Queensland Macropod Management Program

Annual Report 2023

Artwork by Adrian Combarngo, proud Mandandanji and Kamilaroi man.

The Department of Environment, Science and Innovation acknowledges the Country and people of Queensland's First Nations. We pay our respect to Elders past and present. We acknowledge and thank First Nations people for the enduring relationship connecting people, Country and ancestors—an unbreakable bond that safely stewarded and protected the land, waters and sky for thousands of generations

Queensland Government

Prepared by: Queensland Parks and Wildlife Service, Department of Environment, Science and Innovation

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Preface

This annual report summarises the activities of the Macropod Management Program in Queensland for the period 1 January 2023 to 31 December 2023. In accordance with the Queensland Wildlife Trade Management Plan for Export—Commercially Harvested Macropods 2023–2027, 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
- climate
- research and experiments
- program improvements.

For the 2023 harvest period, there were 1,115 macropod harvesting licences. There were 101 dealer licences for dead macropods, which included nine dealer licences for dead macropods (meat processing) and two dealer licences for dead macropods (tanning) . Data from dealer returns, entered up to 5 February 2024, indicates that there were 597,750 macropods commercially harvested and sold, representing 27.0% of the overall quota. The harvest was entirely for carcasses used for both human consumption and pet food.

No quota was exceeded for any species in any harvest zone in 2023. The highest percentage use of quota was for common wallaroos in zone 4 at 71.9%. In all harvest zones, the percentage of the population used for each species was less than 5%.

The commercial harvest is typically biased towards males due to their generally larger size and weight when compared to females. For 2023 the harvest for each species was biased towards males by 81.7% or greater.

During the 2023 harvest period, the department issued 33 infringement notices and 346 warning notices for offences relating to the commercial macropod harvest.

Contents

1. Background

The Department of Environment, Science and Innovation (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' (Department of Environment and Science (Qld) (2023)).

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

These harvested species are abundant over a broad area of Queensland and Australia. None of these species are listed as threatened under state or Australian Government legislation; all are listed as 'least concern' wildlife under the *Nature Conservation (Animals) Regulation 2020*.

The harvesting of these macropods is regulated through or with consideration to the:

- *Nature Conservation Act 1992*
  - *Nature Conservation (Animals) Regulation 2020*
  - *Nature Conservation (Macropod) Conservation Plan 2017*
- *Environment Protection and Biodiversity Conservation Act 1999*
- Queensland Wildlife Trade Management Plan for Export—Commercially Harvested Macropods—2023–2027
- *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 based on population estimates derived from annual aerial surveys of the commercially harvested species. From 2003 to 2022, quotas have been set for each species for four harvest zones to ensure that harvest pressure is distributed across the range of the species. As of 2023 the quotas are set for each species in six harvest zones (figure 1):

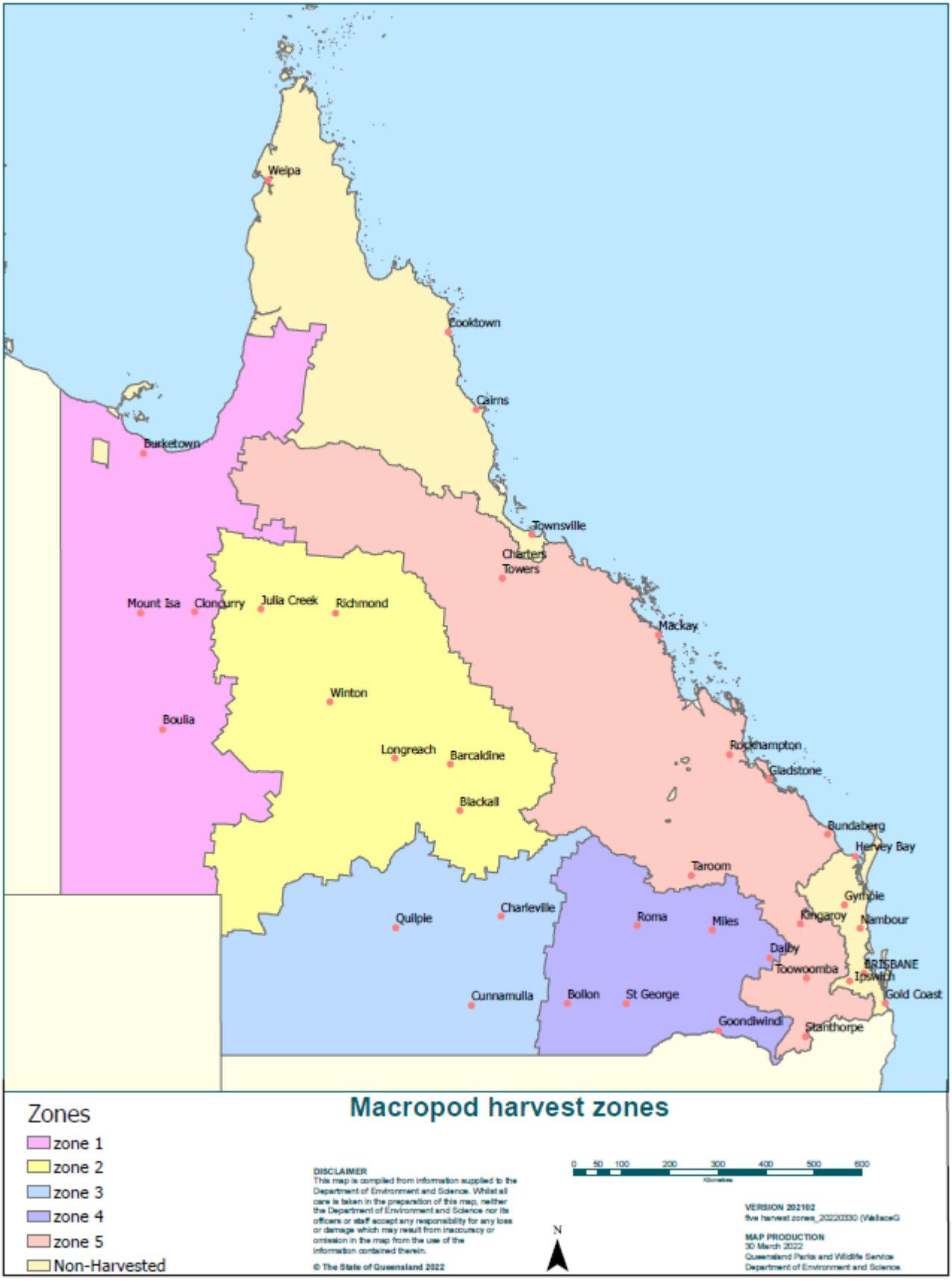
Harvest zone from 2023 onwards

- no harvest zone (quota zero)
- zone 1 (formerly western zone)
- zone 2 (formerly north region of central zone)
- zone 3 (formerly south region of central zone)
- zone 4 (formerly east region of central zone)
- zone 5 (formerly eastern zone)

2003 – 2022 harvest zones

- no harvest zone (quota zero)
- eastern harvest zone
- central harvest zone
- western harvest zone.

Figure 1 – Queensland harvest zones in 2023



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 zones 1 and 5, where survey effort is less extensive when compared to zones 2, 3 and 4, 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, state and Australian governments, for determining state quota limits.

This annual report summarises the activities of the Macropod Management Program for the period 1 January 2023 to 31 December 2023. In accordance with the Queensland Wildlife Trade Management Plan for Export—Commercially Harvested Macropods—2023–2027, the report will address:

- 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
- climate
- research and experiments
- program improvements.

All macropod species are ‘protected animals’ in Queensland under the *Nature Conservation (Animals) Regulation 2020* which provides for the licensing of a range of activities in relation to the commercial harvesting of macropods in Queensland.

Harvested macropods must be taken in accordance with the *Nature Conservation (Macropod) Conservation Plan 2017* under a licence issued by the department.

The harvest is controlled by the use of single use, tamper evident numbered 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.
- Tags must be securely attached to the skin of every macropod 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 2023 harvest period, 1,115 macropod harvesting licences were issued. There were 101 dealer licences for dead macropods, which included nine dealer licences for dead macropods (meat processing) and two dealer licence 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 100% for common wallaroos, in zone 4. The actual harvest for this species in this zone was 71.9% of available quota. Statistics on the harvest and tag sales are updated monthly and made available to the public via the Queensland Government website. This assists the industry to monitor the harvest and tag availability.

Table 1—Tag sales and harvest for 2023

Tag categories by zone	2023 quotas	Tags sold		Reported harvest	
		Number of tags	% of quota	Number of macropods	% of quota
Zone 1					
Red kangaroo	108,050	31,400	29.1	25,520	23.6
Common wallaroo	48,100	2,900	6.0	1,473	3.1
Zone 2					
Eastern grey kangaroo	0	NA	NA	NA	NA
Red kangaroo	687,850	170,250	24.8	147,184	21.4
Common wallaroo	100,900	54,300	53.8	39,359	39.0
Zone 3					
Eastern grey kangaroo	37,500	28,250	75.3	19,554	52.1
Red kangaroo	181,350	58,250	32.1	49,773	27.4
Common wallaroo	8,900	8,400	94.4	5,769	64.8
Zone 4					
Eastern grey kangaroo	422,950	201,600	47.7	172,367	40.8
Red kangaroo	67,600	59,800	88.5	40,942	60.6
Common wallaroo	6,500	6,500	100.0	4,675	71.9
Zone 5					

Eastern grey kangaroo	448,650	103,200	23.0	76,219	17.0
Red kangaroo	26,750	13,750	51.4	7,382	27.6
Common wallaroo	65,300	16,900	25.9	7,533	11.5
Total	2,210,400	755,500	34.2	597,750	27.0

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 5 February 2023, indicates that there were 597,750 macropods commercially harvested and sold, representing 27.0% of the overall quota. The harvest of macropods does not occur evenly across the harvest zones. The majority of harvesting occurs in zones 2, 3 and 4. Figure 2 shows the distribution of the harvest across the state. Of the 597,750 animals harvested, there were 270,801 red kangaroos, 268,140 eastern grey kangaroos and 58,809 common wallaroos harvested (Figure 3).

