

Are We Ready to Reinvent the Way We Think about our Koala Industry?

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Abstract

A number of key issues need to be addressed to maintain and enhance our nation's \$1.1 billion koala industry. To cope with the key challenges ahead, namely the issues of sustainability, global warming and an unknown economic future, we need to combine expertise in koala management with carefully considered long-term plans for koala conservation.

A sound knowledge of koala husbandry will become increasingly important in the years ahead, as we work to increasingly combine koala conservation with koala management. We urgently need to increase the pool of staff with the appropriate education and skills, to increase the level of professionalism in the koala industry. We also need to ensure that the appropriate infrastructure is in place for the long-term success of this industry. And, most importantly we need to reinvent the way we think about koalas' diet, which is affected directly by each of these challenges outlined above. Diet and housing in particular has a direct effect on the animals' behavior and well-being, which in turn has a direct economic correlate for the industry.

Sustainable tree planting, community and council involvement and increased knowledge must all be part of the long-term vision for this industry, allowing local residents to increase their connection with the natural world around them.

1. How big is the koala industry?

As a world famous national icon, koalas have a key role in our tourism industry. Dr Stephen Jackson (2007) places koalas as the number one species that visitors want to see, closely rivaled by kangaroos, and estimates that koalas contribute more than 10% of our national tourism revenue. This is additional to their important role as ambassadors for Australia and our unique way of life.

A 1996 survey commissioned by Australian Koala Foundation and undertaken by Tor Hundloe (University of Queensland) and Clive Hamilton (Australian Institute in Canberra) looked at the value koalas have on the Australian tourism market. The outcome also showed that koalas were contributing more than 10% per cent of the national tourism revenue. When we consider that tourism at the time was a 16 billion dollar industry, this translates into a \$1.1 billion contribution and over 9000 jobs generated from koalas alone.

The Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) census gives some idea of the importance of koalas to Australian zoos. The census shows that a total of 85 Australian zoos currently hold this species. Koala is the most commonly held mammalian species in major Australian zoos, closely followed by the echidna and the red kangaroo. Only the emu occurs in more institutions than the koala. However, in terms of numbers, there are nearly three times as many koalas as emu in Australian zoos. This is despite the fact that keeping koalas in zoos is both time-consuming and expensive. Their popularity justifies the expense.

2. Key issues in the industry

A number of key issues need to be addressed to maintain and enhance our nation's koala industry. Many of these issues are linked to the choices and challenges that our nation currently faces in terms of the issues of sustainability, global warming and an unknown economic future.

Sustainability of koala food sources is an issue that needs urgent attention. There are over 600 different type of eucalyptus, and koalas are known to eat leaves from only around ten percent of these. Within their local area, koalas usually rely on only about 20 Eucalyptus species as their primary food source. With increasing threats from land clearance, wildfires, etc. we need to build a viable and reliable source of food for our koalas in captivity, providing different options of food choice.

With today's increase in environmental awareness also comes responsibility to curb some of our human destruction and nurture our environment. Habitat destruction and fragmentation affects several species (including koalas) by dividing populations, removing food and shelter, and leaving existing populations more exposed to feral predators. Habitat enrichment from the planting of trees may provide a solution which can improve the environment by achieving wildlife corridors, decreasing erosion, reducing noise and recycling some of the CO₂ which is leading to global warming. Colonies in the wild need extensive corridors of trees to access the eucalypt species that they need to survive.

Global warming for instance has direct relevance to the nutrient value of koala feed, further research is needed to find out more. We also need to study the different age, texture, and growth rates of eucalyptus leaves and whether nutrient levels increase or decrease according to the health of the tree itself

To cope with the issues we are confronting, we need to combine expertise in koala management with carefully considered long-term plans for koala conservation. Luckily the popularity of koalas makes the species an excellent educational tool for increasing public awareness of conservation issues. Captive koalas in zoo are excellent ambassadors for other threatened species that also highlights habitat loss.

3. Animal husbandry

There is a growing need to close the gap between koala conservation and koala captivity management. We must work to balance the interests of humans, plants and animals. Good animal husbandry needs to promote the display, well-being and conservation of the species plus optimum diet.

In the future, we need to develop a long-term plan for diet and husbandry to reduce cost, increase income and enhance the well being of animals by:

- providing an enriched base diet
- delivering higher quality leaves, increasing nutrient value
- developing a mental and physical enrichment program
- enhancing the relationship between keeper and koala
- reducing the risk of diseases and infections
- solving problems early.

