Numbers of EGKs Culled 4-8 July 2009

	Target No.	Saturday 4 July	Sunday 5 July	Monday 6 July	Tuesday 7 July	Wednesday 8 July	TOTAL
Kama South	**120**	18			19	38	75 (62.5%)
Crace Grasslands	**42**	42					42 (100%)
East Jerrabomberra	**164**		28	97	39		164 (100%)
West Jerrabomberra	**73**		31	42			73 (100%)
Callum Brae	**140**		75	65			140 (100%)
Totals	**539**	60	134	204	59	38	**494 (91.65%)**

Final Count for the 2010 Kangaroo Population Management Program

Date	*Total*
22/6/2010	423
23/6/2010	403
24/6/2010	414
25/6/2010	255
26/6/2010	111
29/6/2010	107
30/6/2010	58
1/07/2010	69

2011 KPMP Running totals

Site / Licence area	Total licenced to be culled	total no.s night of 06/06	total no.s night of 07/06	total no.s night of 08/06	total no.snight of 09/06	total no.s night of 14/06	total no.s night of 15/06	total no.snight of 16/06	total no.s night of 17/06	total no.s night of 18/06	total no.s night of 19/06	total no.s night of 20/06	total no.s night of 21/06	total no.s night of 22/06	total no.s night of 23/06	Cumulative total	Remaining to be culled	% culled	Ave No. Shot /night
Mulligans Sanctuary NR	1141	70	85	149	147	172	52	130	87	50						942	199	83%	105
Goorooyarroo NR	1099	142	79	82	48	62	61	101	71	76					121	843	256	77%	84
Mt Painter NR	309		41	49	16											106	203	34%	35
Callum Brae NR	342										74	60	59	54	5	252	90	74%	50
Jerrabomberra West NR	536										69	69	83	69	6	296	240	55%	59
	3427															2439	988	64%	

Numbers of kangaroos culled in 2012 and 2013

Dates 2012	No. of kangaroos culled
24 May	153
25 May	46
26 May	133
27 May	128
28 May	43
29 May	98
30 May	72
31 May	100
1 June	175
7 June	117
9 June	90
Total	**1155**

Dates 2013	No. of kangaroos culled
12 July	84
13 July	102
14 July	100
15 July	58
16 July	77
17 July	84
22 July	97
23 July	77
24 July	59
25 July	78
28 July	79
29 July	96
30 July	103
31 July	55
Total	**1149**

Animal welfare and compliance assessment of the 2013 Australian Capital Territory Kangaroo conservation cull

Contents

1. Introduction

Culling of kangaroos for the maintenance of biodiversity in Canberra Nature Parks is carried out in accordance with the Australian Capital Territory (ACT) Kangaroo Management Plan 2010. The cull is carried out under licence from the ACT Conservator of Fauna and Flora. In 2013 a conservation cull was undertaken in seven reserves; Mulligan's Flat Woodland Sanctuary, Goorooyaroo Nature Reserve, Mullangarri Nature Reserve, Mount Painter Nature Reserve, Mount Pinnacle Nature Reserve, Kama Nature Reserve and Callum Brae Nature Reserve.

The National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-Commercial Purposes (hereafter the Code) sets a minimum standard of humane conduct for persons undertaking the non-commercial culling of kangaroos. The 2013 conservation cull was carried with the intent of strict adherence to the standards outlined in the Code. An independent veterinary audit of the 2013 ACT kangaroo conservation cull was undertaken to assess compliance with the Code and to identify any areas of potential animal welfare compromise. This independent audit was conducted in addition to, and separate from, inspections undertaken by the Chief Veterinary Officer of the ACT and the RSPCA.

2. Methodology

2.1 Carcass inspection

Carcasses of culled kangaroos were inspected in the field following collection by shooters and prior to burial. Each carcass was assessed and the following information recorded:

- date
- site from which the animal was culled
- sex of the animal
- number of shots required to kill the animal
- shot placement based on the following three categories
  - brain shot
  - head shot
  - body shot
- the presence of any non target species

For female kangaroos the pouch was inspected and the number of lactating teats was recorded. Lactation was determined by assessing mammary gland development, the length of the teat and by the ability to express milk from the teat. The number of pouch young euthanased was recorded and correlated with the number of lactating mammary glands.

