FAUNA

SECRETS OF KANGAROO HERBIVORY

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While working for our industry partners, Alcoa Australia and Worsley Alumina Pty Ltd, our job was to quantify something mine rehabilitation officers had observed for some time. Kangaroos were changing the makeup of restored lands by selectively browsing young nutritious seedlings. They seemed to like some species, while being put off by others. Unfortunately nothing was in print on the topic, so few people outside the profession were aware of what was happening. Our test was simple and fairly common among herbivory studies.

We constructed kangaroo-proof fences (exclosures) and selected 24 common, but contrasting, species and planted 64 replicates of each species inside and outside each fence to compare the effects. We expected plants outside the fences be smaller or die. We were in for some surprises when we learned it isn't that simple. The results were startling. We found that some plants outside the fences were browsed to the ground while other plants showed signs of heavy browsing, but were actually larger in terms of both weight and height. Instead of doing a community-level study we were forced to look at each species individually and determine what factors caused kangaroos to be more selective about certain plants, and consequently why some plants were devastated by the damage while others appeared to thrive on it!

After working for an entire year and monitoring which plants were eaten and which were avoided, we harvested the plants and undertook chemical analyses on each.

What did the eaten plants have in common? It appears that plants were not chosen for protein content as might have been expected, while almost all of the severely damaged plants tended to be grass like in appearance (as seedlings) even if they were not true grasses. The least eaten plants had higher levels of salts and tannins.

We then wanted to know if the factors that contributed to our results were actually due to their chemical content. We did cafeteria trials (taste tests with a range of foods) with kangaroos at a wildlife sanctuary in Boyup Brook to find out.

To our delight, the results were the same as for the studies on the minesites. Pellets with added salts and tannins were avoided just like for the plants, leading us to make some generalizations about which species will be selected. However, the limited knowledge we have is not very helpful in solving the big problem - deterring kangaroos from restored patches entirely. It appears kangaroos are very intelligent, organizing themselves into mobs with elected sentries and scouts and follow a pecking order. The scouts are able to find the preferred food and inform the rest of the mob where it is, while the sentries stay alert for danger, but that's another story altogether.

Cafeteria trials involving kangaroos

Table 1: Plant species most eaten, least eaten and species that over-compensate (benefit from being eaten) by kangaroos

Most eaten plants	**Least eaten plants**	**Over-compensators**
Xanthorrhoea spp.	*Acacia alata*	*Acacia alata*
Tetraria capillaris	*Hakea amplexicaulis*	*Acacia urophylla*
Viminaria juncea	*Hakea ruscifolia*	*Viminaria juncea*
Notodanthonia caespitosa	*Eucalyptus marginata*	

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If you would like to share your experiences regarding the feeding behaviour, preferences or deterrence of kangaroos, Michael is keen to hear from you. He can be contacted at Michael.Parsons@student.Curtin.edu.au.