



# 2023 Annual report on the commercial harvest of kangaroos in Western Australia

This report is provided to the Australian Government as a requirement of the *Management Plan for the Commercial Harvest of Kangaroos in Western Australia 2019–2023* under Aim 6, Action 16, Performance Indicator 25.

March 2024



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March 2024

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# 1 Harvest statistics

In accordance with the *Management Plan for the Commercial Harvest of Kangaroos in Western Australia 2019–2023* (Management Plan) under Aim 6, Action 16, Performance Indicator 25, the statistics for Western Australia’s commercial harvest of red (*Osphranter rufus*) and western grey (*Macropus fuliginosus*) kangaroos are presented in Table 1 Table 2, Figure 1 and Figure 2 below. In 2023, the commercial harvest was 13.7% of the allowable quota for red kangaroos and 31.8% of the allowable quota for western grey kangaroos.

## 1.1 Red kangaroos

Table 1. Red kangaroo commercial harvest figures for the 2023 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	4,386	75.2	26.7	15.8
Northern	4,789	70.0	26.4	15.7
South-east	8,035	91.8	22.8	16.6
<b>Totals (WA)</b>	<b>17,210</b>	<b>81.5</b>	<b>24.6</b>	<b>15.9</b>
State quota	125,225			
Proportion state quota harvested	13.7%			

## 1.2 Western grey kangaroos

Table 2. Western grey kangaroo commercial harvest figures for the 2023 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	6,040	66.5	25.9	16.4
South-east	2,843	67.1	30.3	19.1
South-east	55,845	60.6	30.2	18.2
<b>Totals (WA)</b>	<b>64,728</b>	<b>61.5</b>	<b>29.7</b>	<b>18.0</b>
State quota	203,240			
Proportion state quota harvested	31.8%			

