

2012 Annual Report

New South Wales Commercial Kangaroo Harvest Management Plan 2012–2016

This report was prepared in March 2013 by the Manager, Kangaroo Management Program, Office of Environment and Heritage (NSW) North West Branch.

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Published by:

Office of Environment and Heritage
59 Goulburn Street
PO Box A290
Sydney South 1232
Phone: (02) 9995 5000 (switchboard)
Phone: 131 555 (environment information and publications requests)
Fax: (02) 9995 5999
TTY: (02) 9211 4723
Email: info@environment.nsw.gov.au
Website: www.environment.nsw.gov.au

ISBN 978-1-74359-058-4
OEH 2013/0244
June 2013

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Introduction

The New South Wales Office of Environment and Heritage (OEH) and its predecessor organisations have been researching, monitoring and managing the commercial harvest of kangaroos in NSW since the 1970s. During this period, a sequence of kangaroo management plans has provided the framework for the harvest, in accordance with legislative requirements.

In December 2011 the Commonwealth Government declared the New South Wales Commercial Kangaroo Harvest Management Plan 2012–2016 to be an approved wildlife trade management plan for the purposes of the *Environment Protection and Biodiversity Conservation Act 1999*. This Plan set the framework for the commercial harvest of kangaroos in NSW following the expiry on 31 December 2011 of the New South Wales Commercial Kangaroo Harvest Management Plan 2007–2011.

This report gives details of the operation of the New South Wales Commercial Kangaroo Harvest Management Plan 2012–2016 in its first year (2012), as required by Performance Indicator 18.1 of the plan. Appendix A describes each performance indicator and the progress made during 2012.

The following information is presented:

- actual harvest, by zone and species, compared with the approved quotas
- details of any Special Quota used (see page 5 for an explanation of Special Quotas)
- 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 licensees
 - number of premises inspected
 - number of Penalty Infringement Notices issued and the reasons
 - number of prosecutions undertaken (offence and outcome)
 - any joint surveillance/enforcement activities completed
- any unusual situations that arose (e.g. flood/disease outbreaks; market factors)
- any experiments or research undertaken by OEH or sponsored by OEH.

Details of population survey methods, the results of aerial surveys and the setting of quotas are given in a separate report, namely the 2013 NSW Kangaroo Quota Report, available from the KMP's web page at www.environment.nsw.gov.au/wildlifemanagement/KangarooManagementProgram.htm.

Actual harvest in 2012, by zone and species

Table 1 summarises the 2012 harvest for each management zone, across all species combined. ‘%q’ is the commercial take as a percentage of the approved quota. ‘%p’ is the commercial take as a percentage of the population estimate, and ‘Ave. wt’ is the average carcase weight in kilograms of harvested females (F) and males (M).

Table 1. Harvest in 2012, by zone for all species combined

<i>All species</i>									
Management zone	No.	Population	Quota	Harvest	%q	%p	% Male	Ave. wt (F)	Ave. wt (M)
Tibooburra	1	672,338	112,744	24,390	21.6	3.6	82.4	18.9	30.5
Broken Hill	2	1,258,371	204,820	60,299	29.4	4.8	83.0	18.9	27.9
Lower Darling	4	285,445	34,959	13,030	37.3	4.6	73.1	18.2	28.8
Cobar	6	386,981	57,241	12,598	22.0	3.3	90.8	18.2	27.1
Bourke	7	572,949	88,440	16,031	18.1	2.8	93.7	17.6	28.6
Narrabri	8	1,759,062	27,4467	40,294	14.7	2.3	85.6	17.9	26.3
Armidale	9	248,035	37,205	13,721	36.9	5.5	71.5	17.7	27.9
Coonabarabran	10	1,433,068	221,825	54,301	24.5	3.8	91.3	18.4	26.5
Griffith	11	1,097,721	172,602	39,091	22.6	3.6	72.0	18.7	29.9
Glen Innes	13	301,690	45,254	14,825	32.8	4.9	75.2	17.8	26.8
Upper Hunter	14	182,485	26,624	7,327	27.5	4.0	78.5	18.9	30.4
SE NSW	16	655,900	98,385	18,385	18.7	2.8	74.6	19.6	30.3
C/T North	48	612,590	91,889	13,337	14.5	2.2	73.5	18.9	29.2
C/T South	49	347,830	52,175	8,372	16.0	2.4	77.9	19.2	30.1
Totals		9,814,465	1,518,630	336,001	22.1	3.4	81.9	18.6	28.1

Table 2 lists the details of the 2012 harvest by zone and species. ‘%q’ is the commercial take as a percentage of the approved quota. ‘%p’ is the commercial take as a percentage of the population estimate, and ‘Ave. wt’ is the average carcass weight in kilograms of harvested females (F) and males (M).

Table 2. Harvest in 2012, by zone and species

<i>Eastern grey kangaroo</i>									
Management zone	No.	Population	Quota	Harvest	%q	%p	% Male	Ave. wt (F)	Ave. wt (M)
Tibooburra	1	40,635	6,095	622	10	2	82.3	18.2	32.2
Broken Hill	2	68,992	10,349	1,950	19	3	78.9	17.7	28.7
Lower Darling	4	32,589	3,259	3,026	93	9	74.5	19.1	30.5
Cobar	6	75,559	11,334	2,864	25	4	88.3	17.6	25.8
Bourke	7	94,734	9,473	3,981	42	4	92.0	17.0	27.2
Narrabri	8	1,228,695	184,304	30,173	16	2	84.2	17.7	25.8
Armidale	9	206,780	31,017	11,695	38	6	92.0	17.0	27.2
Coonabarabran	10	979,179	146,877	40,698	28	4	90.1	18.2	26.0
Griffith	11	477,620	71,643	23,488	33	5	73.1	19.2	30.3
Glen Innes	13	269,500	40,425	12,635	31	5	71.3	17.7	27.2
Upper Hunter	14	167,500	25,125	6,070	24	4	74.1	18.9	30.9
SE NSW	16	655,900	98,385	18,385	19	3	74.6	19.6	30.3
C/T North	48	612,590	91,889	13,337	15	2	73.5	18.9	29.2
C/T South	49	347,830	52,175	8,372	16	2	77.9	19.2	30.1
Totals		5,258,103	782,350	177,296	23	3	79.6	18.5	27.8
<i>Red kangaroo</i>									
Management zone	No.	Population	Quota	Harvest	%q	%p	% Male	Ave. wt (F)	Ave. wt (M)
Tibooburra	1	621,124	105,591	23,214	22	4	82.6	18.9	30.4
Broken Hill	2	1,079,052	183,439	48,729	27	5	83.4	19.1	28.0
Lower Darling	4	186,473	31,700	10,004	32	5	72.6	18.0	28.2
Cobar	6	210,921	35,857	5,957	17	3	92.4	18.9	28.8
Bourke	7	444,932	75,638	11,224	15	3	94.3	17.9	29.1
Narrabri	8	530,367	90,162	10,121	11	2	89.6	18.7	27.8
Coonabarabran	10	343,239	58,351	13,171	23	4	94.8	19.8	27.9
Griffith	11	556,415	94,591	12,473	13	2	70.4	18.1	30.1
Totals		3,972,523	675,329	134,893	20	3	84.2	18.7	28.7

Table 2 continued. Harvest in 2012, by zone and species

<i>Walleroo</i>									
Management zone	No.	Population	Quota	Harvest	%q	%p	% Male	Ave. wt (F)	Ave. wt (M)
Armidale	9	41,255	6,188	2,026	33	5	95.5	20.8	26.7
Glen Innes	13	32,190	4,829	2,190	45	7	97.9	20.0	25.3
Upper Hunter	14	14,985	1,499	1,257	84	8	99.1	19.4	28.7
Totals		88,430	12,516	5,473	44	6	97.3	19.4	26.6
<i>Western grey kangaroo*</i>									
Management zone	No.	Population	Quota	Harvest	%q	%p	% Male	Ave. wt (F)	Ave. wt (M)
Tibooburra	1	10,579	1,058	554	52	5	74.4	19.4	30.1
Broken Hill	2	110,327	11,033	9,620	87	9	81.7	18.5	27.1
Lower Darling	4	66,383							
Cobar	6	100,501	10,050	3,777	38	4	90.0	17.8	25.2
Bourke	7	33,283	3,328	826	25	2	93.2	17.5	27.6
Coonabarabran	10	110,650	16,598	432	3	0	94.0	20.8	24.9
Griffith	11	63,686	6,369	3,130	49	5	69.8	17.4	26.6
Totals		496,059*	48,435	18,339	38	4	82.0	18.2	26.6

* There is a small population (650) of western grey kangaroos in the Narrabri management zone. This is included in the population estimate, but no quota is set for this species in this zone. The population of this species was below the harvest threshold in the Lower Darling zone, so no quota was set during 2012 for this species in this zone.

Harvest quota management

Because of reduced market demand, the only quota management measures implemented during 2012 were limits on the maximum number of tags issued per occupier's licence, as per Table 3.

