Queensland Commercial Macropod Management Program

Annual Report 2013

Prepared by: Environmental Services and Regulation, Department of Environment and Heritage Protection

Disclaimer

This document has been prepared with all due diligence and care, based on the best available information at the time of publication. The department holds no responsibility for any errors or omissions within this document. Any decisions made by other parties based on this document are solely the responsibility of those parties. Information contained in this document is from a number of sources and, as such, does not necessarily represent government or departmental policy.

If you need to access this document in a language other than English, please call the Translating and Interpreting Service (TIS National) on 131 450 and ask them to telephone Library Services on +61 7 3170 5470.

This publication can be made available in an alternative format (e.g. large print or audiotape) on request for people with vision impairment; phone +61 7 3170 5470 or email <library@ehp.qld.gov.au>.

March 2014

Preface

This annual report summarises the activities of the Commercial Macropod Management Program in Queensland for the period 1 January 2013 to 31 December 2013. In accordance with the Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017, the report addresses:

- actual harvest by zone and species compared to quota
- harvest sex ratio, average carcass weights and skin take
- any special quota used
- non-commercial harvest mortality
- compliance statistics
- unusual circumstances
- research and experiments
- program improvements.

For the 2013 harvest period, 1126 commercial wildlife harvesting licences for macropods, commonly known as harvester licences were issued. There were 88 commercial wildlife licences for dead macropods, commonly known as dealer's licences, seven commercial wildlife licences for dead macropods (processing) and two commercial wildlife licences for dead macropods (tanning) issued. Data from dealer returns, entered up to 18 February 2014, indicates that there were 1,140,580 macropods commercially harvested, representing 31.4% of the overall quota. The harvest was predominantly for carcasses used for both human consumption and pet food.

No quota was exceeded for any species in any zone in 2013. The highest percentage use of quota was for common wallaroos in the central zone at 43.7%. In all harvest zones, the percentage of the population used for each species was 6% or less.

The commercial harvest is typically biased towards males due to their generally larger size and weight when compared to females. For 2013, the harvest for each species was biased towards males by 93.2% or greater.

During the 2013 harvest period, there were four joint/interagency inspection operations conducted. A total of 24 infringement notices were issued, 114 warning notices issued and no prosecutions.

Contents

1. Background

The Department of Environment and Heritage Protection (the department) administers the harvest in accordance with the following overarching goal: 'to provide for the sustainable use of macropod species covered by the plan, in accordance with the principles of ecologically sustainable development' (Anon 2013).

There are three main aspects to the program:

- monitoring populations
- setting quotas
- managing the harvest.

Three species can be commercially harvested in Queensland:

- red kangaroo *(Macropus rufus)*
- eastern grey kangaroo *(Macropus giganteus)*
- common wallaroo *(Macropus robustus).*

These commercially harvested species are abundant over a broad area of Queensland and Australia. None of these species are listed as threatened under state or Commonwealth legislation; all are listed as 'least concern' wildlife under the Nature Conservation (Wildlife) Regulation 2006.

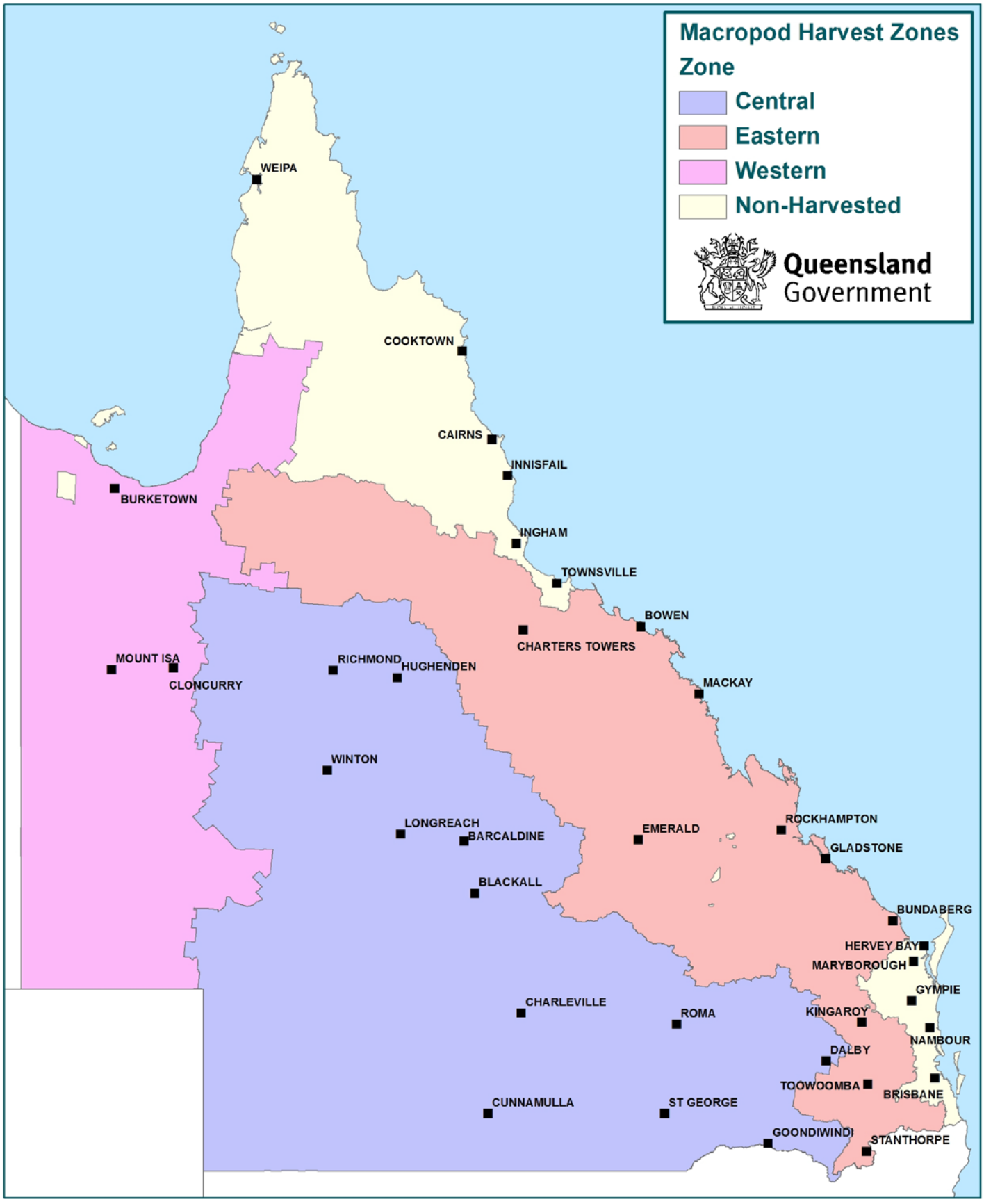
The harvesting of these macropods is regulated through the:

- *Nature Conservation Act 1992*
  - Nature Conservation (Administration) Regulation 2006
  - Nature Conservation (Wildlife Management) Regulation 2006
  - Nature Conservation (Wildlife) Regulation 2006
  - Nature Conservation (Macropod) Conservation Plan 2005.
- *Environment Protection and Biodiversity Conservation Act 1999*
- Queensland Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017
- *Animal Care and Protection Act 2001*
- *Food Production (Safety) Act 2000.*

Management of the harvest is facilitated via quotas that set the number of animals that can be taken. Quotas are largely based on population estimates derived from annual aerial surveys of the commercially harvested species. Quotas are set for each species for four harvest zones (Figure 1):

- non-harvest zone (quota zero)
- eastern harvest zone
- central harvest zone
- western harvest zone.

Figure 1 – Queensland harvest zones in 2013



Quotas are calculated using a fixed proportion of the estimated macropod populations within the harvest areas. Proportions are adjusted for each species across the harvest zones in relation to the margins of error present in population estimates derived from the aerial surveys. The maximum proportions used for each species are 15% of the populations for eastern grey kangaroos and common wallaroos and 20% of the population for red kangaroos for the central zone. For the eastern and western zones, where survey effort is less extensive when compared to the central zone, the more conservative maximum proportion of 10% is applied for all three species.

These sustainable-use harvest proportions are based on research and modelling undertaken by Caughley et al. (1987) and Hacker et al. (2002) and are currently accepted by the scientific community, and the state and Commonwealth governments, for determining state quota limits.

This annual report summarises the activities of the Commercial Macropod Management Program for the period 1 January 2013 to 31 December 2013. In accordance with the Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017, the report will address:

- actual harvest by zone and species compared to quota
- harvest sex ratio, average carcass weights and skin take
- any special quota used
- non-commercial harvest mortality
- compliance statistics
- unusual circumstances
- research and experiments
- program improvements.

All macropod species are ‘protected animals’ in Queensland under the Nature Conservation (Wildlife) Regulation 2006. The Nature Conservation (Administration) Regulation 2006 provides for the licensing of a range of activities in relation to the commercial harvesting of macropods in Queensland.

Macropods can only be taken in accordance with the Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017 and the Nature Conservation (Macropod) Conservation Plan 2005 under a licence issued by the department.

The harvest is controlled by the use of self-locking numbered plastic tags with a unique colour code for each species and year. The following applies to the use of tags:

- Tags are issued to a specific harvester and are not transferable to any other harvester.
- Tags must be securely attached to the skin of every macropod commercially harvested.
- A tag can only be removed from the macropod skin during the skin tanning process at a licensed tannery.
- The tags are self-locking and tamper-evident.
- The tags are individually numbered and of a different colour for each consecutive year and species.
- A fee (fixed by regulation) is charged for the sale of tags.

Record and return of operations are submitted to the department by harvesters and dealers at regular periods. Harvest statistics from returns are used to monitor and manage the harvest.

2. Harvest management

For the 2013 harvest period, 1126 commercial wildlife harvesting licences for macropods, commonly known as harvester licences were issued. There were 88 commercial wildlife licences for dead macropods, commonly known as dealer's licences, seven commercial wildlife licences for dead macropods (processing) and two commercial wildlife licences for dead macropods (tanning) issued.

All licences were issued in accordance with legislative requirements and within regulatory timeframes.

Tags were limited to the quota amount for each species in each zone to ensure no over-harvest occurred. The highest number of tags sold as a proportion of quota was 49.9% for common wallaroos in the central zone. The actual harvest for this species in this zone was 43.7% of available quota. Statistics on the harvest and tag sales are updated monthly and made available to the public via the department's website. This assists the industry to monitor the harvest and tag availability.

Table 1 – Tag sales and harvest

Tag categories by zone	2013 quotas	Tags sold		Reported harvest	
		Number of tags	% of quota	Number of macropods	% of quota
Central zone					
Eastern grey kangaroo	**1,641,300**	615,800	37.5%	561,808	34.2%
Red kangaroo	**1,029,200**	366,900	35.6%	319,177	31.0%
Common wallaroo	**509,700**	254,150	49.9%	222,845	43.7%
Eastern zone					
Eastern grey kangaroo	**369,600**	38,050	10.3%	24,964	6.8%
Red kangaroo	**11,050**	4,800	43.4%	1,340	12.1%
Common wallaroo	**28,350**	7,750	27.3%	3,947	13.9%
Western zone					
Red kangaroo	**44,250**	9,950	22.5%	6,499	14.7%

To ensure harvesters have fair and equitable access to the finite number of tags available, the program regulates the distribution of tags. This is done by establishing a tag allowance for each harvester and ensuring the tags are being used before further tags are ordered.

3. Harvest

The data from dealer returns, entered up to 18 February 2014, indicates that there were 1,140,580 macropods commercially harvested, representing 31.4% of the overall quota. The commercial harvest of macropods does not occur evenly across the harvest zones with the majority of harvesting occurring in the Central Harvest zone (Figure 2). Of the 1,140,580 animals harvested, there were 327,016 red kangaroos, 586,772 eastern grey kangaroos and 226,792 common wallaroos (Figure 3).

