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ADAPTIVE MANAGEMENT OF KANGAROOS ON RESERVES IN SOUTH AUSTRALIA

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ABSTRACT: On land set aside for nature conservation, excessive levels of herbivore grazing pressure can have negative impacts on biodiversity, and active management of total grazing pressure can be required to facilitate ecological restoration. Experience from the Flinders Ranges National Park in South Australia shows that complete removal of domestic stock, and effective management of feral herbivores (e.g. rabbits, goats), will not necessarily result in improvements to land condition (Alexander 1997). In these situations, reduction of kangaroo populations can also be required to meet restoration objectives.

Two species of large kangaroo (Western Grey Kangaroo, *Macropus fuliginosus* and Euro, *M. robustus*) are currently being culled as a component of ecological restoration programs on three conservation reserves in South Australia: Flinders Ranges National Park, Coffin Bay National Park and Para Wirra Recreation Park. All three reserves have integrated control programs for feral herbivores, and vegetation monitoring programs that suggest kangaroo grazing pressure is negatively impacting on native vegetation. Animal welfare requirements are met by ensuring that all kangaroos are culled in accordance with the *Code of Practice for the Humane Shooting of Kangaroos* (Environment Australia 1990).

Uncertainty is an inherent component of ecological systems, and in these systems, we are uncertain about the relationship between kangaroo density and the desired ecological response. We favour a trigger-point model to explain this relationship, under which the ecological response to culling is minimal until kangaroo populations are reduced to a specified target (or trigger-point) density. Due to the uncertainty involved in this model, programs are managed via an adaptive management cycle. This approach allows us to learn about the system as we manage, and refine future management based on information that is learnt.

We evaluate the success of each program over the last five years, and make recommendations for future management. As recovery of native vegetation in response to reductions in herbivore grazing can take up to 10 years (Alexander 1997), we define success as the extent to which culling has reduced kangaroo populations towards target densities, using results from annual kangaroo surveys conducted on foot using line transect methodology (Buckland *et al.* 2001).

Across the three reserves, kangaroo populations have shown a variable response to culling. On the reserve that is located on a peninsula (Coffin Bay), where rates of immigration into the reserve are low, culling has successfully reduced the population to the target density. On the reserves surrounded by pastoral leases (Flinders Ranges) or patches of native vegetation (Para Wirra), culling has been less successful at reducing kangaroo density. In these situations, amendments to the culling strategy may be required to maximise success. Targeting a culling strategy towards females may increase success through a greater impact on the population's rate of increase. Similarly, engaging in partnerships with neighbouring landholders may also increase success, by reducing levels of immigration onto reserves.

Preliminary information on ecological response suggests higher recruitment of indicator species such as native grasses in areas that kangaroos are culled, when compared to areas that are not culled. Ecological response will continue to be monitored, with necessary amendments to target densities and culling strategies made in response to information that is learnt.

REFERENCES

- Alexander, P. 1997. Kangaroo culling, harvesting and farming in South Australia – an ecological approach. *Australian Biologist* 10: 23–29.
- Buckland, S.T.; Anderson, D.R.; Burnham, K.P.; Laake, J.L.; Borchers, D.L. and Thomas, L. 2001. *Introduction to Distance Sampling – Estimating abundance of biological populations*. Oxford University Press, Oxford, UK.
- Environment Australia. 1990. *Code of Practice for the Humane Shooting of Kangaroos*, 2nd edition. Available online at: <http://www.deh.gov.au/biodiversity/trade-use/wild-harvest/kangaroo/practice.html>.