Table 3. Limits on number of tags available per occupier's licence for 2012

Zone	Property size		
	Less than 1000 ha	1000–10,000 ha	More than 10,000 ha
Armidale	50	100	150
Coonabarabran	50	100	200
Glen Innes	50	100	150
Griffith	50	100	200
Narrabri	50	100	150
SE NSW	50	100	100
Upper Hunter	50	100	100
Central Tablelands North	50	100	150
Central Tablelands South	50	100	150
Bourke, Broken Hill, Cobar, Lower Darling, Tibooburra – no formal restrictions but applications that appear unreasonable may be queried.			

Special Quota

A Special Quota for 2012 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.

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

OEH may use the Special Quota only when the commercial quota for a particular kangaroo management zone has been fully issued. As specified in the New South Wales Commercial Kangaroo Harvest Management Plan 2012–2016, the use of a Special Quota will depend on one or more of the following:

- full utilisation of a commercial quota set at the usual proportion for that species in that zone
- consideration of local conditions, including exceptional circumstance declarations and/or Western Lands de-stocking orders
- kangaroo population trends (based on the most recent complete surveys)
- climatic conditions during the quota year.

However, non-commercial culling proceeds regardless of the available commercial quota and is typically less than 10% of the commercial harvest. An authorised OEH officer must assess each application for a non-commercial licence. In areas where commercial harvesting is available, non-commercial licences are generally requested only when:

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

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

During 2012, no Special Quota was used. The quota was fully allocated for eastern grey kangaroos in the Lower Darling zone and for wallaroos in the Upper Hunter zone, but the circumstances did not warrant the release of a Special Quota. Actual harvest of these species fell well short of the tag allocations.

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 1999 to 2011 inclusive, the total harvest consisted of between 68.1% and 89.4% males (Figure 1). Data gathered from harvester returns throughout 2012 indicate that 76.5% of the harvest overall was male; this is higher than the long-term average of 70.7%.

One processing company made the decision to accept only male carcasses from October 2012 onward in response to customer concerns regarding the fate of dependent young orphaned by the harvest. As a result, the proportion of males in the harvest increased during the final quarter of 2012.

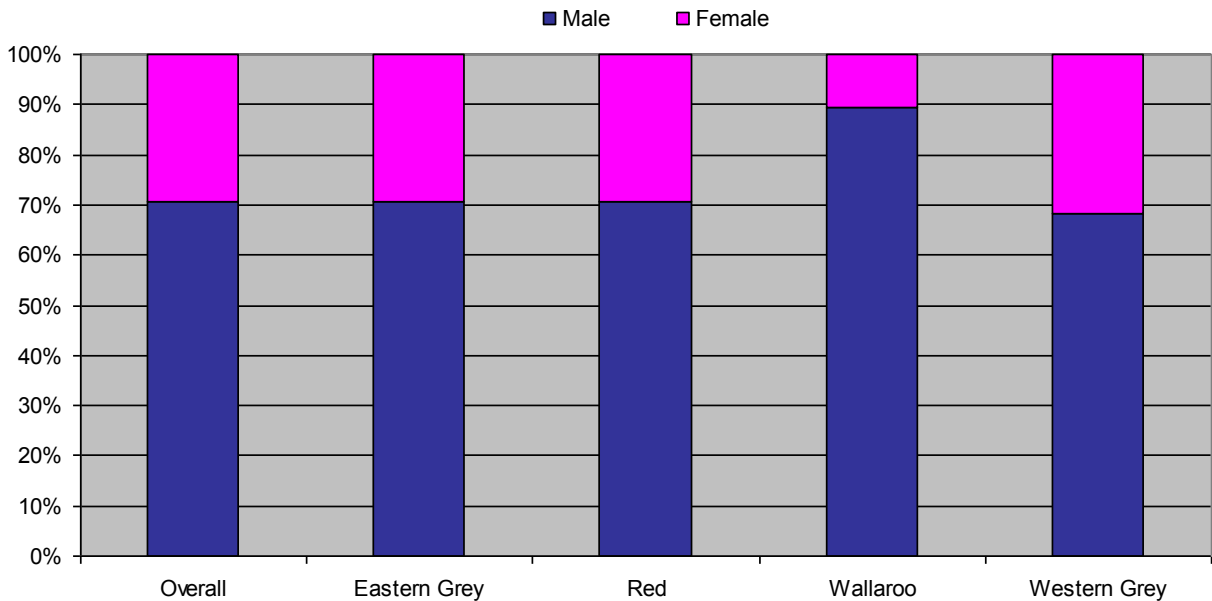


Figure 1. Average sex bias in the commercial harvest, 1999–2011. Male bias is higher in the wallaroo than in other species because of the more pronounced size difference between males and females. Minimum carcass weights were introduced as licence conditions in September 2003, leading to a slight increase in male bias due to sexual dimorphism in all harvested species.

More so than with the other harvested species (Figures 2, 3 and 5), for wallaroo (*Macropus robustus*) the commercial take (Figure 4) is very strongly biased towards males, because females rarely reach the minimum size dictated by the conditions attached to harvester and fauna dealer licences. This has particularly been the case since 2008, when minimum carcass weights were increased by 2 kilograms over the previous standards.

Despite the tendency of males to be larger, commercial harvesters target a range of sizes above the minimum.

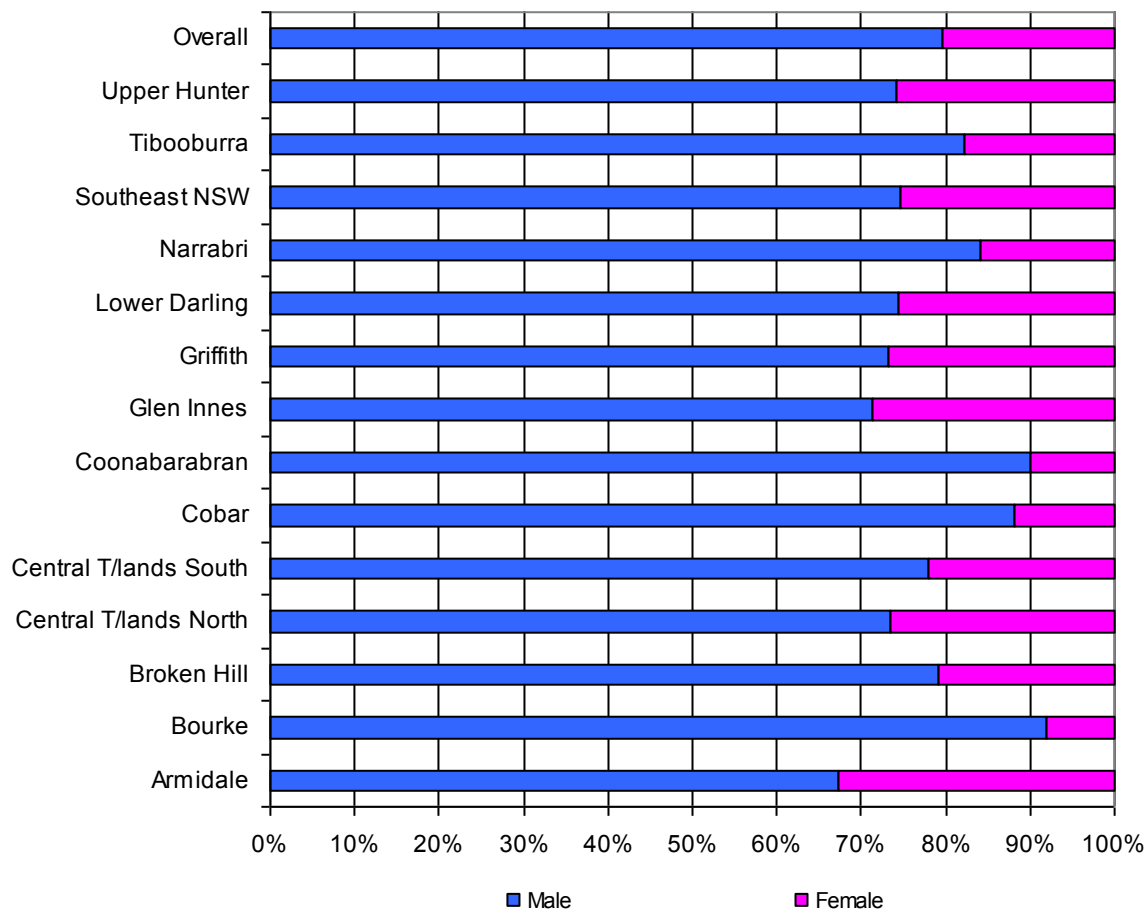


Figure 2. Eastern grey kangaroo sex bias in the commercial harvest, 2012. No consideration is given in this chart to the total harvest of this species in each zone; for example, the Tibooburra harvest

