



Environment,
Climate Change
& Water

2010 ANNUAL REPORT

NEW SOUTH WALES COMMERCIAL KANGAROO HARVEST MANAGEMENT PLAN 2007-2011

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Notes regarding terminology

The NSW Department of Environment and Climate Change (DECC) is now known as the NSW Department of Environment, Climate Change and Water (DECCW).

References in this document and in the NSW Commercial Kangaroo Harvest Management Plan 2007-11 to the Department of Environment and Conservation (DEC) should be taken to indicate DECCW.

On 1 July 2008 amendments to the National Parks and Wildlife Act 1974 came into force. Among the amendments was a change of name for licences issued under Section 123 of the Act. "Trapper Licences" are now called "Commercial Fauna Harvester Licences". In this report, persons licensed under section 123 are referred to as "harvesters". References to "trappers" in the NSW Commercial Kangaroo Harvest Management Plan 2007-11 therefore apply to "harvesters" in this and other documents.

New South Wales Department of Environment, Climate Change and Water (DECCW) has been researching, monitoring and managing the commercial harvest of kangaroos in NSW since the 1970's. During this period, there has been a sequence of kangaroo management plans that provided the framework for the harvest, in accordance with legislative requirements.

In December 2006 the Commonwealth Government declared the NSW Commercial Kangaroo Harvest Management Plan 2007-2011 to be an approved wildlife trade management plan for the purposes of the *Environment Protection and Biodiversity Conservation Act 1999*. This plan sets the framework for the commercial harvest of kangaroos in NSW following the expiry on 31 December 2006 of the Kangaroo Management Program 2002-2006.

The Plan was amended in December 2008 following an appeal in the Administrative Appeals Tribunal. One of the amendments requires DECCW to suspend harvesting if new aerial surveys indicate that the population estimate for a particular species in a zone has fallen below the specified threshold. The Tribunal's decision, including the thresholds for each species, is available at:

www.austlii.edu.au/au/cases/cth/AATA/2008/1079.html

This report details the operation of the current management plan for its fourth year (2010) as required by Performance Indicator 17.1 of the plan. Appendix A details each performance indicator, and the progress made during 2010.

The following information is presented:

- Actual harvest, by zone and species, compared to the approved quotas;
- Details of any Special Quota utilised;
- Harvest sex bias for each species in each zone;
- Average carcase weights for each species in each zone;
- Non-commercial culling statistics within the commercial harvest zones;
- Compliance statistics:

- Number of premises inspected;
- Number of Penalty Infringement Notices issued and the reason;
- Number of prosecutions undertaken (offence and outcome); and
- Any joint surveillance/enforcement activities completed.
- Any unusual situations that arose (eg. flood/disease outbreak; market factors);
- Any experiments or research undertaken by DECCW or sponsored by DECCW.

Population survey methods, and setting of quotas, are detailed in a separate report. Results of aerial surveys, and quotas for 2011 are contained in the 2011 Quota Report for NSW, available from the Kangaroo Management Program's web page:
www.environment.nsw.gov.au/wildlifemanagement/KangarooManagementProgram.htm

A: ACTUAL HARVEST IN 2010 BY ZONE AND SPECIES

%q – commercial take as percentage of approved quota %p – commercial take as percentage of population estimate

Ave Wt – average carcase weight in kilograms of harvested females (F) and males (M)

* modified quotas following suspension/reinstatement of allocation in accordance with amended management plan (see page 2)

Eastern Grey Kangaroo									
Zone Name	No.	Pop	Quota	Harvest	%q	%p	% Male	Ave Wt F	Ave Wt M
Tibooburra*	1	68,974	336	185	55	0	84	19.0	27.3
Broken Hill	2	136,636	20,495	4,296	21	3	79	17.8	25.2
Lower Darling	4	76,985	11,548	6,447	56	8	64	19.0	27.7
Cobar	6	97,316	14,597	4,186	29	4	88	17.2	23.6
Bourke	7	89,094	13,364	2,252	17	3	91	17.3	25.0
Narrabri	8	446,680	67,002	45,537	68	10	77	17.8	24.7
Armidale	9	141,610	21,242	18,006	85	13	58	18.0	27.3
Coonabarabran	10	631,167	94,675	38,821	41	6	84	18.4	24.7
Griffith *	11	500,187	16,673	2,539	15	1	72	19.1	27.2
Glen Innes	13	236,600	35,490	23,209	65	10	62	17.9	26.0
Upper Hunter	14	92,016	13,802	12,309	89	13	69	19.0	29.6
SE NSW	16	656,000	98,385	43,102	44	7	66	19.5	30.8
C/T North	48	433,030	64,955	20,394	31	5	69	18.7	30.0
C/T South	49	535,600	80,340	15,755	20	3	73	19.3	31.4
Totals		4,141,895	552,904	237,038	43	6	74.0	18.4	27.2
Red Kangaroo									
Zone Name	No.	Pop	Quota	Harvest	%q	%p	% Male	Ave Wt F	Ave Wt M
Tibooburra	1	560,706	95,320	13,718	14	2	63	18.9	29.0
Broken Hill	2	809,665	137,643	51,126	37	6	71	18.7	26.1
Lower Darling	4	185,449	31,526	14,226	45	8	65	18.1	26.7
Cobar	6	97,823	16,630	5,076	31	5	89	18.1	25.5
Bourke	7	180,413	30,670	8,414	27	5	88	18.1	26.6
Narrabri	8	189,118	32,150	11,509	36	6	83	18.2	26.5
Coonabarabran	10	202,199	34,374	10,548	31	5	92	19.2	24.5
Griffith	11	231,422	39,342	3,194	8	1	58	18.2	27.1
Totals		2,456,795	417,655	117,811	28	5	76.1	18.4	26.5
Wallaroo									
Zone Name	No.	Pop	Quota	Harvest	%q	%p	% Male	Ave Wt F	Ave Wt M
Armidale	9	37,859	5,679	3,023	53	8	95	17.8	26.4
Glen Innes	13	32,184	4,828	3,814	79	12	97	17.8	25.0
Upper Hunter*	14	44,923	6,738	2,341	35	5	99	21.4	27.6
Totals		114,966	17,245	9,178	53	8	97.0	19.0	26.4
Western Grey Kangaroo									
Zone Name	No.	Pop	Quota	Harvest	%q	%p	% Male	Ave Wt F	Ave Wt M
Tibooburra*	1	23,931	615	469	76	2	65	19.9	25.9
Broken Hill	2	230,041	34,506	11,829	34	5	76	18.6	24.9
Lower Darling	4	138,434	20,765	8,728	42	6	69	17.6	24.6
Cobar	6	153,916	23,087	3,776	16	2	91	17.2	22.8
Bourke*	7	57,907	830	688	83	1	93	16.0	24.9
Coonabarabran*	10	101,696	3,390	64	2	0	100		20.5
Griffith*	11								
Totals		705,925	83,193	25,554	31	4	82.3	17.9	23.9

B: HARVEST QUOTA MANAGEMENT

In the Broken Hill, Griffith, Bourke and Tibooburra management zones, the commercial quota was allocated on a first in first served basis, with no formal restrictions on the number of tags allocated per application.

In other zones the annual harvest quota was released in stages to assist in the management of damage to winter crops and reduce non-commercial culling associated with crop protection. In those management zones where winter cropping is an important agricultural enterprise, 40% of the total quota was available for use from January, with the remaining 60% withheld for release in May. This system was put in place for the Narrabri, Coonabarabran, Glen Innes, Armidale, Upper Hunter, Cobar, Lower Darling and SE NSW zones.

The commercial quota was allocated in accordance with the following:

- 40% available to commence from 1 January 2010. If tag allocation reaches 40% of any species in a zone before the end of April, then no more tags will be issued for that species in that zone until 1 May.
- 60% available to commence from 1 May 2010.
- Restrictions were placed on the number of tags that could be issued per property per month, based on property size.

Tag numbers were restricted by property size for the two new Central Tablelands zones which commenced on 1 June 2010, with the whole annual quota made available.

Despite the restrictions on tag numbers, applications for commercial quota for eastern grey kangaroos in the Armidale zone exceeded the available quota, in both the first and second releases. The quota was allocated using a ballot system to ensure that all applications were treated equitably. For the 40% quota release, each harvester was given the opportunity to nominate either 1 January or 1 February start for successful applications. The 60% quota release was staged over three months, with 20% of the quota commencing in May, 20% in June and the final 20% in July, with no choice available to the harvester.

C: SPECIAL QUOTA

A special quota for 2010 was endorsed by the Commonwealth Government as part of the overall commercial quota and was potentially available to minimise the number of kangaroos shot under non-commercial licences.

Special Quota is not a pseudo commercial quota, its sole purpose is to provide for commercial utilisation of kangaroos that would be shot and left in the field under the normal non-commercial licensing system.

DECCW may only use Special Quota when the commercial quota for a particular kangaroo management zone has been fully issued. As specified in the NSW Commercial Kangaroo Harvest Management Plan 2007-2011, the use of Special Quota will depend on one or more of the following:

- consideration of local conditions including exceptional circumstance declarations;
- kangaroo population trends (based on most recent survey if completed); and
- climatic conditions during the quota year.

However, non-commercial culling proceeds regardless of available commercial quota, typically equating to less than 10% of the commercial harvest. An authorised DECCW officer must assess each application for a non-commercial licence. In the commercial zone, non-commercial licences are generally only requested when:

- it is not economically viable to take kangaroos commercially;
- the commercial kangaroo industry is unable to fulfil the landholders needs; or
- management zone commercial quotas are fully utilised.

