when we venture off the beaches and into the hinterland, we take our beloved car. When car meets roo on the highways and byways, the crash repairers profit and the dead or maimed kangaroo takes the blame. Thus as I take to my car, I proceed with caution along the Snowy Mountains Highway that connects Canberra to its winter playgrounds in the snowfields and summer beach houses. This road is a notorious hotspot for roadkill. The adaptations and behaviour of the gentle herbivores of the mob again put them at a disadvantage when car meets kangaroo in a metal-bending collision. Here the driver, usually travelling at high speed, with variable attentiveness and reaction time meets the kangaroo. The latter suddenly manifests with its unpredictable behaviour as it's confronted with the complex configuration of light, sound and movement from a vehicle. Various forward-reaching sound and light stimuli have been developed to ward off the wildlife but research has shown a minimal increase in the predictability of animal behaviour in advance of a vehicle. The jinks and switchbacks of a kangaroo in flight have served them well in avoiding the predators with which they evolved. Country roads are poorly engineered, shedding water to a frequently mown verge, maintaining highly attractive lawn-like vegetation drawing kangaroos to the road edge. Ultimately the substantial road toll for kangaroos is a result of drivers behaving badly. After all the greater intelligence resides with the driver not the roo facing the juggernaut of an oncoming vehicle arriving at high speed.



As I meander back to Canberra, enchanted sleek grey bipeds spring into the concealing umbra of the hinterland. Indigenous Australia accepted them as teachers about living in a landscape in which they have evolved from ancestors 16 million years ago.

Modern Australia seems indifferent to a collapse of more than 60% of the population of eastern grey kangaroos as the unrelenting drought of the new millennium desiccates the wide brown land. If our best adapted species are in such decline then where is the resilience in our environment?



And yet I don't despair, for the kangaroo is the ultimate survivor. As I pass by, a lonely roo rises up on a war memorial lawn, perhaps marking his own kind's battles against the battues and kangaroo dogs of the colonists. As for climate change, it seems a small obstacle for a species that has survived for millions of years over a staggering range of latitudes, currently inhabiting landscapes from Northern Tasmania to Cape York in Queensland. Rather than lose hope, we should celebrate the kangaroo's successful occupation of Australia's most challenging terrestrial ecosystems, its resilience to the country's climatic extremes, its athleticism, its careful conservation of energy and water, and its individualism within the rich social grouping of the mob.

We should also reflect on its vulnerability to the rapid environmental degradation of our anthropogenic making. This deeper understanding of the species might help us to tread more lightly on the Australian continent, following in the lengthy footsteps of these marvellous marsupials.

Harvesting removes the largest and therefore fittest kangaroos (whether male or female) from the population – the ones most likely to survive extreme climatic conditions and other detrimental unpredictable events.





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