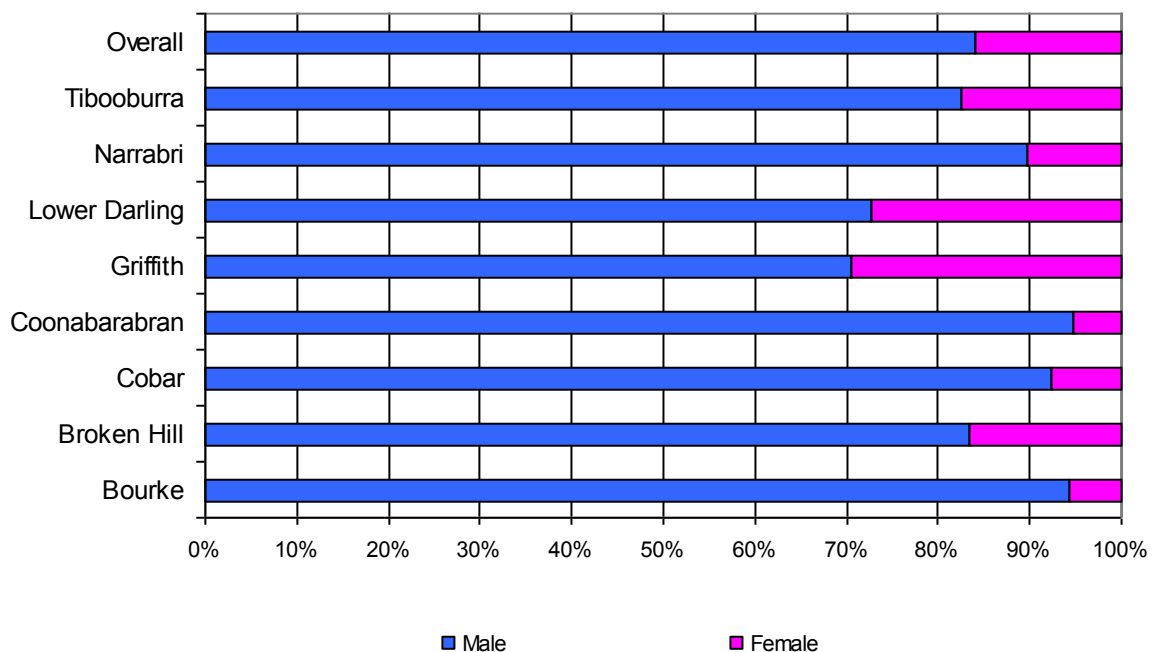


Figure 3. Red kangaroo sex bias in the commercial harvest, 2012. No consideration is given in this chart to the total harvest of this species in each zone; for example, the Cobar harvest was around 6,000 animals, compared with over 48,000 for the Broken Hill zone.

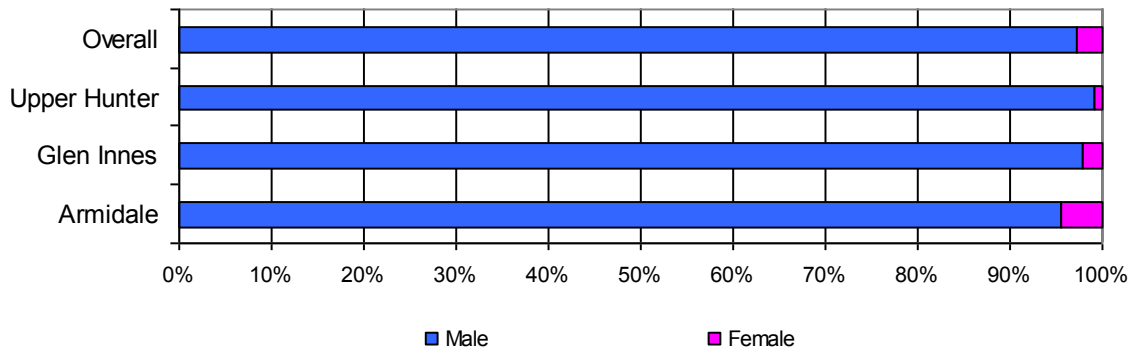


Figure 4. Wallaroo sex bias in the commercial harvest, 2012. The total harvest of wallaroos was around 5,500 animals—about 1.6% of the total harvest for 2012. Male bias is very strong, because female wallaroos rarely reach the minimum size for commercial harvest.

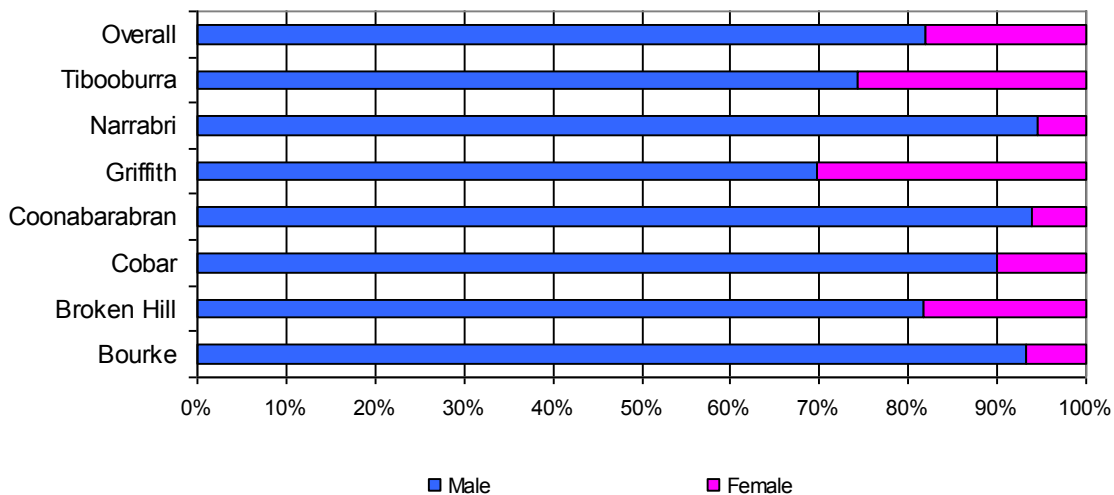


Figure 5. Western grey kangaroo sex bias in the commercial harvest, 2012. No consideration is given in this chart to the total harvest of this species in each zone; for example, the Coonabarabran harvest was about 430 animals, and the total harvest of this species across zones was only about 18,300.

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. Results of these opportunistic inspections during 2012 indicated a strong bias towards males (94.6%).

Average weights by species and zone

Conditions attached to commercial harvest licences during 2012 required that kangaroo carcasses delivered to chillers for sale were not to weigh less than 14 or 15 kilograms. (The two different values reflect differences in the way the carcasses are dressed.) Before 1 January 2008, the 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 from harvester returns during 2012 indicate that average carcass weight across all species was 28.1 kilograms for males and 18.6 kilograms for females; these values are higher than the long-term averages. This is to be expected, given the increase in minimum carcass weight as part of licence conditions.

OEH does not require licensees to record individual carcass weights. Instead, harvester returns provide total weights for each category of carcasses (e.g. mean weight of female eastern grey kangaroos = total weight of females / number of females). These totals are used to calculate the average weights of carcasses by sex, species and zone (Figures 7–14).

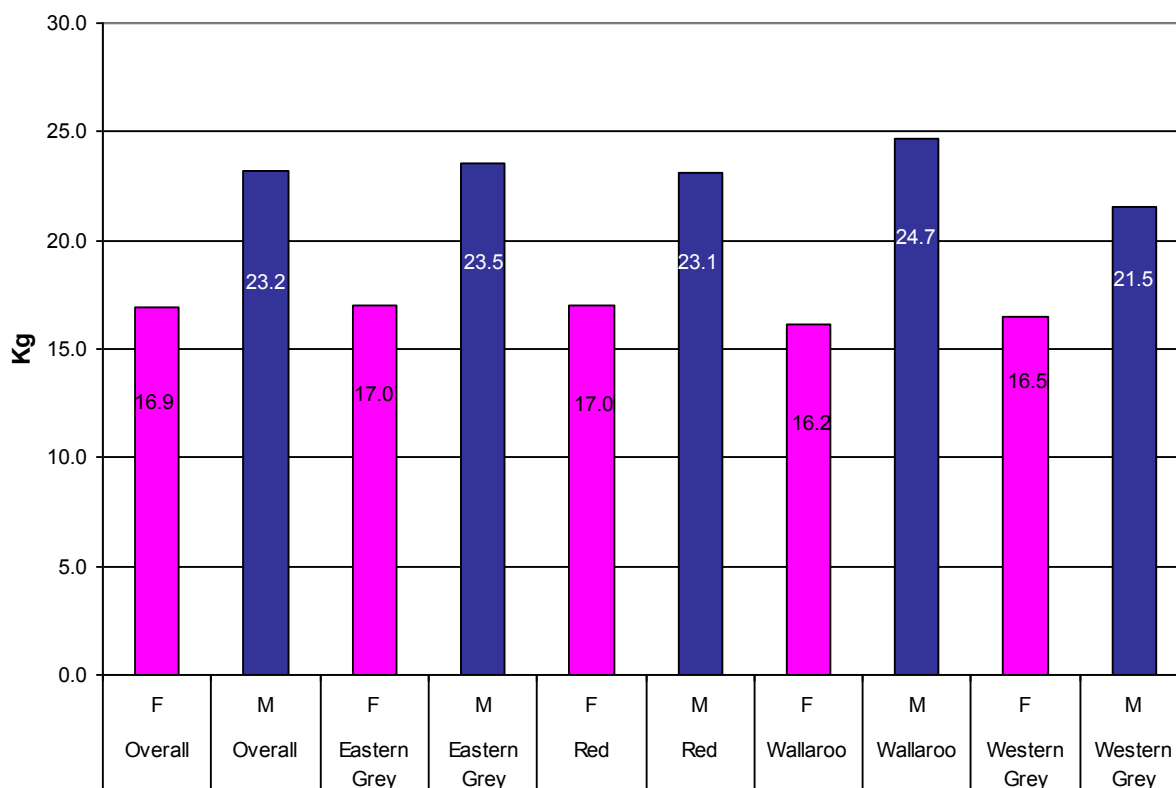


Figure 6. Average weights of carcasses in the commercial harvest, 1999–2011. Minimum carcass weights were introduced as licence conditions in September 2003. They increased by 2 kilograms from 1 January 2008, leading to a slight increase in the long-term average.