It is not necessarily intended to fully utilise the Special Quota, unless criteria justify such action.

During 2010, no Special Quota was utilised. Only in the Armidale management zone was the full commercial quota allocated, and there only for eastern grey kangaroos. Wallaroo quota was available. Circumstances did not justify the release of any Special Quota despite full allocation of the eastern grey kangaroo commercial quota.

D: SEX BIAS BY SPECIES AND ZONE

The commercial harvest is typically biased towards males, as they tend to be larger and heavier than females. For the period 1997 to 2009 inclusive, the total harvest comprised between 70 and 89 percent males (Figure 1). Data gathered throughout 2010 indicates that 73.4 per cent of the harvest overall was male, which is consistent with the long-term average of 70.0%.

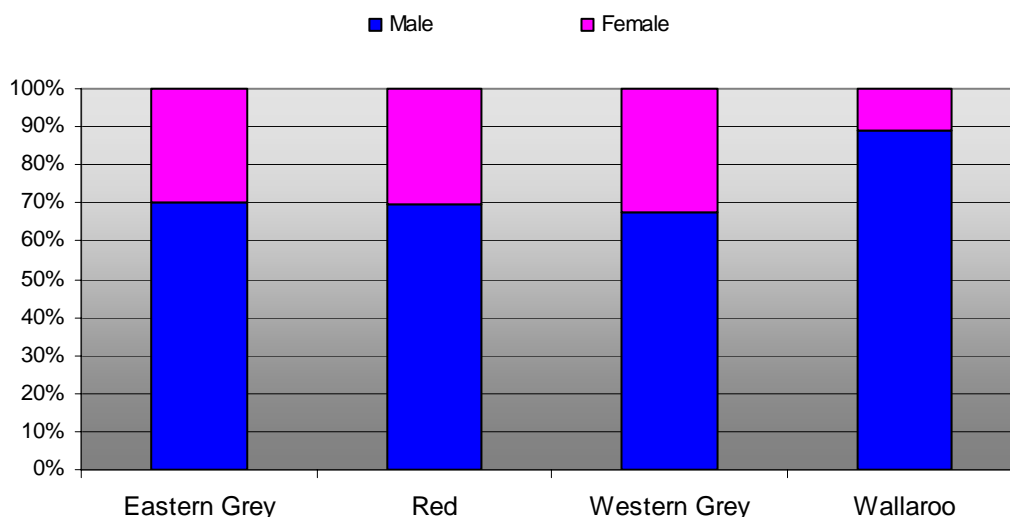


Figure 1: Average sex bias in the commercial harvest 1997-2009. Male bias is higher in wallaroo than other species because of more pronounced size difference between males and females. Minimum carcass weights were introduced as licence conditions in September 2003, leading to a slight increase in male bias due to sexual dimorphism in all harvested species.

In contrast to the other harvested species (Figures 2, 3 and 5), the commercial take of wallaroo (*Macropus robustus*) is more strongly biased towards males, because females rarely reach the minimum size dictated by the conditions attached to harvester and fauna dealer licences (Figure 4). This has particularly been the case since 2008, when minimum

carcase weights were increased by two kilograms over the previous standards. Further, the kangaroo processing industry utilised a tiered pricing structure to discourage the harvest of smaller animals whose skins are of little value under current market conditions. Despite the tendency of males to be larger, commercial harvesters target a range of sizes above the minimum, particularly when densities are reduced and there are fewer target animals to select from.

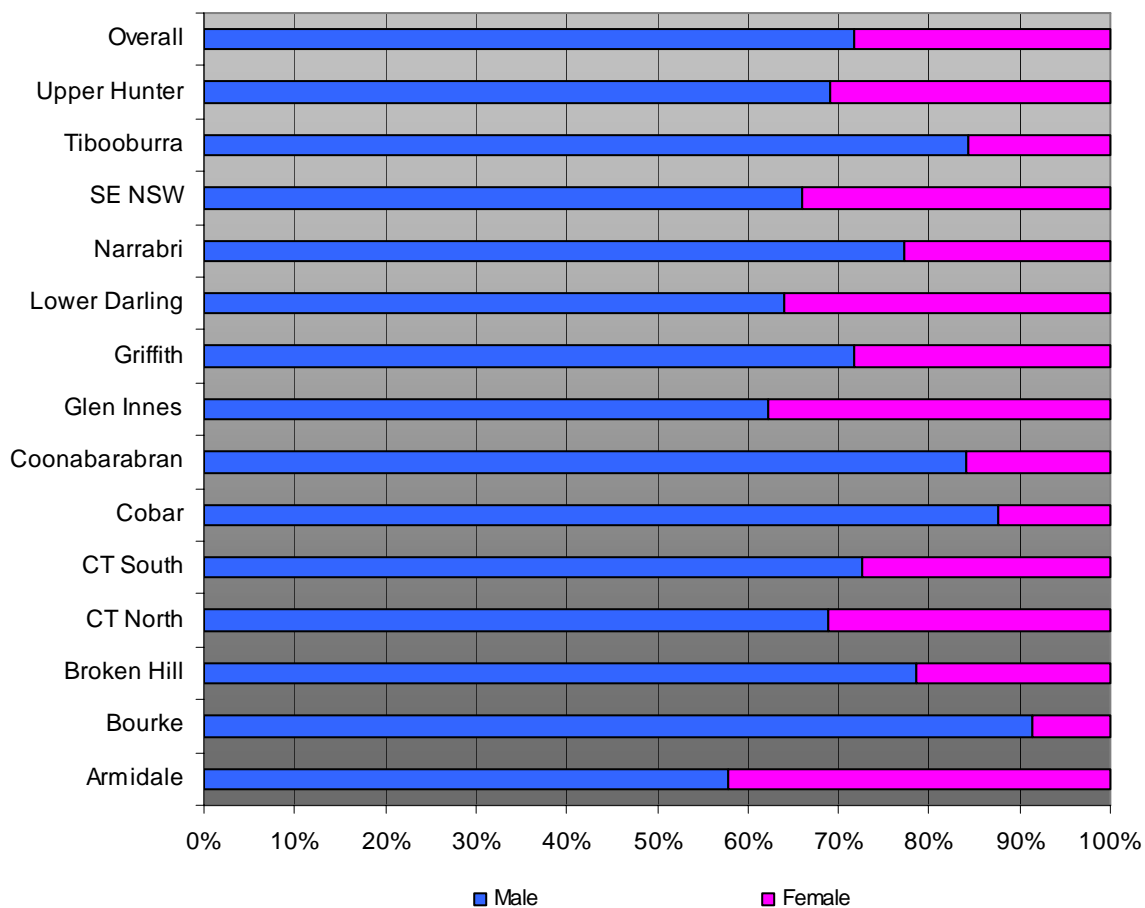


Figure 2: Eastern grey kangaroo sex bias in the commercial harvest 2010. No consideration is given in this chart to the total harvest of this species in each zone – the Tibooburra harvest was less than 200 animals compared to over 45,000 for Narrabri zone.

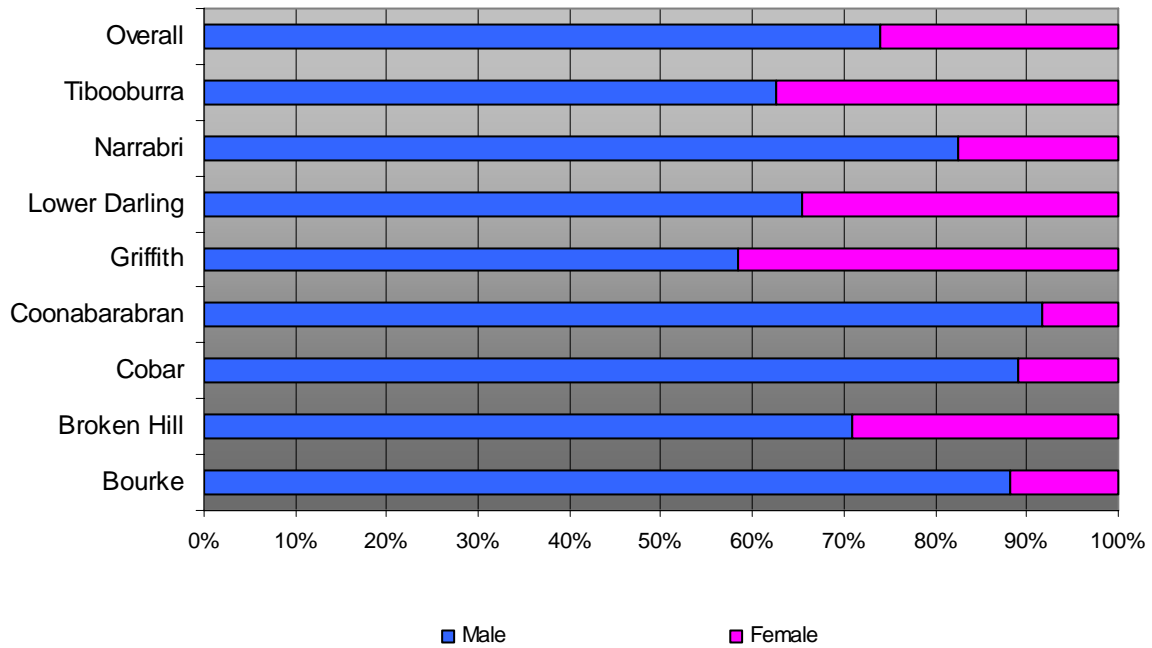


Figure 3: Red kangaroo sex bias in the commercial harvest 2010. No consideration is given in this chart to the total harvest of this species in each zone – the Griffith harvest was just over 3,000 animals compared to over 50,000 for Broken Hill zone.