4. Diet

Koalas (*Phascolarctos cinereus*) are highly specialised, tree dwelling marsupials. They feed on foliage, mainly *Eucalyptus*. The distribution of *Eucalyptus* species varies tremendously between (and within) different Australian states and Koalas have evolved to utilise Eucalyptus trees as their source of food. Koalas have been known to change their eating habitats, usually under stressful conditions to adapt to non eucalyptus trees, such as Melaleucas, Acacia, conifers, Casuarina, Banksia, and Lophostemon.

There are over 600 different types of *Eucalyptus*, and koalas are known to eat only around ten per cent of that figure. This ten percent is known as their basic food source, and within that basic source only a small number are referred to as their preferred food trees, and when harvested, not all trees will be at optimum palatability (TIP). “Tip” is the term for juvenile leaves at the top of a tree, which turn to yellow reddish in colour. From time to time individual koalas may consume the foliage of other eucalyptus as well as non-eucalyptus species.

Koalas in captivity when given the choice are visibly motivated towards juvenile leaf and appear to crave it in preference to the mature leaf. Koalas have highly efficient digestive systems and therefore can handle a high fibrous diet such as eucalyptus leaves with low nutrient levels.

Leaves can be sourced from either plantations or collecting in the field, and the different sources need to be evaluated in terms of cost, reliability, nutritional value etc for the long-term future of the koala industry.

5. Professional training

Staff involved in managing koalas need to be equipped with the knowledge to develop infrastructure to support the well-being and display of the animals. They also need education on koala behaviour, for health and safety and optimum display, with specialist knowledge of koala dietary needs.

Whilst TAFE courses can provide a basic understanding of animal husbandry, individuals need to enhance their own learning and skills by tapping into the experience of zoo keepers and researchers.

6. Long term vision.... Reinventing the future

The way forward must be to combine captivity management with conservation. We need to develop sustainable businesses that benefit the community and works towards ensuring the long-term survival of koalas. This involves looking at the whole picture, including planning the species' food sources for the future and educating both children and adults to ensure that the best interests of these animals are supported.

I am director of an organisation called *Koala Retreat*, which offers a professional service for wildlife parks and zoos. *Koala Retreat* is a business that supports koalas by providing specific services to promote their display, well-being and conservation, while educating the general public through our tree planting program and promoting koala conservation. Meanwhile we are slowly introducing our *KR Environmental Wheel*, presenting the whole picture of our long-term vision.

The following diagram summarises what we see as the way forward for the future.

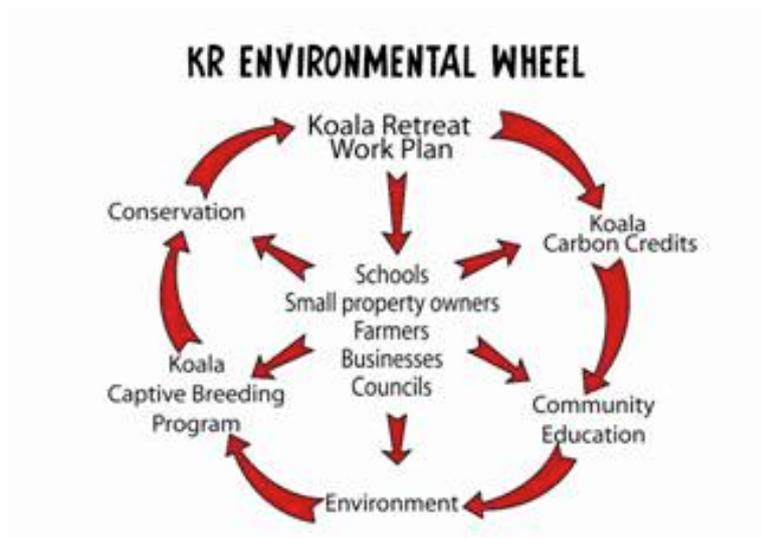


Figure 1. Koala Retreat's environmental wheel

Koala Retreat will provide a sustainable business that benefits the community and works towards ensuring the long-term survival of koalas.

It aims to do this by using Australian natural resources, by understanding koalas' relationship with Eucalypts and by taking advantage of the animal's natural appeal within the local and tourist community.

Enhanced enclosure design is the part of the long-term program that completes the picture, and is a natural progression from the dietary and husbandry programs. KR aims to pushing the boundaries in koala enclosure design by utilising air space more than land. Our designs focus on a more naturalistic theme whilst still providing an experience that excites human emotions. These designs originate from our understanding of koala behaviour, and allow contact without touch and disturbance.