Average carcass weights were calculated monthly and compared with the long-term average (1999–2011) for each sex, species and zone, as required by Performance Indicator 13.1 of the amended plan. None of the 2012 monthly results was more than one standard deviation below the long-term average. Standard deviations ranged from 1.97 kilograms for eastern grey females in the Cobar zone to 6.33 kilograms for red males in the Narrabri zone, reflecting the degree of variation in the size of animals taken and the relative sample sizes.

For most combinations of species, sex and zone, average carcass weights were reasonably consistent from month to month. However, in the following charts, no consideration is given to the differences in sample sizes between sexes, species and zones; for example, the total harvest of female wallaroos during 2012 was just 148 individuals, whereas the harvest of male red kangaroos was about 113,000.

Where large fluctuations occur, the sample size is usually very small and statistical reliability is low. 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 (e.g. in the case of male eastern grey kangaroos in the Coonabarabran zone).

In the charts that follow, there are a number of months in which no animals of a given sex or species were shot in a particular zone; this results in discontinuous lines in the charts. For example, in Figure 7 there were no female eastern grey kangaroos shot in the Upper Hunter zone in October.

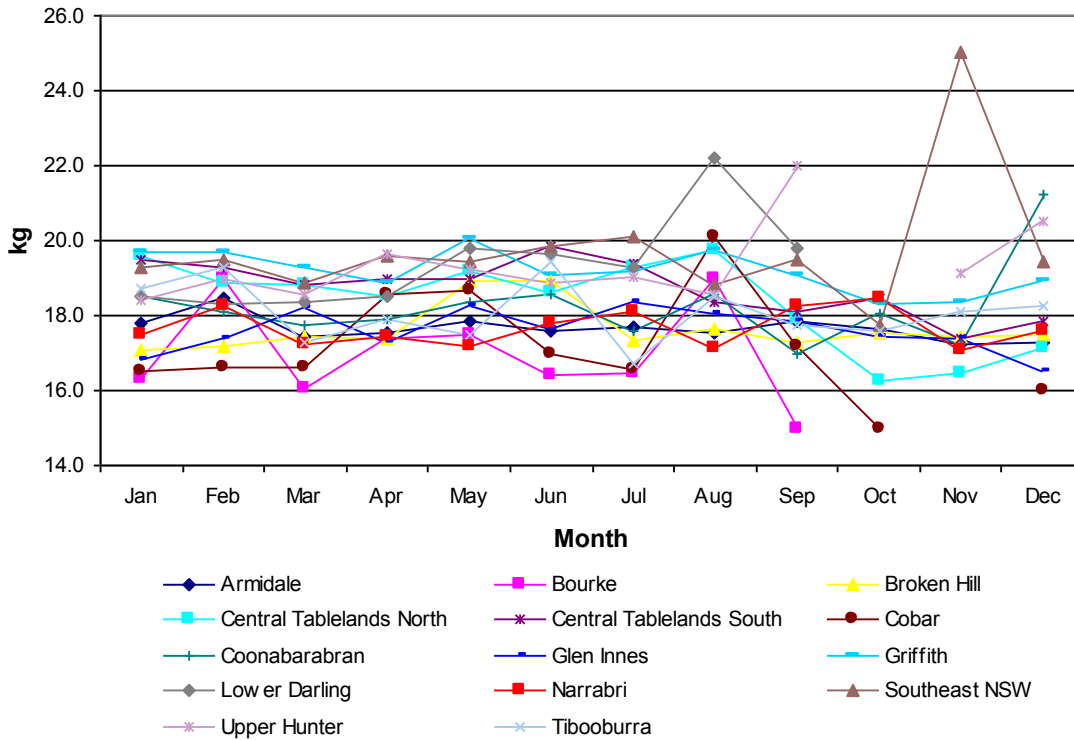


Figure 7. Eastern grey kangaroo female average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages. Large fluctuations are usually associated with small numbers of animals; the high average for Southeast NSW in November relates to just 27 carcasses, and the sharp decline for t

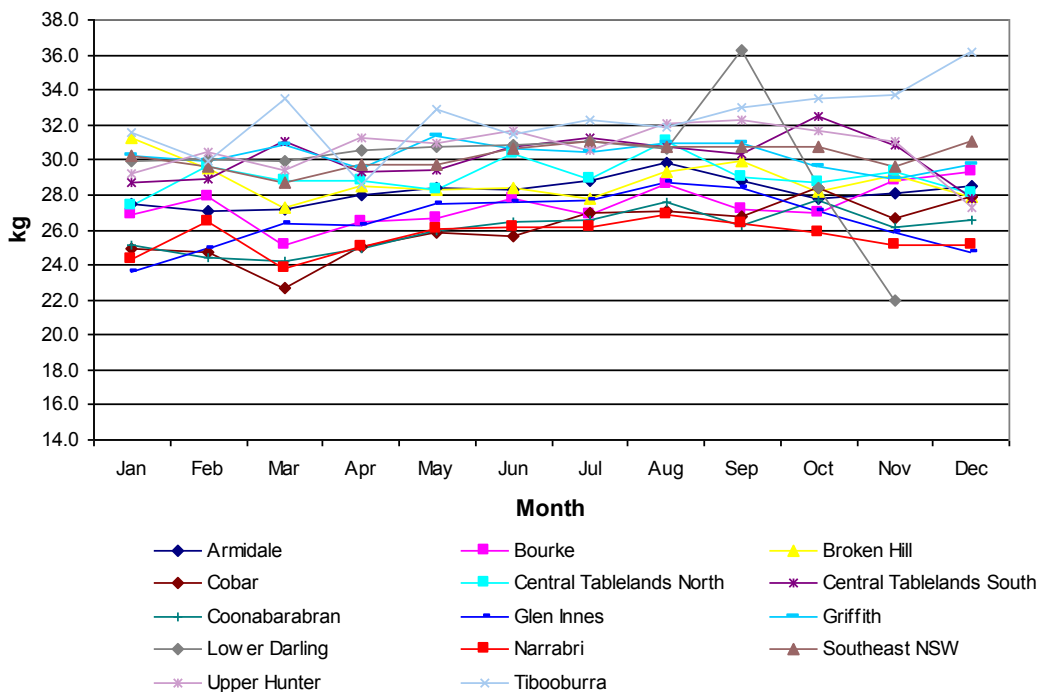


Figure 8. Eastern grey kangaroo male average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages. The sharp decline in average weight in the Lower Darling zone for November relates to a harvest of only three animals that month.

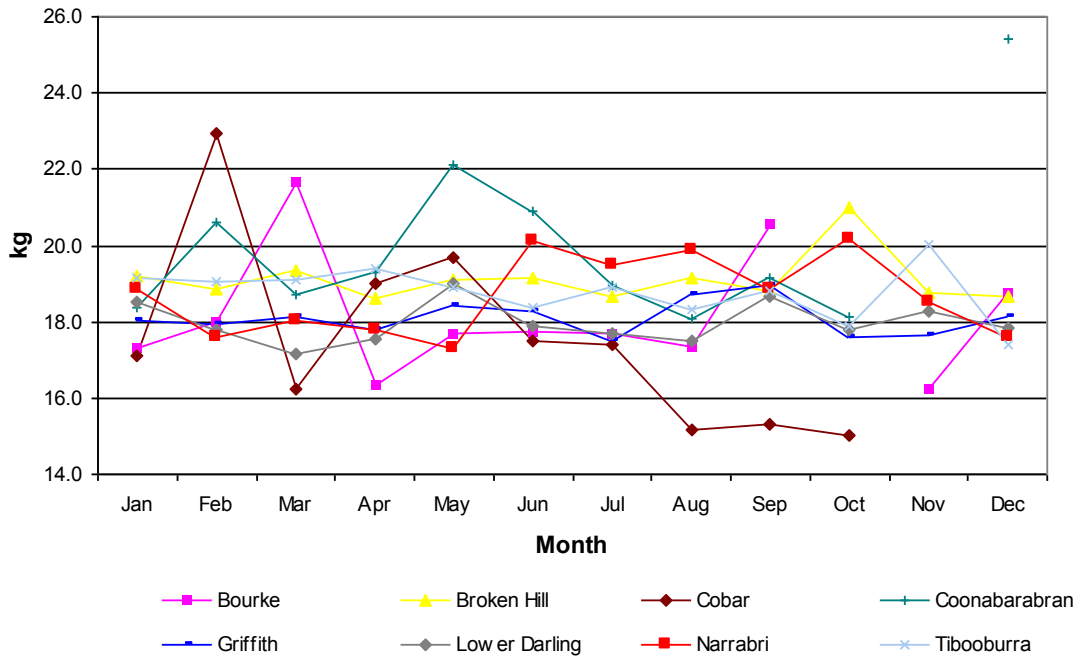


Figure 9. Red kangaroo female average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the