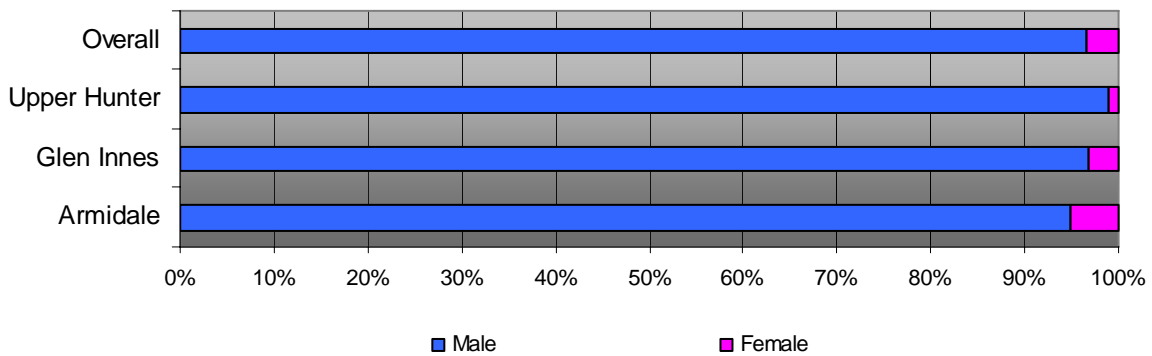


Figure 4: Wallaroo sex bias in the commercial harvest 2010. The total harvest of wallaroos is less than 10,000 animals, about 2.5% of the total harvest for 2010. Male bias is very strong because female wallaroos rarely reach the minimum size for commercial harvest.

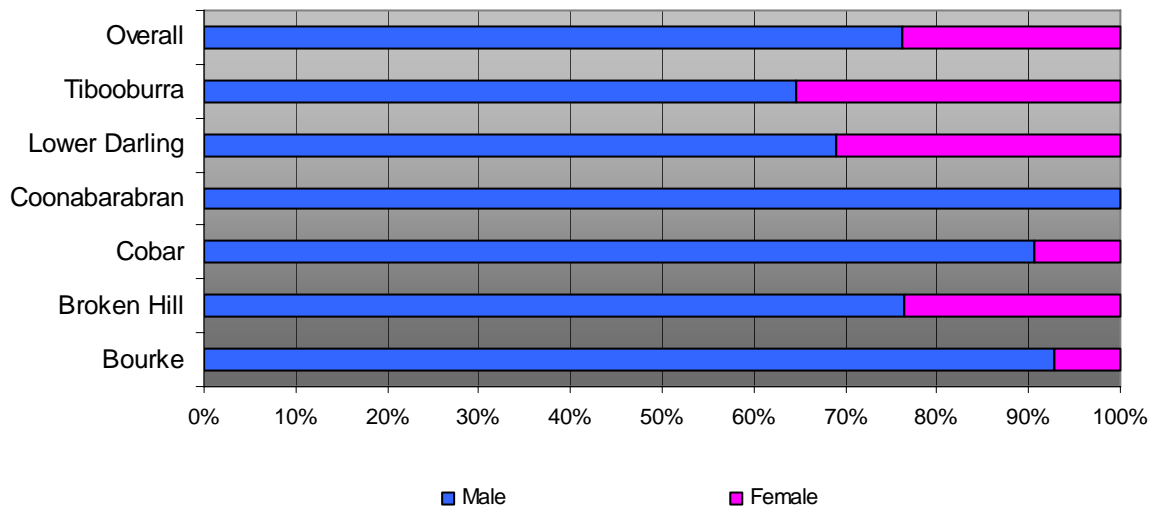


Figure 5: Western grey kangaroo sex bias in the commercial harvest 2010. No consideration is given in this chart to the total harvest of this species in each zone – the Coonabarabran harvest was just 50 animals, following reinstatement of the commercial quota for this species in October.

Compliance officers also record the sex bias of the harvest opportunistically, such as when a chiller inspection coincides with the carcasses being loaded onto trucks. This enables inspection of every carcass, which is not always possible in a full chiller.

E: AVERAGE WEIGHTS BY SPECIES AND ZONE

Conditions attached to commercial harvest licences during 2010 required that kangaroo carcasses delivered to chillers for sale must not weigh less than 14 or 15 kilograms, depending on how the carcasses are dressed. Prior to 1 January 2008, the previous minimum carcass weights were 12 and 13 kilograms respectively. Above these minimum weights, a wide range of weights is targeted.

The long-term average carcass weights by sex and species (across all zones) are shown in Figure 6.

Data collected during 2010 indicates average carcass weights across all species was 26.8 kilograms for males, and 18.5 kilograms for females, which is higher than the long-term average. This is to be expected given the increase in minimum carcass weight as part of licence conditions, and a two-tiered pricing structure implemented by the processing industry which discourages the harvest of animals at the bottom end of the permissible weight range.

DECCW does not require licensees to record individual carcass weights. Instead, returns provide group weights for each category of carcasses (eg. female eastern grey kangaroos – number of animals taken and total weight). These totals are used to calculate the average weights of carcasses, by sex, species and zone (Figures 7-14).

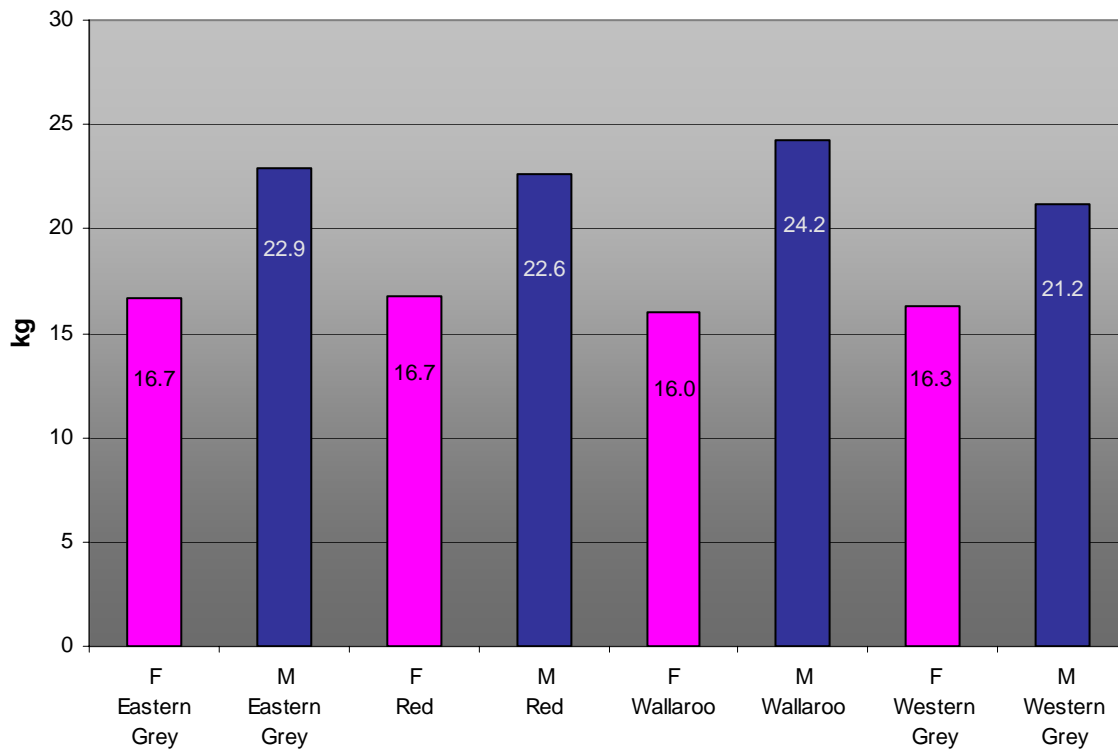


Figure 6: Average weight of carcasses in the commercial harvest 1997-2009. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008, leading to a slight increase in the long-term average.

Average carcass weights were calculated monthly and compared with the long-term average (1997-2009) for each sex, species and zone, as required by Performance Indicator 13.1 of the amended plan. None of the 2010 monthly results were more than one standard deviation below the long-term average. Standard deviations range from 1.94 kilograms for eastern grey females in the Cobar zone to 6.28 kilograms for red males in the Narrabri zone, reflecting the degree of variation in the size of animals taken and the relative sample sizes.

Average carcass weights were reasonably consistent from month to month. However, in the following charts, no consideration is given to the different sample sizes between sexes, species and zones - the total harvest of female wallaroos during 2009 was just 305 individuals, while the harvest of male red kangaroos was about 87,000.

Where large fluctuations occur, the sample size is usually very small and statistical reliability is low – for example, only 302 male western grey kangaroos were shot in the Tibooburra in 2010, and 24 female wallaroos in the Upper Hunter zone. This variation is a result of statistical processes and is not a reflection of changes in the kangaroo population. Weights do not vary significantly where larger samples are available (such as male eastern grey kangaroos in Coonabarabran zone).

In the charts that follow, there are a number of months where no animals of a given sex/species were shot in a particular zone – this results in discontinuous lines in the charts below. For example, in Figure 7 there were no female eastern grey kangaroos shot in the Tibooburra zone in February, March, April, August, November or December.