Figure 2—Macropod harvest in local government areas during the 2022 harvest period

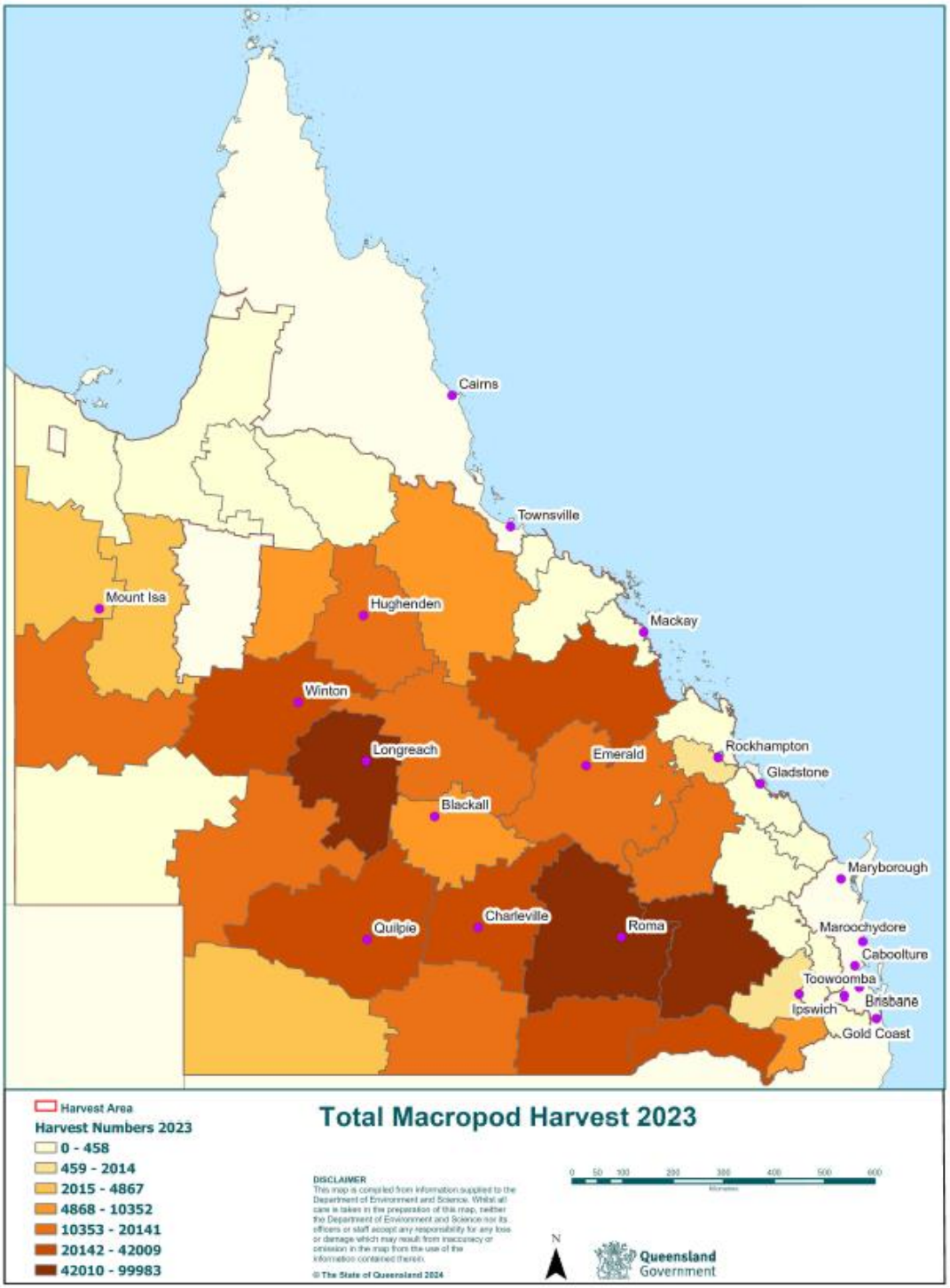
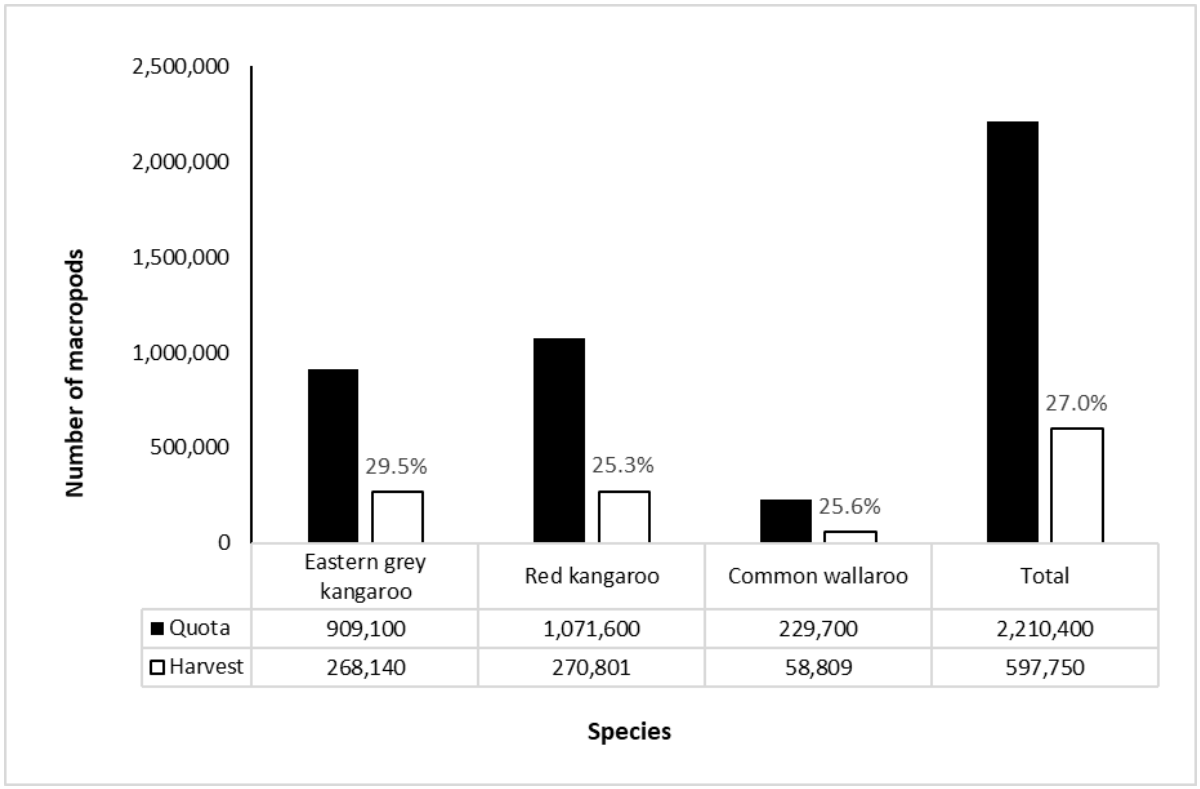
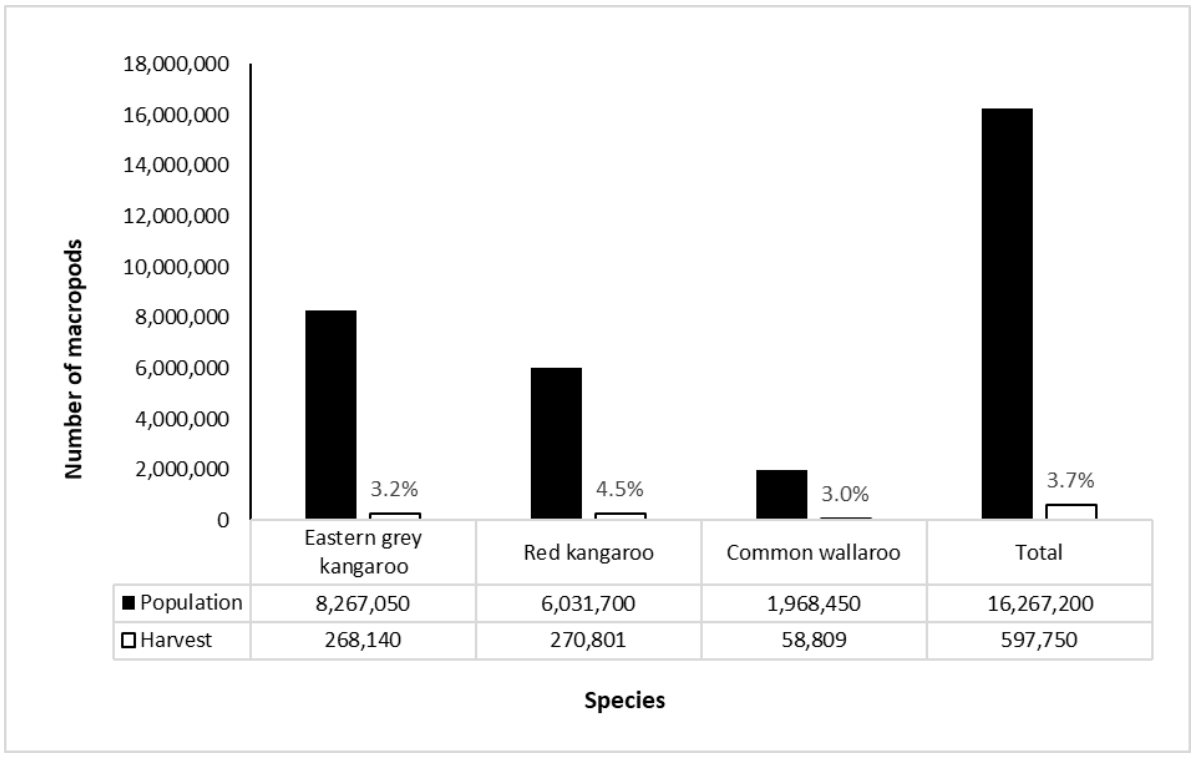


Figure 3—Total number of macropods harvested in 2023 compared to harvest quotas



For all three harvested species the percentage of the population harvested in 2023 was only 3.7% of the 2022 estimated population (Figure 4). For red kangaroos, 4.5% of the estimated population in the harvest area was harvested, while 3.2% of the estimated population of eastern grey kangaroos and 3.0% for common wallaroos was harvested.

Figure 4—Percentage of the 2022 estimated population harvested in 2023



Tables 2–5 contain detailed summaries of the harvest in 2023. Quotas for each species in each zone were not exceeded in 2023. The highest percentage of quota used was for common wallaroos in zone 4 at 71.9%. In all harvest zones the percentage of the population harvested for each species was below 13%.

Table 2—Total harvest in 2023

Species	Population estimate 2022	Quota 2023	Harvest take 2023	% quota used 2023	% population harvested 2023
Eastern grey kangaroo	8,267,050	909,100	268,140	29.5	3.2
Red kangaroo	6,031,700	1,071,600	270,801	25.3	4.5
Common wallaroo	1,968,450	229,700	58,809	25.6	3.0
Total	16,267,200	2,210,400	597,750	27.0	3.7

Note: population estimates are based on aerial surveys conducted in 2022, which were used to set the 2023 quotas. Harvest figures are based on data available 5 February 2023.

Table 3—Harvest of red kangaroos in 2023

Zone	Population estimate 2022	Quota 2023	Harvest take 2023	% quota utilised 2023	% population harvested 2023
Zone 1	1,080,500	108,050	25,520	23.6	2.4
Zone 2	3,439,150	687,850	147,184	21.4	4.3
Zone 3	906,800	181,350	49,773	27.4	5.5
Zone 4	337,950	67,600	40,942	60.6	12.1
Zone 5	267,300	26,750	7,382	27.6	2.8
Total	6,031,700	1,071,600	270,801	25.3	4.5

Note: population estimates are based on aerial surveys conducted in 2022, which were used to set the 2023 quotas. Harvest figures are based on data available 5 February 2023.

Table 4—Harvest of eastern grey kangaroos in 2023

Zone	Population estimate 2022	Quota 2023	Harvest take 2023	% quota utilised 2023	% population harvested 2023
Zone 1	0	NA	NA	NA	NA
Zone 2	461,050	0	0	NA	NA
Zone 3	499,750	37,500	19,554	52.1	3.9
Zone 4	2,819,700	422,950	172,367	40.8	6.1
Zone 5	4,486,550	448,650	76,219	17.0	1.7
Total	8,267,050	909,100	268,140	29.5	3.2

Note: population estimates are based on aerial surveys conducted in 2022, which were used to set the 2023 quotas. Harvest figures are based on data available 5 February 2023.