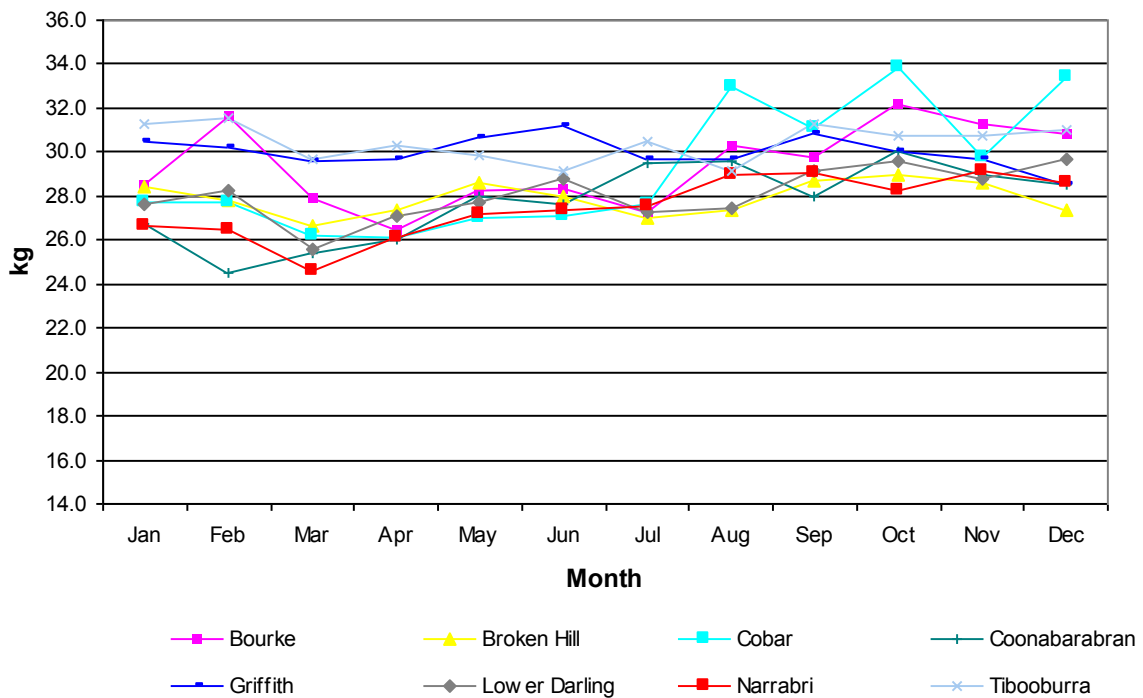


Figure 10. Red kangaroo male average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages.

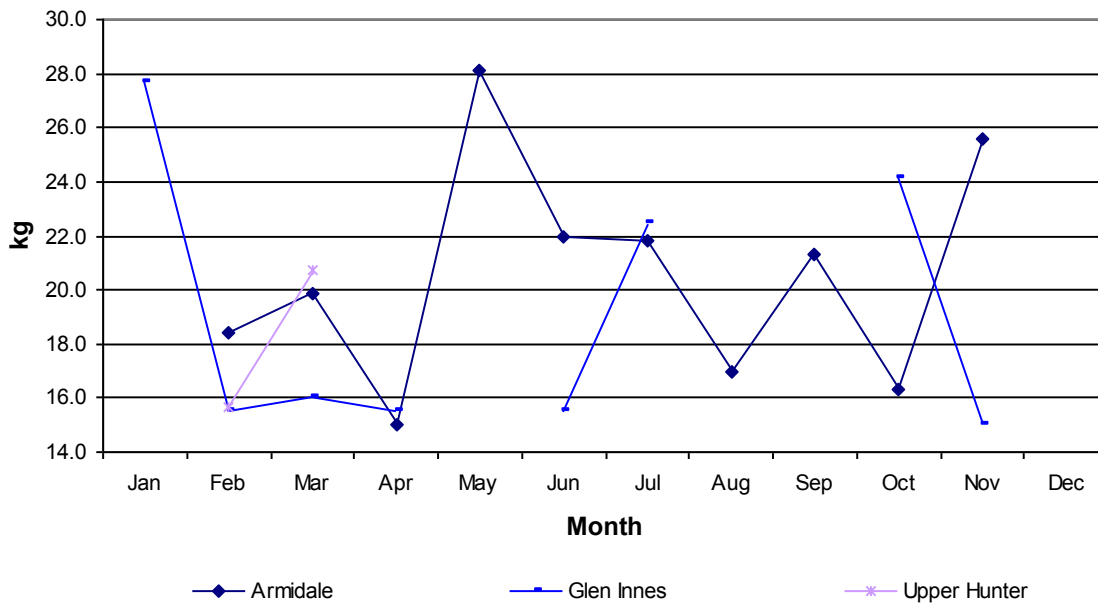


Figure 11. Wallaroo female average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the

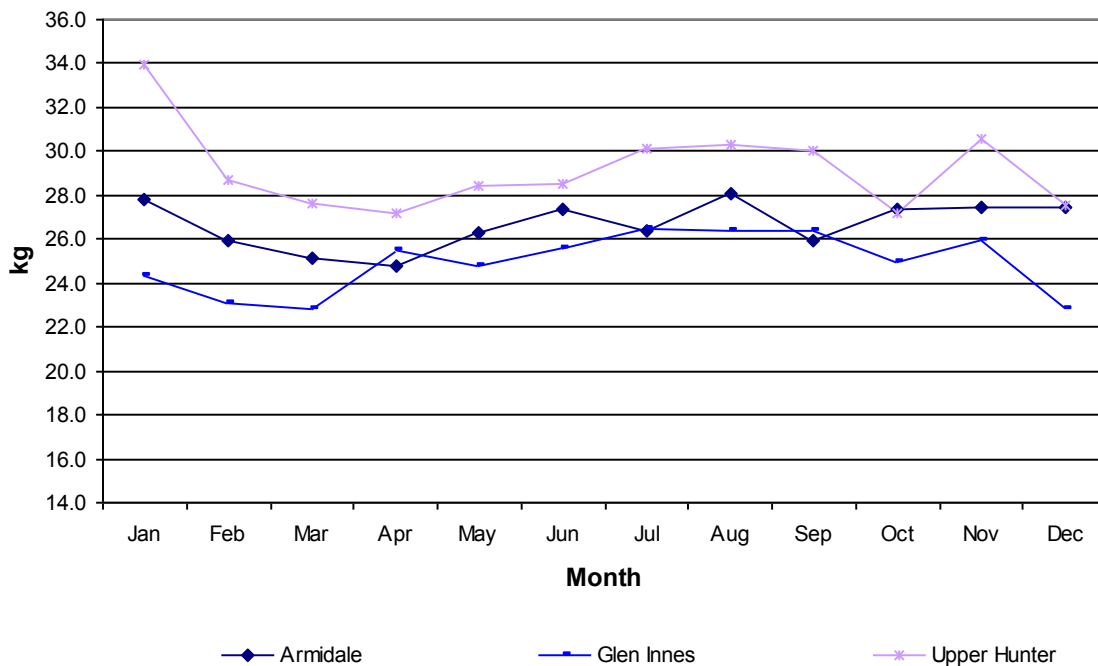


Figure 12. Wallaroo male average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages.

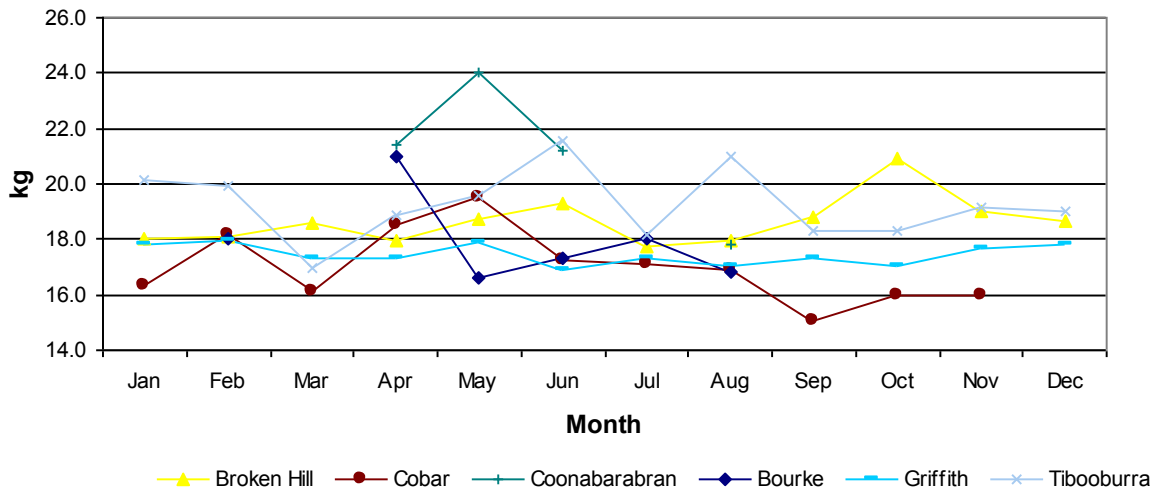


Figure 13. Western grey kangaroo female average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages. The total take of female western grey kangaroos in 2012 was about 3,300 animals.