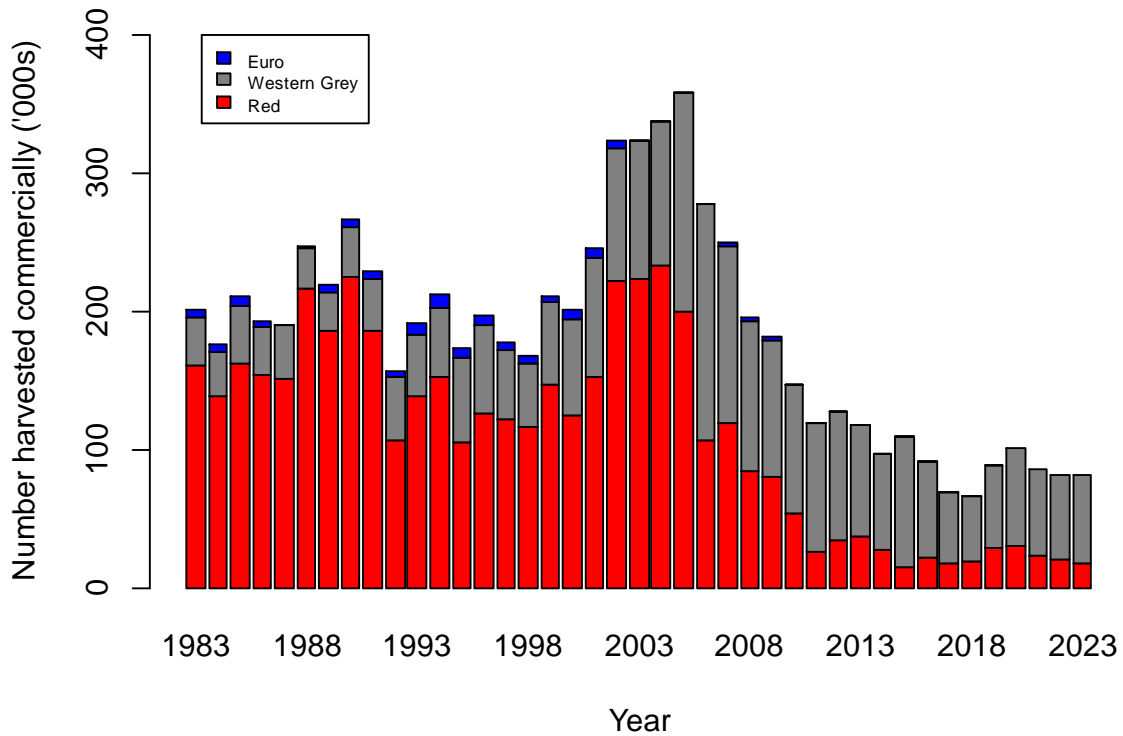


Figure 1: Total commercial harvest of red and western grey kangaroos and euros (*Osphranter robustus*) in Western Australia. Note: there was no commercial harvest of euros from 2003 to 2006 and from 2010 onwards.

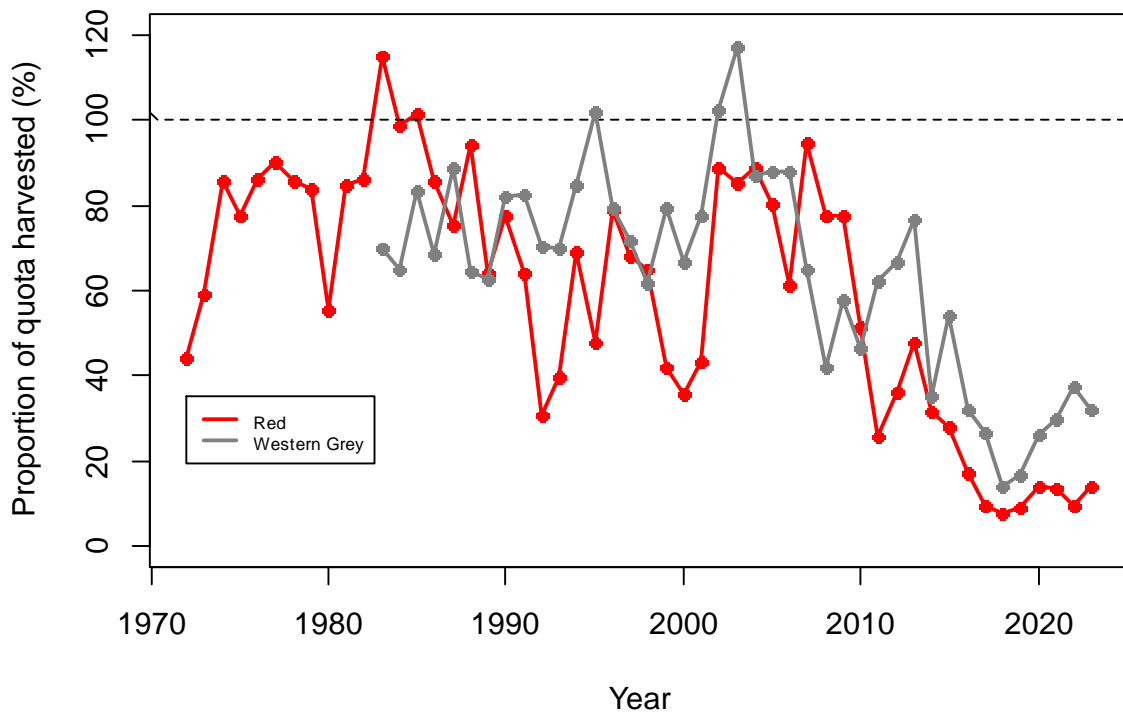


Figure 2. The proportion of quota harvested in the state for red and western grey kangaroos.



## 2 Industry compliance

Table 3. Summary of commercial kangaroo industry compliance monitoring in Western Australia for the 2023 calendar year.

