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## Comments on February 2017 Draft Controlled Native Species Management Plan – Eastern Grey Kangaroo

Dear Conservation Research Manager

Thank you for giving me the opportunity to provide the following comments on this draft management plan.

### 2.1 Background

It would be useful for the background section to summarise the history of kangaroo population management, including:

- predation by marsupial lions and thylacines;
- predation by humans and dingoes
- habitat change and biological competition since the mid 19<sup>th</sup> century, associated with the introduction of cattle and sheep
- cessation of predation by humans
- habitat loss resulting from rural and urban development
- cessation of predation by dingoes, due to available ecosystems becoming too small to support viable dingo populations, and/ or to hunting of dingoes
- predation by foxes
- culling

### 2.2 Purpose of the management plan

It would be valuable to explicitly state that the purpose and goals of the management plan exist within the context of the overall management of Canberra's ecosystems and open spaces, that management of those spaces will be affected by climate change, and that best practice management will accommodate the direct and indirect impacts of climate change.

### Responding to Climate Change

Management of kangaroos within the ACT's ecosystems and open spaces will need to respond to the changes that will be imposed on them by changing average temperatures, changing seasonal temperature ranges and changing rainfall patterns.

Climate change is predicted to cause 7.9% of species to become extinct<sup>1</sup>. This implies that by the end of this century the list of locally endangered or vulnerable species will grow substantially from its current number of thirty-four<sup>2</sup>, possibly to thousands.

1 Urban, M. "Accelerating extinction risk from climate change," *Science*, 01 May 2015: Vol. 348, Issue 6234, pp. 571-573: <http://science.sciencemag.org/content/348/6234/571.full>

2 See [Notifiable Instrument NI2016-265](#)

Changes to the ACT's ecosystems will mean that they will no longer be suitable for some species. If those species are unique to the ACT, they will either relocate or become extinct.

Those same changes will also make the ACT's ecosystems suitable for species that do not currently exist in the ACT, but whose current habitats will become unsuitable for them.

Canberra's open spaces can serve not only as locations where vulnerable species can survive in a stable climate, but also as corridors that can allow vulnerable species to migrate from habitats that are becoming unsuitable due to global warming, to new habitats that due to global warming are becoming suitable.

#### **4.3.3 (a) Methods of Culling**

Continuous culling of vulnerable individuals will most closely replicate the conditions under which the ACT's ecosystems have developed.

Predators such as thylacines, dingoes and human hunter-gatherers would hunt and kill kangaroos on a daily basis, for survival. This would provide a continuous supply of food for scavengers such as lizards, quolls, hawks and eagles.

If culling is carried out for only a part of the year, then those scavengers will have only limited access to kangaroo carcasses during the remainder of the year.

Methods of culling can influence kangaroo behaviour. They can directly cause kangaroos to prefer certain types of habitats – for example woodland or grassland – where they are safer from predators. This can result in heavier grazing of safer habitats and lighter grazing of less-preferred habitats. These preferences in turn will affect the number and nature of biota in preferred and less-favoured habitats.

Natural predators target vulnerable individuals, such as very young and very old kangaroos. This in turn influences kangaroo responses to danger, such as mature males staying with mobs, and mobs moving together.

Culling, for example with rifles, can preferentially select against mature kangaroos because they make easier targets, and can promote very different behaviours such as mob dispersal. These changes in turn can result in changes to kangaroos' preferred habitats, with resulting changes in grazing levels and biodiversity of preferred and less-favoured habitats.

#### **4.3.3 (c) Environmental modification**

Kangaroos live within the larger environment. They also act as habitats for smaller organisms.

Live kangaroos and their excretions provide habitat for organisms such as parasites. Kangaroo carcasses are a potential source of food for predators and scavengers, and provide habitats for organisms that break down body tissues and return them to the soil. The organisms that break down kangaroo carcasses are in turn sources of food for other animals.

Removal of kangaroo carcasses from ecosystems would have immediate adverse impacts on vulnerable species such as the Little Eagle, and would also cause long term depletion of soil nutrients.

With my best regards



24 March, 2017