Figure 2 – Queensland harvest zones showing relative amount of commercial harvesting occurring in each local government area during the 2013 harvest period

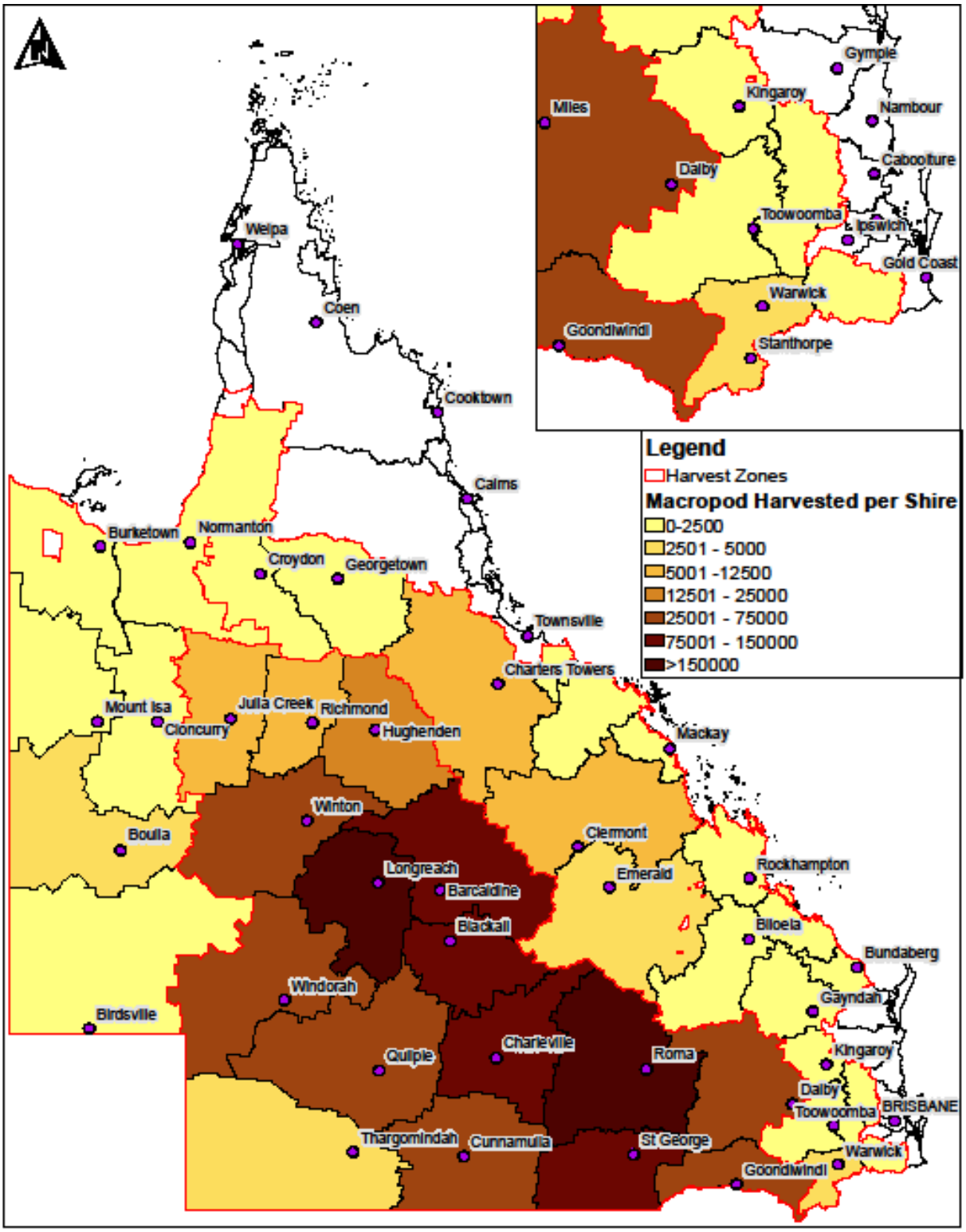
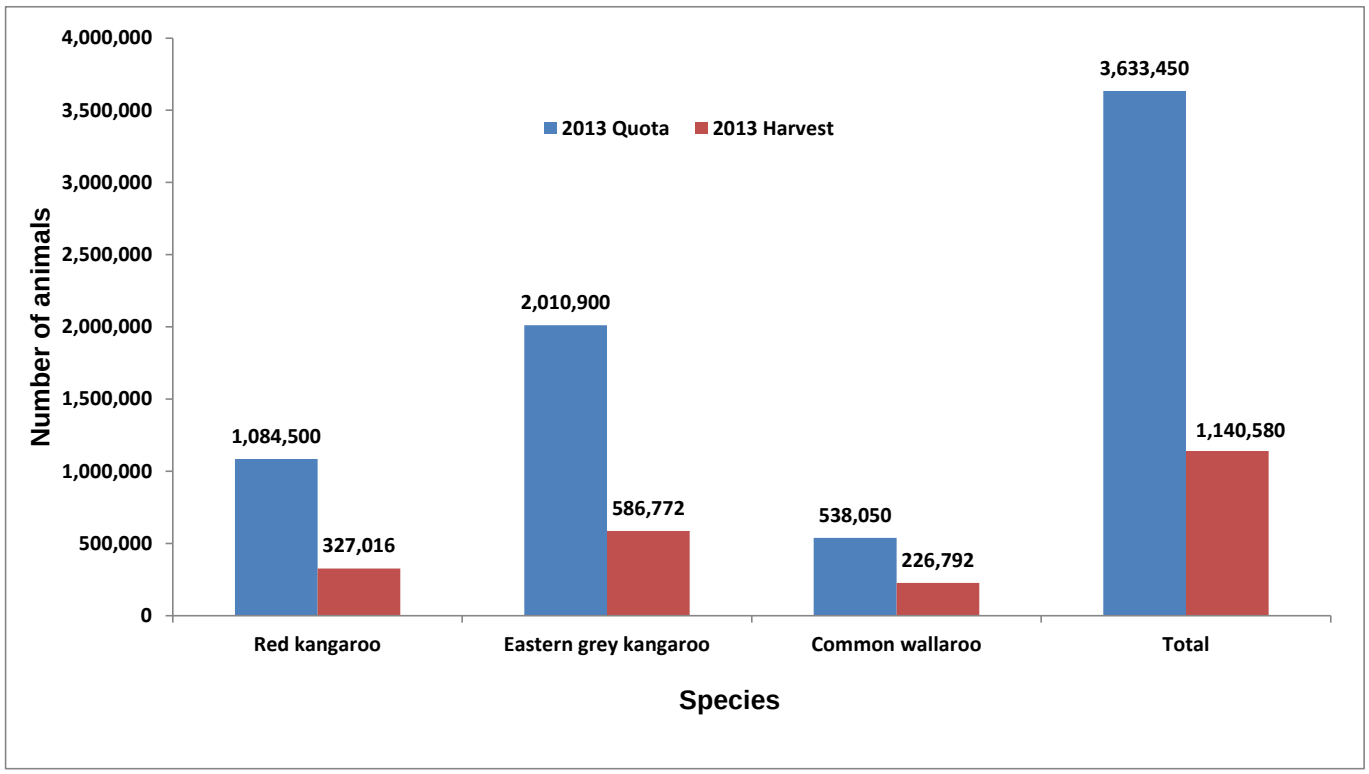
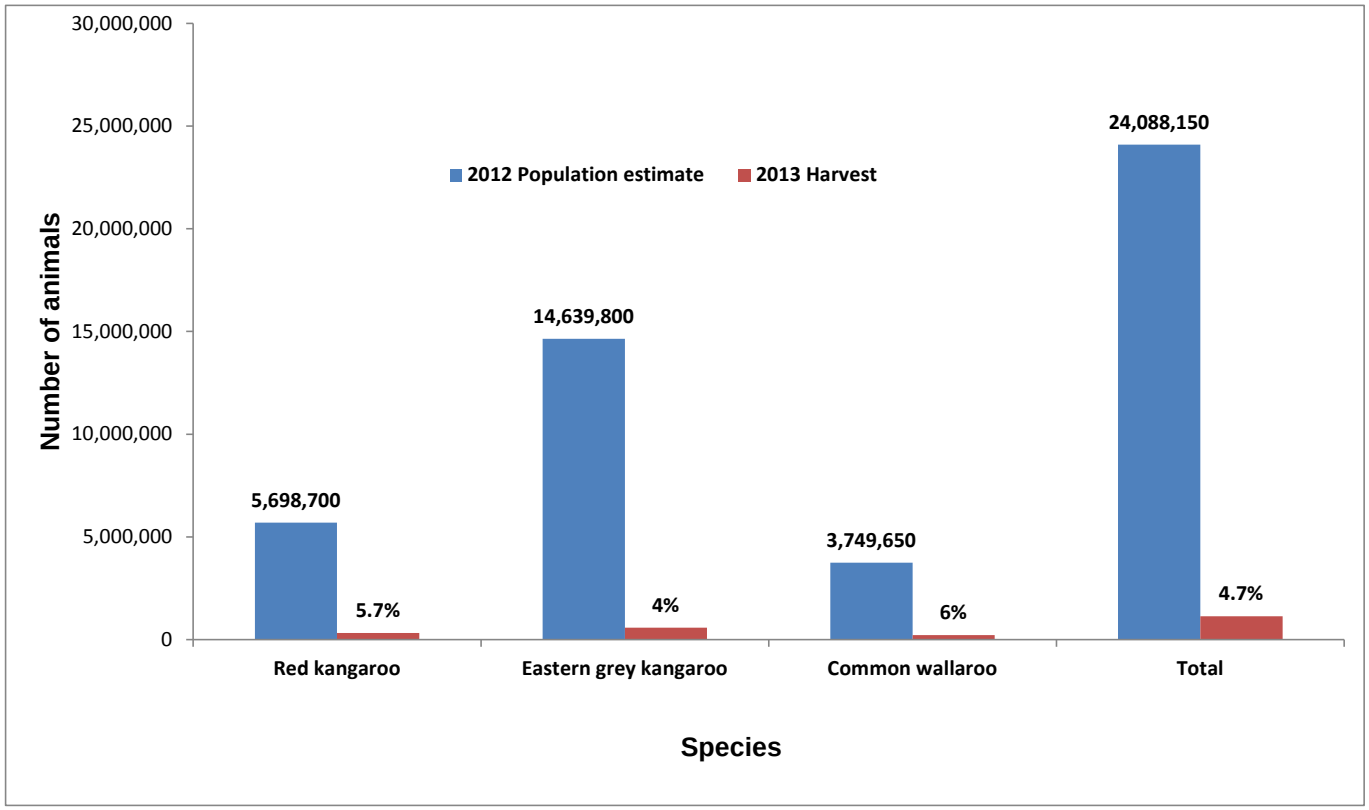


Figure 3 – Total number of macropods harvested in 2013 compared to quotas



For all three commercially harvested species the percentage of the population harvested in 2013 was only 6% of the 2012 estimated population or less (Figure 4). For common wallaroos, 6% of the estimated population in the harvest area was harvested, while just under 6% of the estimated population of red kangaroos and 4% for eastern grey kangaroos was harvested.

Figure 4 – Percentage of the 2012 estimated population harvested in 2013



Tables 2–5 contain detailed summaries of the commercial harvest in 2013. Quotas for each species in each zone were not exceeded in 2013. The highest percentage of quota used was for common wallaroos in the central zone at 43.7%. In all harvest zones the percentage of the population harvested for each species was below 6%.

Table 2 – Total harvest in 2013

Species	Population estimate 2012	Quota 2013	Harvest take 2013	% quota used 2013	% population harvested 2013
Red kangaroo	5,698,700	1,084,500	327,016	30.2%	5.7%
Eastern grey kangaroo	14,639,800	2,010,900	586,772	29.2%	4.0%
Common wallaroo	3,749,650	538,050	226,792	42.1%	6.0%
Total	24,088,150	3,633,450	1,140,580	31.4%	4.7%

Note: population estimates are based on aerial surveys conducted in 2012, which were used to set the 2013 quota. Harvest figures are based on data available 18 February 2014.

Table 3 – Harvest of red kangaroos in 2013

Zone	Population estimate 2012	Quota 2013	Harvest take 2013	% quota utilised 2013	% population harvested 2013
Central	5,146,000	1,029,200	319,177	31.0%	6.2%
Eastern	110,300	11,050	1,340	12.1%	1.2%
Western	442,400	44,250	6499	14.7%	1.5%
Total	5,698,700	1,084,500	327,016	30.2%	5.7%

Note: population estimates are based on aerial surveys conducted in 2012, which were used to set the 2013 quota. Harvest figures are based on data available 18 February 2014.

Table 4 – Harvest of eastern grey kangaroos in 2013

Zone	Population estimate 2012	Quota 2013	Harvest take 2013	% quota utilised 2013	% population harvested 2013
Central	10,942,500	1,641,300	561,808	34.2%	5.1%
Eastern	3,695,850	369,600	24,964	6.8%	0.7%
Western	1,450	0	0	NA	NA
Total	14,639,800	2,010,900	586,772	29.2%	4.0%

Note: population estimates are based on aerial surveys conducted in 2012, which were used to set the 2013 quota. Harvest figures are based on data available 18 February 2014.

Table 5 – Harvest of common wallaroos in 2013

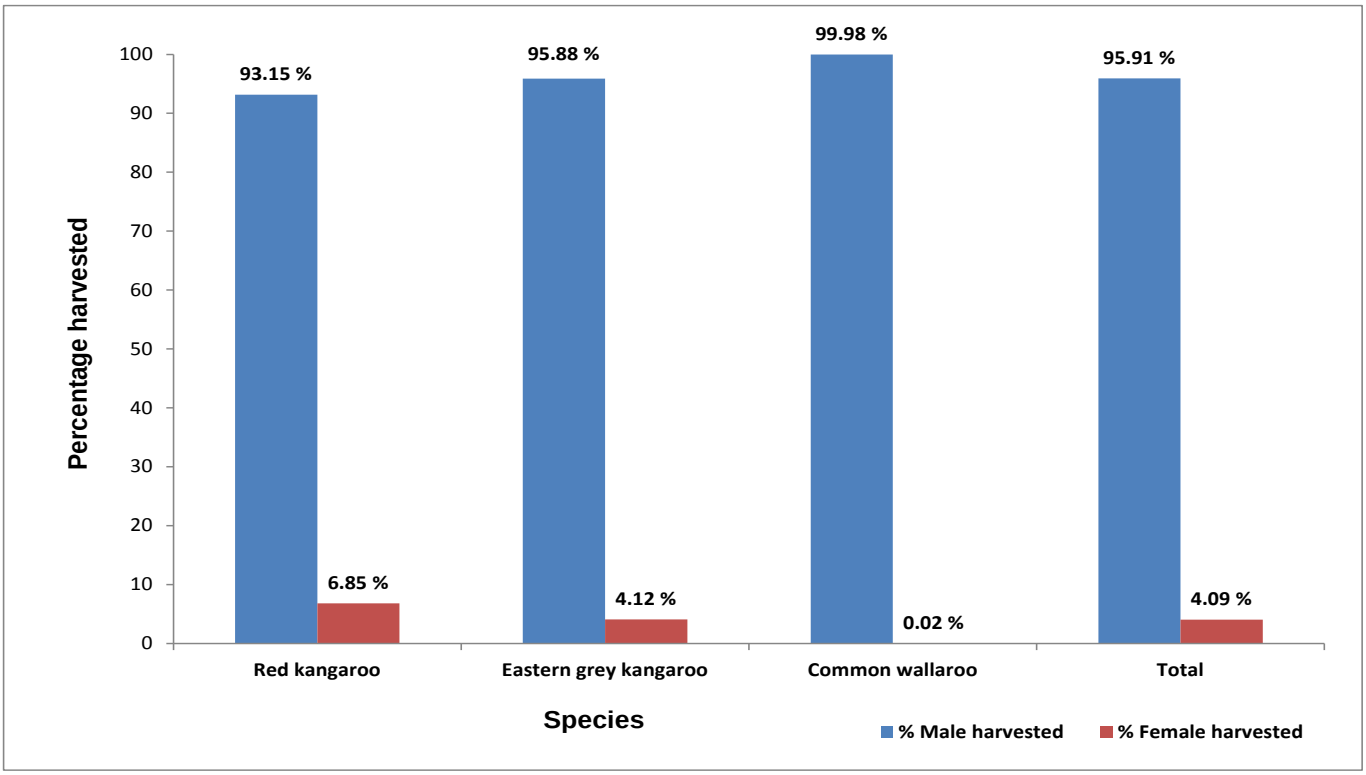
Zone	Population estimate 2012	Quota 2013	Harvest take 2013	% quota utilised 2013	% population harvested 2013
Central	3,398,000	509,700	222,845	43.7%	6.6%
Eastern	283,700	28,350	3,947	13.9%	1.4%
Western	67,950	0	0	NA	NA
Total	3,749,650	538,050	226,792	42.1%	6.0%

Note: population estimates are based on aerial surveys conducted in 2012, which were used to set the 2013 quota. Harvest figures are based on data available 18 February 2014.