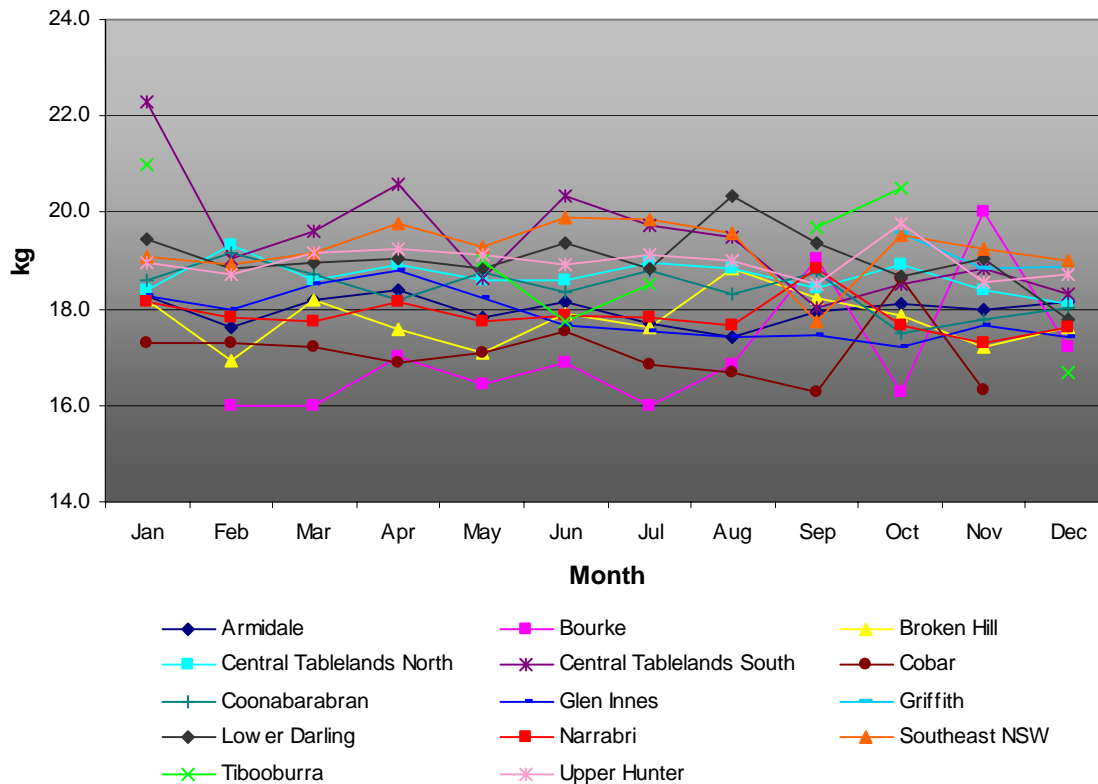


Figure 7: Eastern grey kangaroo female average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average.

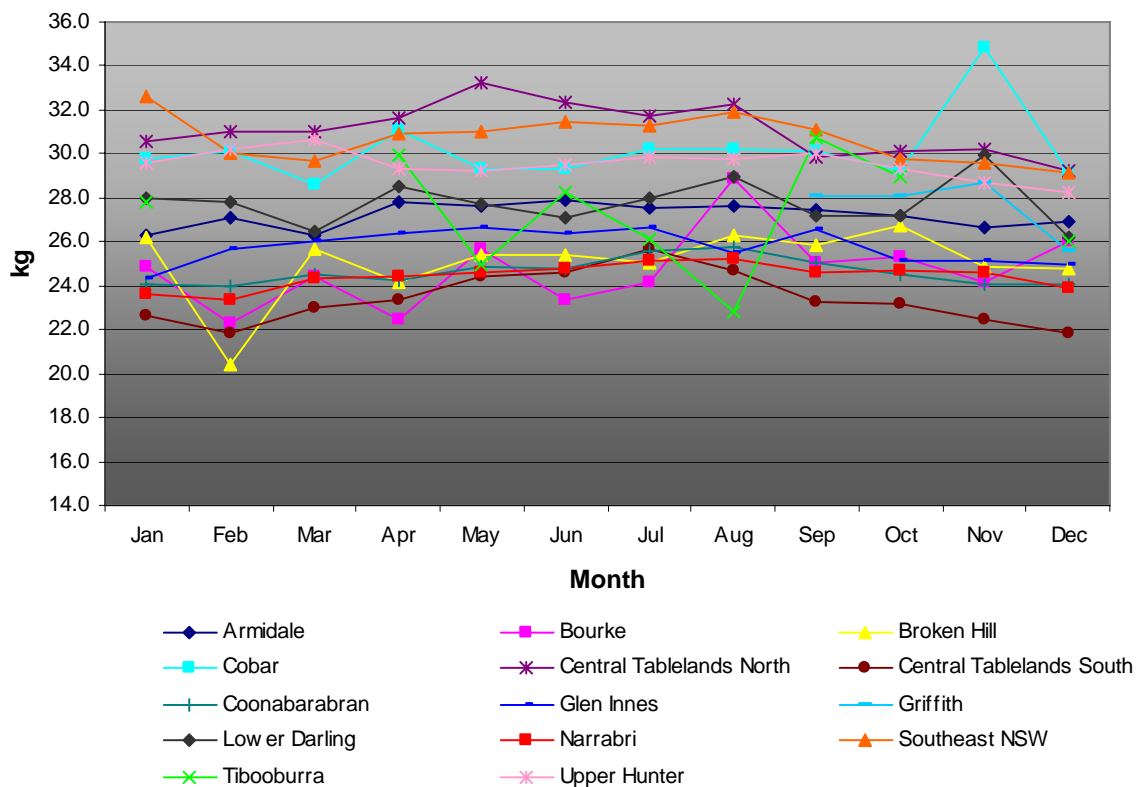


Figure 8: Eastern grey kangaroo male average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average.

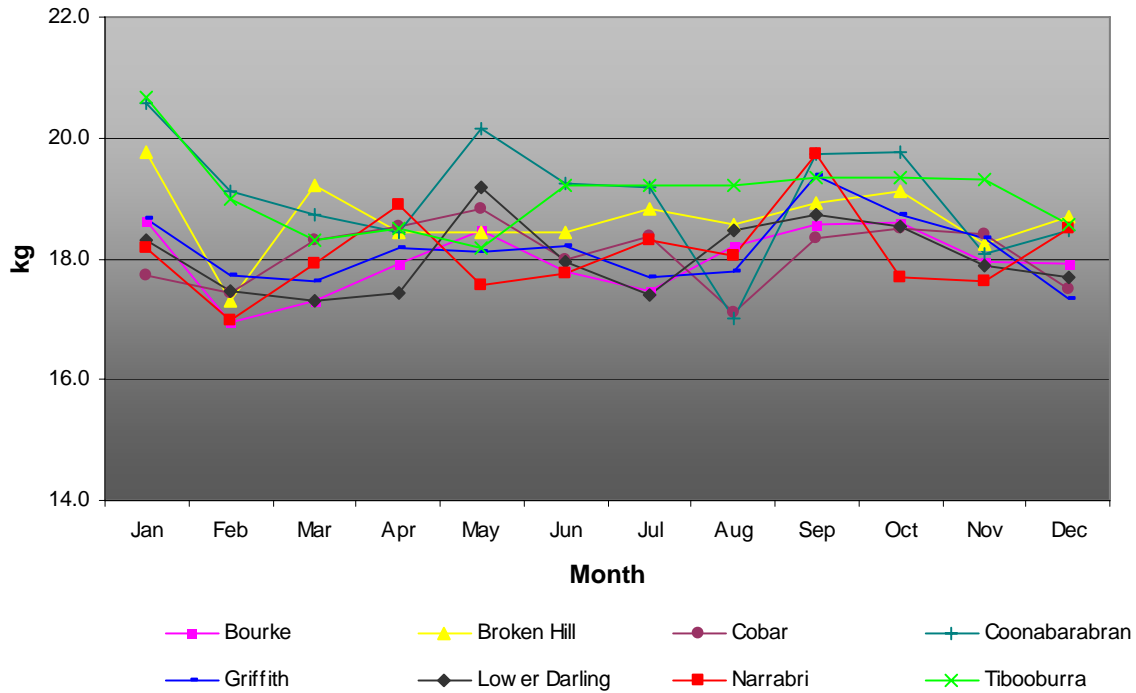


Figure 9: Red kangaroo female average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average.