Koala Carbon Credits (KCC) is our latest addition in the fight towards saving Australian flora and fauna. This unique program successfully addresses two key issues: offsetting our carbon emissions and maintaining our koalas.

We recognise that by making simple changes in our lifestyles and taking actions such as planting trees we can offset some of the carbon we emit. Planting trees also has the benefit of increasing natural vegetation for animals and helping soil quality. The more trees and shrubs we plant the less pressure on our natural resources and by getting community, business, schools and council involvement we can improve social issues currently facing the community. In Australia we have our own problems, being the driest continent on earth. At present we are seeing the lowest rainfalls to date and experiencing bigger and longer bush fires which destroy homes and livelihoods.



Figure 2: *Koala Retreat's* tree planting program at Western Sydney International Dragway

The diagram below presents an overview of the key features ('cogs') turning the wheel for progress in the short term, for many organisations.

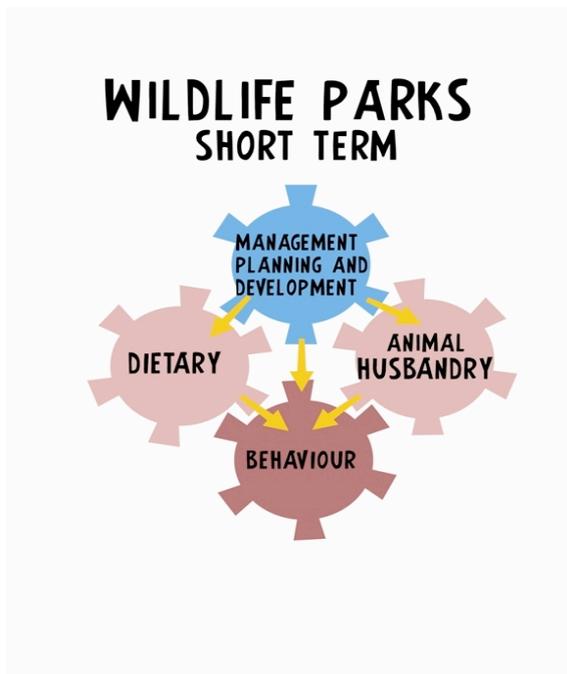


Figure. 3: *Koala Retreat's* short term vision

The addition of some key further elements offers huge scope for change and development of the industry in the long term. This is the vision that *Koala Retreat* is working towards.