3.1 Harvest sex ratio

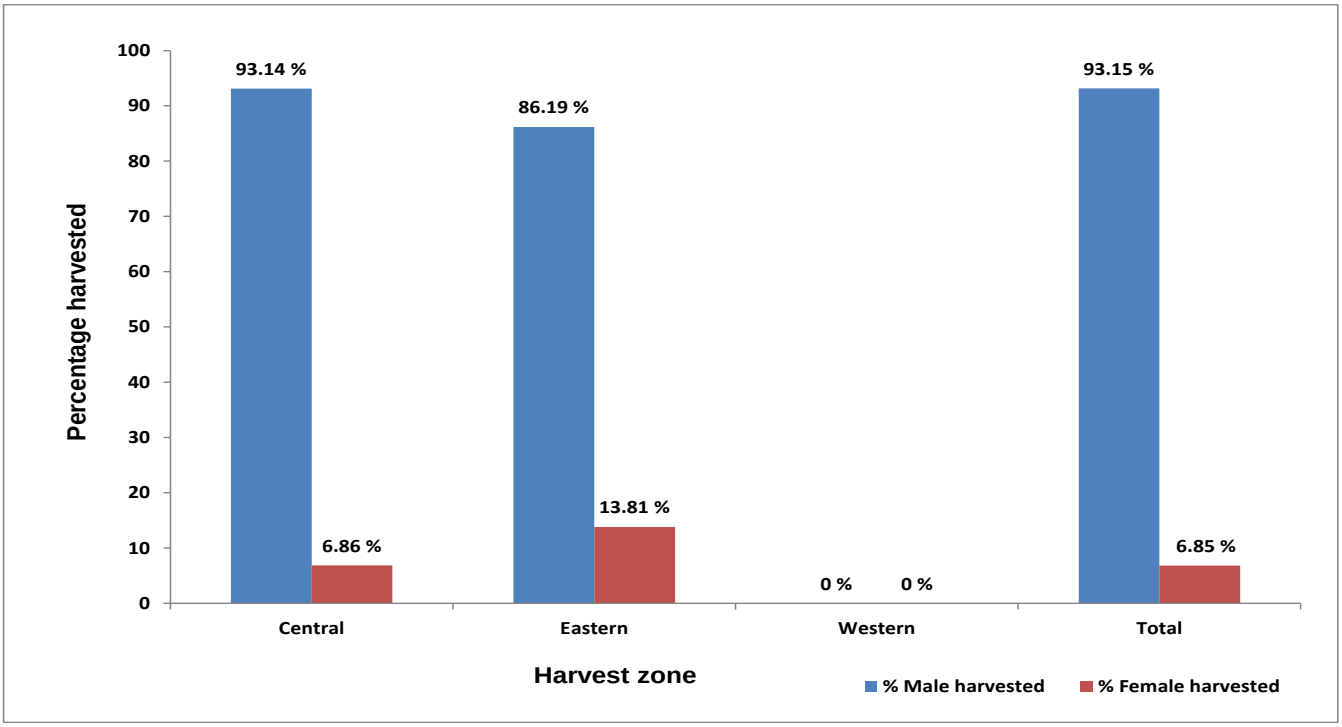
The commercial harvest is typically biased towards males due to their generally larger size and weight when compared to females. For 2013, the harvest for each species was biased towards males by 93.15% or greater (Figure 5). Females composed less than 5% of the overall harvest.

Figure 5 – Sex ratio of harvested macropods in 2013 for all harvest zones combined



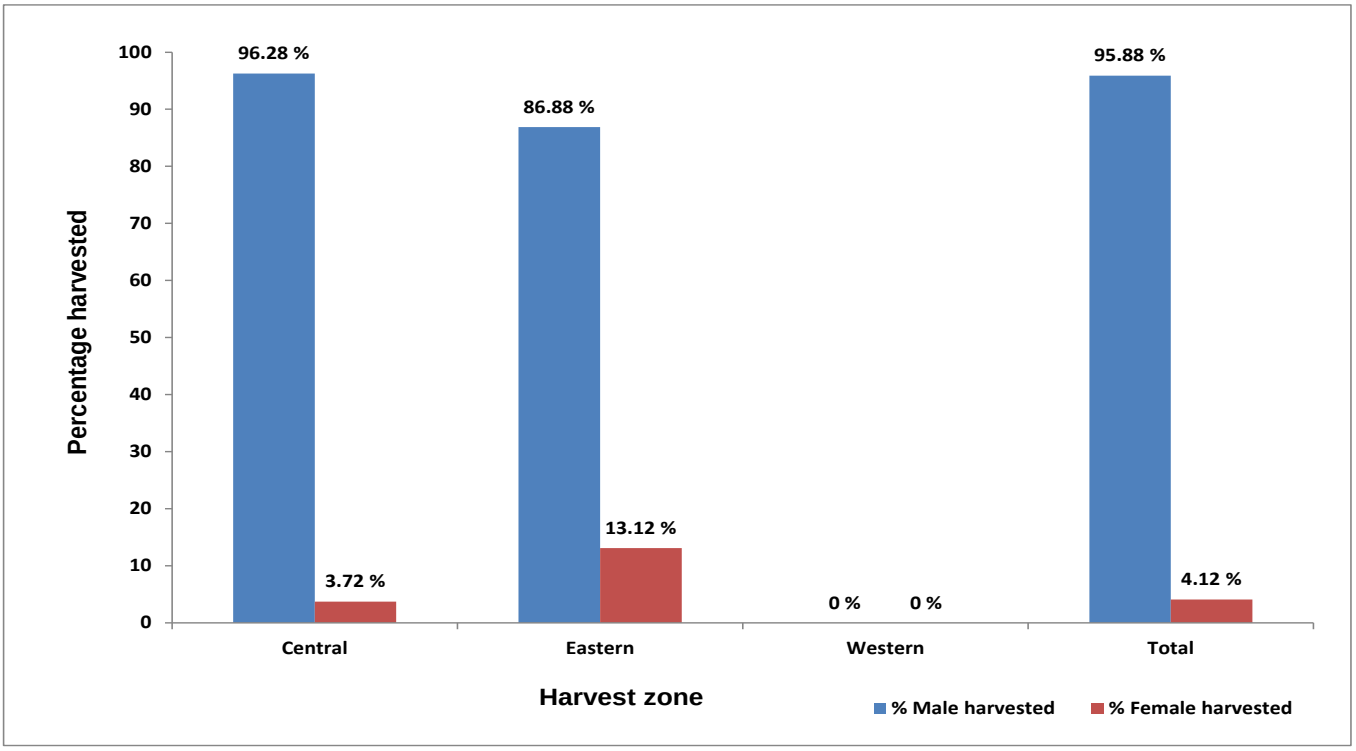
For red kangaroos, the highest percentage of females harvested was in the eastern zone at 13.81%. However, the overall take of females for this species was 6.85% of the harvest (Figure 6).

Figure 6 – Sex ratio of harvested red kangaroos in 2013



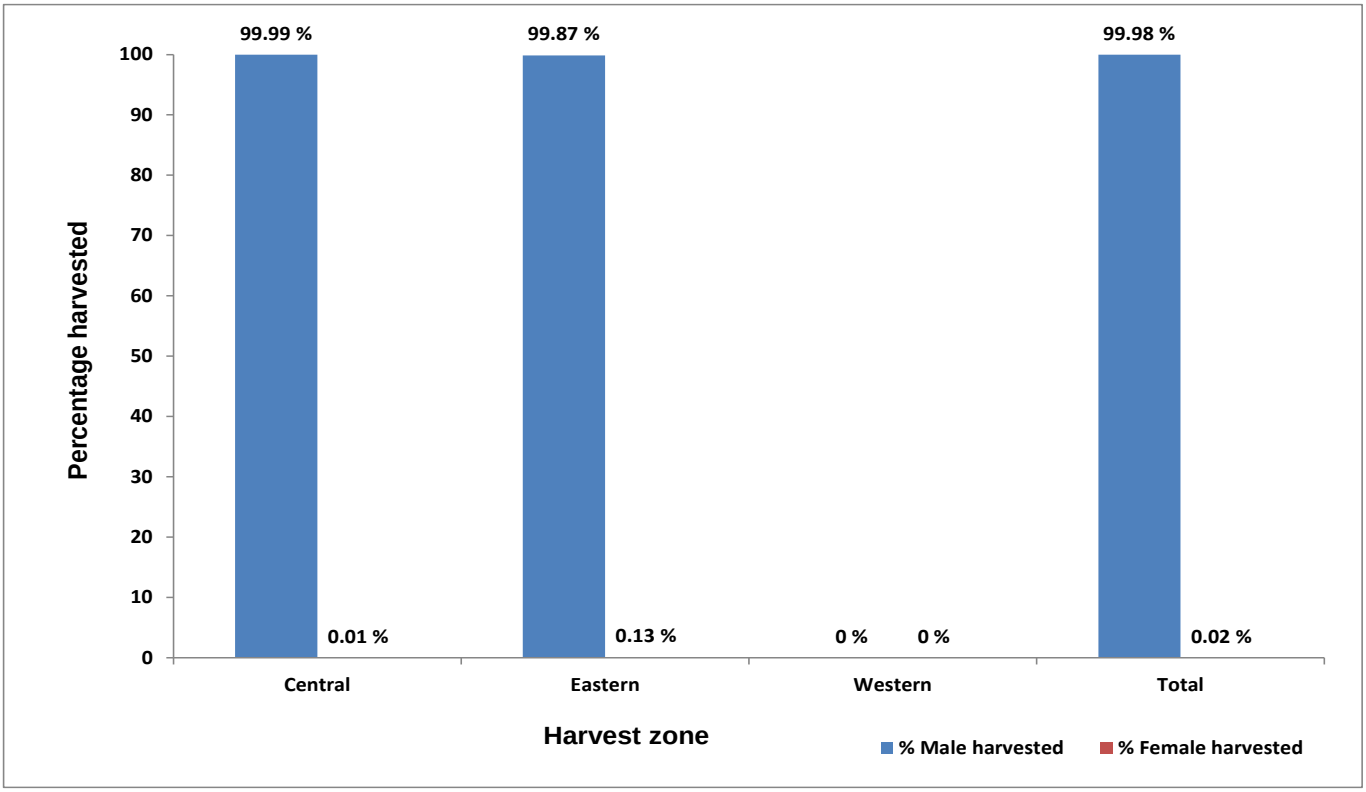
For eastern grey kangaroos the greatest percentage take of females was 13.12% in the eastern zone. Overall for this species, females comprised 4.12% of the harvest (Figure 7).