Table 5—Harvest of common wallaroos in 2023

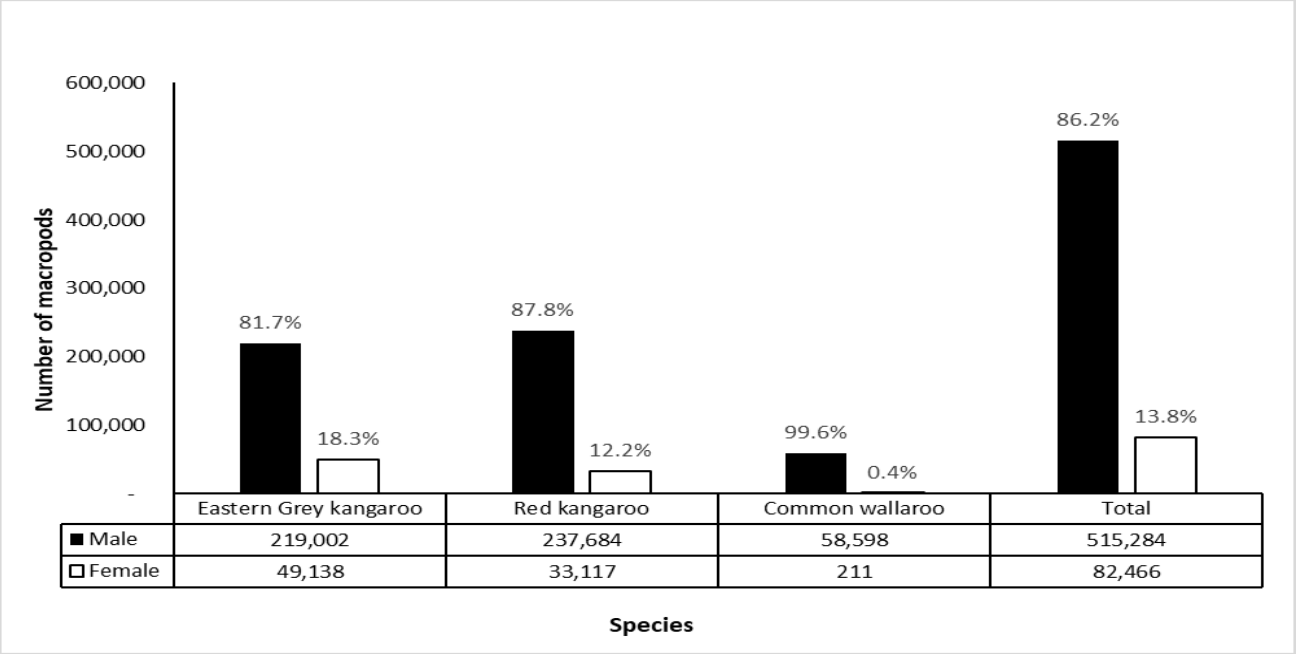
Zone	Population estimate 2022	Quota 2023	Harvest take 2023	% quota utilised 2023	% population harvested 2023
Zone 1	480,750	48,100	1,473	3.1	0.3
Zone 2	672,650	100,900	39,359	39.0	5.9
Zone 3	118,800	8,900	5,769	64.8	4.9
Zone 4	43,200	6,500	4,675	71.9	10.8
Zone 5	653,050	65,300	7,533	11.5	1.2
Total	1,968,450	229,700	58,809	25.6	3.0

Note: population estimates are based on aerial surveys conducted in 2022, which were used to set the 2023 quotas. Harvest figures are based on data available 5 February 2023.

3.1 Harvest sex ratio

The harvest is typically biased towards males due to their generally larger size and weight when compared to females. For 2023, the harvest for each species was biased towards males by 81.7% or greater (Figure 5). Females composed less than 14% of the overall harvest.

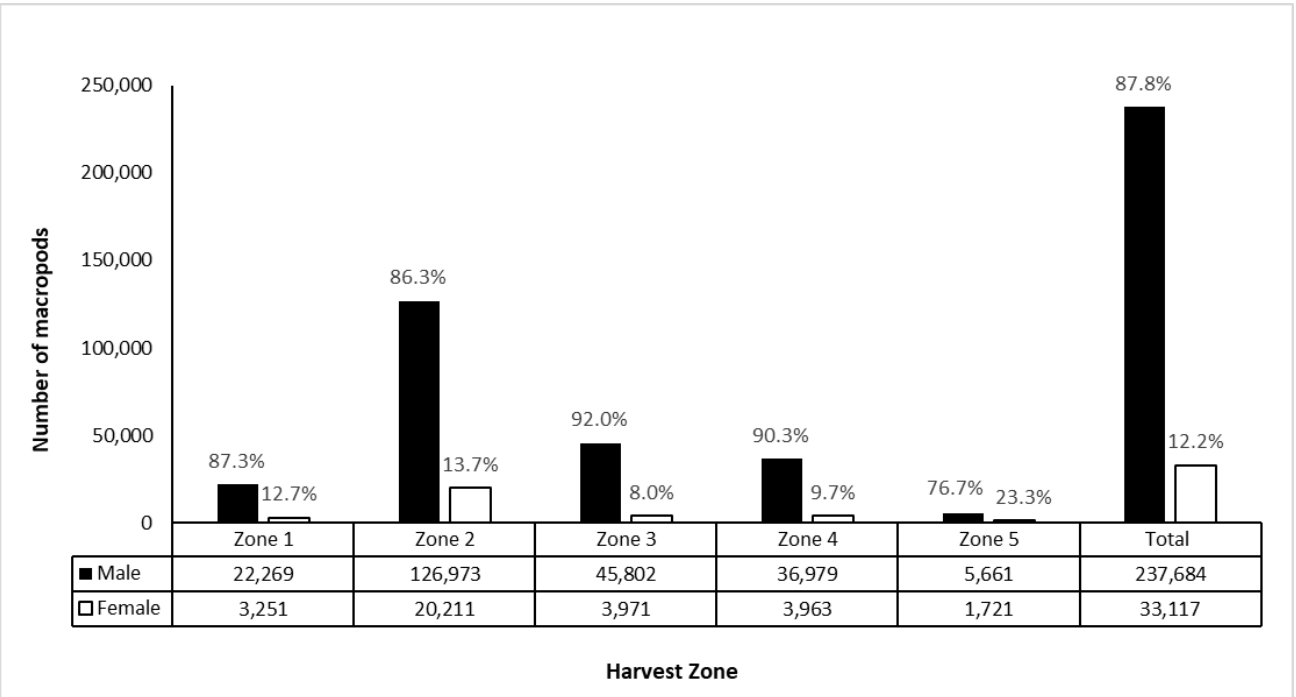
Figure 5—Sex ratio of harvested macropods in 2023 for all harvest zones combined



	Eastern Grey kangaroo	Red kangaroo	Common wallaroo	Total
Male	219,002	237,684	58,598	515,284
Female	49,138	33,117	211	82,466

For red kangaroos, the highest percentage of females harvested was in zone 5 at 23.3%. The overall take of females for this species was 12.2% of the harvest (Figure 6).

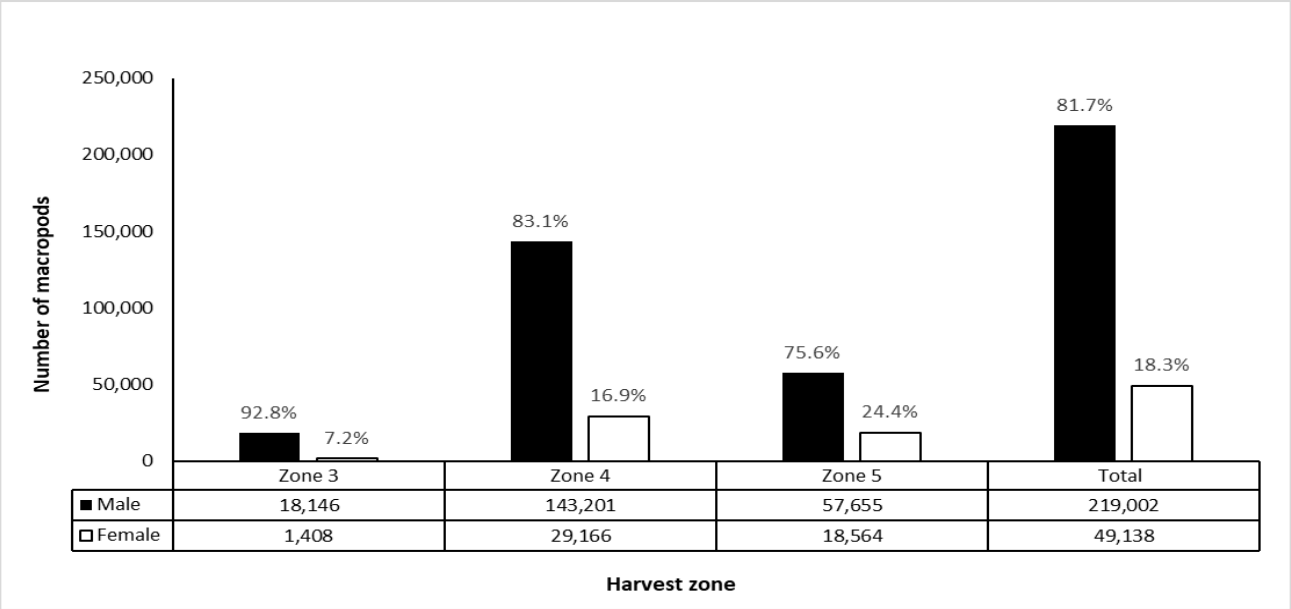
Figure 6—Sex ratio of harvested red kangaroos in 2023



	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Total
Male	22,269	126,973	45,802	36,979	5,661	237,684
Female	3,251	20,211	3,971	3,963	1,721	33,117

For eastern grey kangaroos the greatest percentage take of females was 24.4% in the zone 5. The overall take of females for this species was 18.3% of the harvest (Figure 7).

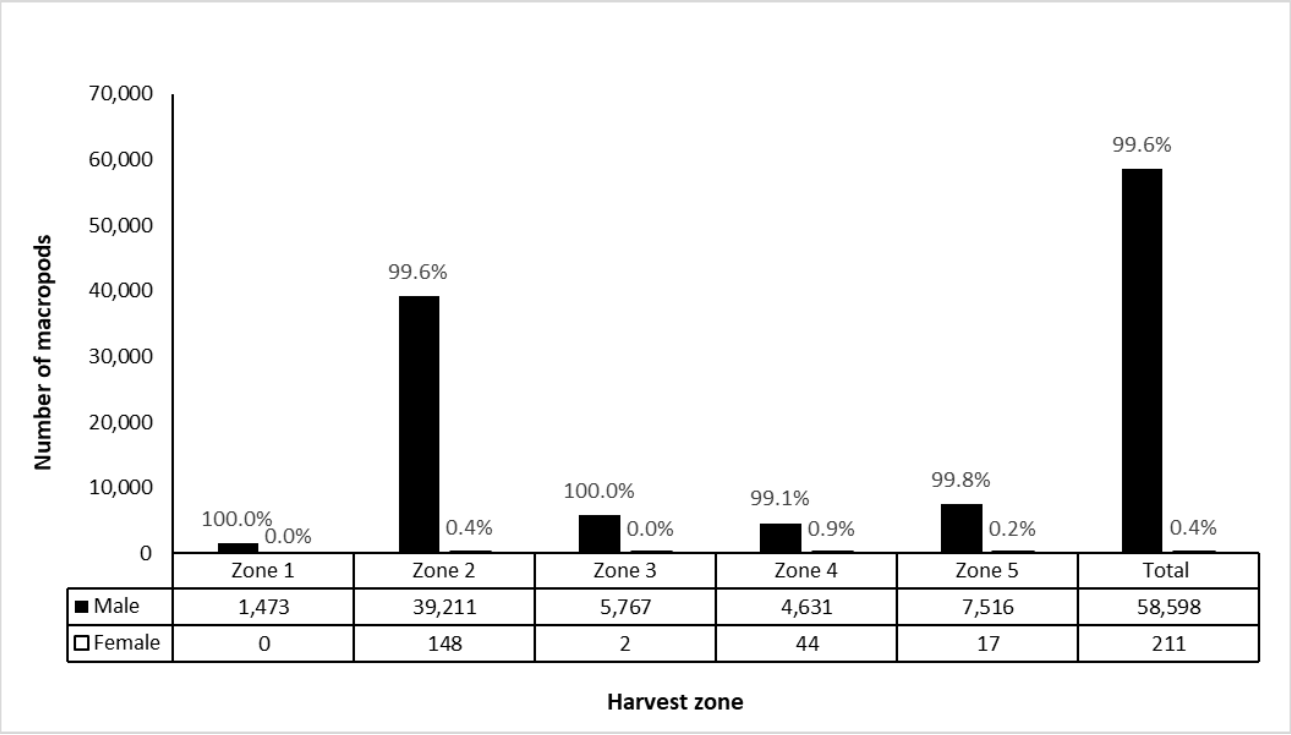
Figure 7—Sex ratio of harvested eastern grey kangaroos in 2023



Note: There is no harvest quota for eastern grey kangaroos in zone 1. There was also no quota in zone 2 in 2023 due to a trigger point being reached in the population estimates.