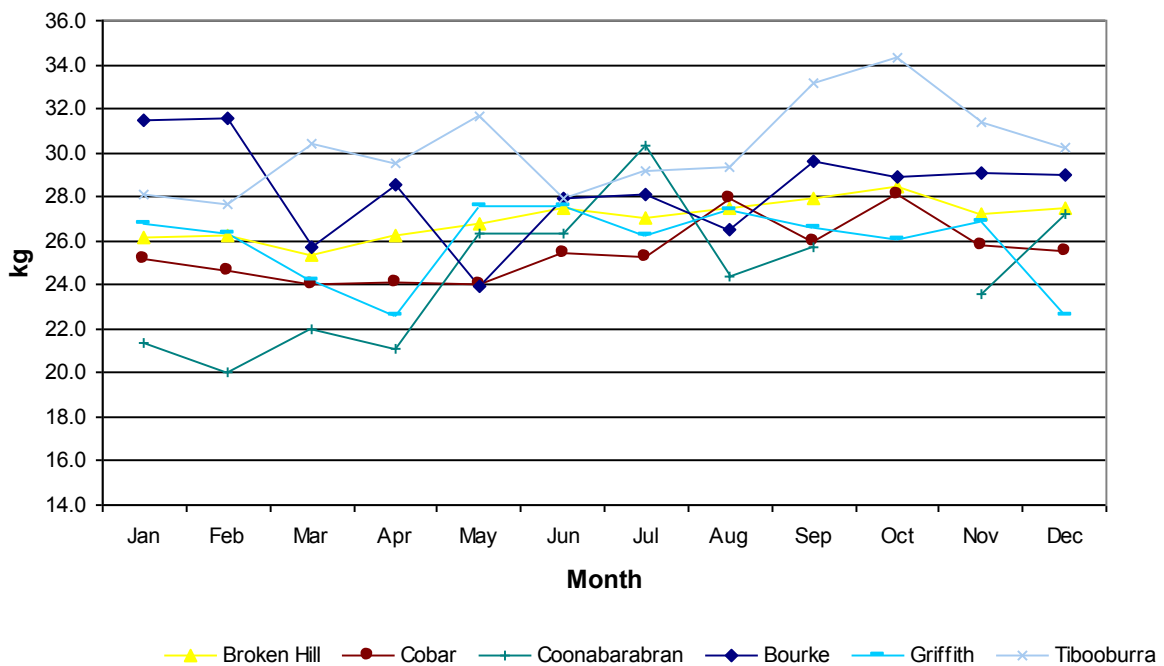


Figure 14. Western grey kangaroo male average carcass weights in the commercial harvest, 2012. Minimum carcass weights were introduced as licence conditions in September 2003 and increased by 2 kilograms from 1 January 2008. Current carcass weights are therefore generally higher than the long-term averages. The apparent fluctuation in carcass weights for the Coonabarabran zone is the result of a small sample size, with a total take in 2012 of only about 400 animals.

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. If underweight carcasses are detected, the harvester responsible may be cautioned or fined, depending on the circumstances.

Non-commercial culling within the commercial harvest zones

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

The Coonabarabran and Narrabri zones comprise the majority of winter cropping lands within the commercial harvest 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 culls relative to the commercial quotas and harvests. In rangelands pastoral areas, non-commercial licences are rarely requested; for example, over the period 1999–2011 the non-commercial licences issued for the Broken Hill zone were equivalent to 1.0% of the commercial quota available over that period.

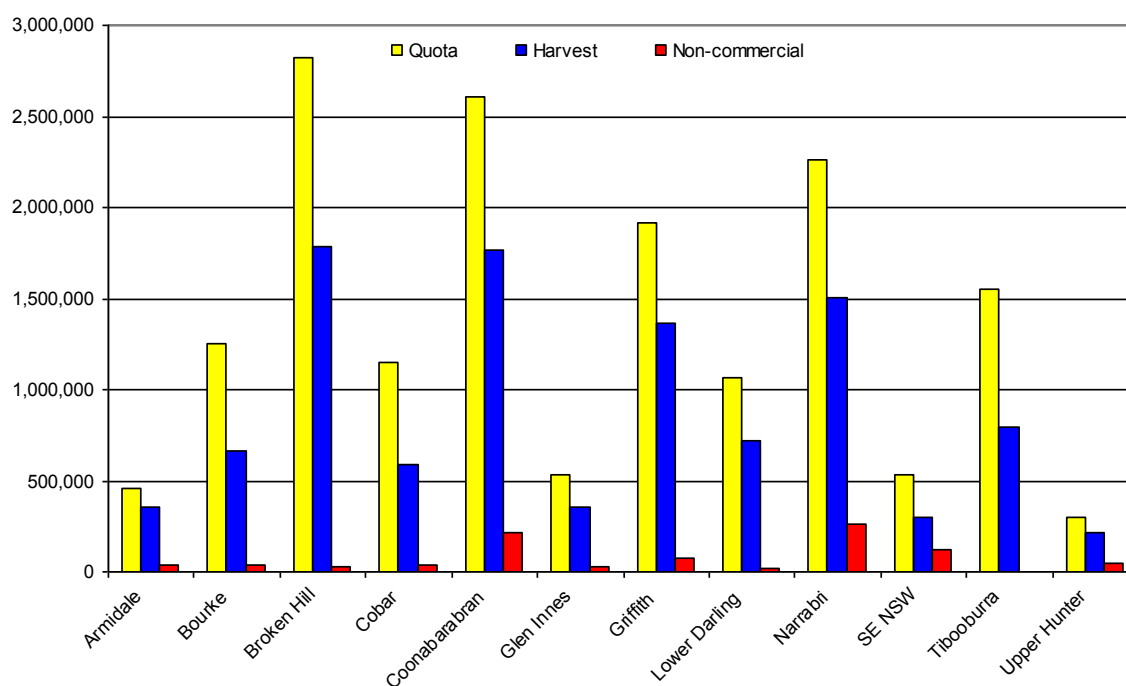


Figure 15. Comparison of commercial quotas, actual commercial harvests and non-commercial culls for the period 1999–2011. Non-commercial licences are available state wide and can be issued for properties where commercial harvesting is also done. However, the non-commercial cull is typically equivalent to less than 10% of the commercial take and is highest in those areas where high-value pastures and winter crops are important. Southeast NSW zone commenced operation in 2004; data shown for this zone are therefore limited to 2004–2011.

In 2012, non-commercial licences were issued for the culling of 55,291 kangaroos, equivalent to 16.5% of the commercial harvest, or 3.6% of the commercial quota (Figure 16). The commercial industry continued to operate at a reduced scale during 2012; because kangaroo populations respond to favourable seasonal conditions, landholders in some areas perceived a need for population control that could not be met through the commercial industry. Consequently, OEH saw

a slight increase in inquiries regarding non-commercial licences. However the level of non-commercial culling done remains low relative to the commercial harvest, except in the new Tablelands zones, where commercial harvesting has been available only since 2009. Experience with the Southeast NSW commercial harvest zone, which opened in 2004, indicates that it takes several years for landholders to become fully aware of commercial harvest options and become comfortable participating in the harvest program. During this time there is still substantial reliance on non-commercial culling for kangaroo management.