Figure 7 – Sex ratio of harvested eastern grey kangaroos in 2013



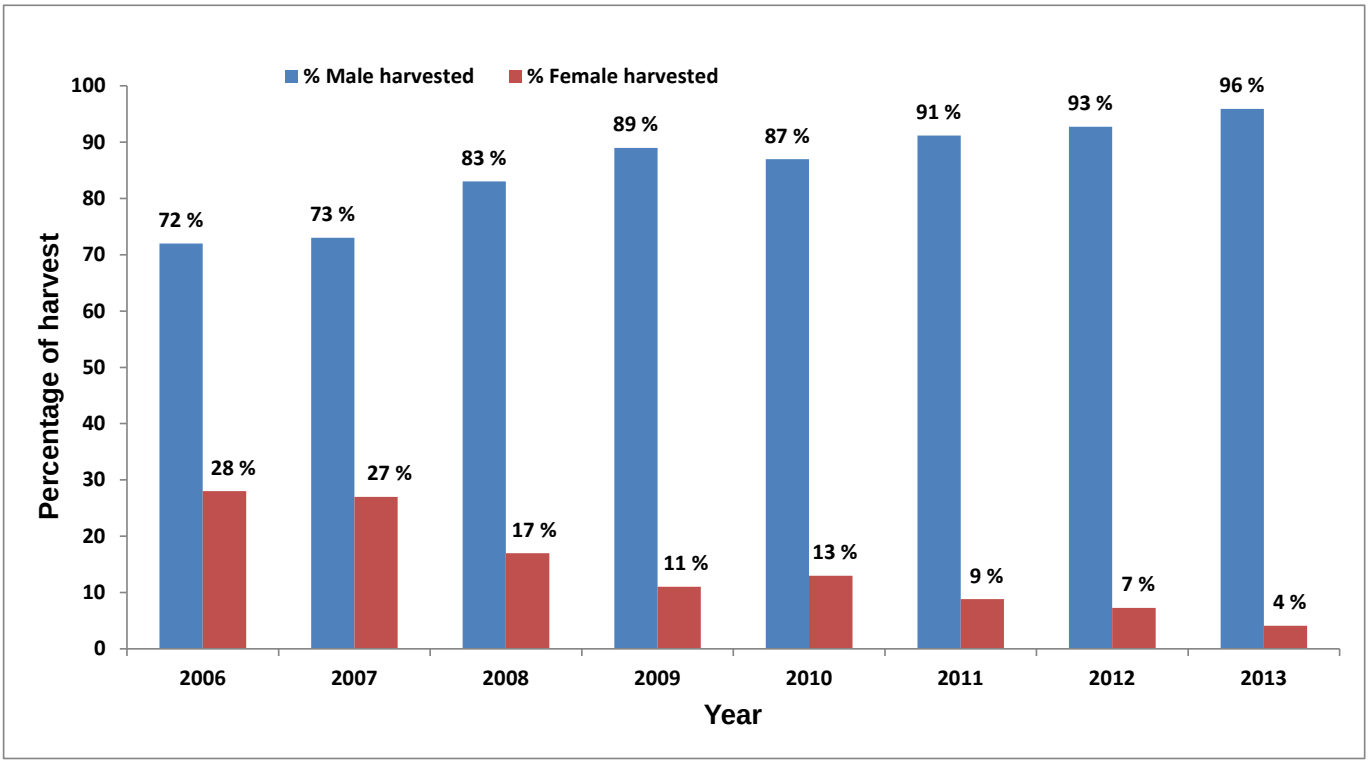
For common wallaroos the percentage of the harvest containing females was the lowest amongst the three commercially harvested species at an overall total of 0.02%. The highest take for females was 30 animals in the central zone (Figure 8).

Figure 8 – Sex ratio of harvested common wallaroos in 2013



The proportion of the commercial harvest comprising females in 2013 was less than 2012 and has been decreasing since 2006 (Figure 9).

Figure 9 – Queensland commercial macropod harvest sex ratio trend 2006 to 2013



3.2 Carcass and skin harvest

The commercial harvest of macropods in Queensland is predominantly for meat products used for human consumption and pet food. The majority of macropod skins utilised for leather and fur products are sourced from harvested carcasses. Less than 7% of the commercial take are harvested for their skins only (Figures 10–13). The largest skin only harvest in 2013 was for red kangaroos in the central zone at 37,520, followed by grey kangaroos in the central zone at 35,534.

Figure 10 – Macropod skin and carcass harvest for Queensland in 2013

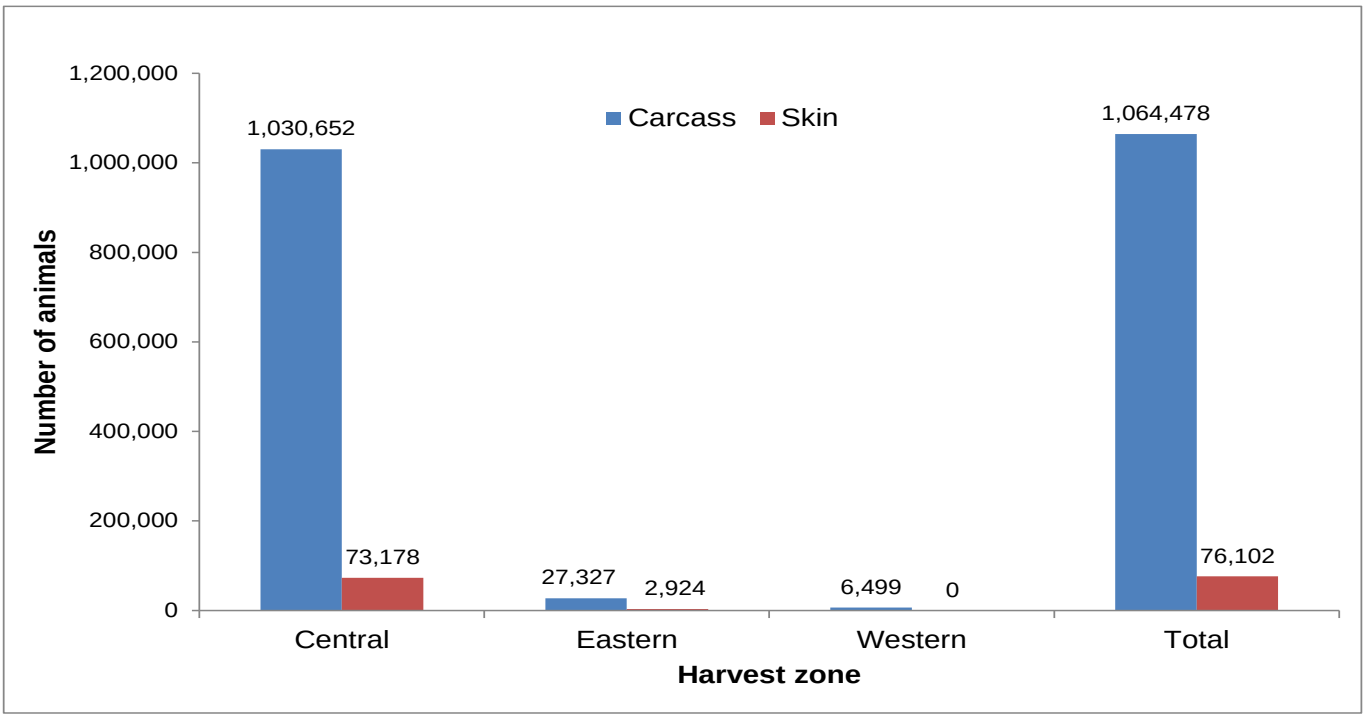


Figure 11 – Skin and carcass harvest of red kangaroos in 2013

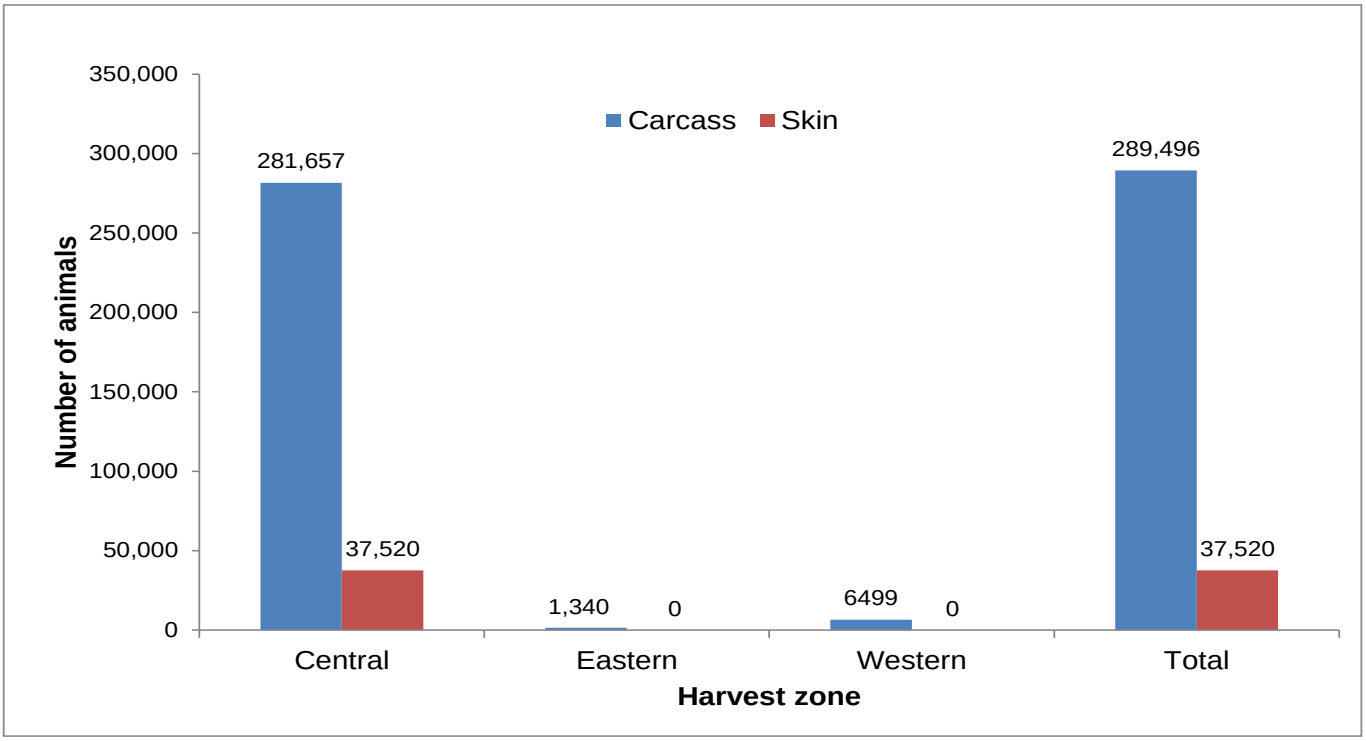


Figure 12 – Skin and carcass harvest for eastern grey kangaroos in 2013

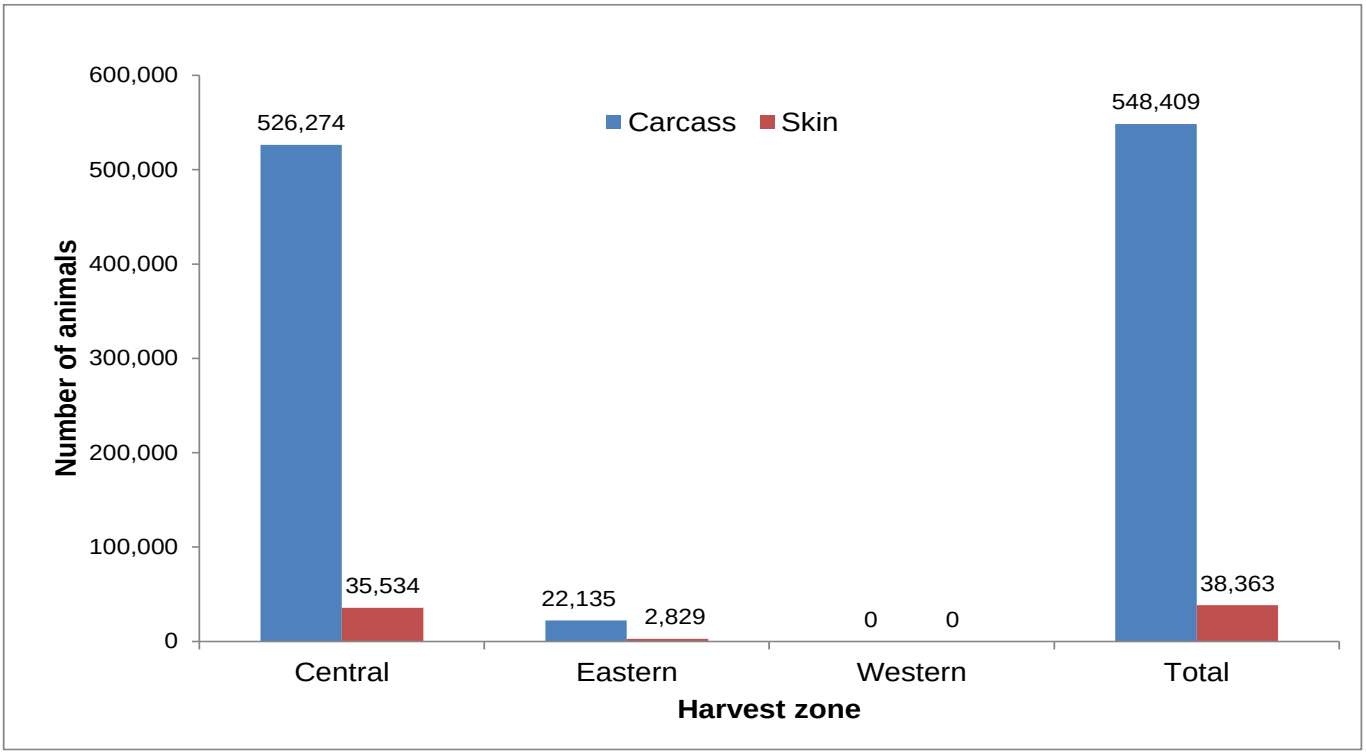
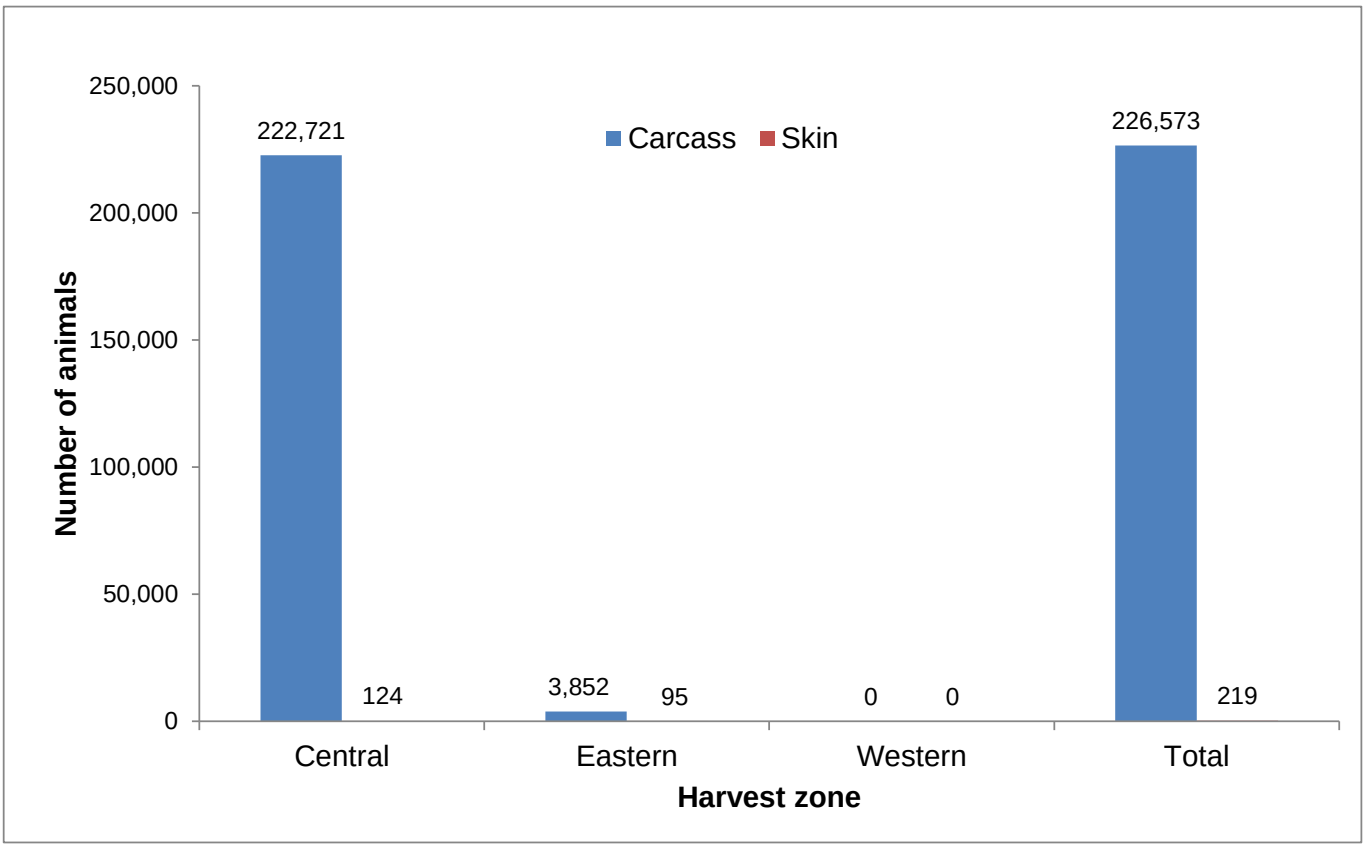