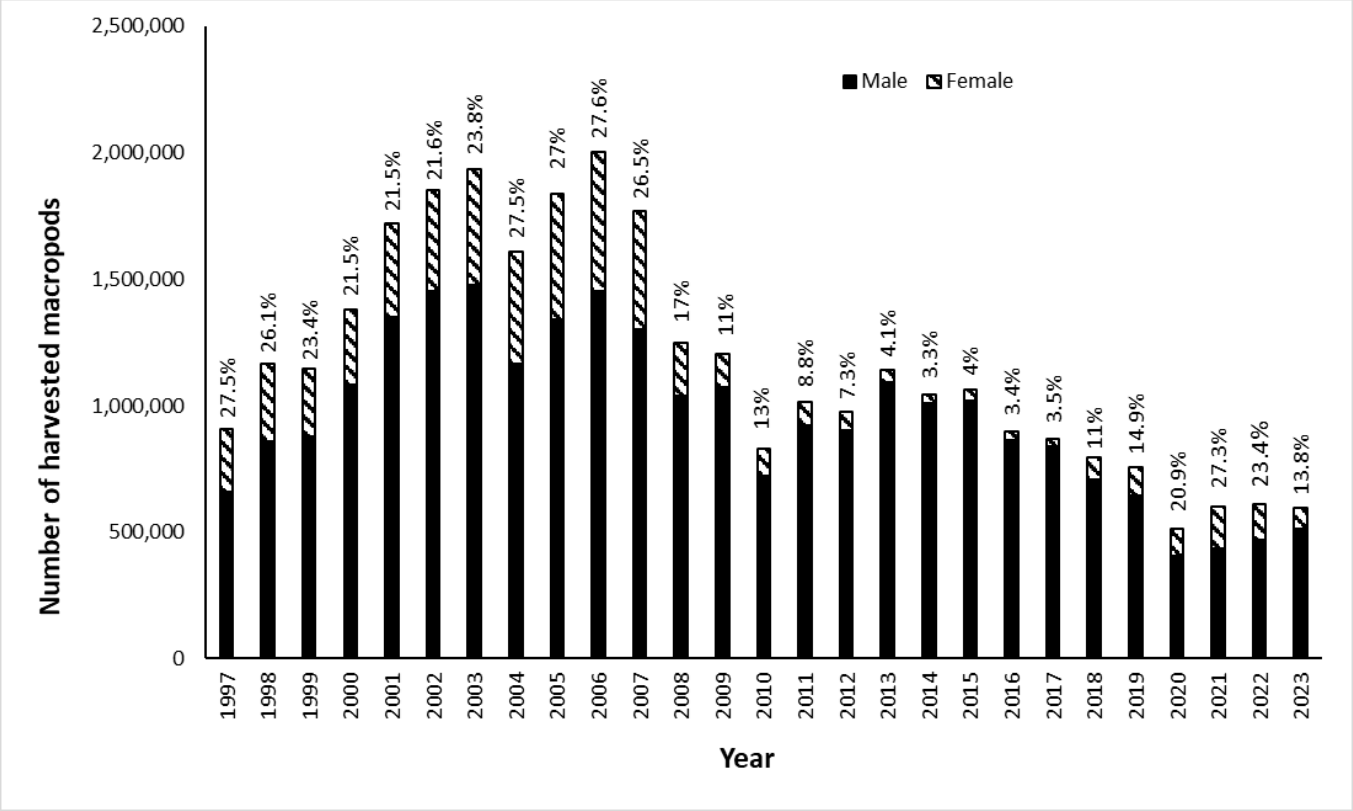
For common wallaroos the percentage of the harvest containing females was the lowest amongst the three commercially harvested species at an overall total of only 211 animals. The greatest percentage take of females for this species was 0.9% in zone 4 (Figure 8).

Figure 8—Sex ratio of harvested common wallaroos in 2023



The proportion of the total macropod harvest comprising females in 2023 was less than 14%. The percentage of females harvested in 2023 decreased from the previous year and is consistent with long term trends.

Figure 9—Queensland macropod harvest sex ratio trend 1997 to 2023 (percentage of female harvest shown)



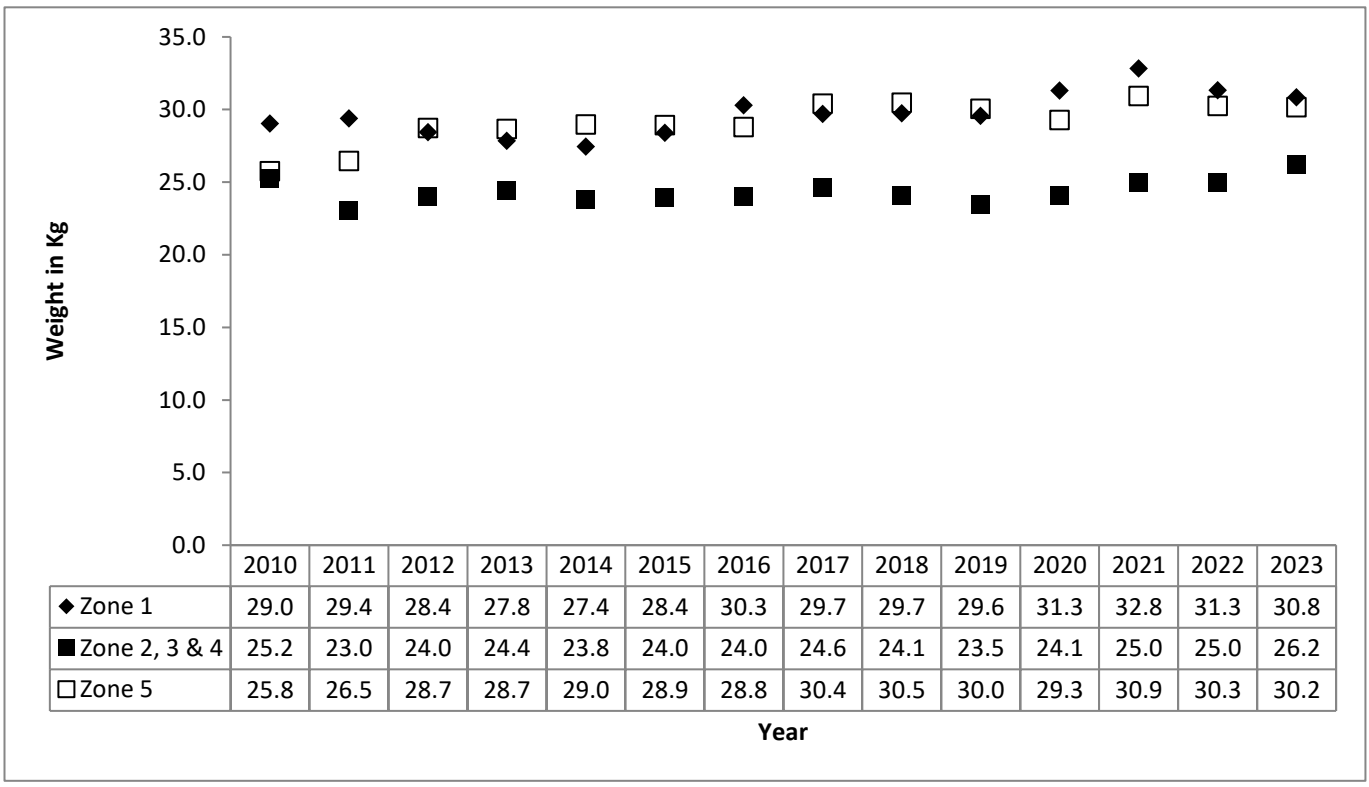
3.2 Carcass and skin harvest

The 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 meat processors. No macropods were reported as commercially harvested for their skins only in 2023.

3.3 Average weight

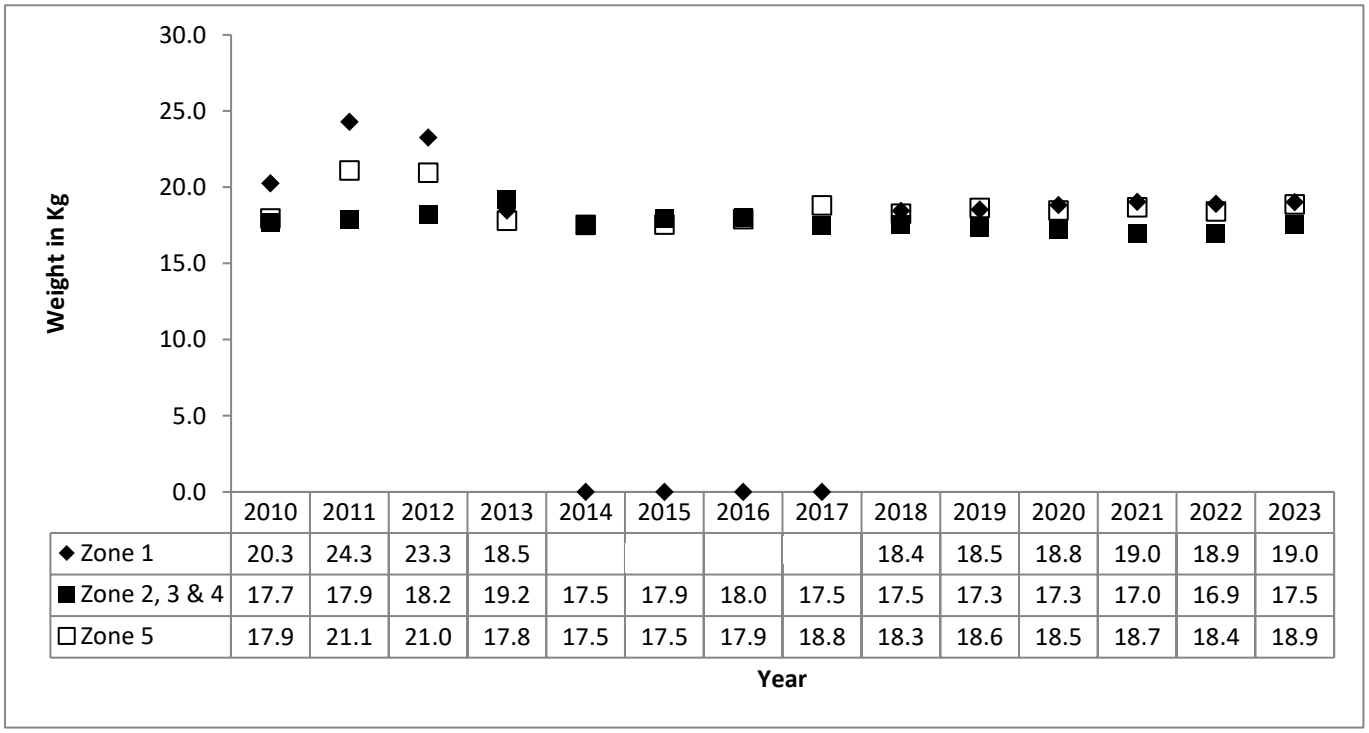
The average dressed carcass weights per harvest zone and species are shown in figures 10 to 13. Carcass weights have fluctuated slightly in the past 13 years in each harvest zone with no significant increases or decreases having occurred in that time. A number of dealer sites have established a minimum preferred dressed weight requirement between 16kg and 18kg. This is driven by economic reasons with efficiencies gained in processing heavier carcasses.

