

ACT Government response to the

Review of eastern grey kangaroo counts and derivation of sustainable density estimates in the Australian Capital Territory, April 2014.

Key conclusions and recommendations	Government comment/response
<p>Conclusion/Recommendation 1</p> <p>The logic and evidence underpinning the Kangaroo Management Plan (KMP) is valid but the conservation culling components of the plan are properly adaptive and will be refined as the results of current research and monitoring reduce uncertainty about key parameters such as target densities.</p>	<p>Agreed: The KMP presents the ACT Government policies on all kangaroo issues and was commended in a previous external review. The application of the adaptive management concept is discussed in the KMP. In particular, the KMP anticipates the preparation of subsidiary documents, such as 'Calculation of the Number to Cull' at www.environment.act.gov.au which will be revised as often as needed to adapt to changing information and circumstance relating to the application of policy.</p>
<p>Conclusion/Recommendation 2</p> <p>Unmanaged kangaroo populations reduce the biomass of ground-layer vegetation which has adverse impacts on some other native species. Therefore culling kangaroos is a valid management action. The current management ensures sustained populations of kangaroos at densities that purport to allow more vegetation and more secure populations of threatened native species.</p>	<p>Agreed: This supports policy 5.3.1 (g) on p. 110 of the KMP. The ACT Government will continue to monitor, manage and undertake conservation culling on high priority reserves to protect ground-layer vegetation and dependent fauna, as required and where resources are available.</p>
<p>Conclusion/Recommendation 3</p> <p>There is published evidence that the current target density of kangaroos (set by modelling at 1 per hectare) does benefit other native plants and animals but managers recognise there are gaps in understanding the details of how temperate grassland ecosystems work as components of it (mostly kangaroo numbers) are manipulated. Current projects conducted by ACT staff and PhD studies underway at ANU should fill some of these knowledge gaps.</p>	<p>Agreed: The ACT Government will continue to build on existing research and monitor new, emerging research both by ACT Government staff and external researchers.</p>

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<p>Conclusion/Recommendation 4</p> <p>One key question is whether the density of 1 kangaroo per hectare is the ‘correct’ target for all times, all nature reserves and under all environmental and biological conditions. We suspect it will be too high (100 large herbivores per km² is still a very high density relative to other systems and species, and certainly constitutes no threat to the sustainability of the kangaroos). The results of an ACT project currently being conducted will help identify whether the average density set is the best or at least within the optimal range of densities.</p>	<p>Noted: The term ‘1 kangaroo per hectare’ is an abbreviation for the formula given in ‘<i>Calculation of the Number to Cull</i>’. The target is <u>not</u> 1 EGK/ha ‘for all times, all nature reserves and under all environmental and biological conditions’. The formula requires the target EGK density to be scaled in proportion to percent canopy cover, with 1 EGK/ha where there are no trees, 0.9 EGK/ha in Open Woodland, 0.5 EGK/ha in Woodland and 0.1 EGK /ha in forest and Open Forest. Therefore the target density produced by the formula is already unique to each reserve because of differences between reserves in the proportion of Grassland, Open woodland, Woodland, Open Forest and Forest (i.e. the target is the same for each vegetation type).</p> <p>The policy in <i>Calculation of the Number to Cull</i> requires an experienced ecologist to adjust the target density produced by the formula according to seasonal factors and circumstances specific to particular reserves. Examples of reasons for such adjustment are given in the aforementioned document. For this reason the target is not the same for all seasons.</p>
<p>Conclusion/Recommendation 5</p> <p>Each nature reserve is a sort of habitat island with a variety of assets and threats, with varying degrees of connection between the reserves. The KMP might be supported with a set of individual site plans, with kangaroo management as but one action within each plan. Site-specific monitoring will allow management to be fine-tuned.</p>	<p>Agreed: Individual Reserve Operations Plans (currently in draft form) for each nature reserve in Canberra Nature Park will contribute to this recommendation for a set of individual site plans.</p>