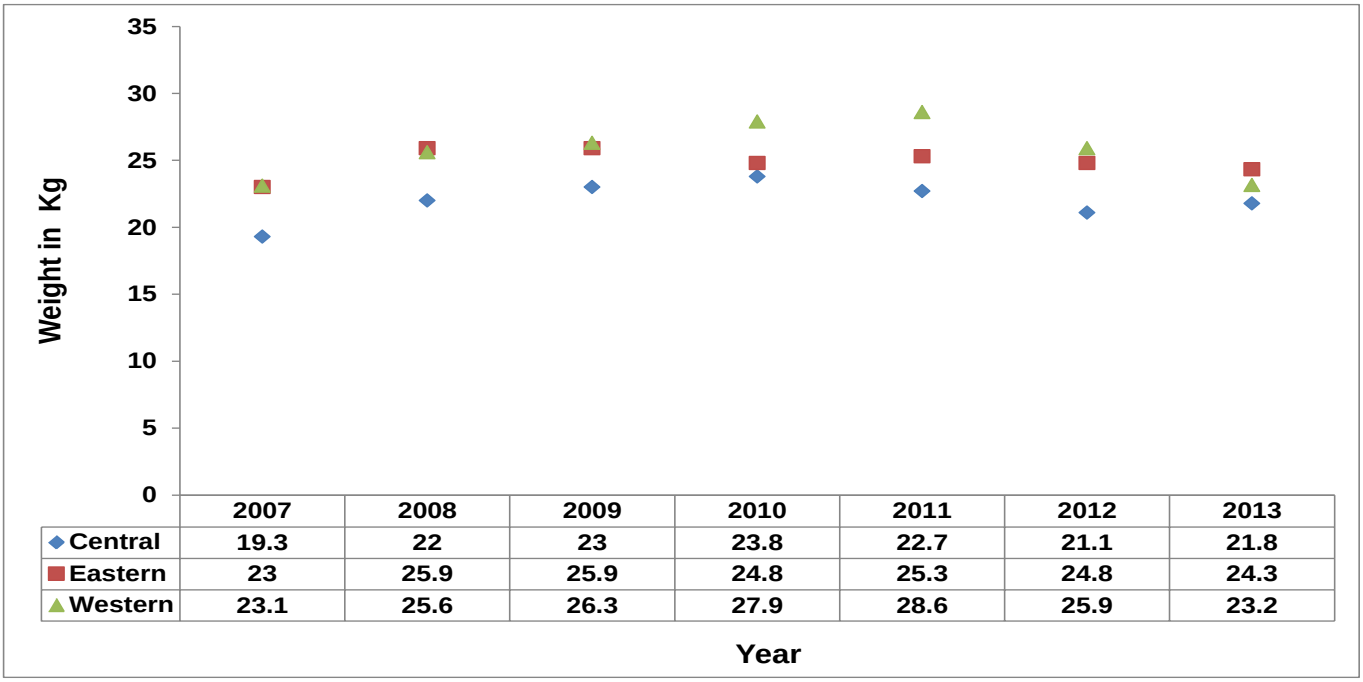
Figure 13 – Skin and carcass harvest for common wallaroos in 2013



3.3 Average weight

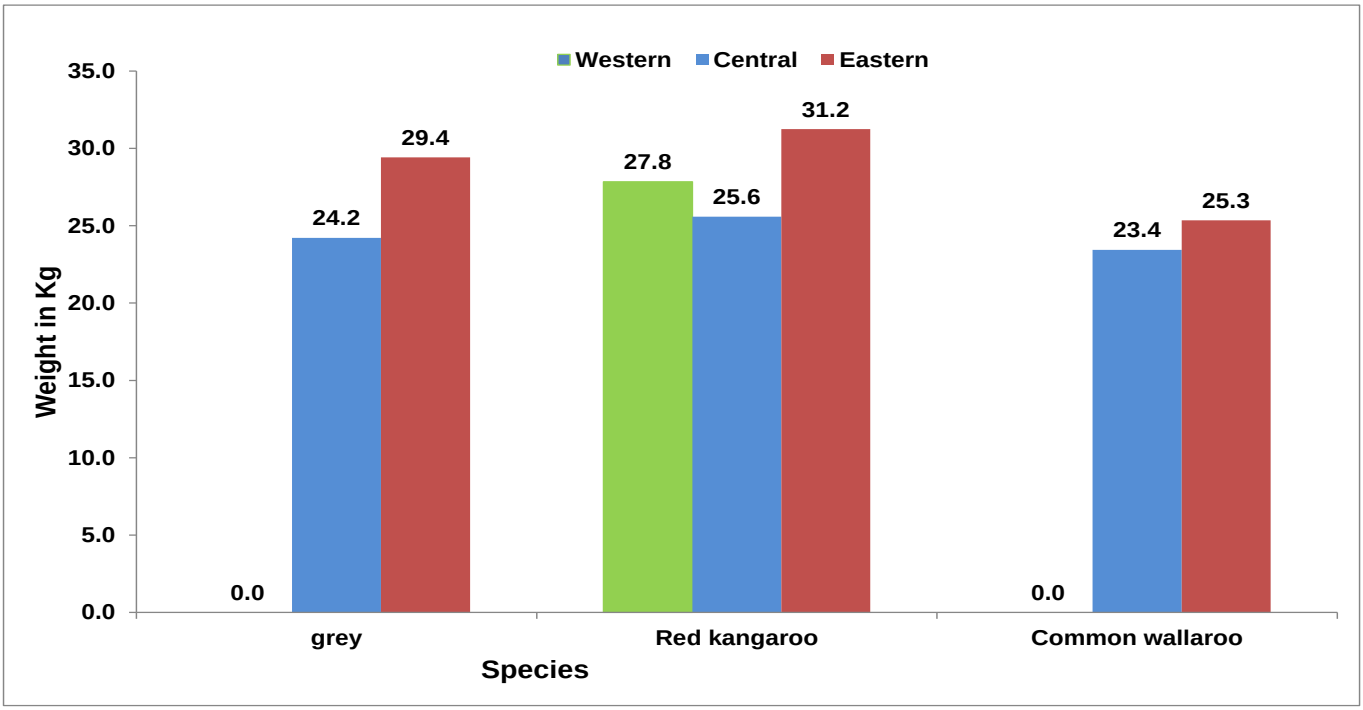
The average carcass weights per harvest zone and species are shown in figures 14 to 16. Carcass weights have fluctuated slightly in the past seven years in each harvest zone. Weights are consistently lowest in the central zone. No significant increases or decreases have occurred in the last seven years. The minimum weight of a fully dressed carcass as defined in the harvest period notice was 13 kilograms (kg) during the 2013 harvest period. A number of dealer sites established a minimum weight requirement between 16kg and 18kg. This was driven by economic reasons with efficiencies gained in processing heavier carcasses. Regular inspections of dealer sites and monitoring minimum carcass weights ensure the minimum weight requirement is met. Where carcasses are found that breach the minimum weight requirements, both the harvester and dealer may be issued warning or infringement notices and fined.

Figure 14 – Average weight of Queensland macropod carcasses 2007–2013



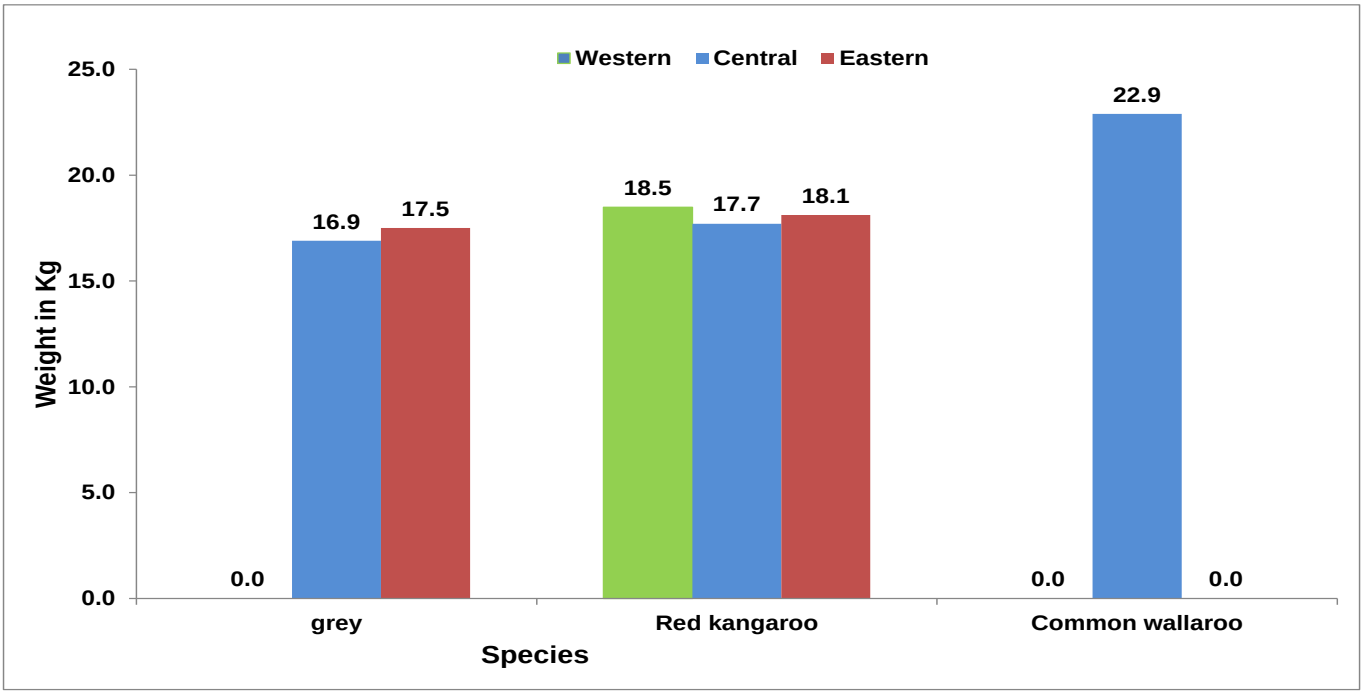
	2007	2008	2009	2010	2011	2012	2013
Central	19.3	22	23	23.8	22.7	21.1	21.8
Eastern	23	25.9	25.9	24.8	25.3	24.8	24.3
Western	23.1	25.6	26.3	27.9	28.6	25.9	23.2

Figure 15 – Average carcass weight for male macropods harvested in 2013



Average carcass weights for female common wallaroos are influenced by the very low number of harvested animals (54 across all three zones) Figure 15.

Figure 16 – Average carcass weight for female macropods harvested in 2013



4. Special quotas

A special quota can only be considered once the commercial harvest quota for a particular species has been reached in a harvest zone. Situations where a special quota may be considered include where there is a high macropod population density in a particular area or where adverse weather conditions such as prolonged drought are having a detrimental effect on macropod health. No special quotas were set in 2013.