Figure 10—Average dressed carcass weight of Queensland male macropod carcasses 2010–2023
(zones 2,3&4 are combined to allow comparisons with previous years)



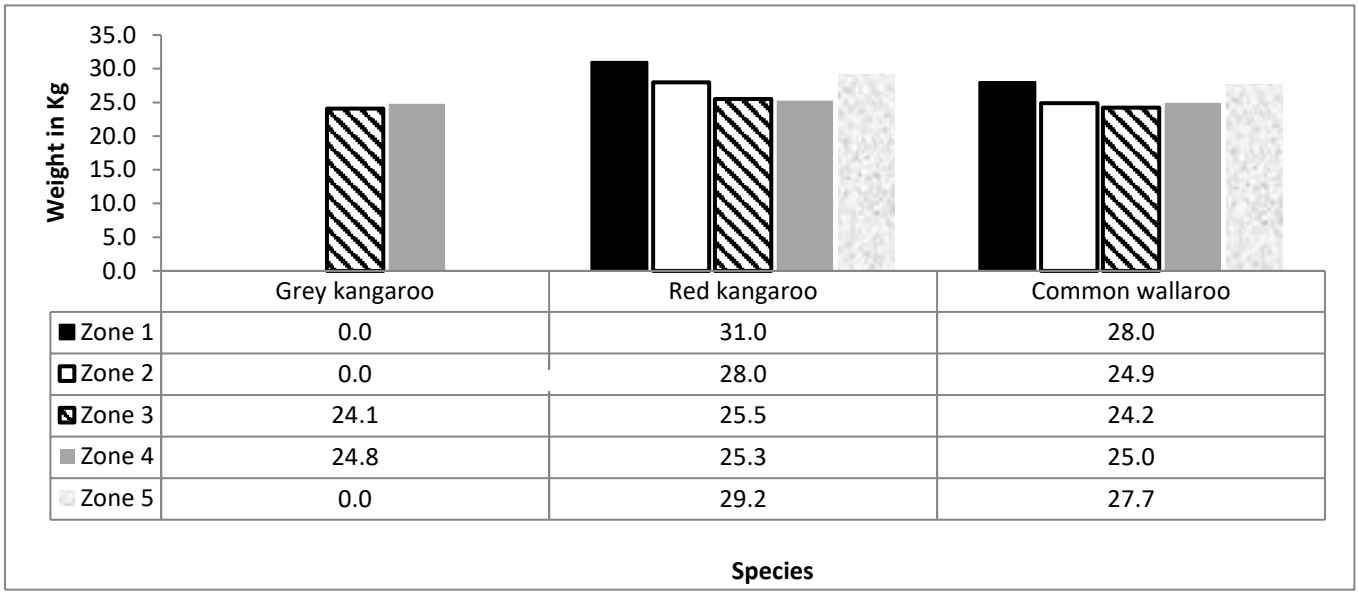
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
◆ Zone 1	29.0	29.4	28.4	27.8	27.4	28.4	30.3	29.7	29.7	29.6	31.3	32.8	31.3	30.8
■ Zone 2, 3 & 4	25.2	23.0	24.0	24.4	23.8	24.0	24.0	24.6	24.1	23.5	24.1	25.0	25.0	26.2
□ Zone 5	25.8	26.5	28.7	28.7	29.0	28.9	28.8	30.4	30.5	30.0	29.3	30.9	30.3	30.2

Figure 11—Average dressed carcass weight of Queensland female macropod carcasses 2010–2023
(zones 2,3&4 are combined to allow comparisons with previous years)



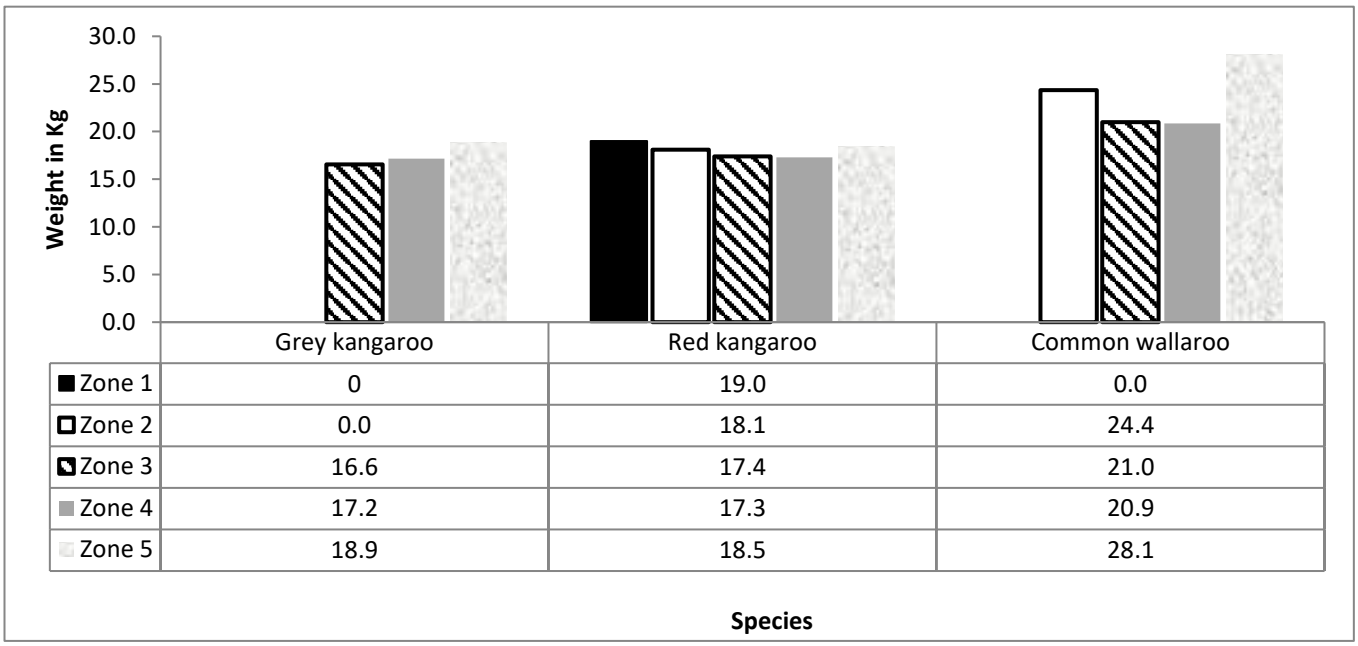
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
◆ Zone 1	20.3	24.3	23.3	18.5					18.4	18.5	18.8	19.0	18.9	19.0
■ Zone 2, 3 & 4	17.7	17.9	18.2	19.2	17.5	17.9	18.0	17.5	17.5	17.3	17.3	17.0	16.9	17.5
□ Zone 5	17.9	21.1	21.0	17.8	17.5	17.5	17.9	18.8	18.3	18.6	18.5	18.7	18.4	18.9

Figure 12—Average dressed carcass weight for male macropod species harvested in 2023. Note there was no quota for eastern grey kangaroos in zones 1 and 2.



	Grey kangaroo	Red kangaroo	Common wallaroo
Zone 1	0.0	31.0	28.0
Zone 2	0.0	28.0	24.9
Zone 3	24.1	25.5	24.2
Zone 4	24.8	25.3	25.0
Zone 5	0.0	29.2	27.7

Figure 13—Average dressed carcass weight for female macropod species harvested in 2023. Note there was no quota for eastern greys in zones 1 and 2.



	Grey kangaroo	Red kangaroo	Common wallaroo
Zone 1	0	19.0	0.0
Zone 2	0.0	18.1	24.4
Zone 3	16.6	17.4	21.0
Zone 4	17.2	17.3	20.9
Zone 5	18.9	18.5	28.1

4. Special quotas

No special quotas were utilised in 2023. A special quota can only be considered once the 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.

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 two forms of non-commercial harvest mortality which can be considered when determining commercial quotas. These are damage mitigation permits (DMPs), and disease outbreak mortality.

6. Damage Mitigation Permits

Damage mitigation permits (DMPs) are issued by the department where macropods may cause damage or loss of property or present a threat to human health or wellbeing. The issuing of these permits is limited to a maximum of 2% of the estimated population for each species. The total take under this permit system remains below the allowable quota (Figure 14). For comparative purposes, a summary of the macropods taken under DMPs for each species for 2013–2023 is outlined in Figure 15.

Figure 14—Macropod quota and allowable take for damage mitigation permits in 2023

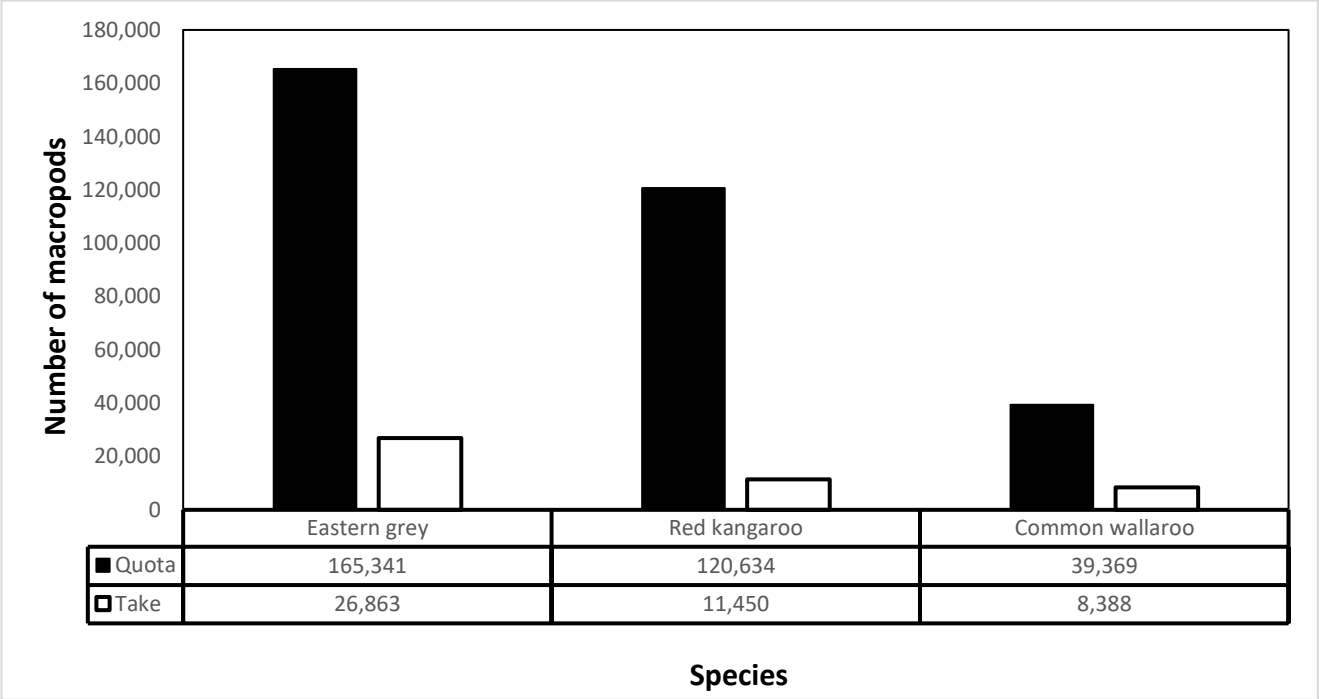
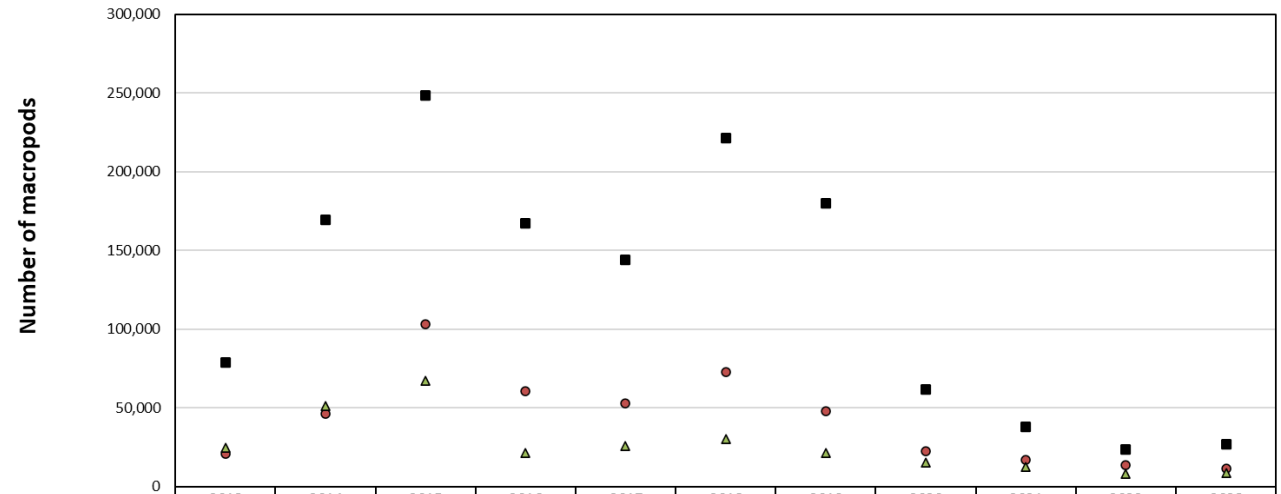