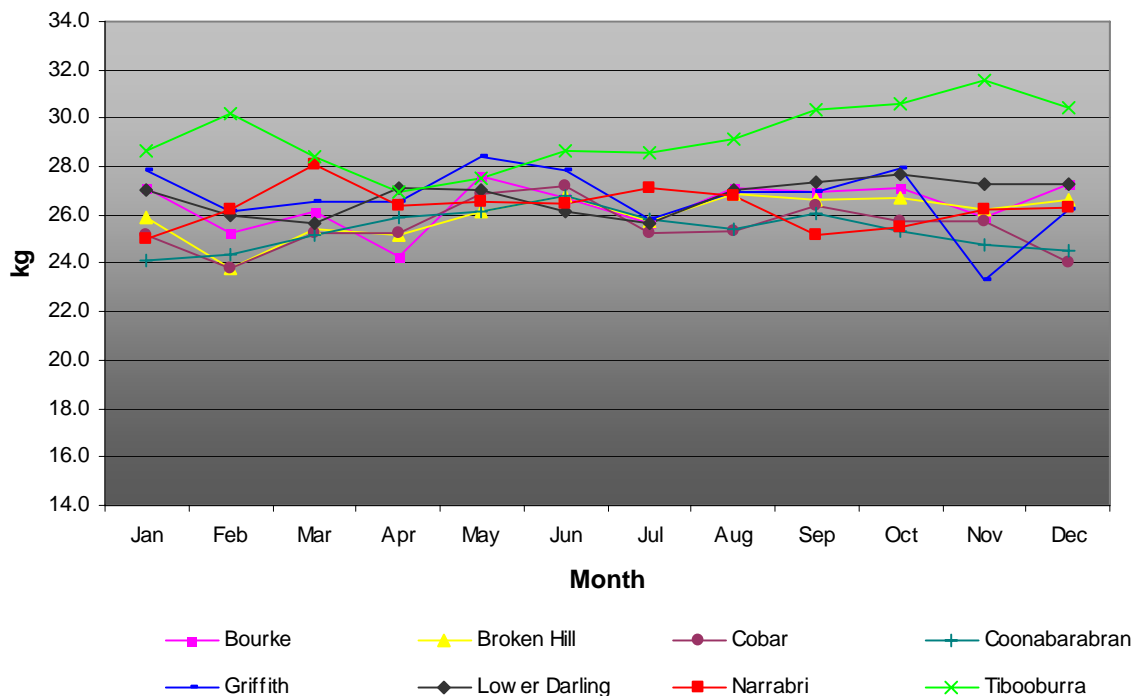


Figure 10: Red kangaroo male average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average.

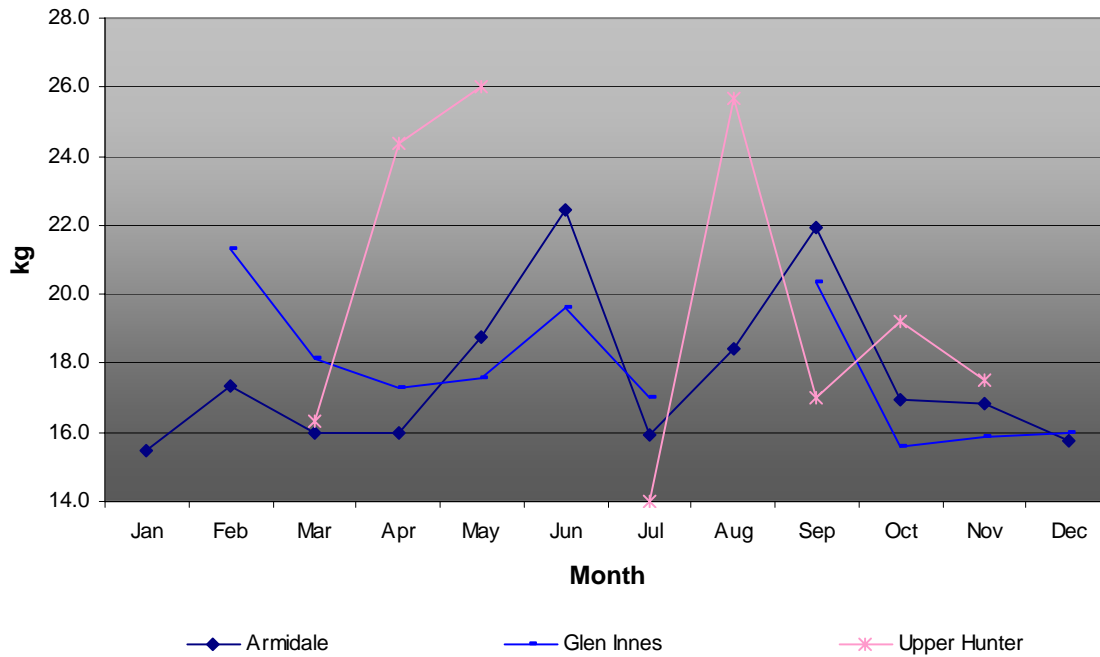


Figure 11: Wallaroo female average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average. The apparent fluctuation is the result of extremely small sample sizes – for example, one animal for Upper Hunter zone in July and three in August. The total take of female wallaroos in 2010 was about 300 animals.

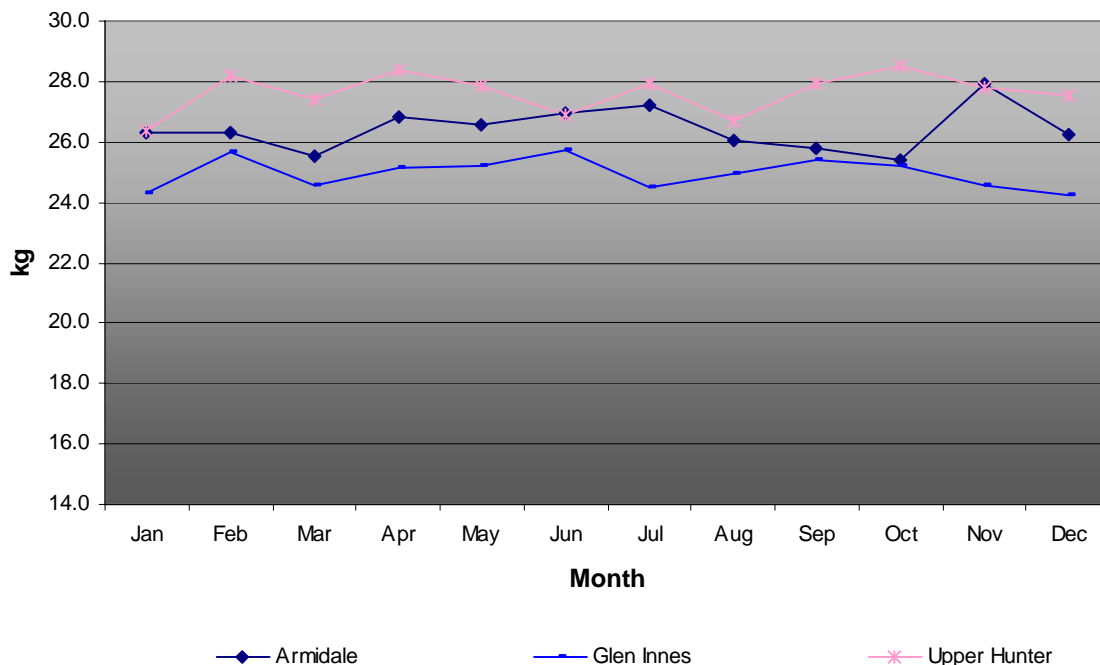


Figure 12: Wallaroo male average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average.

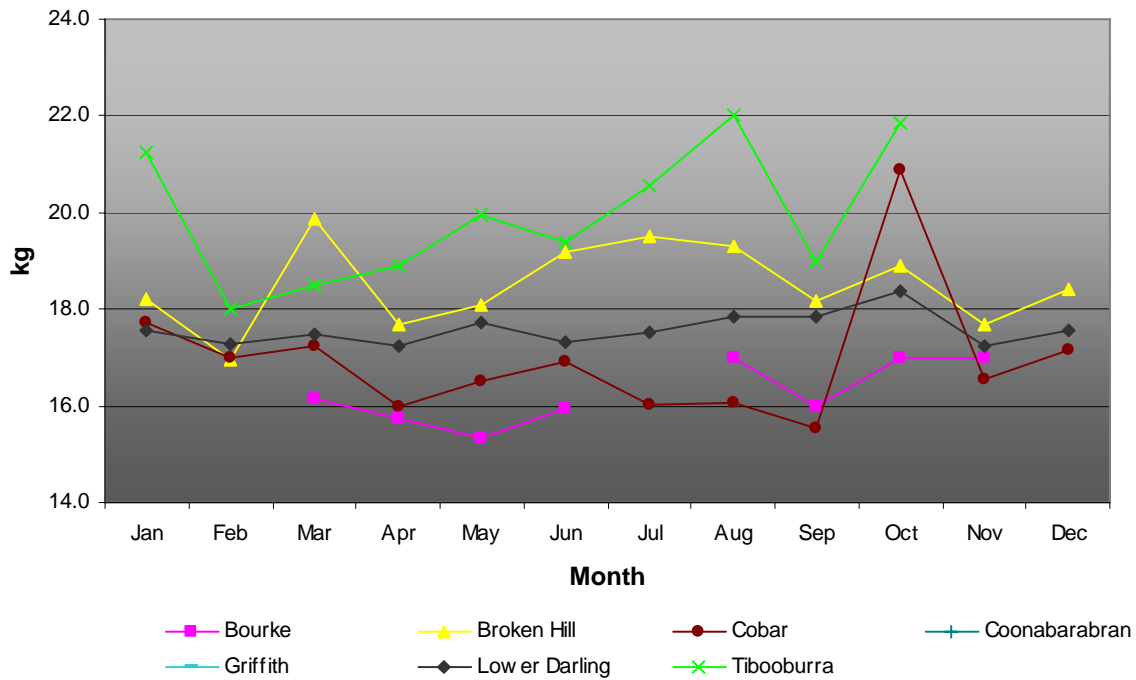


Figure 13: Western grey kangaroo female average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average. The apparent fluctuation is the result of small sample sizes – for example, 21 animal for Cobar zone in September and 17 in October. The total take of female western grey kangaroos in 2010 was about 6,000 animals.