Category	Commercial Activity			
	Regulation 23: Licence to take kangaroos for sale	Regulation 37: Licence to process	Regulation 23 or Regulation 38: Active chiller units*	Regulation 38: Licence to deal in skins
Licences current in 2023	421	29	88	1
Licensees/ premises inspected	25	23	20	1
Alleged offences	21	7	0	0
Type of alleged offence	BCR R84 Contravene condition of licence	BCR R84 Contravene condition of licence	-	-
Letters of warning issued	0	0	0	0
Caution notices issued	21	4	0	0
Prosecutions initiated	0	0	0	0
Convictions	0	0	0	0
Dismissals	0	0	0	0
Prosecutions pending	0	0	0	0

\*Active chiller units are those identified on shooter returns where there is at least one shooting day of effort assigned to that chiller during the year.

## 3 Unusual circumstances

### 3.1 Rainfall and drought

Western Australia experienced a notably hot, dry year in 2023 with many areas across the kangaroo population management zones (PMZs) recording their driest year on record (Figure 3, Figure 4, Figure 5). Associated extremely low pasture growth was recorded across the central, south-west, and south-east PMZs (Figure 6). This is expected to have a detrimental impact on kangaroo populations in Western Australia within the next six to twelve months.

The following is an excerpt of relevant information taken from the annual climate summary for Western Australia published by the Bureau of Meteorology (product code IDCKGC51R0; accessed 13 February 2024). The full annual climate summary is available from <http://www.bom.gov.au/climate/current/annual/wa/summary.shtml>.

#### Rainfall

- Annual rainfall was below to very much below average in the western and far southern WA. Annual rainfall was the lowest on record since 1900 in the western Gascoyne and Central West districts.
- The areal-averaged annual rainfall for the state was 332.3 mm, making it the driest year since 2019 (the driest year on record with 177.5 mm).
- The South-West Land Division (SWLD) annual rainfall was 312.9 mm, which was the seventh-driest year on record, and driest since 2019.
- Carnarvon Airport on the Gascoyne coast had its driest year on record with an annual rainfall total of 54 mm, which was merely a quarter (24%) of its annual average (221.6 mm). The previous record was 75.3 mm in 1966.
- Shark Bay Airport on the Gascoyne coast had its driest year on record with an annual rainfall total of 20 mm, which was 10% of its annual average (193.5 mm). The previous record was 73 mm in 2019.
- Kalbarri in the Central West coast had its driest year on record with an annual rainfall total of 108.9 mm, which was one third (32%) of its annual average. The previous record was 147.2 mm in 2006.

#### Temperature

- Annual mean maximum temperatures were above to very much above average (in the highest 10% of all observations since 1910) for most of Western Australia.
- The state's annual mean maximum temperature was 1.52°C above the long-term 1961–1990 average, which was the third-warmest year on record, the warmest since 2020.
- The state's annual mean minimum temperature was 0.53°C above the long-term 1961–1990 average, the highest since 2020.
- The SWLD annual mean maximum temperature was 1.58°C above the long-term 1961–1990 average, which was the second-warmest year on record, behind 2019.
- The SWLD annual mean minimum temperature was 0.36°C above the long-term 1961–1990 average, the highest since 2021.