Figure 15—Macropods taken under damage mitigation permits 2013–2023



	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Eastern grey kangaroo	78,678	169,631	248,719	167,066	143,996	221,312	179,849	61,929	38,019	23,779	26,863
Red kangaroo	20,910	46,492	103,393	60,730	52,967	72,999	48,142	22,500	17,150	13,600	11,450
Common wallaroo	24,533	51,112	67,246	21,420	25,716	30,229	21,473	15,065	12,450	8,092	8,388

7. Disease outbreak mortality

No reports of disease outbreaks in macropods across Queensland were reported during 2023.

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 Queensland Wildlife Trade Management Plan for Export—Commercially Harvested Macropods 2023–2027. These surveys occur over 22 representative monitor blocks across the state and are utilised to obtain population estimates that inform the quota.

In 2011 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 (Caughley et. al. 1987, Hacker et. al. 2002). None of the three commercially harvested species has shown a consistent decline in abundance since 1992 (Figure 16) 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. All three species occur in numbers of over 1,000,000 across the harvest zones.

Figures 16–19 below outline data on the three commercially harvested macropod species pertaining to population, commercial harvest quota and macropods commercially harvested and sold for the years 1992–2023. 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 16—Estimated macropod populations in the Queensland macropod harvest zones 1992–2023

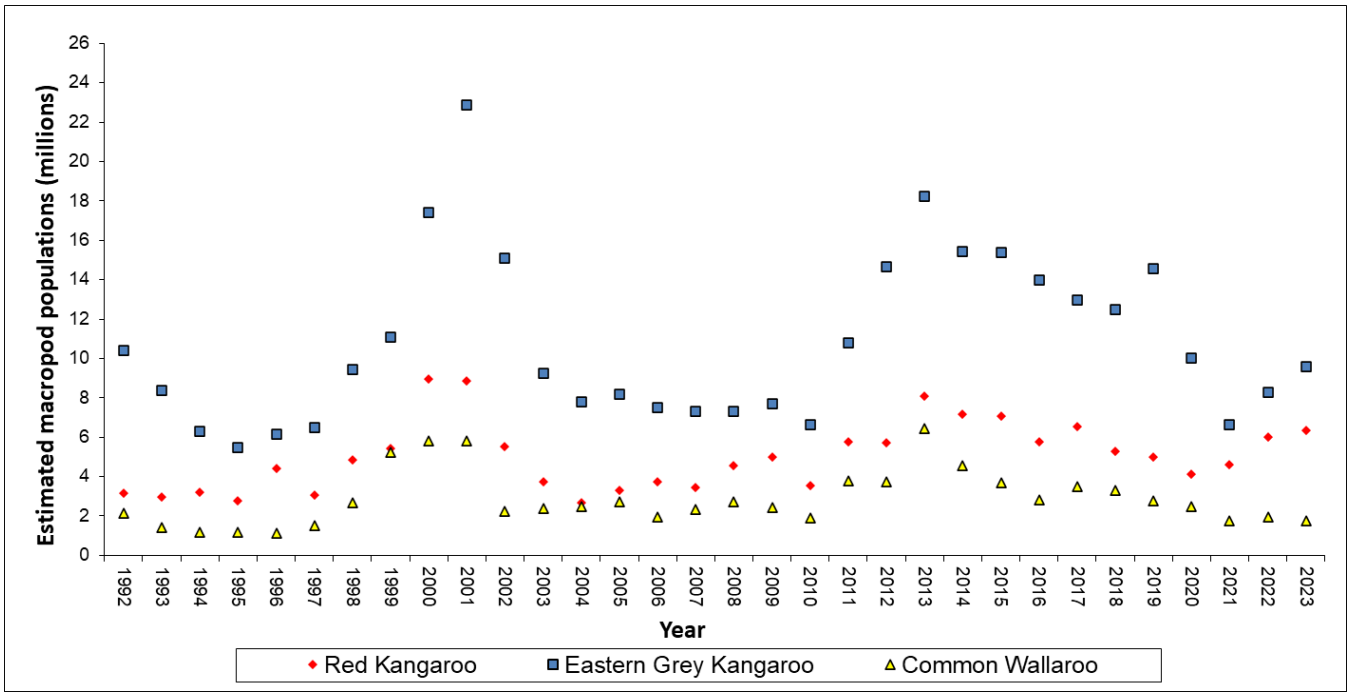


Figure 17—Long-term estimated populations (± SE), harvest quotas and actual harvest of red kangaroos. Note: Harvest quotas are based on survey estimates from the previous year

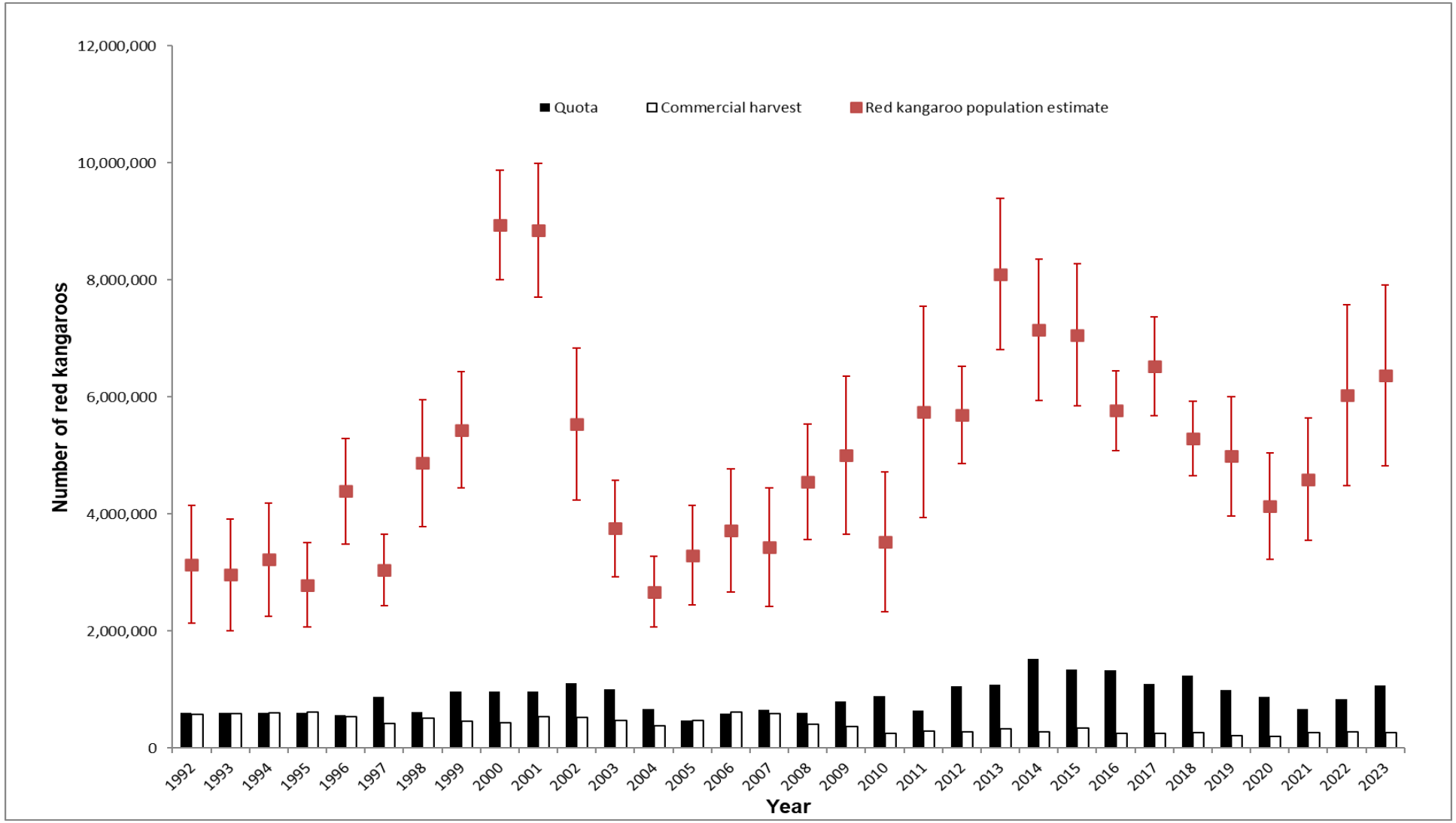


Figure 18—Long-term estimated populations (± SE), commercial harvest quotas and actual harvest of eastern grey kangaroos. Note: Harvest quotas are based on survey estimates from the previous year