5. The extent of non-commercial harvest mortality

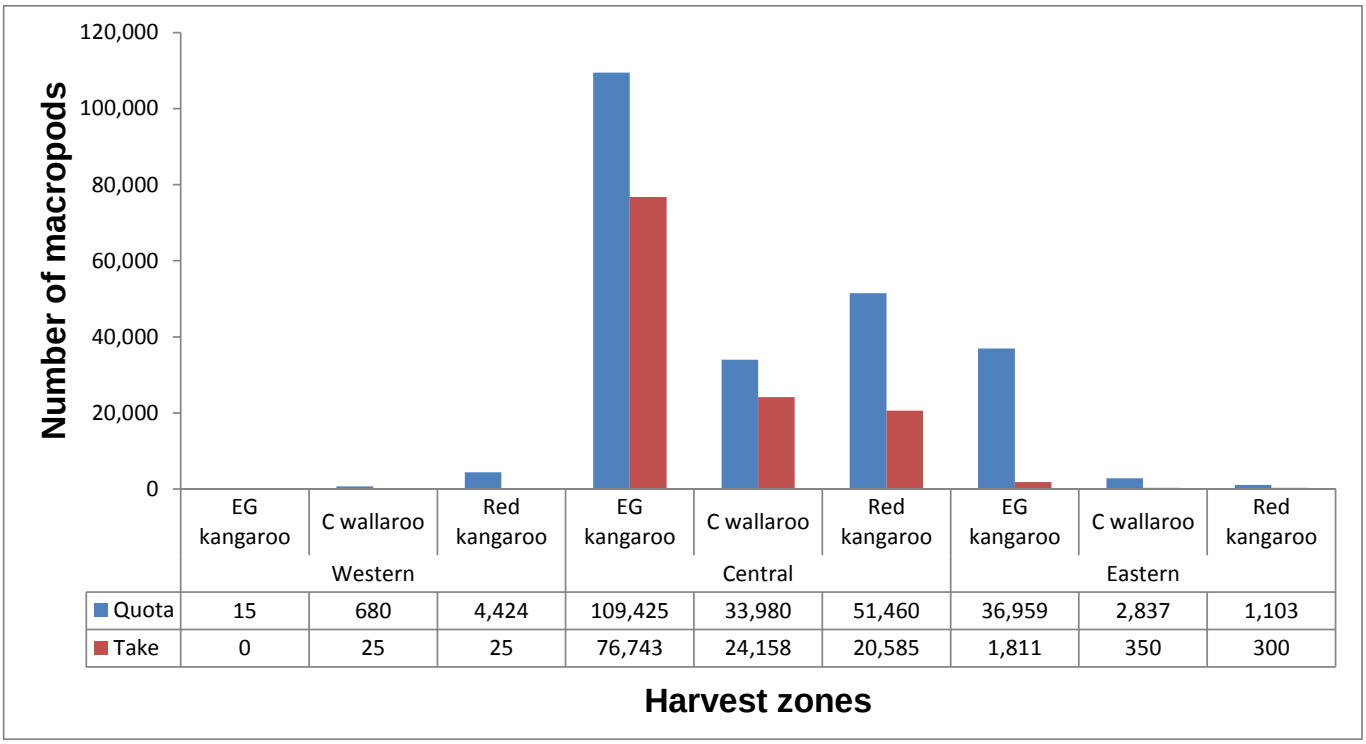
There are many forms of macropod mortality outside of the commercial harvest. It is possible for the department to collect and report data on three forms of non-commercial harvest mortality which can be considered when determining commercial quotas. These are damage mitigation permits (DMPs), licensed recreational harvest and disease outbreak mortality.

6. Damage mitigation permits

DMPs are issued by the department where macropods are causing demonstrable damage to primary production. The issuing of these permits is limited to a maximum of 1% of the population estimate for each species. It is a condition of the permit that macropods are taken in accordance with the requirements of the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Non-commercial Purposes.

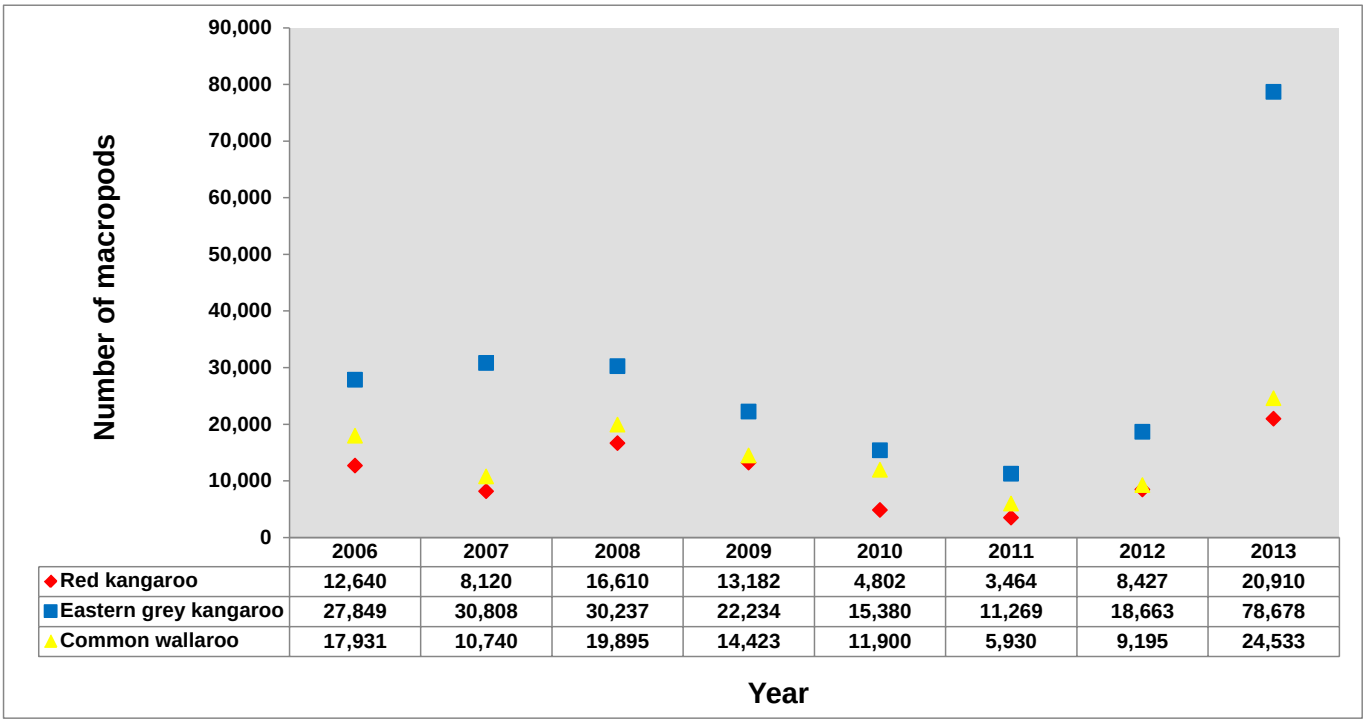
A total of 396 DMPs were issued for macropods in Queensland in 2013 which was a considerable increase from 2012 when 79 permits were issued. The number of animals taken for each harvest zone and species was below the quota. The highest percentage of quota used was for the common wallaroos in the central zone at 71.1%. A summary of the macropods taken under DMPs in 2013 compared to the DMP quota is given in Figure 17. For comparative purposes, a summary of the macropods taken under DMPs for each species for 2006–2013 is outlined in Figure 18.

Figure 17 – Macropod quota and take for damage mitigation permits in 2013



	EG kangaroo	C wallaroo	Red kangaroo	EG kangaroo	C wallaroo	Red kangaroo	EG kangaroo	C wallaroo	Red kangaroo
	Western			Central			Eastern		
Quota	15	680	4,424	109,425	33,980	51,460	36,959	2,837	1,103
Take	0	25	25	76,743	24,158	20,585	1,811	350	300

Figure 18 – Macropods taken under damage mitigation permits 2006–2013



	2006	2007	2008	2009	2010	2011	2012	2013
Red kangaroo	12,640	8,120	16,610	13,182	4,802	3,464	8,427	20,910
Eastern grey kangaroo	27,849	30,808	30,237	22,234	15,380	11,269	18,663	78,678
Common wallaroo	17,931	10,740	19,895	14,423	11,900	5,930	9,195	24,533

7. Disease outbreak mortality

There has been no incidence of significant mortalities related to disease outbreaks recorded in macropod populations in Queensland during the 2013 harvest period.

8. Long-term population, quota and harvest trends

Since 1991, the Queensland Government has conducted an annual program of aerial surveys by helicopter to directly monitor populations of the three macropod species covered by the Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017. These surveys occur over 22 representative monitor blocks across the state and are utilised to obtain population estimates that inform the quota.

2011 marked the first year that a correction factor of 1.85 was applied to population estimates for common wallaroos in Queensland. Prior to 2011 a conservative correction factor of 1.2 was used for common wallaroos. Current harvesting rates (quotas ranging from 10 to 20% of population estimates) are considered sustainable. None of the three commercially harvested species has shown a consistent decline in abundance since 1992 (Figure 19) which would necessitate a reassessment of the harvest take and species conservation status. Whilst no consistent declines have been observed, the macropod populations in Queensland have fluctuated over time. Of these species, the eastern grey kangaroo is consistently most abundant across the harvest zones, followed by the red kangaroo. Common wallaroos are the lowest even after the new correction factor was introduced in 2011. All three species occur in numbers of over 1,000,000 across the harvest zones.

Figures 20–22 below outline data on the three commercially harvested macropod species pertaining to population, quota and harvest for the years 1992–2012. Harvest data in these graphs is the combined commercial harvest and damage mitigation take. It should be noted that harvest quotas are calculated from population estimates based on aerial surveys conducted in the previous year to the harvest. Combined population estimates, quota and harvest data have been used for the period post-regionalisation to enable comparison with data collated prior to this period. As quotas are set as a constant proportion of the populations, they fluctuate as populations fluctuate, however, numerous factors influence harvest rates for commercial macropods. These include population levels, market forces, environmental conditions and access by harvesters. As a consequence, there is no clear pattern or trend in the proportion of the quota harvested since 1992.

Figure 19 – Estimated macropod populations in the Queensland commercial harvest zones 1992–2013

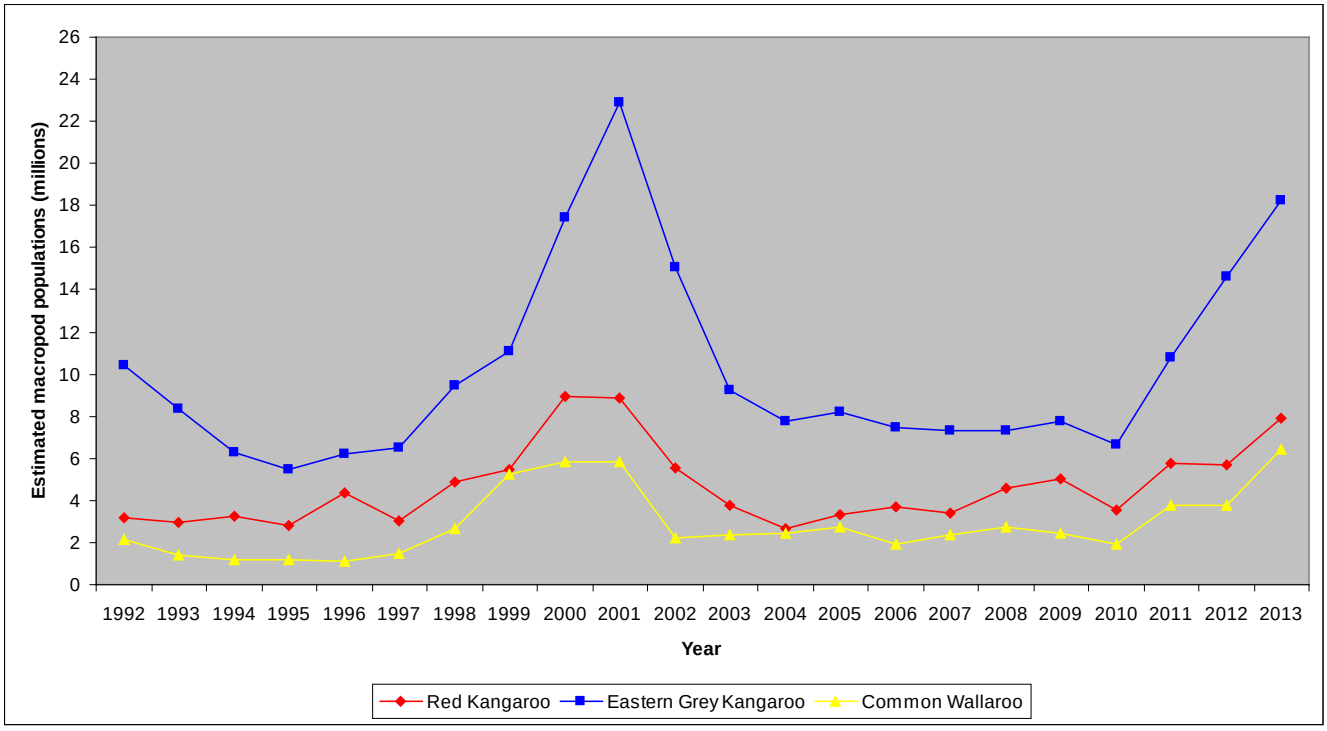


Figure 20 – Long-term estimated population (± SE), quota and combined harvest data (commercial harvest + DMPs) for the red kangaroo.
Note: Commercial harvest quotas are based on survey estimates from the previous year.