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<p>Conclusion/Recommendation 6</p> <p>ACT managers have two options to lead to this site-based approach:</p> <p>(i) They can nominate a number of nature reserves to be managed to allow the rare native species to be maintained with resilient populations and achieve it as efficiently as possible (cost minimisation); or</p> <p>(ii) they can set a fixed annual budget and determine how many nature reserves can be effectively managed within the budget (benefit maximisation).</p>	<p>Agreed: The management response is in effect a combination of both options. Kangaroo management is delivered to a pre-defined budget, however a process of prioritisation is applied to site selections to ensure benefits accrue where they are needed most.</p>

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<p>Conclusion/Recommendation 7</p> <p>The methods being used to count kangaroos and estimate densities are sound, but we recommend the following four changes. (i) direct and sweep counts need more replication, (ii) uncertainties in components of direct, sweep and pellet count methods should be addressed in analyses, (iii) a team of trained professionals (i.e. staff and/or contractors) should be the core for all counts, although we acknowledge the wider social and public relations benefits of including volunteers, and (iv) the counts should be conducted as close as possible to the intended cull. Further, consideration should be given to conducting a second post-cull count perhaps six months later, at least in a subset of reserves.</p>	<p>(i) Agreed in principle: The additional replication is beyond current resources; however a trial has commenced which replicate sweeps on the same day and different days to assess the cost-benefit of additional replicates.</p> <p>(ii) Agreed in principle: More sophisticated estimates of uncertainty will be adopted as time and resources permit.</p> <p>(iii) Partly agreed: Some professionals are needed i.e. annual hire of casual staff who can be trained to help volunteer counts run well. Experienced staff at Conservation Research in the Environment and Planning Directorate have more than 25 combined years of experience working with volunteer counters and have determined a suitable mix of ratios of professional staff to volunteers (depending on the complexity of the site, the experience of the volunteers, and the level of technology available).</p> <p>(iv) Agreed: Counting is undertaken as close to the cull as practical. Whereas counting is conducted up to three years from commercial harvesting in nearby NSW, the time between counting and culling is less than one year in the ACT. Counting too close to the cull is risky due to possible delays from weather and other causes, thereby creating a risk of the cull not being able to proceed on schedule. Also, counting should be outside the season when young are emerging from pouches (October-March) and the season when mortality of young-at-foot reaches a peak (July-September). Therefore the previous April-June is the preferred season.</p>

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<p>Conclusion/Recommendation 8</p> <p>Sweep counts have several potentially significant problems, including traffic problems if kangaroos flee the counters. We recommend ACT consider either replacing this method with direct or walked-line transects, or if this is not possible to use core trained staff as above.</p>	<p>Disagreed: There are counter measures to avoid kangaroos being herded in to traffic.</p> <ul style="list-style-type: none"> • Kangaroos are naturally reluctant to be herded out of their site onto roads. • Sweeps are often run from opposite sides of a reserve toward the middle to reduce the risk of herding kangaroos onto roads. • Where the sweep runs parallel to a road, the last few people in the line are sent ahead (so the line of counters is not straight but crescent shaped) in order to move kangaroos toward the centre of the area and away from the road. • In some cases an experienced urban wildlife ranger is tasked with patrolling the high speed roads and can radio the count leader to stop the count if he/she perceives a threat to motorists.
<p>Conclusion/Recommendation 9</p> <p>It would be valuable to conduct a trial to compare the costs, accuracy, and precision of the four counting methods across different habitat types and kangaroo densities.</p>	<p>Agreed: A trial has been commenced with replicate sweeps on the same day and different days to assess the cost-benefit of additional replicates. The same trial is comparing cost benefit of the alternative methods. Results will be available in due course.</p>
<p>Conclusion/Recommendation 10</p> <p>The methods used to conduct kangaroo counts should be described in standard operating manuals that can be updated as required. This would ensure continuity for a program that will have to be sustained long after current staff have left.</p>	<p>Agreed</p>

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<p>Conclusion/Recommendation 11</p> <p>Publication of research by ACT staff and others should be facilitated because this work is potentially of high standard and of interest to a wider audience, as well as providing ACT decision-makers and other stakeholders with the confidence of peer review</p>	<p>Agreed in principle:</p> <p>Historically the Conservation Research unit had a higher publication output, however, senior staff had fewer responsibilities and more support staff at that time. Since then government responsibilities have increased and economies have been made.</p>