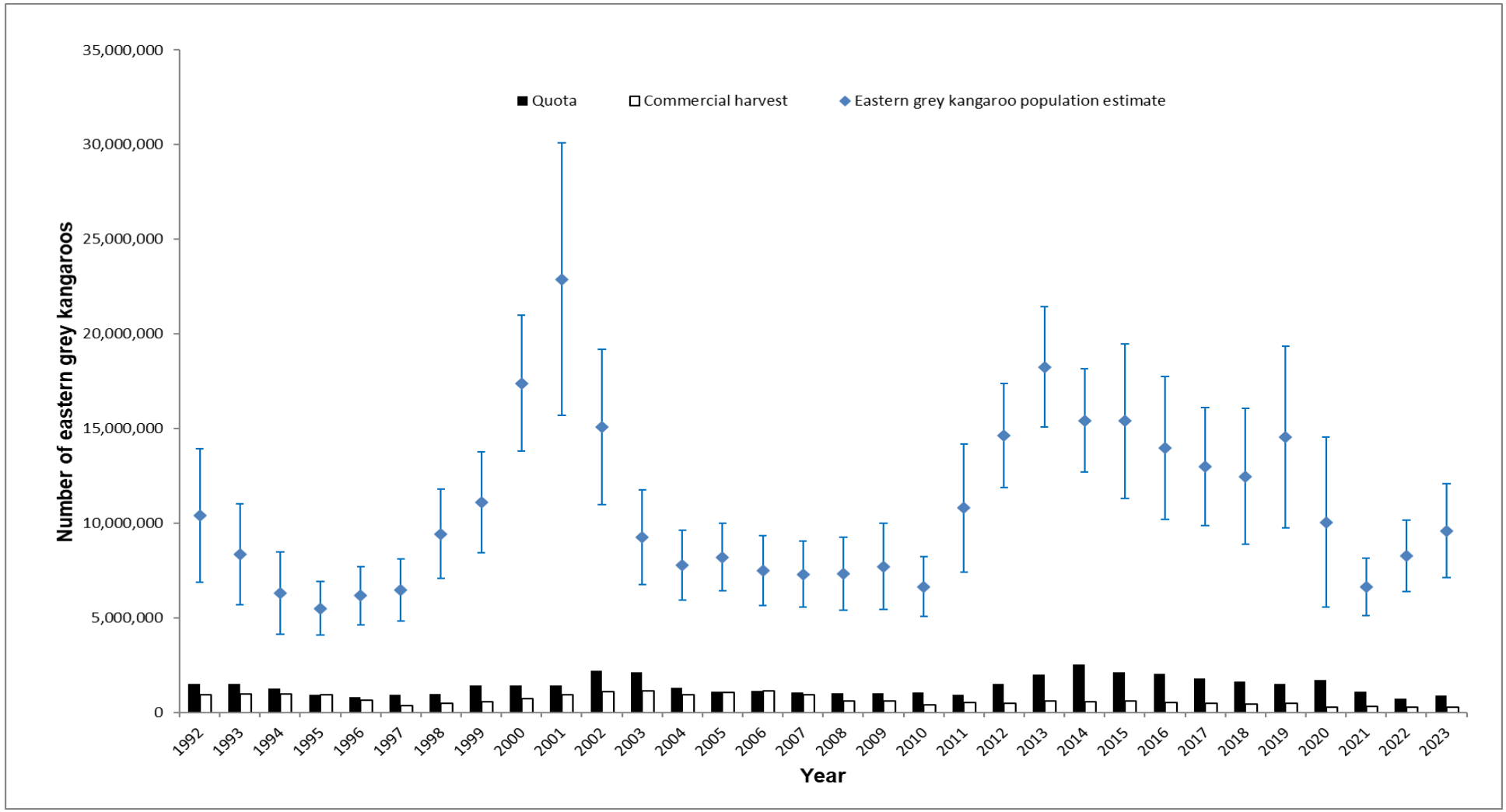
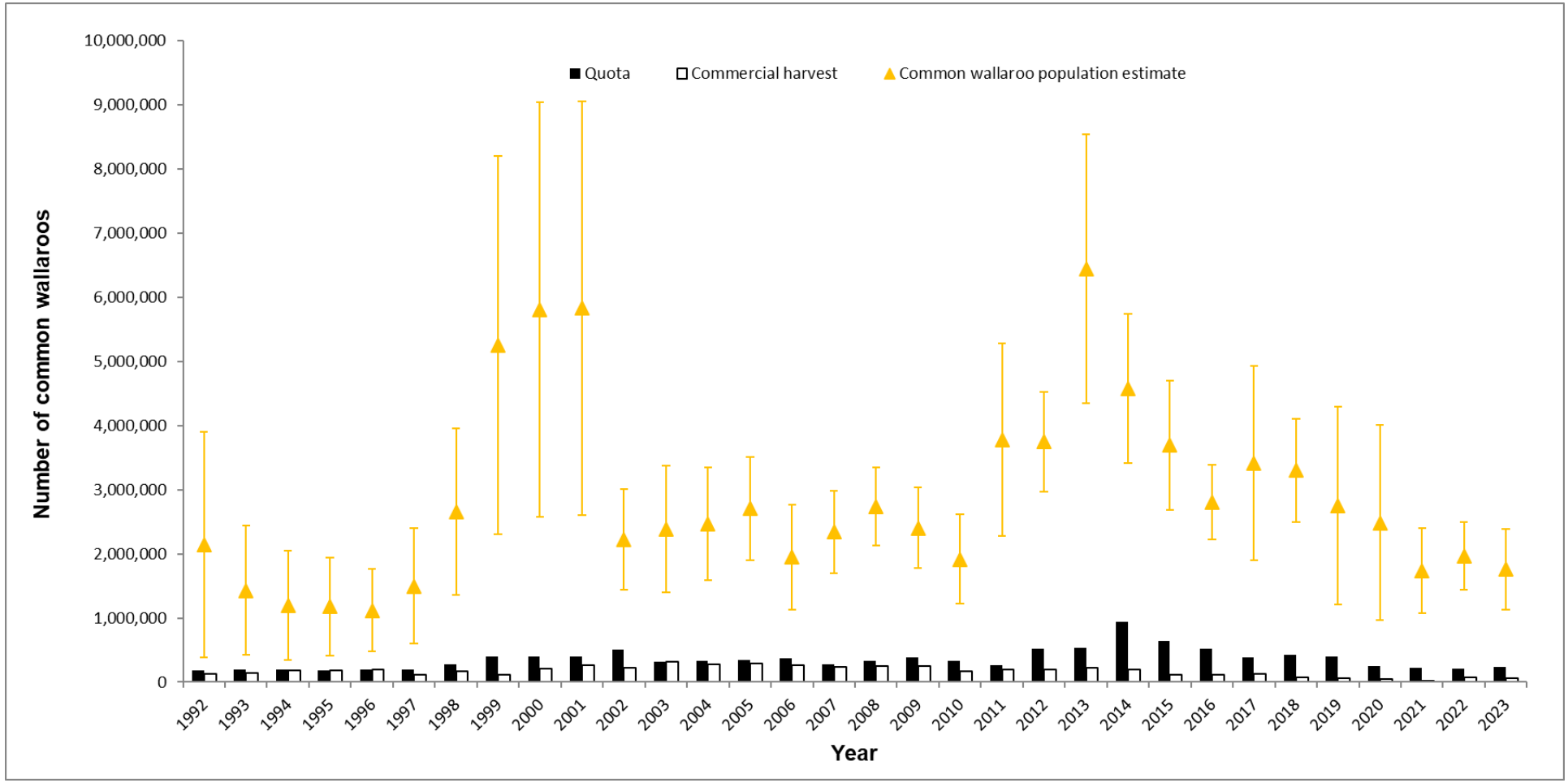


Figure 19—Long-term estimated populations (± SE), commercial harvest quotas and actual harvest of common wallaroos. Note: Harvest quotas are based on survey estimates from the previous year



9. Compliance

During the 2023 harvest period, inspections of dealer sites, processor sites and harvesters were completed state wide. Overall compliance was considered good. Inspections were targeted towards higher risk sites.

The harvest of macropods in Queensland requires compliance, investigation and enforcement resources. Compliance activities are conducted both infield and through desktop auditing. There are five compliance officers authorised under the *Nature Conservation Act 1992* within the Macropod Management Unit. The majority of macropod harvest field 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).

Other compliance activities are conducted by the Macropod Management Unit including licence audits, harvest return analysis, report compilation and licence application assessment. Licensees are assessed at time of application against suitability criteria. These include accrual of 10 or more demerit points, convictions against the *Nature Conservation Act 1992* or any other matters relevant to the person's ability to carry out the activities authorised by the licence in a competent and ethical way.

Compliance priorities for the 2023 harvest period were:

- Harvesters hold the appropriate licence.
- Macropods are correctly tagged with a valid 2023 harvest period tag.
- Macropods are tagged with the correct species/zone tag.
- Prohibited (non-head-shot) macropods are not traded.
- Compliance with the National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes 2020.
- Harvesters produce/carry valid written landholder consent as per licence conditions.
- Ensure timely, complete, and accurate harvest returns.

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.

9.1 Inspections

The department conducted both programmed and unannounced inspections of harvesters, dealers and processors. During the 2023 harvest period, officers conducted 62 in field inspections throughout the state. Other complaints and evidence of non-compliance were also investigated.

Throughout the harvest period, inspection targets were a minimum of 1% of the harvest being visually inspected and 0.1% of the harvest being inspected in detail. The visual inspection target of 1% was met, as was the detailed inspection target of 0.1% (Table 6). All operating processor sites were inspected during the 2023 harvest period. In addition to planned inspections, compliance officers investigate reports of illegal harvesting to the fullest extent possible.

Table 6—Inspection targets

	Inspection target	**Inspections conducted**
Visual inspection—1% of overall harvest	5,977 – (1%)	6,750 – (1.1% of harvest)
Detailed inspection of 0.1% of harvest	597 – (0.1%)	914 – (0.15% of harvest)

9.2 Compliance and enforcement measures

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

Enforcement action is taken in accordance with the department's enforcement guidelines. Written warnings or infringement notices are given at the discretion of compliance officers, in accordance with the department's enforcement guidelines and in consultation with the Manager. Decisions on possible prosecutions involve consultation with the Manager and department's litigation unit.

During the 2023 harvest period, a total of 263 infringement notices and 1470 warning notices were issued (Table 7). During the 2023 harvest period three licences were suspended due to compliance issues.

One licence holder appeared in the magistrate's court during 2023 for 19 offences under the Nature Conservation Act 1992. The licence holder was convicted and fined $5000.

Table 7—Detail of offences during 2023

Dealer	PIN	Warning
Fail to give return for each period/by prescribed time. CWL	1	64
Harvester		
Fail to comply with condition of authority.	2	7
Fail to give return of operations for each month of the harvest period/by prescribed time. CWHL	251	1393
Fail to properly attach a tag immediately after macropod is dressed.	1	0
Failure to have record complete, accurate, legible and in ink.	1	0
Fail to give return to nominated return system.	1	2
Failure to record relevant particular within prescribed time.	2	2
Failure to show authority or identification without reasonable excuse. (S318 offence)	0	1
Keep, use, sell or give away a prohibited macropod.	3	0
Take protected animal without lawful authority.	0	1
Leave unused parts of macropod on public land/at place visible to the public.	1	0
Total	263	1470

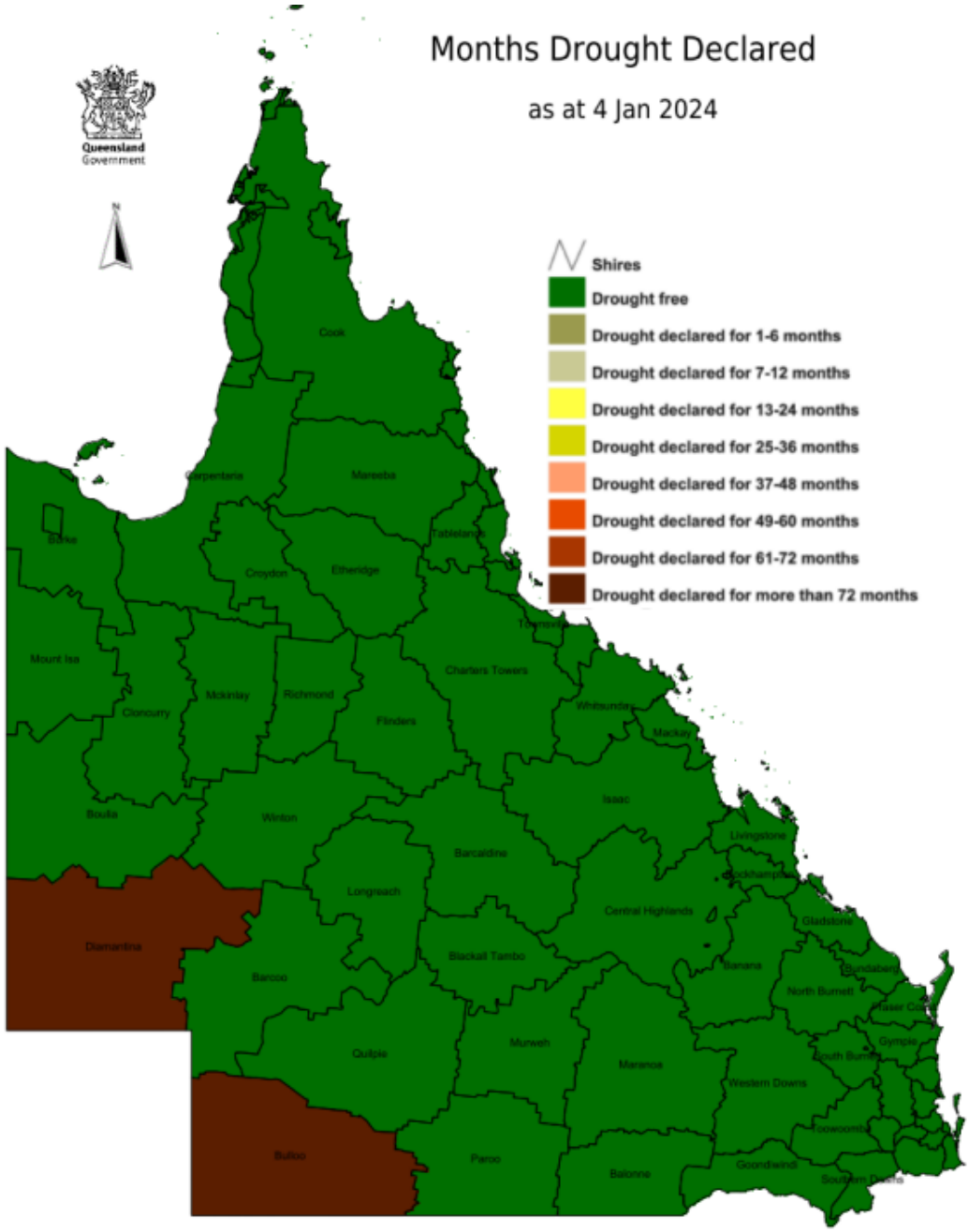
10. Climate

Queensland's rainfall totals across the state were 11% greater than the long-term averages for most areas in 2023.