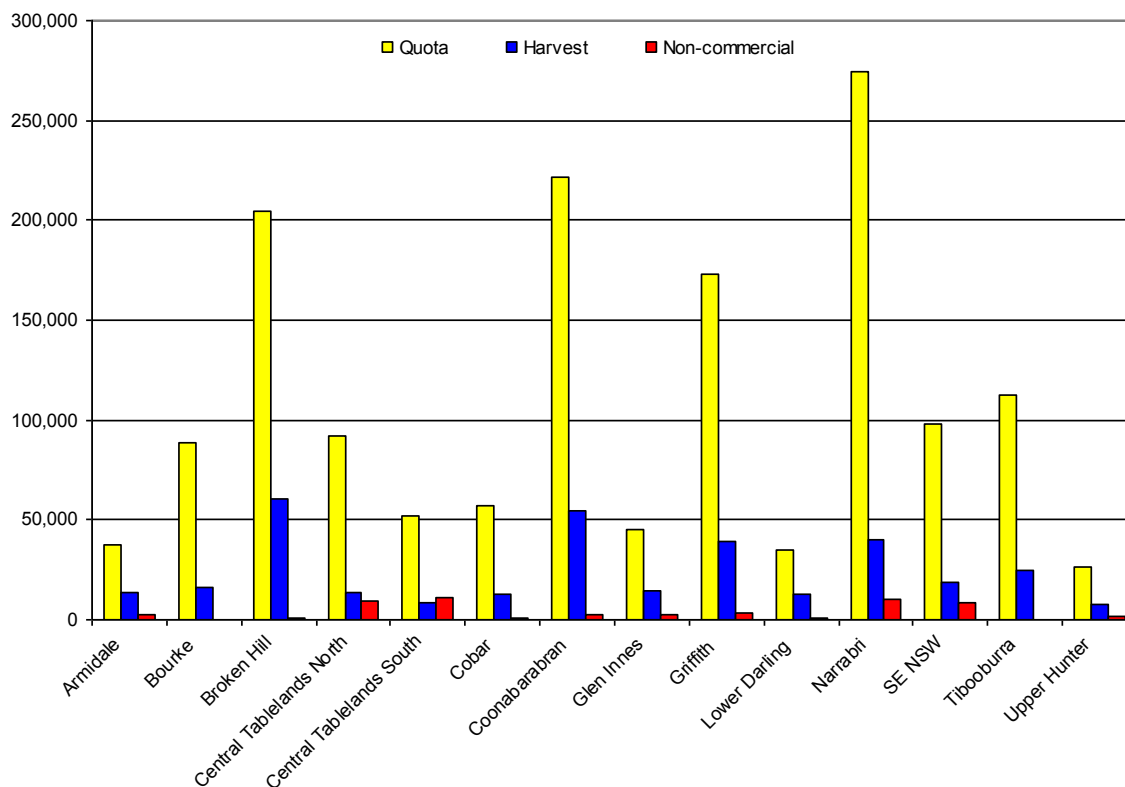


Figure 16. Comparison of commercial quotas, actual commercial harvests and non-commercial culls in 2012. Despite the relatively low commercial harvest, there was no substantial increase in non-commercial culling in 2012. Non-commercial culling remains relatively high in the Central Tablelands North and Central Tablelands South harvest zones, which were opened to commercial harvesting in 2009.

Monitoring compliance in the commercial harvest zones

Compliance audits

During 2012, there were 496 licensed commercial harvesters nominated on a total of 3,647 commercial occupiers' licences throughout the commercial harvest zone.

Compliance audits of licensees are performed continuously by 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 by scrutinising applications, compiling reports and investigating suspect activities and irregularities. Other OEH 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. During 2012 numerous reports of illegal shooting were received, either

involving commercial licensees or for commercial purposes. On investigation, several were dismissed because no evidence was found to substantiate the report, or the activities were in fact licensed.

In two cases, surveillance activities were conducted; insufficient evidence was available to take punitive action, but these investigations are ongoing. One report resulted in a joint compliance operation, during which evidence to support a possible prosecution was gathered.

Reports involving matters related to food safety were referred to the NSW Food Authority in accordance with the Memorandum of Understanding between OEH and the Food Authority. Activities involving non-commercial shooting were referred to the relevant National Parks and Wildlife office.

Information to help enforce the relevant sections of the NSW *National Parks and Wildlife Act 1974* is shared with NSW Police, the NSW Food Authority, the Australian Quarantine and Inspection Service and interstate fauna protection agencies as required, within the boundaries of NSW privacy legislation.

Inspection of premises

On average, KMP compliance officers and/or NSW Food Authority compliance staff inspect about 150 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 premises 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 the NSW Food Authority (for either human consumption or pet food)
- correct setup and fitout (in accordance with a NSW Food Authority memorandum of understanding)
- untagged carcasses.

Harvesters are also checked to ensure that they are carrying a Commercial Kangaroo Harvester's Licence licence under s.123 of the *National Parks and Wildlife Act 1974*.

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

During 2012, there were 119 chiller premises registered by fauna dealer wholesalers and a further nine registered by harvesters for their own use. In total, 498 inspections were conducted. Of these registered premises, all but four were registered for the full year. A large number of chiller premises were not operational for significant periods during the year as a result of market factors; if premises are known to be closed, no inspections are conducted.

However, 46 chiller premises (about 36%) were inspected five times or more during 2012.

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

Penalty infringement notices

Issuing of verbal cautions, written warnings or infringement notices is at the discretion of the KMP compliance officer, in accordance with the KMP's compliance policy and in consultation with the Manager KMP. Decisions on possible prosecutions involve consultation with the Manager KMP and OEH Legal Services Branch.

During 2012 a total of 36 infringement notices were issued, three for the offence of harming protected fauna and 33 for the offence of contravening conditions of licence, as follows:

- non-head-shot (4)
- fail to return unused tags (6)
- exceed number authorised (1)
- untagged carcasses (2)
- fail to submit returns (harvester) (14)
- tag not permanently attached (1)
- tag substitution (2)
- shoot outside licence period (3).

OEH officers seized 92 carcasses as a result of licence conditions being breached. Seized carcasses that meet the commercial licensing requirements are sold by OEH to avoid wastage. Carcasses that do not meet the licence requirements (i.e. that are underweight or body-shot) are not sold.

In addition to the infringement notices, 18 written cautions were issued for various minor breaches of licence conditions. Although these cautions do not attract penalties, any issued to a licensee are recorded and taken into account in any future compliance considerations.

Licence cancellations

OEH did not cancel any licences or registrations during 2012.

Two Fauna Dealer Wholesalers were issued with notices of intention to cancel chiller registration premises:

- one Fauna Dealer Wholesaler on the basis of continued failure to comply with access requirements. However, the issue was rectified and as a result the registration was not cancelled.
- one Fauna Dealer Wholesaler on the basis of repeated failure to provide timely and accurate chiller returns. Following submissions by the dealer and the setting-up of improved reporting systems, this registration was not cancelled.

Two harvesters were issued with letters late in 2012 indicating that OEH intended to refuse applications for licences in 2013 should the harvesters apply.

Prosecutions

OEH did not undertake any prosecutions during 2012. However, investigations are continuing and prosecution action may result against one harvester for offences committed in 2011 and against one harvester and one fauna dealer in relation to offences committed in 2012 (Table 4).

Table 4. Summary of compliance breaches and actions in 2012

Offence	Action	Result
Contravene conditions of licence (s. 133(4) of the NPW Act)	18 cautions	No penalty
	33 penalty notices	Penalties at \$300 each
Harm protected fauna (s. 98(2) of the NPW Act)	3 penalty notices	Penalties at \$300 each

NPW Act: *National Parks and Wildlife Act 1974*

Other factors affecting the commercial harvest in 2012

There was no commercial quota set for 2012 for western grey kangaroo in the Lower Darling zone.

The Russian Federation maintained its ban on the import of kangaroo meat throughout 2012, limiting the industry's capacity to utilise the full commercial quota. As a result of poor market prospects, many chiller premises were closed down for various periods throughout the year or placed limits on the number of carcasses accepted each week so as to manage supply to processing plants.

In October 2012, one processor made the decision to accept only male carcasses in response to customer concerns about the fate of dependent young orphaned by the harvest. As a result, some harvesters are shooting fewer animals.

The combination of these impacts resulted in only 22% of the available quota being utilised (about 3.4% of the estimated population).

Research involvement in 2012

The KMP did not initiate any new research proposals in 2012. However, it contributed to an investigation into the impact of the kangaroo harvest on biodiversity and agricultural production. The project is a collaborative effort coordinated by the Invasive Animals CRC (Cooperative Research Centre). All of the field work for this research has been completed. The final report was expected to be available at the end of 2012 but has been delayed.

In 2009, the KMP pledged in-kind support to help in a collaborative project looking at humane methods of euthanizing orphaned pouch young. The project aims to provide scientific knowledge and other information on the animal welfare impact of kangaroo harvesting methods. It aims to determine the most appropriate methods of euthanasing young kangaroos in ways that reduce, as far as possible, unnecessary pain, distress and suffering. The KMP provided administrative help for components of the project throughout 2012.

Appendix A: Progress against performance indicators in 2012

Action	Performance indicator	Progress in 2012
1.0 All relevant activities are licensed in accordance with the applicable NSW legislation and OEH policy	PI 1.1 – All licences across NSW are assessed, processed and issued in accordance with NSW legislation and OEH policy.	Done. Centralising licensing has resulted in consistent adherence to policy requirements.
2.0 Licence conditions are effective and reflect current NSW legislation, OEH 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 reviewed; no amendments were necessary.
	PI 2.2 – Licensees are advised in writing of changes to licence conditions within one month of such changes being approved by the Manager, KMP.	Not required.
3.0 OEH 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 National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes.	PI 3.1 – All successful applicants for harvesters' 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.
	PI 3.2 – During the life of this plan, the content of the accreditation course will be reviewed and revised if necessary.	Not yet commenced.
4.0 OEH staff will monitor compliance with the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes 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.	Four penalty notices were issued for breach of licence conditions relating to animal welfare. Several other reports of non-head-shot carcasses were investigated, but there was insufficient evidence to take penalty action.
	PI 4.2 – During the life of this plan, a selection of harvesters will be audited to determine the level of compliance with the Code of Practice in the field.	Not yet commenced.
5.0 OEH 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 research proposals are sought from universities and other research institutions during the life of this plan.	Research priorities identified. OEH provided in-kind resources to a collaborative research project led by the NSW Department of Primary Industries. Project began in November 2010 and is ongoing.