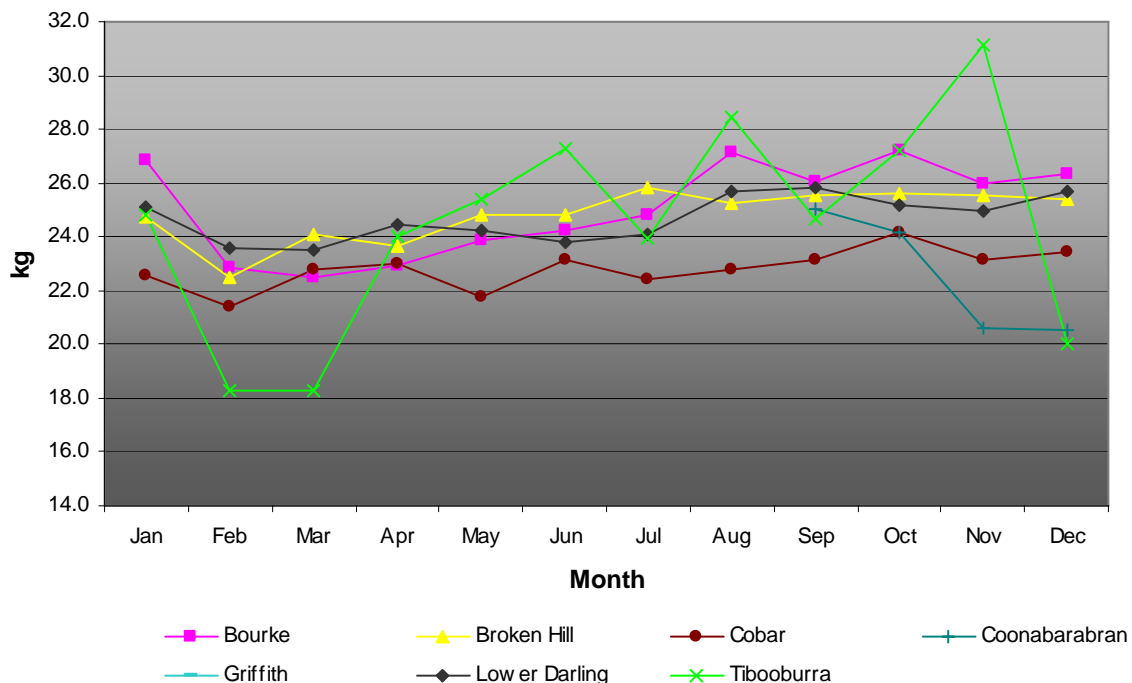


Figure 14: Western grey kangaroo male average carcass weight in the commercial harvest 2010. Minimum carcass weights were introduced as licence conditions in September 2003, and increased by two kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term average. The apparent fluctuation in carcass weights for Tibooburra zone is the result of small sample size, with a total take in 2010 of about 300 animals. The harvest of this species in Coonabarabran zone was suspended until September, so there are no records earlier in 2010.

During routine inspections of chiller premises and processing works, a selection of smaller animals is weighed individually by compliance officers to ensure that the minimum weight standards are being maintained. Where underweight carcasses are detected, the harvester responsible may be cautioned or fined, depending on circumstances.

F: NON-COMMERCIAL CULLING WITHIN THE COMMERCIAL HARVEST ZONES

Some non-commercial culling always occurs within the commercial zone. Typically, the non-commercial cull represents much less than 10% of the commercial harvest (Figure 15). Southeast NSW commercial zone has been included in the long-term totals, however the commercial harvest in that zone only commenced in 2004. The Central Tablelands North and Central Tablelands South zones have not been included, as these zones only commenced operation from 1 June 2009.

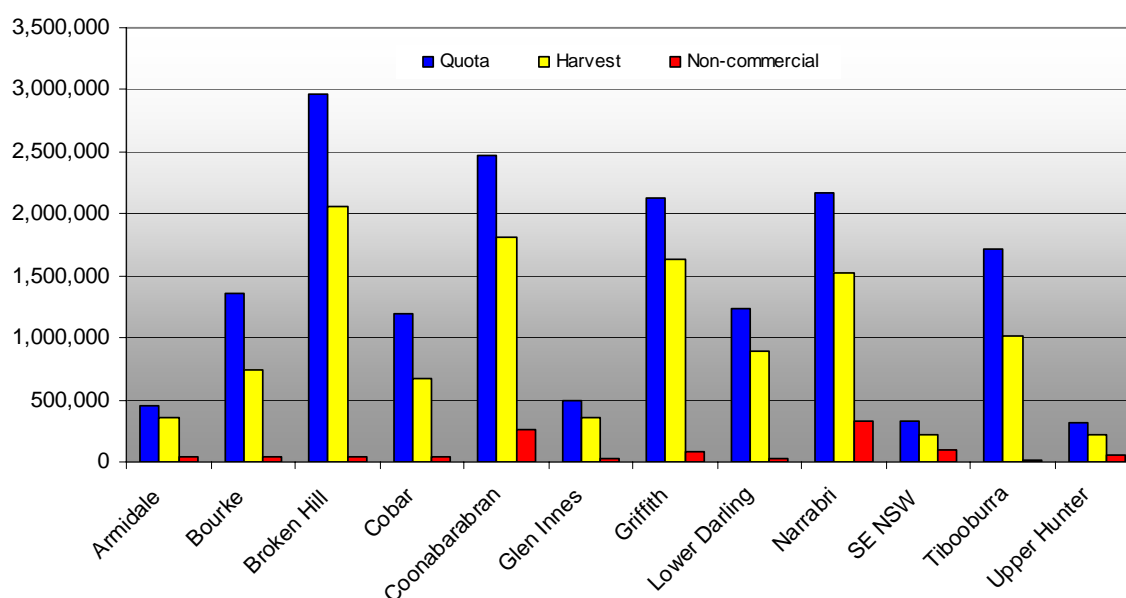


Figure 15: Comparison of commercial quota, actual commercial harvest and non-commercial cull for the period 1997-2009. Non-commercial licences are available statewide and can be issued for properties where commercial harvesting is also undertaken. However, the non-commercial cull is typically equivalent to less than 10% of the commercial take, and highest in those areas where high value pastures and winter crops are important.

Coonabarabran and Narrabri zones comprise the majority of winter cropping lands within the commercially harvested areas. As most non-commercial culling is associated with the protection of young winter crops, it is not surprising that these zones also show the highest non-commercial cull relative to the commercial quota and harvest.

In 2010, non-commercial licences were issued for culling equivalent to 9.5 per cent of the commercial harvest, or 3.6 per cent of the commercial quota, excluding Central Tablelands zones (Figure 16). Despite the commercial industry operating at a reduced scale during 2010, DECCW did not see a significant increase in enquiries regarding non-commercial licences. The level of non-commercial culling undertaken remains low relative to the commercial harvest. The wet conditions that impacted on the commercial harvest will also have affected landholders' capacity to undertake non-commercial culling, and may have contributed to the low demand for non-commercial licences.

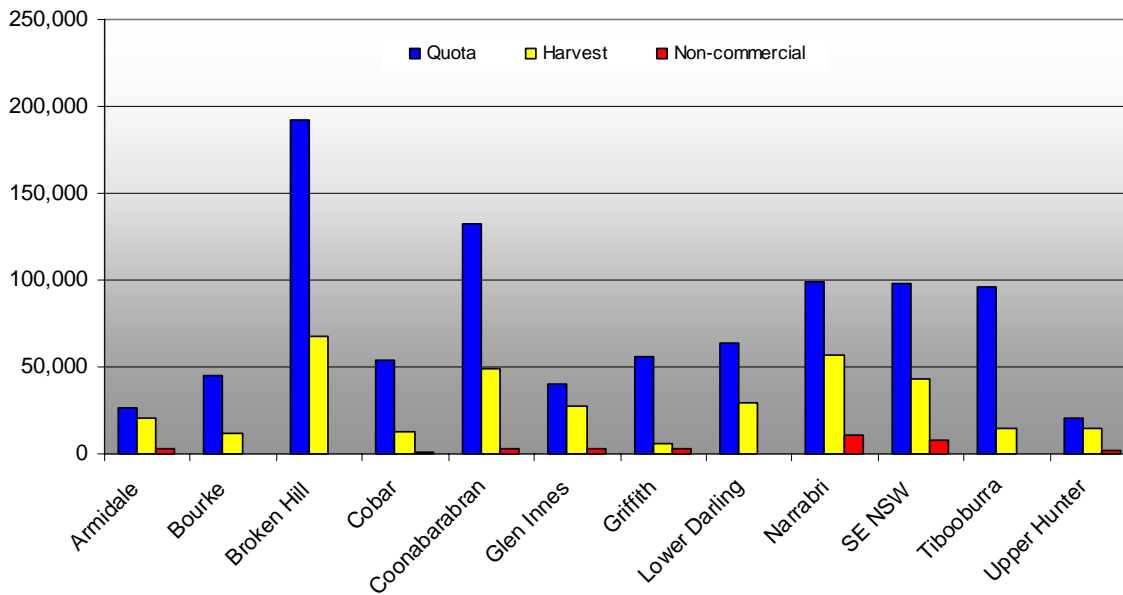


Figure 16: Comparison of commercial quota, actual commercial harvest and non-commercial cull for 2010. Despite the relatively low commercial harvest, there was no significant increase in non-commercial culling in 2010.

G: MONITORING COMPLIANCE IN THE COMMERCIAL HARVEST ZONES

1. Compliance audits

The compliance audits are carried out continuously by Kangaroo Management Program (KMP) staff. Checks are “built in” to the KMS database and the KMP compliance officers based in Dubbo and Broken Hill conduct field investigations and compliance checks. Licensing staff contributed to compliance activities via scrutiny of applications, reports and investigation of suspect activities and irregularities. Other DECCW staff located in regional areas contribute via *ad hoc* inspection of chiller premises.