This is reflected in drought declarations being lifted from all but the far southwest of the state (Figure 20) by the end of the harvest period. In parts of the north of the harvest zones the rainfall totals were significantly above average. These increases were not experienced in the south and southeastern harvest zones particularly the Darling Downs, Maranoa and parts of the Warrego.

Temperatures across the Queensland harvest zones were also above the average long term maximums and minimums (1961-190 average). These recorded highs were most prevalent in the areas with average or below average rainfall. Most harvest areas have now experienced two years since they were last drought declared with a corresponding increase in overall pasture biomass.

Figure 20— Queensland drought declarations as at 4 January 2024



11. Research and experiments

In 2022 the Macropod Management Unit increased the survey coverage using helicopters across the Queensland harvest zones. During 2023 the Unit continued to collect aerial survey data over seven new helicopter survey blocks. Data collected from these surveys continues to be analysed and will be used to inform ongoing population estimate models in the future.

Beginning in 2023 the department began a collaborative research project with Deakin University to investigate lead alternative projectiles for use by the macropod industry. Lead is a toxic and persistent heavy metal that can be particularly hazardous to scavenging animals. Awareness of this issue is increasing across Australia with the use of lead projectiles for harvesting meat for human consumption and pest control now a global issue .

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

12. Program improvements

The department introduced harvest tags manufactured from Category 2 HDPE in January 2023. These tags are exceptionally robust being specifically manufactured with a laminated construction. Throughout the 2023 harvest period the tags were found to have all the advantages of the previous 2022 Tyvek tags without the possibility of fraying. The tags are 100% recyclable by the existing recycling industry in Australia, are litter free and made in Queensland. In line with the Department's Strategic Plan to grow the circular economy the Macropod Management Unit have been returning all packaging used to transport tags back to the manufacturer for reuse. The Macropod Management Unit continue to look for innovations and are currently working with the manufacturer to achieve a fully biodegradable product and further reductions in packaging and transport costs in the future.

During 2020, the department provided the ability for harvester and dealer permit holders to enter and submit their record returns online in the Online Services system. Throughout 2021, the online return function was utilised by approximately 20% of permit holders, while the remaining 80% were still using the paper-based record book. Policies and procedures implemented during the 2022 harvest period by the Macropod Management Unit improved the uptake of online returns to approximately 80% of permit holders. Beginning in January 2023 the MMU made submitting records of returns compulsory using the Online Services portal. Whilst an exceptional circumstances provision is available for those licence holders who do not have access to the internet, by December 2023, 99% of all records of returns were submitted online.

Due to the majority of licence holders now entering data directly into Macropods Online the Macropod Management Unit were able to run regular audits of licence holders compliance with the requirement to provide a return of operations within 14 days of the end of each month. Through the use of Warning Notices and where necessary PINs, the number of licence holders complying with this regulatory requirement was 98% by the close of the 2023 harvest period.

13. References

Department of Environment and Science (Qld) (2023). Queensland Wildlife Trade Management Plan for Export – Commercially Harvested Macropods – 2023–2027. Queensland Department of Environment and Science; Brisbane.

Bureau of Meteorology, 2024, Annual Climate Summary for Queensland,

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

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.

Appendix 1

Queensland Wildlife Trade Management Plan for Export—Commercially Harvested Macropods 2023–2027, performance indicators

Aim	Action	Performance indicator	Progress in 2023
Aim 1. Ensure the commercial use of macropods in Queensland is ecologically sustainable.	**Action 1.1**. Populations within the sustainable harvest zones will be estimated annually based on aerial surveys.	**1.1.1**. Macropod population estimates are obtained annually using aerial surveys conducted over the life of this plan.	Achieved
	Action 1.2. Macropod harvest quotas will be set in accordance with the provisions of the Queensland Wildlife Trade Management Plan 2023–27.	**1.2.1**. All macropod harvest quotas are set in accordance with the provisions of the Queensland Wildlife Trade Management Plan 2023–27.	Achieved
		1.2.2. The Commonwealth is advised of harvest quotas for the following calendar year by 30 November. The quota submission will contain the following information: – Population estimates for each species in each harvest zone – quotas calculated as proportion of population estimate – any proposed changes to quotas – any changes to the harvest zones – data outlining trends in population estimates, quotas and harvest.	Achieved
		1.2.3. If Commonwealth approval is required for quotas set above the rates specified in this plan as part of an adaptive management experiment, approval will be obtained before the additional quota is implemented.	NA
		1.2.4. The quota report is made available to the public on the Queensland Government website.	Achieved
	Action 1.3. Special macropod harvest quotas will be set in accordance with the provisions of the Queensland Wildlife Trade Management Plan 2023–27.	**1.3.1**. Special macropod harvest quotas are set and utilised in accordance with the provisions of the Queensland Wildlife Trade Management Plan 2023–27.	NA
	Action 1.4. Macropod populations will be monitored indirectly throughout the life of this plan.	**1.4.1**. Where a harvest zone showed greater than 40 per cent female harvest, then appropriate management action would be taken.	NA
	Action 1.5. Annual population estimates for commercially harvested macropod species will be assessed against	**1.5.1**. Where an estimated population for a population estimate region within the Central harvest zone falls below a set trigger point of 1.5 standard deviations below the long term average for that region then the harvest quota will be	Achieved

Aim	Action	Performance indicator	Progress in 2023
	predetermined trigger points in each population estimate region.	reduced for that region in the next calendar year.	
		1.5.2. Where an estimated population for a population estimate region within the Central harvest zone falls below a set 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 2. Ensure humane treatment of commercially-harvested macropods.	**Action 2.1**. The department will work with accredited providers to ensure that all potential harvesters are competent to achieve the standards set out in the code of practice before being issued a license.	**2.1.1.** All successful applicants for harvester's licences have completed the approved training course and the approved shooting test.	Achieved
		2.1.2. Approved course of training is reviewed and revised if necessary during the life of this plan.	Achieved
		2.1.3. The code of practice is provided to all new applicants when they receive their licence and is available on the Queensland Government website.	Achieved
	Action 2.2. The department will monitor compliance with the code of practice by commercial macropod industry operators.	**2.2.1.** 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 2.3. The department will contribute to nationally-focused research in improving animal welfare outcomes, if requested.	**2.3.1.** 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	Action	Performance indicator	Progress in 2023
Aim 3. Promote First Nations culture as it relates to the sustainable use of macropods in Queensland.	**Action 3.1**. Throughout the life of this plan the cultural importance of macropods to First Nations people will be promoted.	**3.1.1**. All licence holders will receive regular information on the cultural importance of macropods to First Nations people.	Achieved
		3.1.2. All relevant stakeholder groups, who are not licence holders, will receive information on the cultural importance of macropods to First Nations people.	Achieved
		3.1.3. The Queensland Government website will provide information on the cultural importance of macropods to First Nations people.	Achieved
Aim 4. Manage and administer commercial operators via licensing.	**Action 4.1**. All relevant activities are licensed in accordance with the applicable Queensland legislation and department policy.	**4.1.1** All licences across Queensland are assessed, processed and issued appropriately in accordance with Queensland legislation.	Achieved
		4.1.2 Databases are maintained to ensure licensee information is current and accurate.	Achieved
	Action 4.2. Licence conditions are applied where required.	**4.2.1.** Licence conditions are imposed on licences where required and in accordance with Queensland legislation.	Achieved
		4.2.2. Information notices explaining conditions and rights of review are provided with all licences with licence conditions.	Achieved
Aim 5. Monitor macropod industry compliance.	**Action 5.1.** The department will undertake both regular and opportunistic monitoring of compliance by commercial macropod industry operators.	**5.1.1.** A minimum of one per cent of harvested macropods are inspected by departmental staff to ensure compliance with Queensland legislation and licence conditions.	Achieved
		5.1.2. 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.	Achieved
		5.1.3. 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 5.2. Activities not in accordance with Queensland legislation and Queensland Wildlife Trade Management Plan 2023–27 will be investigated and where an offence has been committed, and it is appropriate, prosecute.	**5.2.1.** 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
	Action 5.3. The accuracy of industry returns will be	**5.3.1.** During the life of this plan, incoming industry returns are scrutinised and	Achieved

Aim	Action	Performance indicator	Progress in 2023
	continually monitored during the life of this plan.	discrepancies are investigated and resolved.	
	Action 5.4. A compliance database will be maintained to support investigations, inspections and audits.	**5.4.1**. A compliance database of investigations, inspections and audits is maintained.	Achieved
Aim 6. Undertake program reporting and review**.**	**Action 6.1.** An annual report on the Queensland Wildlife Trade Management Plan 2023-27 will be prepared and submitted to the Commonwealth.	**6.1.1.** An annual report on the operation of the Queensland Wildlife Trade Management Plan 2023–27 for each calendar year is submitted to the Commonwealth Government by the end of March of the following year.	Achieved
		6.1.2. All annual reports prepared during the life of this plan are available on the Queensland Government website.	Achieved
	Action 6.2. 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.	**6.2.1.** The Queensland Wildlife Trade Management Plan 2023–27 will be reviewed no later than 12 months prior to the expiry of this plan.	Achieved
		6.2.2. The success of the current plan in achieving its goal is assessed by measuring the aims against the performance indicators.	Achieved
		6.2.3. The results of the plan review are presented to the Commonwealth no later than six months prior to the expiry of this plan.	Achieved
Aim 7. Facilitate adaptive management and research.	**Action 7.1.** The department will respond to changes as they arise.	**7.1.1.** Changes to the macropod management program will be communicated on the Queensland Government website and directly to stakeholders.	Achieved
	Action 7.2. The department will facilitate research into the ecology and harvest management of macropods.	**7.2.1.** 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.	Achieved

Aim	Action	Performance indicator	Progress in 2023
Aim 8. Promote community awareness and participation.	**Action 8.1.** Relevant public documents will be made available on the Queensland Government website.	**8.1.1.** 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 – current harvest period notice – code of practice – contact information for the Macropod Management Unit – access and guidelines to the department's online system for licence/tag applications and submitting returns – current forms for commercial macropod licences.	Achieved
	Action 8.2. Relevant information regarding licensing arrangements will be developed as required and made available to all licensees.	**8.2.1.** 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