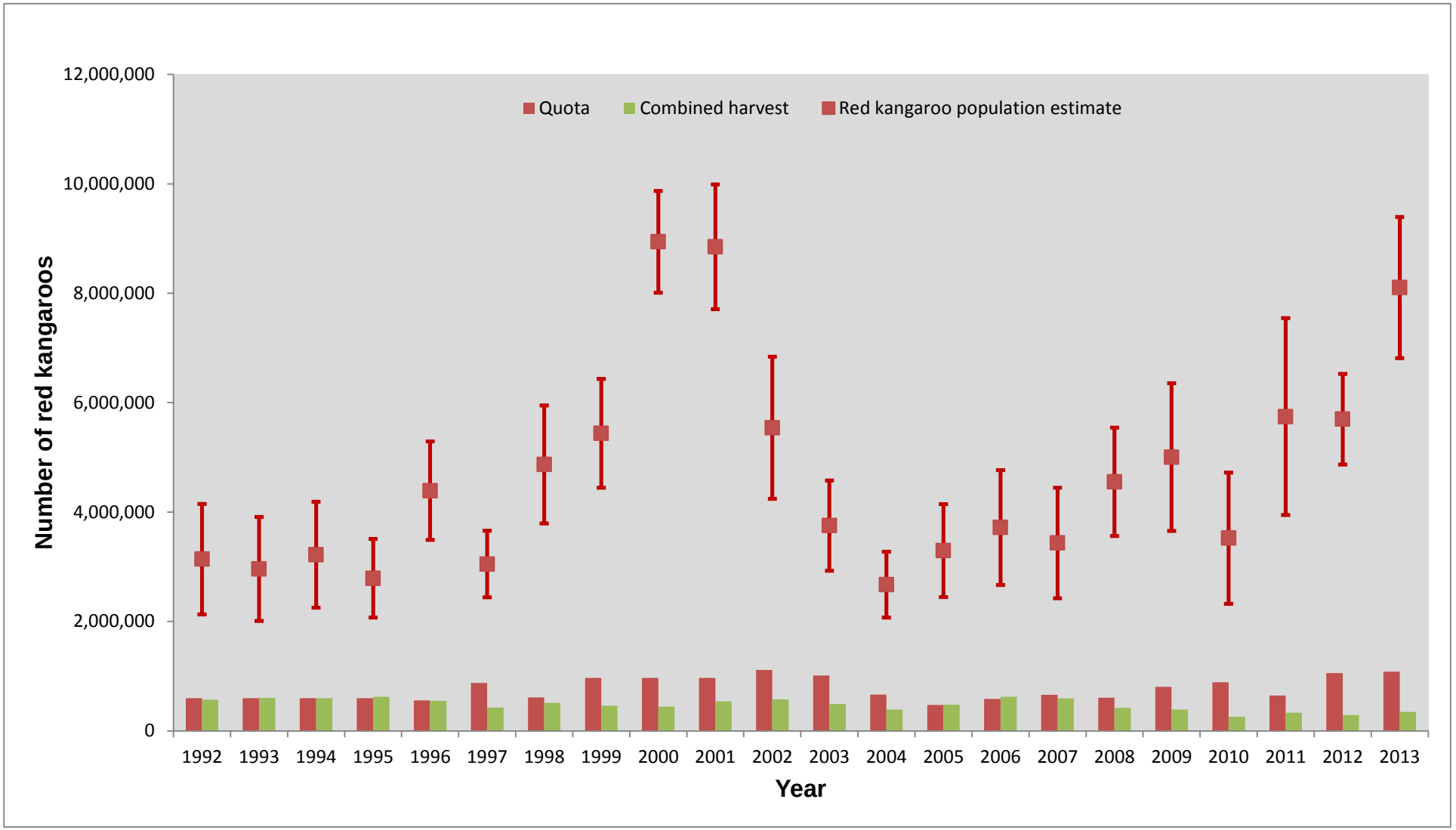


Figure 21 – Long-term estimated population (± SE), quota and combined harvest data (commercial harvest + DMPs) for the eastern grey kangaroo. Note: Commercial harvest quotas are based on survey estimates from the previous year.

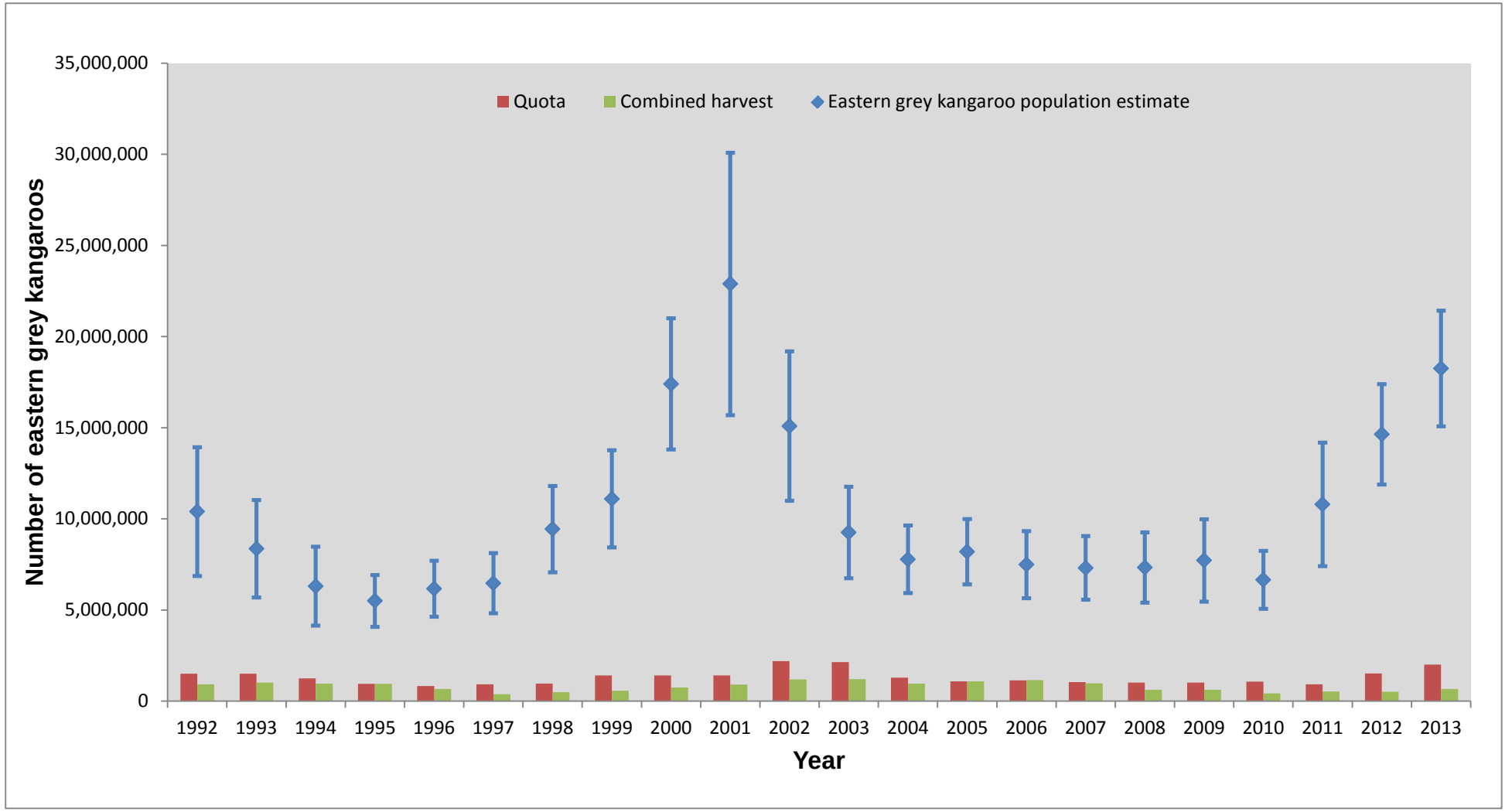
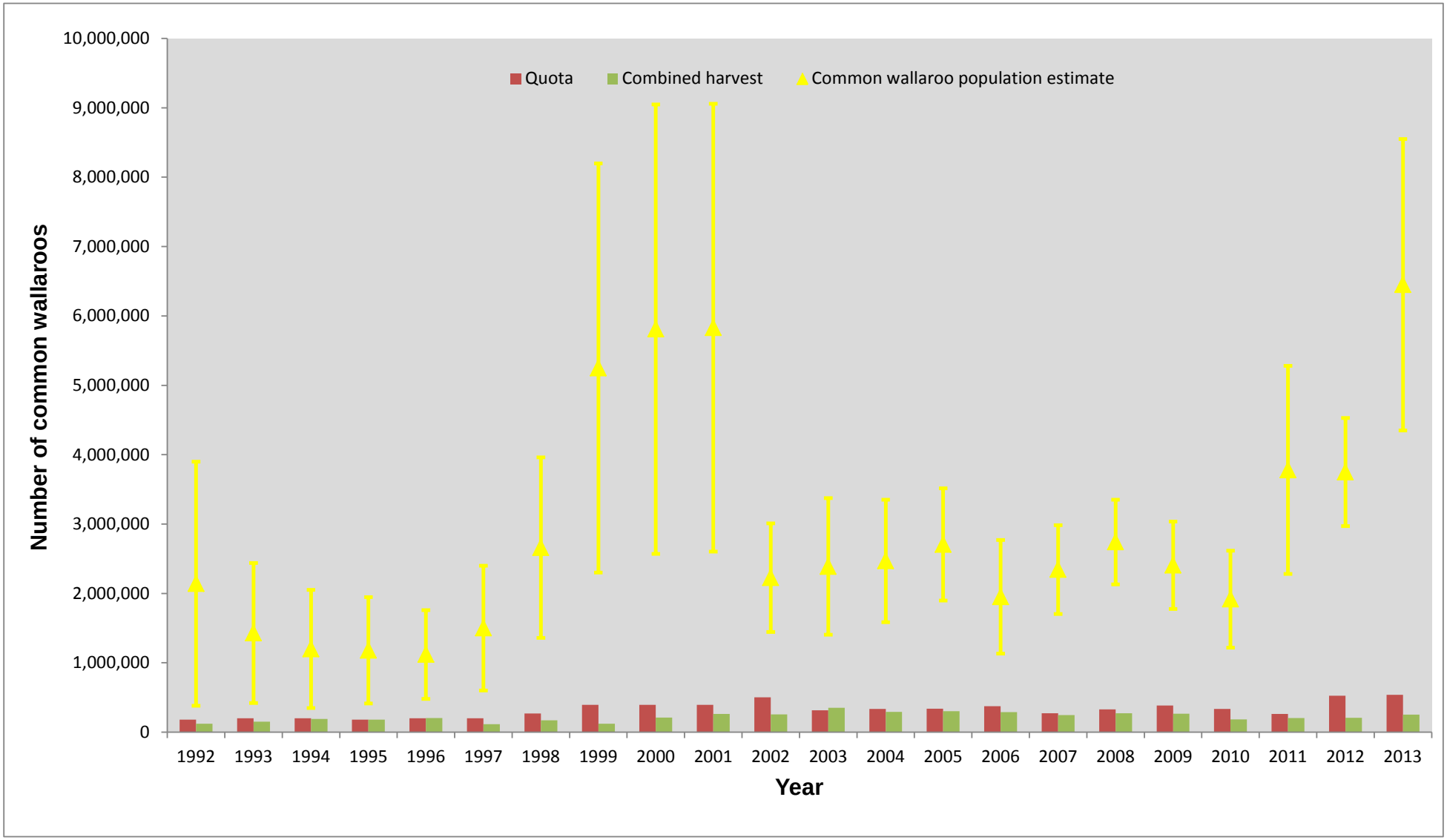


Figure 22 – Long-term estimated population (± SE), quota and combined harvest data (commercial harvest + DMPs) for the common wallaroo.
Note: Commercial harvest quotas are based on survey estimates from the previous year



9. Compliance

The commercial harvest of macropods in Queensland requires compliance, investigation and enforcement resources. There are two macropod management officers authorised under the *Nature Conservation Act 1992* within the Macropod Management Unit. The majority of commercial macropod harvest compliance activities are undertaken by these officers, however the department undertakes collaborative compliance work with wildlife rangers, the Queensland Police Service, and Safe Food Production Queensland (SFPQ).

Compliance priorities for the 2013 harvest period were:

- Harvesters hold the appropriate licence.
- Ensure macropods are correctly tagged with 2013 harvest period tag.
- Ensure macropods are tagged with the correct species/zone tag.
- Ensure non-head-shot macropods are not traded.
- Ensure compliance with the National Code of Practise for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes 2008.
- Ensure harvesters produce/carry valid written landholder consent as per licence conditions.
- Ensure timely, complete and accurate harvest returns from dealers.

The integrity of a quota relies upon the premise that tags are not reused or applied to the wrong species or used in the wrong harvest zone. To objectively and adequately demonstrate effective compliance levels, an inspection target of 1% of the overall harvest; with 10% of the sample inspected at a detailed level has been established.

Desktop audits and administration checks form part of routine compliance activities. Weapons licence audits are conducted throughout the year, as well as licence application checks and regular investigation of return irregularities.

9.1 Inspections

The department conducted both programmed and unannounced inspections of harvesters, dealers and processors. During the 2013 harvest period, 66 licensed dealer sites were inspected as well as five licensed processor sites and 54 harvester inspections.. Other complaints and evidence of non-compliance were also investigated.

A total of four joint/interagency inspection operations were conducted throughout the 2013 harvest period. Macropod management officers also conducted four training activities with the Queensland Police Service during the same period.

Throughout the harvest period, inspection targets were a minimum of 1% of the harvest being visually inspected and of this sample a further 10% being inspected in detail. The inspection targets of 1% and 10% were met, with 1.5% of the harvest visually inspected and 16.0% of the sample target inspected in detail.

Table 6 – Inspection targets

	Inspection target	**Inspections conducted**
Visual inspection—1% of overall harvest	11,405 – (1%)	16,764 (1.5% of harvest)
Detailed inspection of 10% of sample	1,141 – (10%)	1,822 (16.0% of target sample)

9.2 Compliance and enforcement measures

Breaches of legislation are subject to enforcement action such as warning notices, fines, licence cancellation and prosecution.