In addition to these activities, compliance staff investigate reports of illegal shooting activities to the fullest extent possible. Several reports of illegal shooting were investigated, however, no punitive action has yet been taken due to insufficient evidence.

Information to assist in enforcing the relevant sections of the NSW *National Parks and Wildlife Act* is shared with the NSW Police, the NSW Food Authority and interstate fauna protection agencies as required, within the boundaries of NSW privacy legislation.

One collaborative compliance operation was undertaken in 2010, involving DECCW, NSW Police and NSW Food Authority.

2. Inspection of premises

On average, the KMP compliance officers and/or NSW Food Authority compliance staff inspect about 200 chillers in Kangaroo Management Zones about four times each year. Chillers are inspected for:

- non-head shot kangaroos;
- valid tags;

- correctly affixed tags;
- untagged kangaroos;
- display of premise registration number and licence number for either pet food or human consumption (NSW Food Authority);
- presence of other animal carcasses.

Harvesters' vehicles are checked opportunistically for:

- appropriate registration through NSW Food Authority (either for human consumption or pet food);
- correctly set up/fitted out (NSW Food Authority MoU);
- untagged carcasses;
- harvester carrying s.123 licence.

Chiller inspection trips often include early morning visits to coincide with deliveries of kangaroos shot the previous night. On these occasions, vehicles are checked as above.

During 2010, 143 chiller premises were registered by fauna dealer wholesalers and a further 7 were registered by harvesters for their own use. A total of 659 inspections was conducted. Of these registered premises, 25 were not registered for the full year and were therefore inspected less frequently.

Widespread significant rainfall and flooding across much of the state disrupted harvest activities by preventing access to properties by harvesters. As a result, many chiller premises did not operate for several months in the mid- to latter part of the year, and were inspected less frequently. However, 54 chiller premises (about 36%) were inspected five times or more during 2010.

In addition to routine chiller inspections, DECCW officers investigated several instances of non-head shot kangaroo carcasses originating in NSW that were reported from processing works in South Australia and Queensland. These investigations resulted in four penalty notices being issued (see next section).

3. Penalty infringement notices

Issuing of verbal cautions, written warnings or infringement notices are at the discretion of the KMP compliance officer, in accordance with the Kangaroo Management Program's compliance policy and in consultation with the Team Leader Compliance. Decisions on possible prosecutions involve consultation with the Manager KMP and DECCW Legal Services Branch.

During 2010, 82 infringement notices were issued for the offence of contravening conditions of licence:

- Non-head shot (4)
- Unauthorised species (3)
- Exceed number authorised (3)
- Untagged carcasses (3)
- Fail to submit returns (harvester) (49)
- Use unregistered chiller (3)
- Fail to submit returns (fauna dealer) (1)
- Fail to submit returns (chiller) (1)
- Harvester returns not true and accurate (4)
- Transfer tags (4)

- Shoot outside licence period (5)
- Chiller registration numbers not displayed (2)

DECCW officers seized a total of 25 carcasses as a result of licence conditions being breached. Seized carcasses that meet the commercial licensing requirements are sold by DECCW to avoid wastage. Carcasses that do not meet the licence requirements (that is, are underweight or body-shot) are not sold.

In addition to infringement notices, 26 written cautions were issued for various minor breaches of licence conditions. Whilst not attracting a penalty, any cautions issued to a licensee are recorded and taken into account in any future compliance considerations.

4. Licence cancellations

DECCW did not cancel any licences or registrations during 2010.

5. Prosecutions

DECCW prosecuted one licensed harvester in 2010 for offences committed in 2009:

- three charges of harm protected fauna; and
- three breaches of licence conditions (failing to supply true and accurate harvester returns).

The prosecution was successful and the harvester was fined a total of \$12,000 (\$2,000 for each offence) and ordered by the Court to pay \$500 in legal costs to DECCW.

An unlicensed person charged with four counts of harming protected fauna was convicted, placed on 18 month good behaviour bonds for each offence, and ordered to pay \$500 costs to DECCW.

Table 1: Summary of compliance breaches and actions for 2010.

Offence	Action	Result
Contravene conditions of licence (s 133(4) of the NPW Act)	25 cautions	No penalty
	81 penalty notices	Penalties at \$300 each
	1 prosecution	Fines of \$6,000
Harm protected fauna (s 98(2) of the NPW Act)	1 caution	No penalty
	2 prosecutions	Fines of \$6,000 = \$500 costs 18 month good behaviour bonds x 4.

H: OTHER FACTORS AFFECTING THE COMMERCIAL HARVEST IN 2010

The industry's overseas marketing difficulties continued, with the Russian Federation maintaining its ban on the import of kangaroo meat. However, the most significant factor affecting the 2010 commercial harvest was widespread rainfall, causing regional flooding and extensive disruption to the harvest. Some areas, such as the northwest, remained

inaccessible for the majority of the year, while other areas were affected later, and for shorter periods.

The impact of the rainfall conditions, in concert with the continued contraction of the industry as a result of lost overseas markets, can be seen in the historically low harvest as a proportion of the available quota for 2010.

Allocation of commercial quota for both grey kangaroo species in the Griffith management zone and western grey kangaroos in the Coonabarabran zone was suspended in October 2009 as a result of population declines. Estimates derived from 2010 aerial surveys of the Western Plains of NSW indicated that the populations of eastern grey kangaroos in Griffith zone and western grey kangaroos in Coonabarabran zone had increased above their respective thresholds, and in accordance with the provisions of the amended plan, DECCW reinstated a pro rata quota from 1 September 2010 and advised licensees accordingly. The quota for western grey kangaroos in Griffith zone remained suspended.

Populations of both grey kangaroo species in the Tibooburra zone, and western grey kangaroos in the Bourke zone, have declined below their respective thresholds, and quotas were suspended from 1 September 2010. Licensees were advised, and existing licences were allowed to continue until their expiry.

For Upper Hunter management zone, estimates derived from helicopter surveys in September indicated that the wallaroo population had fallen below its threshold, and the quota was subsequently suspended from 1 November 2010. Licensees were advised.

I: RESEARCH INVOLVEMENT IN 2010

The Kangaroo Management Program did not initiate any new research proposals in 2010.

The Kangaroo Management Program contributed to an investigation into the impact of the kangaroo harvest on biodiversity and agricultural production. The project is a collaborative effort co-ordinated by the Invasive Animals CRC. All the field work for this research has been completed in 2010, and the final report is expected to be available mid-2011.

In 2009, the Kangaroo Management Program pledged in-kind support to assist in a collaborative project looking at humane methods of euthanizing orphaned pouch young. The project will provide scientific knowledge and other information on the animal welfare impact of kangaroo harvesting methods with the aim of determining the most appropriate euthanasia methods for young kangaroos which reduce, as much as possible, unnecessary pain, distress and suffering. Field work was due to commence in early 2010 but was delayed until November 2010, and is ongoing.

A pilot study into the extent to which foxes utilise harvest offcuts was planned to commence in August 2010, but has been delayed as a result of rainfall disrupting the harvest.

APPENDIX A: PROGRESS AGAINST PERFORMANCE INDICATORS IN 2010

Action	Performance Indicator	Progress in 2010
1.0 All relevant activities are licensed in accordance with the applicable NSW legislation and DEC policy	PI 1.1 – All licences across NSW are assessed, processed and issued in accordance with NSW legislation and DEC policy.	Done. Centralising licensing at two locations has resulted in consistent adherence to policy requirements.
2.0 Licence conditions are effective and reflect current NSW legislation, DEC policy and the goal and aims of the plan.	PI 2.1 – Licence conditions are reviewed at least annually and where necessary amended.	Licence conditions have been updated following the formation of DECCW, and amended to correct reporting requirements following centralisation of licensing in Dubbo and Broken Hill offices.
	PI 2.2 – Licensees are advised in writing of changes to licence conditions within one month of such changes being approved by the Manager, Kangaroo Management Program.	Licensees were advised by newsletter in November 2009 of the changes that would be in place on licences for 2010.
3.0 DEC will work with the NSW Firearms Safety and Training Council Ltd to ensure that all trappers are competent to achieve the standards set out in the Code of Practice for the Humane Shooting of Kangaroos.	PI 3.1 – All successful applicants for trapper's licences have completed the approved accreditation and their accreditation is current.	Validation processes built into the licensing database prevent a harvester's licence being created and saved unless a valid accreditation number is entered. Applicants must provide a certified photocopy of their accreditation card with their application for a harvester's licence.
4.0 DEC staff will monitor compliance with the Code of Practice for the Humane Shooting of Kangaroos by commercial kangaroo industry operators	PI 4.1 – All licensees who are found to have breached licence conditions relating to animal welfare are issued with Penalty Infringement Notices or are prosecuted as appropriate.	4 penalty notices issued for breach of licence conditions relating to animal welfare.
5.0 DEC will facilitate research into improving animal welfare outcomes associated with the commercial harvest of kangaroos	PI 5.1 – Issues associated with the animal welfare aspects of the commercial harvest are identified and a research prospectus is prepared and distributed to universities and other research institutions during the life of this plan.	Research priorities identified. DECCW has committed in-kind resources to a collaborative research project led by NSW Department of Industry and Investment. Project commenced in November 2010 and is ongoing.
6.0 DEC staff will undertake both regular and opportunistic monitoring of compliance by commercial kangaroo industry operators	PI 6.1 – On receipt of trapper's licence applications the authorised DEC officer assessing the applications will ensure that applicants have both a valid and current NSW Firearms accreditation and a current Firearms Licence.	Done. Validation rules built into licensing database prevent the issuing of a harvester's licence without this information.
	PI 6.2 – All chiller premises are inspected on average every three months during the life of this plan by Kangaroo Management staff and/or staff of the NSW Food Authority to ensure compliance with NSW legislation and licence conditions.	Done. Some chillers not inspected 4 times due to not being used – others inspected more frequently than required. Refer to Section G2.
	PI 6.3 – All kangaroo processing works in NSW are	Done in conjunction with chiller inspections. Skin