Western Australian rainfall deciles 1 January to 31 December 2023

Australian Gridded Climate Data

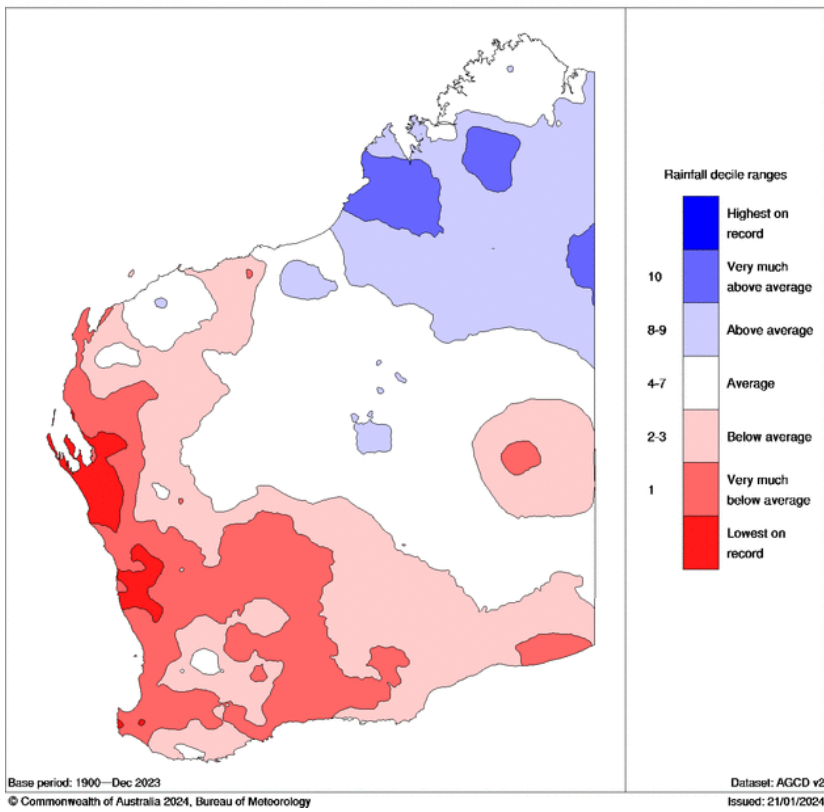


Figure 3. Rainfall deciles for Western Australia for the 2023 calendar year.

Western Australian total rainfall (mm) 1 January to 31 December 2023

Australian Gridded Climate Data

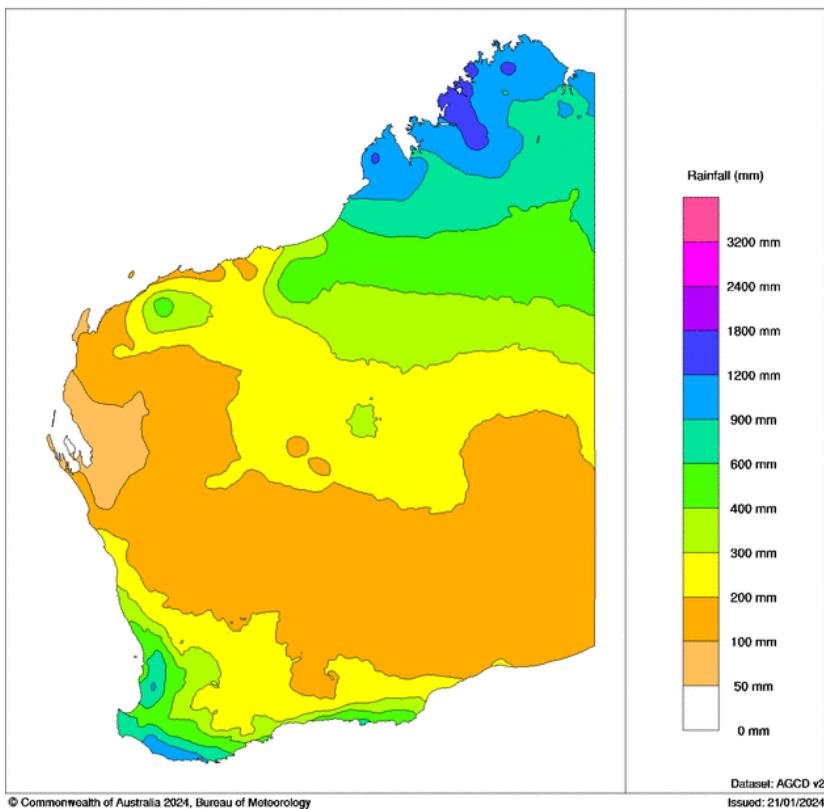


Figure 4. Rainfall totals for Western Australia for the 2023 calendar year.

