

Australian Capital Territory

Nature Conservation (Eastern Grey Kangaroo) Conservation Culling Calculator Determination 2017

Notifiable instrument NI2017–206

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 2017*.

2 Commencement

This instrument commences on the commencement of the *Nature Conservation (Eastern Grey Kangaroo) Controlled Native Species Management Plan 2017*.

3 Conservation culling calculator

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

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Conservator of Flora and Fauna
11 May 2017

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* Disallowable Instrument DI2017-37 (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 judgement 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 **target number of kangaroos to remain** after culling (A) 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

On current knowledge it is estimated that a density of approximately one kangaroo per hectare in grassland is likely to provide the desired conservation environment in average 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.

A different calculation of the target number is applied to two nature reserves, Goorooyaroo and Mulligans Flat Nature Reserves, which are part of the Mulligans-Goorooyaroo Experiment (www.mfgowoodlandexperiment.org.au), a project that is

improving the way grassy box-gum woodlands are managed and restored through research. In order to meet the research goals while not compromising the conservation priorities in these reserves, the target density set as 1 kangaroo per hectare in the bulk of the reserve and 0.1 to 0.5 kangaroo per hectare in the kangaroo grazing exclosures.

B: the current population

Population abundance is determined within a Kangaroo Management Unit (KMU), 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 Judgement

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 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 require prior consideration of a temporary reduction in kangaroo abundance to avoid excessive grazing pressure.

Communications between the relevant parts of government are essential to achieve this.

References

Nature Conservation (Eastern Grey Kangaroo) Controlled Native Species Management Plan 2017 Disallowable Instrument DI2017-37