2.2 Shooter appraisal

The shooting team was accompanied and the following information recorded:

- date
- site at which assessment occurred
- whether the firearm was zeroed prior to use
- calibre of firearm
- ammunition used
- the number of animals shot prior to collection of carcasses
- whether or not the animal was killed outright

- whether or not death was confirmed by the shooter
- the sex of the animal
- whether or not the pouch was checked
- whether or not a pouch young was present
- method of euthanasia of any pouch young

3. Results

3.1 Carcass inspections

3.1.1 Number of carcasses inspected and reproductive status of kangaroos

Eastern grey kangaroo carcass inspections were performed on five separate nights across four sites with a total of 347 carcasses inspected. This represented 30.2% (347 from 1149) of all adult kangaroos culled during the culling program. Inspections occurred in conjunction with culling at Goorooyaroo Nature Reserve, Mulligan's Flat Woodland Sanctuary, Kama Nature Reserve and Pinnacle Nature Reserve. The overall numbers of male, lactating female and non-lactating female eastern grey kangaroo carcasses inspected are presented in Table 1. The relative numbers of male, lactating female and non-lactating female eastern grey kangaroos carcasses inspected at each of the four sites are presented in Table 2.

Table 1: Sex and reproductive status culled eastern grey kangaroos

Reproductive class	Number of kangaroos culled
Males	160
Lactating females	139
Non-lactating females	48

Table 1 summary – Overall numbers of male, lactating female and non-lactating female eastern grey kangaroo carcasses inspected. From the 347 carcasses inspected, 160 were male, 139 were lactating females and 48 were non-lactating females.

Table 2: Sex and reproductive status of culled eastern grey kangaroos relative to site

	Goorooyaroo Nature Reserve	Mulligan's Flat Woodland Sanctuary	Kama Nature Reserve	Pinnacle Nature Reserve
Males	139	9	9	3
Lactating females	97	4	14	24
Non-lactating females	40	4	1	3

Table 2 summary – Numbers of male, lactating female and non-lactating female eastern grey kangaroo carcasses at each inspection site. In the Goorooyaroo Nature Reserve (GNR) 139 males, 97 lactating females and 40 non-lactating females were inspected; in the Mulligan's Flat Woodland Sanctuary (MF) nine males, four lactating females and four non-lactating females were inspected; in the Kama Nature Reserve (KNR) nine males, 14 lactating females and one non-lactating female were inspected; and in the Pinnacle Nature Reserve (PNR) three males, 24 lactating females and three non-lactating females were inspected.

3.1.2 Shot placement and number of shots evident

All kangaroo carcasses inspected had been killed with a single shot. Three hundred and forty five of 347 (99.42%) kangaroo carcasses inspected had been killed by a single shot to the brain. Two of 347 (0.58%) kangaroo carcasses inspected had been killed by a shot to the head not directly involving the brain. No kangaroo carcasses presented for inspection had been killed by a shot to the body.

3.1.3 Non-target macropod species

All carcasses inspected were of eastern grey kangaroos and no non-target macropod species carcasses were presented for inspection.

3.1.4 Lactating females versus pouch young or young at foot presented

A total of 139 lactating female eastern grey kangaroo carcasses were inspected with six (4.32%) of these females presenting with two active mammary glands to give a total 145 active mammary glands. Carcasses of kangaroos were inspected in 13 batch groups and in six of these batch inspections there was a disparity between the number of pouch young or dependent young at foot presented and the number of active mammary glands present. A total of 138 pouch young or dependent young at foot carcasses were presented for inspection suggesting seven dependent young at foot were not culled with their dams and remained at large. Three furless pouch young (included in the above total of 138) with head lengths between 15-30 mm were found alive and attached to a teat in carcasses of three females presented for inspection. The pouches of these females had been checked in the field but in all three cases the females had two active mammary glands. These pouch young were euthanased at the inspection site while all other pouch young were euthanased in the field at the point of carcass retrieval.

3.2 Shooter appraisal

3.2.1 Firearm, ammunition and shooting platform

A .223 calibre, bolt action, centre fire rifle fitted with a telescopic sight was used with .223 50 grain V-Max ammunition in all appraisal sessions. On all occasions on which the shooters were accompanied the firearm was observed to be zeroed in prior to use. All kangaroos were shot from a stationary vehicle.