	inspected by Kangaroo Management staff and/or staff of the NSW Food Authority to ensure compliance with the NSW legislation and licence conditions.	premises located in Sydney inspected separately.
	PI 6.4 – During the life of this plan trappers' vehicles loaded with kangaroo carcasses are inspected opportunistically to ensure compliance with New South Wales legislation and licence conditions and the results of these inspections are documented.	Vehicles inspected during routine chiller inspections and joint compliance operations. Refer to Section G2.
7.0 Activities not in accordance with the plan and the NSW legislation will be investigated and where an offence has been committed and it is appropriate, prosecuted.	PI 7.1 – Reports of unlicensed activities and activities in breach of licence conditions are investigated to the fullest extent possible, and where sufficient evidence is available offenders are issued with Penalty Infringement Notices or prosecuted as appropriate.	Allegations and investigations register maintained and updated. All information investigated to fullest extent possible. Refer to Section G1.
8.0 The accuracy of industry returns will be continually monitored during the life of this plan.	PI 8.1 – During the life of this plan, all incoming industry returns are scrutinised and discrepancies are investigated and resolved.	Ongoing. Validation rules built into licensing database assist in the detection of errors. Administrative staff contact licensees to resolve discrepancies. 53 penalty notices issued for breaches of licence conditions relating to returns. Refer to Sections G3 and G4.
9.0 A compliance database will be maintained to support investigations, inspections and audits.	PI 9.1 – A compliance database is maintained.	Ongoing. Enforcement actions are recorded in database and also noted in the licensing database.
10.0 Population surveys will be conducted annually for the western plains and three-yearly for tableland zones and other areas that require helicopter surveys.	PI 10.1 – Kangaroo population estimates are obtained using standard survey methodology throughout the life of this plan.	Done. Aerial surveys of Western Plains conducted in June/July/August and population estimates available from KMP web page in October. Helicopter survey of Northern Tablelands management zones conducted in September.
	PI 10.2 – Ground surveys are conducted as required to verify the ratio of eastern grey kangaroos to western grey kangaroos in areas where both species occur.	Not required in 2010.
11.0 Commercial kangaroo harvest quotas will be set in accordance with the provisions of the plan.	PI 11.1 – All commercial kangaroo harvest quotas are set in accordance with the provisions of the plan.	Done. Quotas for 2010 were calculated from 2009 population estimates at 15% for eastern and western grey kangaroos and wallaroos, and 17% for red kangaroos. No quota is set for species and zones where current population estimates are below identified thresholds – refer Introduction on p2. Reinstated quotas following suspension are set at 10%.
	PI 11.2 – The Commonwealth Government is advised of commercial harvest quotas for the following calendar year by 30 November.	Done. 2011 Quota report submitted before 30 November. Commonwealth confirmation received 22 December 2010.
	PI 11.3 – If Commonwealth approval is required for quotas set above the rates specified in the plan as part	Not required in 2010.

	of an adaptive management experiment, such approval is obtained before the additional quota is implemented.	
	PI 11.4 – The Quota Report is made available to the public via the KMP web page.	Done.
12.0 Special kangaroo harvest quotas will be set in accordance with the provisions of the plan.	PI 12.1 – Special kangaroo harvest quotas are set and utilised in accordance with the provisions of the plan.	Done. Special quotas calculated at 1.5% of the population estimate as per Commonwealth's approval of the plan.
13.0 Kangaroo populations will continually be monitored indirectly throughout the life of this plan.	PI 13.1 – Sudden or acute changes in the average weights of harvested kangaroos, as ascertained from licence returns, are investigated to determine where practicable the cause of the change.	Done monthly as per the amended plan. No significant changes detected.
14.0 Historical data relating to the commercial kangaroo harvest in NSW will be analysed during the life of this plan to identify trends; this analysis will be considered in future kangaroo management programs.	PI 14.1 – Analysis of historical kangaroo harvest and management data is undertaken during the life of this plan.	Ongoing.
	PI 14.2 – The results of analysis and research using historical kangaroo harvest and management data are published in an appropriate forum.	Not applicable in 2010.
15.0 Where practicable experiments will be performed to test deliberate management interventions during the life of this plan.	PI 15.1 – All proposals to undertake active adaptive management experiments are reviewed and assessed by DEC in accordance with the criteria outlined in this plan.	None in 2010.
	PI 15.2 – All necessary approvals are obtained prior to experiments testing deliberate management interventions commence.	No approvals necessary.
	PI 15.3 – All adaptive management experiments are continuously monitored and conducted according to approval conditions.	Not applicable in 2010.
	PI 15.4 – Results of all experiments testing deliberate management interventions are published in an appropriate forum.	Not applicable in 2010.
16.0 DEC will facilitate research into the ecology and harvest management of kangaroos.	PI 16.1 – Issues associated with the ecology of harvested species and the management of the commercial harvest are identified and a research prospectus is prepared and distributed to universities and other research institutions during the life of this plan.	Pilot study to be conducted by NSW Department of Industry and Investment planned for August commencement but delayed due to wet weather.
17.0 An annual report on the plan will be prepared and submitted to the Commonwealth.	PI 17.1 – An annual report on the operation of the plan for the previous calendar year is submitted to the Commonwealth by end of March of the following year.	Annual Report for 2009 submitted and accepted. Annual Report for 2010 submitted.
	PI 17.2 – All annual reports prepared during the life of this plan are posted on the KMP web page.	Done for 2009 Annual Report. 2010 Annual Report will be posted after acceptance by Commonwealth.

18.0 The review of the plan will commence no later than twelve months prior to the expiry of this plan.	PI 18.1 – The schedule of DEC plan review activities initiated no later than 12 months prior to the expiry of this plan will include, but is not limited to: <ul style="list-style-type: none"> • Strategic planning prior to a full review of the program • Compilation of reports including reviews of relevant literature • Public meetings/forums including the KMAP and invited scientists • Public exhibition of new draft program; and • KMAP review of public submissions. 	Project plan for review of current plan and drafting of next plan prepared for KMAP October 2010 meeting.
	PI 18.2 – The success of the current plan in achieving its goal is assessed by measuring performance indicators.	Assessment commenced.
	PI 18.3 – The results of the plan review are presented to the Commonwealth and are placed on the KMP web page.	Not applicable in 2010.
19.0 Members of the KMAP will be provided with relevant information and afforded the opportunity to advise DEC on key kangaroo management issues throughout the life of this plan.	PI 19.1 – KMAP is provided with monthly updates on commercial harvest and tag issue throughout the life of this plan.	Done.
	PI 19.2 – KMAP is provided with other relevant information as required or as necessary throughout the life of this plan.	Done. During 2010 information provided included results of aerial surveys, harvest statistics and copies of information sent to licensees.
	PI 19.3 – KMAP meets at least twice per year to review progress of plan in relation to the goal and aims of the plan.	KMAP met on 2 March and 26 October 2010.
20.0 Relevant public documents will be made available on the KMP web page.	PI 20.1 – Throughout the life of this plan the KMP web page contains the following information as a minimum standard: <ul style="list-style-type: none"> • The current and previous management plans; • Monthly tag issue and commercial harvest statistics; • Historical harvest statistics; • Population survey reports; • Current population estimates; • Current commercial quotas; • Ratified minutes of recent KMAP meetings; • Contact information for the Kangaroo Management Section; and 	Done. All this information is currently available and updated as necessary.

	<ul style="list-style-type: none"> • Current forms for commercial kangaroo licences. 	
21.0 Publicly available information will be provided to interested parties on request.	PI 21.1 – Publicly available kangaroo management information is distributed to interested parties as soon as practicable after such a request.	Done.
22.0 Where appropriate relevant DEC staff will participate in media interviews and prepare media releases.	PI 22.1 – DEC staff participate in interviews with the media where appropriate.	Done. Examples include radio interviews regarding updated population estimates and quota suspensions.
	PI 22.2 – Media releases are prepared when appropriate for issues of interest to the community such as population surveys and the release of quota for the next calendar year.	Done. Examples include following successful prosecutions for harming protected fauna.
23.0 Relevant information regarding licensing arrangements will be developed as required and distributed to all licensees.	PI 23.1 – A copy of the current Handbook for Kangaroo Trappers is issued with every trapper's licence throughout the life of this plan to ensure that licensees are apprised of relevant licensing requirements and responsibilities.	Done. Handbook has been revised and updated, following centralised licensing, the creation of new harvest zones and formation of DECCW.
	PI 23.2 – A chiller operator's handbook is developed and published during the life of this plan and thereafter issued with every chiller registration to ensure that operators are aware of relevant licensing requirements and responsibilities.	Handbook published and distributed August 2010 to all existing fauna dealers and chiller managers. Handbook also provided to all new chiller managers.