

Australian Capital Territory

Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator Determination 2018

Notifiable instrument NI2018-141

made under the

Nature Conservation (Eastern Grey Kangaroo) Controlled Native Species Management Plan 2017, s 2.3 (Implementation of the management plan)

1 Name of instrument

This instrument is the *Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator Determination 2018*.

2 Commencement

This instrument commences on the day after its notification day.

3 Conservation culling calculator

I determine the *Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator* in schedule 1.

4 Revocation

This instrument revokes the *Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator Determination 2017 (NI2017-206)*.

Ian Walker
Conservator of Flora and Fauna
21 March 2018

Schedule 1 Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator

(see s 3)

Summary

This instrument determines the appropriate number of Eastern Grey Kangaroos to be culled on ACT nature reserves and adjacent land for conservation reasons under section 2.3 of the *Nature Conservation (Eastern Grey Kangaroo) Controlled Native Species Management Plan 2017* (DI2017-37) (the **management plan**).

The purpose of conservation culling in protected areas in the ACT is to maintain densities of Eastern Grey Kangaroos at levels that retain grassland conservation values. In particular the aim is to moderate kangaroo grazing effects to achieve a grazing regime favourable for the conservation of plants and small animals that frequent the ground-layer vegetation.

The culling calculator takes into account that the heterogeneous pasture structure desired for biodiversity conservation does not develop at either extreme of high or low grazing and is designed to achieve ‘grassland target densities’ (see section 5.3 of the management plan). The calculator uses the formula below and the outcome is then subject to expert ecological judgment to take into account annual variation and species of interest (threatened species) in each reserve. For detailed explanations and supporting references refer to the management plan.

Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator

Conservation culling formula

The (A) **target number of kangaroos to remain** after culling is subtracted from (B) the **current population**, making allowance for (C) **population growth** in the interim to the next cull. The three components of this formula are explained in the following points (A to C).

A: The target number of kangaroos to remain after culling

It is estimated that a density of approximately one kangaroo per hectare in grassland is likely to maintain the desired conservation environment under varying pasture growth conditions for small animals such as the Striped Legless Lizard. The corresponding figures for other vegetation types are inversely proportional to the percentage canopy cover: open woodland = 90% of grassland; woodland = 50% of grassland; and forest/open forest = 10% of grassland.

Thus it would be calculated that a reserve comprising 100 hectares of forest, 100 hectares of open woodland and 100 hectares of grassland could sustain $10+90+100=200$ Eastern Grey Kangaroos without threatening the habitat of small ground dwelling animals.

Site specific target densities may be applied to support ecological research, when supported by a defined research project that has been approved by the Conservator of Flora and Fauna and which has gained ethics approval, if required. For example, this has been applied in the Goorooyaroo and Mulligans Flat Nature Reserves that are part of the Mulligans-Goorooyaroo Experiment (see www.mfgowoodlandexperiment.org.au).

B: The current population

Population abundance is determined within a Kangaroo Management Unit (*KMU*), which is typically an area bounded by features known to inhibit kangaroo movement such as high speed roads and the suburban edge. A *KMU* typically consists of multiple land tenures occupied by one kangaroo population, which is reflected in the kangaroo counts by conducting the counts across the land components rather than just the Nature Reserve. Refer to Appendix 1 of the management plan for methods of estimating kangaroo population abundance.

C: Population growth in the interim to the next cull

The grassland target density is an average for the year, so the population starts the year below the target and ends the year above it. For example, if the target was 1/ha, and the annual population growth rate (*PGR*) was 20%, the cull should reduce the density to 0.91/ha and it will end the year at 1.10/ha.

The primary limit to kangaroo population size and *PGR* is the per capita availability of food. Other processes affecting *PGR* of local populations are motor vehicle collisions on high speed roads and the presence of foxes and dogs.

Post-cull growth rates are generally expected to be higher than those of uncultured populations because more food is available per kangaroo. As a general guideline for kangaroo populations culled to well below the maximum possible density, 0-30% annual growth is currently taken as a reasonable expectation, depending on weather and site specific circumstances.

Expert Ecological Judgment

Ecologically based management requires professional judgment based on observations and current research, as well as answers from simple formulas. For example, a degraded grassland would recover faster if grazing pressure was kept lower for a few years, whereas a grassland which had grown tall for several years may benefit from higher grazing pressure for a short time.

Adjustments should also be made both between years and between reserves to allow for differences in environmental variables (for example, rainfall, pasture type, etc.) or to manage habitat for specific species. For example, monitoring indicates that the above formula can result in too much grass for Golden Sun Moths in wet years. If more kangaroos are desirable in reserves prioritised for Golden Sun Moths, refinements will be needed. Adjustment for pasture type and condition would also be appropriate, providing it is kangaroo specific, as Eastern Grey Kangaroos have different feeding preferences to livestock.

Biomass reduction within the KMU, such as fire (prescribed burns or wild fires), grazing by livestock or slashing may also require variations. For example, the temporary addition of livestock may complement kangaroo grazing where grass composition or structure makes areas unpalatable to kangaroos. Communications between the relevant parts of government are essential to effectively achieve this integrated approach.