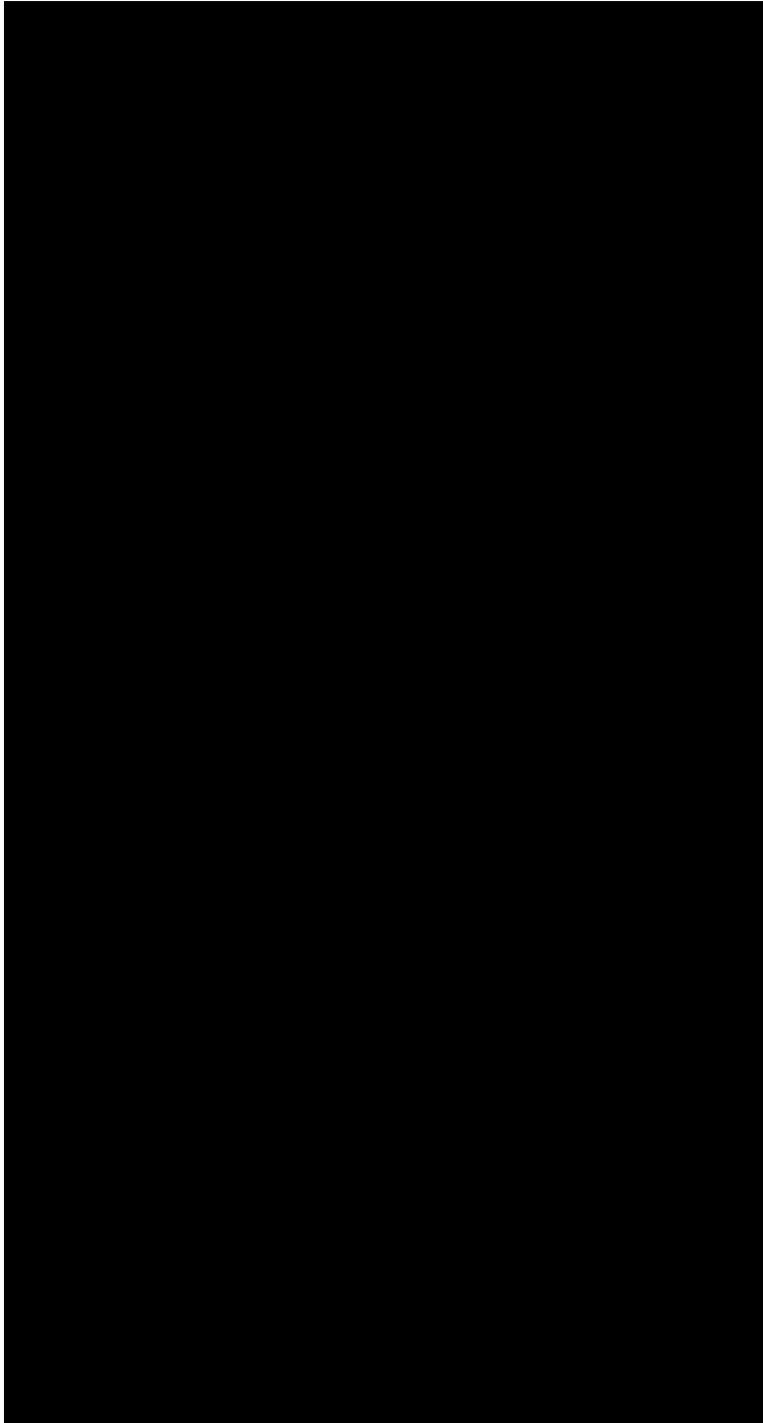


Figure. 4: *Koala Retreat's* long term vision

9. References

- Bradley K. Private communication 2007.
- Cork S.J , Catling PC. 1996. Modelling distributions of arboreal and ground-dwelling mammals in relation to climate, nutrients, plant chemical defences and vegetation structure in the eucalypt forests of southeastern Australia. *Forest Ecology and Management* 85, 163–175.
- Cork SJ , Hume ID. 1983. Microbial Digestion in the Koala (*Phascolarctos cinereus*, Marsupialia), and Arboreal Folivore; Accepted March 1 1983 *Journal of Comparative Physiology. B*; 152: 131-135.
- Cork SJ. 1986. Foliage of *Eucalyptus punctata* and the Maintenance Nitrogen Requirements of Koalas, *Phascolarctos cineveus*. *Aust. J. Zool*, 34, 17–23.
- Cork SJ. 1996. Optimal digestive strategies for arboreal herbivorous mammals in contrasting forest types: Why Koalas and Colobines are different. *Australian Journal of Ecology* (1996) 21, 10–20.
- Cork SJ. Private communication 2007.
- Cork SJ, Hume ID, Foley WJ.. 2000. Improving Habitat Models and their Utility in Koala Conservation: CSIRO Wildlife and Ecology, *Conservation Biology*, Vol 14 No. 3 June 660-668.
- Dearing MD, Cork SJ. 1999. Role of detoxification of plant secondary compounds on diet breadth in a mammalian herbivore, *Trichosurus- vulpecula*, *Journal of Chemical Ecology*, Vol. 25, No. 6, 1999
- DeGabriel JL, Wallis IR, MooreBD, Foley WJ. 2008. _ A simple, integrative assay to quantify nutritional quality of browses for herbivores. *Oecologia* 156:107-116.
- Department of Environment and Climate Change NSW. 2008. Recovery Plan for the Koala, November 2008 114.
- Foley W. Private communication 2007, 2008.
- Jackson S. 2007. Koala, Origins of an Icon. 323p.
- Jackson S. private communication 2005, 2006, 2007, 2008.
- Marsh K J, Wallis IR, Foley WJ. 2007. Behavioural contributions to the regulated intake of plant secondary metabolites in koalas. School of Botany and Zoology, Australian National University, Canberra, Australian Capital Territory 0200, Australia
- Martin R, Handasyde K. 1999. The Koala. University of New South Wales Ltd Sydney 2052, First Edition 1988, Reprinted 1996, Second edition 1999. 132p.
- Moore B D, Wallis IR, Marsh KJ, Foley WJ. The role of nutrition in the conservation of the marsupial folivores of eucalypt forests. In "Conservation of Australia's Forest Fauna II" Ed D. Lunney, Royal Zool Soc NSW, Mosman (in press).
- Zorich M. 1999. The Enigma. Unpublished.