Action	Performance indicator	Progress in 2012
<p>6.0 OEH staff will undertake both regular and opportunistic monitoring of compliance by commercial kangaroo industry operators.</p>	<p>PI 6.1 – On receipt of harvesters' licence applications, the authorised OEH officer assessing the applications will ensure that applicants have both a valid and current NSW Firearms accreditation and a valid Firearms Licence.</p>	<p>Done. Validation rules built into licensing database prevent the issuing of a harvester's licence without this information.</p>
	<p>PI 6.2 – All chiller premises are inspected on average every three months during the life of this plan by OEH staff and/or staff of the NSW Food Authority to ensure compliance with NSW legislation and licence conditions. Where a chiller premises has not been registered for the full calendar year, inspections will be required on a pro rata basis. Chiller premises that are registered but known to be non-operational may not require regular inspection.</p>	<p>Done. Some chillers were not inspected four times because they were not being used. Others were inspected more frequently than required. See 'Inspection of premises' on page 16 of this report.</p>
	<p>PI 6.3 – All kangaroo-processing works in NSW are inspected every three months on average during the life of this plan by OEH staff and/or staff of the NSW Food Authority to ensure compliance with NSW legislation and licence conditions.</p>	<p>Done in conjunction with chiller inspections. Skin premises located in Sydney were inspected separately.</p>
	<p>PI 6.4 – During the life of this plan, harvesters' vehicles loaded with kangaroo carcasses are inspected opportunistically to ensure compliance with NSW legislation and licence conditions, and the results of these inspections are documented.</p>	<p>Vehicles inspected during routine chiller inspections and joint compliance operations. See 'Inspection of premises' on page 16 of this report.</p>
<p>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.</p>	<p>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.</p>	<p>Allegations and investigations register maintained and updated. All information was investigated to the fullest extent possible. See 'Compliance audits' on page 15 of this report.</p>
<p>8.0 The accuracy of industry returns will be continually monitored during the life of this plan.</p>	<p>PI 8.1 – During the life of this plan, all incoming industry returns are scrutinised and discrepancies are investigated and resolved.</p>	<p>Ongoing. Validation rules built into licensing database help in detecting errors. Administrative staff contact licensees to resolve discrepancies. See 'Penalty infringement notices' and 'Licence cancellations' on page 17 of this report.</p>

Action	Performance indicator	Progress in 2012
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 a 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 by using standard survey methodology throughout the life of this plan.	Done. Aerial surveys of Western Plains were conducted in June–July–August and population estimates were made available on the KMP web page in September. Helicopter survey of South East NSW management zone completed in October.
	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 2012.
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 2012 were calculated from 2011 population estimates at 15% for eastern and western grey kangaroos and wallaroos and 17% for red kangaroos, except where low population thresholds were reached.
	PI 11.2 – The Commonwealth Government is advised of commercial harvest quotas for the following calendar year by 30 November.	Done; 2013 Quota report submitted before 30 November.
	PI 11.3 – If Commonwealth approval is required for quotas set above the rates specified in the plan as part of an adaptive management experiment, such approval is obtained before the additional quota is implemented.	Not required in 2012.
	PI 11.4 – The Quota Report is made available to the public via the KMP web page.	Done.
12.0 If kangaroo populations decline to specific trigger points, the commercial harvest of particular species in particular zones will be reduced or suspended.	PI 12.1 – Commercial harvest quotas are reduced if population estimates fall below 1.5 standard deviations from the long-term average density, or suspended if population estimates fall below two standard deviations from the long-term average.	Done. For 2012, the quota was suspended for western grey kangaroos in the Lower Darling Zone. Quotas were set at 10% of the population estimate for eastern grey kangaroos in the Lower Darling and Bourke zones; western grey kangaroos in the Tibooburra, Broken Hill, Cobar, Bourke and Griffith zones; and wallaroos in the Upper Hunter zone.
13.0 Special kangaroo harvest quotas will be set in accordance with the provisions of the plan.	PI 13.1 – Special kangaroo harvest quotas are set and utilised in accordance with the provisions of the plan.	Done. Special quotas were calculated at 1.5% of the population estimate as per the Commonwealth's approval of the plan.

Action	Performance indicator	Progress in 2012
14.0 Kangaroo populations will continually be monitored indirectly throughout the life of this plan.	PI 14.1 – Sudden, sustained 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.
	PI 14.2 – Average carcase weights for each species will be analysed each month; if the average falls below the long-term average by more than one standard deviation for three successive months, OEH will investigate (and may reduce or suspend) the commercial harvest for that species in that zone.	Done monthly as per the plan. No significant changes were detected.
15.0 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 15.1 – Analysis of historical kangaroo harvest and management data is undertaken during the life of this plan.	Ongoing. Paper in preparation.
	PI 15.2 – The results of analysis and research using historical kangaroo harvest and management data are published in an appropriate forum.	Not applicable in 2012.
16.0 Where practicable, experiments will be performed to test deliberate management interventions during the life of this plan.	PI 16.1 – All proposals to undertake active adaptive management experiments are reviewed and assessed by OEH in accordance with the criteria outlined in this plan.	None in 2012.
	PI 16.2 – All necessary approvals (including animal care and ethics) are obtained before experiments testing deliberate management interventions commence.	No approvals necessary.
	PI 16.3 – All adaptive management experiments are continuously monitored and conducted according to approval conditions.	Not applicable in 2012.
	PI 16.4 – Results of all experiments testing deliberate management interventions are published in an appropriate forum.	Not applicable in 2012.

Action	Performance indicator	Progress in 2012
17.0 OEH will facilitate research into the ecology and harvest management of kangaroos.	PI 17.1 – Issues associated with the ecology of harvested species and the management of the commercial harvest are identified and research proposals are sought from universities and other research institutions during the life of this plan.	None in 2012.
18.0 An annual report on the plan will be prepared and submitted to the Commonwealth.	PI 18.1 – An annual report on the operation of the plan for the previous calendar year is submitted to the Commonwealth by the end of March of the following year.	Annual Report for 2011 submitted and accepted.
	PI 18.2 – All annual reports prepared during the life of this plan are posted on the KMP web page.	Done.
19.0 The review of the plan will commence no later than twelve months prior to the expiry of this plan.	PI 19.1 – The schedule of OEH 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 [Kangaroo Management Action Panel] and invited scientists • public exhibition of new draft program • KMAP review of public submissions. 	Not applicable in 2012.
	PI 19.2 – The success of the current plan in achieving its goal is assessed by measuring performance indicators.	Not applicable in 2012.
	PI 19.3 – The results of the plan review are presented to the Commonwealth and are placed on the KMP web page.	No applicable in 2012.

Action	Performance indicator	Progress in 2012
20.0 Members of the KMAP will be provided with relevant information and afforded the opportunity to advise OEH on key kangaroo management issues throughout the life of this plan.	PI 20.1 – KMAP is provided with monthly updates on commercial harvest and tag issue throughout the life of this plan.	Done.
	PI 20.2 – KMAP is provided with other relevant information as required or as necessary throughout the life of this plan.	Done. During 2012 the information provided included results of aerial surveys, carcase weight analyses, harvest statistics and copies of information sent to licensees.
	PI 20.3 – KMAP meets at least twice a year to review the progress of the plan in relation to the goal and aims of the plan.	KMAP did not meet in March; the review of the draft Annual Report was conducted via email. KMAP met on 7 November 2012.
21.0 Relevant public documents will be made available on the KMP web page.	PI 21.1 – Throughout the life of this plan the KMP web page contains the following information as a minimum standard: <ul style="list-style-type: none"> • 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 • current forms for commercial kangaroo licences. 	Done. All of this information is currently available and is updated as necessary.
22.0 Publicly available information will be provided to interested parties on request.	PI 22.1 – Publicly available kangaroo management information is distributed in an appropriate format to interested parties as soon as practicable after such a request.	Done. Examples include provision of previous Annual and Quota Reports, contracted aerial survey design and analysis reports and aerial survey data.
23.0 Where appropriate, relevant OEH staff will participate in media interviews and prepare media releases.	PI 23.1 – OEH staff participate in interviews with the media where appropriate.	Done.
	PI 23.2 – Media releases are prepared when appropriate for issues of interest to the community, such as population surveys and the release of quotas for the next calendar year.	Done.

Action	Performance indicator	Progress in 2012
24.0 Relevant information regarding licensing arrangements will be developed as required and distributed to all licensees.	PI 24.1 – A copy of the current <i>Handbook for Kangaroo Trappers</i> 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. Copies are also provided to potential applicants by the NSW Firearms Safety and Training Council upon registration to complete the Kangaroo Harvester Accreditation Course. Handbook is also available online.
	PI 24.2 – A copy of the current <i>Handbook for Kangaroo Chiller Managers</i> is issued with every new chiller registration or change in nominated manager to ensure that operators are aware of relevant licensing requirements and responsibilities.	Handbook provided to all new chiller managers.