3.2.1 Target animal, point of aim and follow up

The shooting team was accompanied on a total of three occasions across two separate sites with the culling of 47 (20 male, 27 female) adult kangaroos observed and appraised. All kangaroos were stationary, standing and clearly visible to the shooter prior to shooting. All kangaroos were within 100 metres of the shooter when targeted and shot. Forty seven of 47 (100%) of kangaroos were killed with a single shot to the brain. The carcasses of these

animals were examined in the field and were not included in the total of 347 carcasses reported in 3.1.1. All kangaroos were confirmed dead before a subsequent animal was targeted. In 65.52% of cases a single kangaroo was shot prior to carcass retrieval but in some cases up to five kangaroos in a mob were shot prior to carcass retrieval. The frequency with which differing number of kangaroos were shot prior to carcass collection is detailed in Table 3.

Table 3: Frequency and number of kangaroos shot prior to carcass retrieval

Number of kangaroos shot	Frequency (percentage)
1	65.52
2	13.79
3	17.24
4	0
5	3.45

Table 3 summary – Frequency with which different numbers of kangaroos were shot prior to carcass retrieval. Prior to carcass retrieval, 65.52% of the time one kangaroo was shot; 13.79% of the time two kangaroos were shot; 17.24% of the time three kangaroos were shot; 0% of the time four kangaroos were shot and 3.45% of the time five kangaroos were shot.

3.2.2 Euthanasia of pouch young and young at foot

There were no observations of dependent young at foot associated with any of the females shot during appraisal of the shooting team. The shooters confirmed the sex of all carcasses inspected. The pouches of all female kangaroos were inspected for pouch young. As the shooters were operating with thermal imaging and night vision equipment pouch inspection was limited to palpation in all cases observed with no visual inspection of the pouch. The euthanasia of a total of 20 pouch young was observed. All pouch young were euthanased by a forceful blow to the base of the skull. Each pouch young was examined after euthanasia to confirm death but inspection was limited to ensuring the pouch young was neither moving nor breathing. While there was no indication that any of these joeys were not dead, assessment for the presence of a heart beat or corneal reflex, as stipulated by the Code, was not carried out. It should be noted that a significant proportion of pouch young were at an early stage of development with their eyes as yet unopened precluding assessment of the corneal reflex.

4. Conclusions

In general a very high degree of compliance with the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-Commercial Purposes was evident during the audit of the 2013 ACT conservation cull. The shooting team was highly proficient with 100% of carcasses inspected and 100% of kangaroos observed being shot in the field killed with a single shot. Shot placement was highly accurate with 100% of adult kangaroos observed in the field and 99.42% of inspected carcasses killed with a shot to the brain. The

remaining 0.58% (two animals) had been hit in the base of the skull and upper cervical spine which was judged to have also resulted in the instantaneous loss of consciousness and death. On the basis of the results of carcass inspections and field observations a humane death and high level of animal welfare was achieved for all adult kangaroos killed and inspected during the auditing process.

The shooting team was compliant with all aspects of the Code relating to the firearm used, ammunition and shooting platform. Additionally the shooting team was compliant in targeting of animals, ensuring that non-target species were avoided, point of aim and ensuring shot kangaroos were dead prior to targeting the subsequent animal.

A significant proportion, some 40.06%, of culled kangaroos were lactating females. Given that this cull was undertaken for management/ecological reasons this is in compliance with the Code which states that "Shooters should avoid shooting female kangaroos or wallabies where it is obvious that they have pouch young or dependent young at foot except in special circumstances (i.e. the female kangaroo or wallaby is sick or injured or needs to be killed for management and/or ecological reasons)". The disparity between the number of carcasses of pouch young or dependent young at foot presented for inspection and the total number of lactating mammary glands observed is an area of animal welfare compromise. Young at foot not being shot with their dams and escaping is the most likely reason for this disparity. Also of concern was the finding of three live pouch young in the pouches of female carcasses in which pouch inspections had been undertaken in the field prior to presentation. While the shooting team checked that joeys were in fact dead following euthanasia the failure to check for the presence of a heart beat and a corneal reflex (where appropriate) represents only partial compliance with section 5.1(ii) of the Code. These particular aspects of the culling program warrant improved practices to ensure enhanced compliance with the Code and appropriate animal welfare outcomes where pouch young or dependent young at foot are concerned.

5. Recommendations

In order to ensure complete compliance with the Code the following recommendations are made:

- to ensure that all target female kangaroos are thoroughly examined for pouch young, pouches should be visually inspected (not limited to palpation) in all instances
- following euthanasia of pouch young or dependant young at foot death be ascertained by ensuring that body movement, respiration, heart beat and corneal reflex are absent; in cases where the eyes of the pouch young are not yet opened assessment of the corneal reflex is not required.