During the 2013 harvest period, a total of 24 infringement notices and 114 warning notices were issued. A total of 376 enforcement letters were sent. No licences were cancelled for breaches of legislation during the 2013 harvest period.

Table 7 – Enforcement measures used

Compliance letter		**Warning notice**		**Infringement notice**		**Prosecution**	
Harvester	Dealer	Harvester	Dealer	Harvester	Dealer	Harvester	Dealer
366	10	113	1	20	4	0	0

Warning notices

Dealer

- 1 * Buy or accept macropods tagged in contravention of Act.

Harvester

- 109 * Fail to give return of operations for each month of the harvest period/by prescribed time.
- 1 * Failure to record relevant particular within prescribed time.
- 1 * Failure to show identification or authority without reasonable excuse.
- 1 * Fail to properly attach a tag immediately after macropod is dressed.
- 1 * Sell or give away macropod after prescribed time.

Penalty infringement notices

Harvester

- 2 * Fail to give return of operations for each month of the harvest period/by prescribed time.
- 2 * Fail to properly attach a tag immediately after macropod is dressed.
- 1 * Failure to have record complete, accurate, legible and in ink.
- 2 * Failure to record relevant particular within prescribed time.
- 6 * Fail to comply with conditions of harvest period notice (NHS).
- 1 * Attach a tag to wildlife of a species other than the species for which the tag is supplied or approved.
- 1 * Possess/attach a tag without lawful authority.
- 1 * Failure to comply with condition of authority (no landholder consent form).
- 1 * Sell or give away macropod to a person other than the prescribed class of person.
- 3 * Take protected wildlife without lawful authority.

Dealer

- 2 * Buy or accept macropods tagged in contravention of Act.
- 2 * Failure to have record complete, accurate, legible and in ink.

10. Unusual circumstances

Areas of the west and south-west of the state were very dry in 2012 with little if any rain but were not drought declared. These widespread dry conditions continued throughout 2013 with two thirds of the state drought declared by November. The majority of the western and central harvest zones are in areas that were drought declared. There were no reported disease outbreaks during 2013 however the macropod management unit received reports of weak macropods, attributed to drought, throughout the harvest zones during December.

11. Research and experiments

The Macropod management program did not undertake any new research programs or experiments during 2013.

The department continues to respond to requests for data from researchers and other stakeholders as they arise.

12. Program improvements

The year 2013 marked the beginning of a new Queensland Wildlife Trade Management Plan for Export (Commercially Harvested Macropods 2013–17). Incorporated into this new plan are pre-determined trigger points for each of the commercial harvest quotas. Each trigger point represents a threshold level based on analysis of the long-term population estimate for each harvested species in each population estimate region.

Where an estimated population for a population region falls below a trigger point of 1.5 standard deviations below the long-term average for that region then the harvest quota will be halved for that region in the next calendar year. If a population estimate falls below two standard deviations below the long-term average for that species in that region then there will be no quota for the following year.

Table 8 shows the calculated trigger points for 2013 for each species in each zone compared with the population estimates for those regions. As the western zone is on the very limit of the eastern grey kangaroo range no quota is set for this species in this zone. Consequently there are no trigger points calculated for this species in this zone either. The 2012 population estimate for common wallaroos in the western zone was below two standard deviations below the long term average for this species. Therefore there was no quota set for this species in this zone in 2013 (Table 8).

Table 8 Calculated trigger points for 2013 and estimated populations of commercially harvested macropod species in each region for 2012

Note: There is no quota set for eastern grey kangaroos in the western region. Population estimates in red are below a pre-determined trigger point.

Species	Population estimate region	2012 estimated population	2013 1.5 SD trigger point	2013 2 SD trigger point
Red kangaroo	Central North	3,047,700	1,758,300	1,548,100
	Central South	1,672,100	665,000	550,400
	Central East	426,200	88,000	67,700
	Eastern	110,300	75,700	70,850
	Western	442,400	178,150	157,100
Eastern grey kangaroo	Central North	2,468,000	1,298,050	1,076,150
	Central South	3,117,350	809,750	646,350
	Central East	5,357,150	2,321,250	1,961,900
	Eastern	3,695,850	1,468,450	1,411,600
	Western	1,450	NA	NA
Common wallaroo	Central North	2,646,750	422,850	317,150
	Central South	679,550	77,950	55,000
	Central East	71,700	10,650	7,650
	Eastern	283,700	247,600	217,500
	Western	67,950	83,500	69,900

13. References

Anon. 2008. Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2008–2012. Queensland Parks and Wildlife Service; Brisbane.

Bureau of Meteorology 2011 “La Niña” Canberra, viewed February 2011, <www.bom.gov.au/watl/about-weather-and-climate/australian-climate-influences.shtml?bookmark=lanina>.

Caughley, G., Shepard, N. and G. Short. 1987. Kangaroos, their ecology and management in the sheep rangelands of Australia. Cambridge University Press; Cambridge.

Clancy, T.F., Pople, A.R., and L.A. Gibson. 1997. Comparison of helicopter line transects with walked line transects for estimating densities of kangaroos. Wildlife Research 24: 397–409.

Hacker, R, McLeod, S., Druhan, J., Tenhumberg, B. and U. Pradhan. 2002. Managing Kangaroos in the Murray-Darling Basin. Technical Report to the Murray-Darling Basin Commission; Canberra.

Pople, A.R. 2006. Modelling the spatial and temporal dynamics of kangaroo populations for harvest management. Final report to the Department of Environment and Heritage; Canberra.

Pople, A.R. and G.C. Grigg. 1999. Commercial harvesting of Kangaroos in Australia. Report to Environment Australia.

Appendix 1

Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2013–2017, performance indicators

Aim	Action	Performance indicator	Progress in 2013
Aim 1. Manage and administer commercial operators via licensing.	**Action 1.**1 All relevant activities are licensed in accordance with the applicable Queensland legislation and department policy.	**1.1.1** All licences across Queensland are assessed, processed and issued appropriately in accordance with Queensland legislation.	Achieved.
		1.1.2 Databases are maintained to ensure licensee information is current and accurate.	Achieved.
	Action 1.2—Licence conditions are applied where required.	**1.2.1.** Licence conditions are imposed on licences where required and in accordance with Queensland legislation.	Achieved.
		1.2.2. Information notices explaining conditions and rights of review are provided with all licences with licence conditions.	Achieved.
Aim 2. Monitor macropod populations and set quotas.	**Action 2.1**. Populations within the commercial harvest zones will be estimated annually based on aerial surveys.	**2.1.1.** Macropod population estimates are obtained annually via aerial surveys throughout the life of this plan.	Achieved.
	Action 2.2. Commercial macropod harvest quotas will be set in accordance with the provisions of this plan.	**2.2.1.** All commercial macropod harvest quotas are set in accordance with the provisions of this plan.	Achieved.
		2.2.2. The Commonwealth Government is advised of commercial harvest quotas for the following calendar year by 30 November.	Achieved.
		2.2.3. If Commonwealth approval is required for quotas set above the rates specified in this plan as part of an adaptive management experiment, such approval is obtained before the additional quota is implemented.	NA
		2.2.4. The quota report is made available to the public via the department's website.	Achieved.
	Action 2.3. Special macropod harvest quotas will be set in accordance with the provisions of this plan.	**2.3.1**. Special macropod harvest quotas are set and utilised in accordance with the provisions of this plan.	NA
	Action 2.4. Macropod populations will be monitored indirectly throughout the life of this plan.	**2.4.1.** Where a harvest zone showed greater than 40 per cent female harvest, then appropriate management action would be taken.	NA
	Action 2.5. Annual population estimates for commercially harvested macropod species will be assessed against predetermined trigger	**2.5.1.** Where an estimated population for a population estimate region reaches a trigger point of 1.5 standard deviations below the long term average for that region then the harvest quota will be reduced for that region in the next calendar year.	NA

Aim	Action	Performance indicator	Progress in 2013
	points in each population estimate region.	**2.5.2.** Where an estimated population for a population estimate region reaches a trigger point of two standard deviations below the long-term average for that region then the harvest quota will be further reduced or suspended for that region in the next calendar year.	Achieved.
Aim 3. Ensure humane treatment of commercially-harvested macropods.	**Action 3.1**. The department will work with the Southern Queensland Institute of TAFE or other accredited provider to ensure that all potential harvesters are competent to achieve the standards set out in the code of practice before being issued a license.	**3.1.1.** All successful applicants for harvester's licences have completed the approved training course and the approved shooting course.	Achieved.
		3.1.2. Approved course of training is reviewed and revised if necessary during the life of this plan.	Achieved.
		3.1.3. The code of practice is provided to all new applicants when they receive their licence and is available on the department website.	Achieved.
	Action 3.2. The department will monitor compliance with the code of practice by commercial macropod industry operators.	**3.2.1.** All licensees who are found to have breached licence conditions in relation to animal welfare are issued with warning notices, PINs or are prosecuted as appropriate.	Achieved.
	Action 3.3. The department will contribute to nationally-focused research in improving animal welfare outcomes, if requested.	**3.3.1.** Research proposals from universities and other research institutions concerned with the welfare aspects of the commercial harvest of macropods are considered during the life of this plan. Assistance to such research will be provided where appropriate.	Achieved.
Aim 4. Monitor macropod industry compliance.	**Action 4.1.** The department will undertake both regular and opportunistic monitoring of compliance by commercial macropod industry operators.	**4.1.1.** A minimum of one per cent of harvested macropods are inspected by departmental staff to ensure compliance with Queensland legislation and licence conditions.	Achieved.
		4.1.2. During the life of this plan all macropod processing works in Queensland are inspected by department staff annually and dealer sites are inspected opportunistically to ensure compliance with Queensland legislation and licence conditions.	Five of the seven licenced processing facilities were inspected during the 2013 harvest period.
		4.1.3. During the life of this plan, harvester's vehicles loaded with macropod carcasses are inspected opportunistically to ensure compliance with Queensland legislation and licence conditions and the results of these inspections are documented.	Achieved.
	Action 4.2. Activities not in accordance with Queensland legislation and Queensland Wildlife Trade Management Plan 2013–17 will be investigated and where an offence has been committed, and it is appropriate, prosecute..	**4.2.1.** Reports of unlicensed activities and activities in breach of legislation are investigated to the fullest extent possible, and where sufficient evidence is available offenders are issued with warning notices or PINs or prosecuted as appropriate.	Achieved.

Aim	Action	Performance indicator	Progress in 2013
	Action 4.3. The accuracy of industry returns will be continually monitored during the life of this plan.	**Performance indicator 4.3.1.** During the life of this plan, incoming industry returns are scrutinised and discrepancies are investigated and resolved.	Achieved.
	Action 4.4. A compliance database will be maintained to support investigations, inspections and audits.	**Performance indicator 4.4.1**. A compliance database of investigations, inspections and audits is maintained.	Achieved.
Aim 5. Undertake program reporting and review**.**	**Action 5.1.** An annual report on the Queensland Wildlife Trade Management Plan 2013–17 will be prepared and submitted to the Commonwealth.	**5.1.1.** An annual report on the operation of the Queensland Wildlife Trade Management Plan 2013–17 for each calendar year is submitted to the Commonwealth Government by the end of March of the following year.	Achieved.
		5.1.2. All annual reports prepared during the life of this plan are available on the department's website.	Achieved.
	Action 5.2. The review of this plan will commence no later than 12 months prior to the expiry of this plan in order to assess the success of the plan in achieving its goal.	**5.2.1.** The Queensland Wildlife Trade Management Plan 2013–17 will be reviewed no later than 12 months prior to the expiry of this plan.	NA
		5.2.2. The success of the current plan in achieving its goal is assessed by measuring the aims against the performance indicators.	NA
		5.2.3. The results of the plan review are presented to the Commonwealth no later than six months prior to the expiry of this plan.	NA
Aim 6. Facilitate adaptive management and research.	**Action 6.1.** The department will respond to changes as they arise. Changes made to the management program will be communicated to all relevant stakeholders.	**6.1.1.** Changes to the macropod management program will be communicated to relevant stakeholders via the department's website and directly to stakeholders where appropriate.	Achieved.
	Action 6.2. The department will facilitate research into the ecology and harvest management of macropods.	**6.2.1.** Research proposals from universities and other research institutions concerned with the ecological aspects of the commercial harvest of macropods are considered during the life of this plan. Assistance to such research will be provided where appropriate.	NA

Aim	Action	Performance indicator	Progress in 2013
Aim 7. Promote community awareness and participation.	**Action 7.1.** Relevant public documents will be made available on the department's website.	**7.1.1.** Throughout the life of this plan, the department's website contains the following information as a minimum standard: – current and previous wildlife trade management plans – monthly tag issue and commercial harvest statistics – historical harvest statistics – population survey reports – current population estimates – current commercial quotas – contact information for the Macropod Management Unit – current forms for commercial macropod licences.	Achieved.
	Action 7.2. Publicly available information will be provided to interested parties on request.	**7.2.1.** Publicly available macropod management information is distributed to interested parties as soon as practicable after such a request.	Achieved.
	Action 7.3. Where appropriate, relevant macropod management program staff will participate in media interviews and prepare media releases.	**7.3.1.** Departmental staff participate in interviews with the media where appropriate.	Achieved.
		7.3.2. Media releases are prepared when appropriate for issues of interest to the community such as population surveys and the release of the quota for the next calendar year.	Achieved.
	Action 7.4. Relevant information regarding licensing arrangements will be developed as required and made available to all licensees.	**7.4.1.** A copy of the current Harvest Period Notice and code of practice is made available to harvesters and dealers throughout the life of this plan to ensure that licensees are aware of relevant licensing requirements and responsibilities.	Achieved.