Western Australian rainfall deficiencies 1 January to 31 December 2023  
 Australian Gridded Climate Data

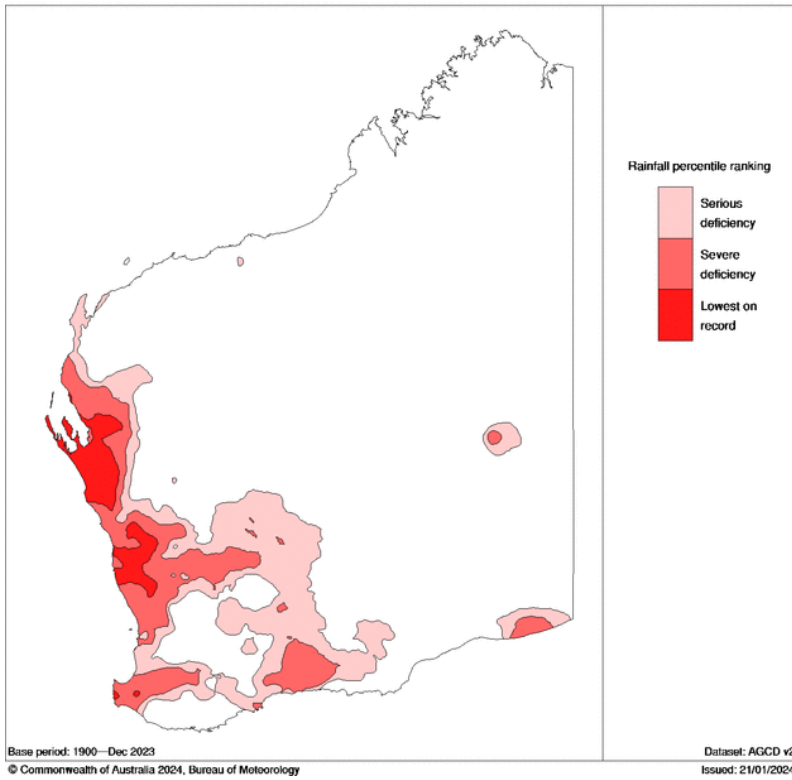


Figure 5. Drought map for Western Australia for the 2023 calendar year.

Pasture Growth Percentile  
 Relative to Historical Records from 1957  
 January to December 2023

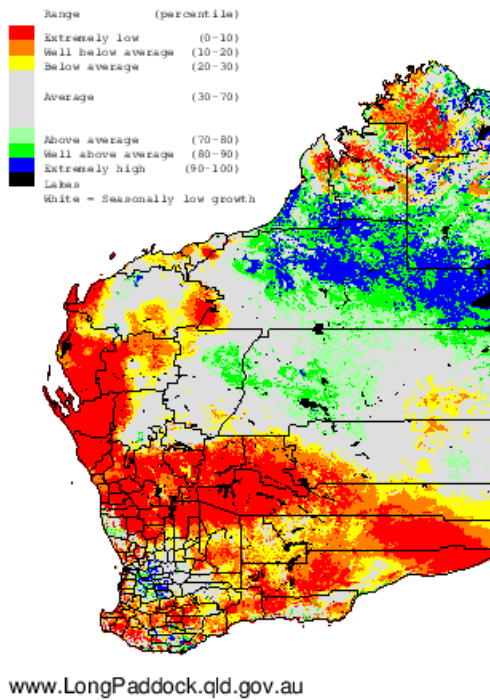


Figure 6. Pasture growth in Western Australia for the 2023 calendar year relative to historical records from 1957.

## 3.2 Disease

No significant disease outbreaks were detected or reported in populations of commercially harvested kangaroos in Western Australia in 2023.

## 3.3 Market factors

Limited demand for carcasses from processors continues to contribute to the significant reduction in active shooting of kangaroos for commercial purposes. There has not been a significant increase in demand across the industry.

## 4 Research activity

No research or adaptive management experiments related to the commercial harvesting of kangaroos were undertaken or sponsored by the Department of Biodiversity, Conservation and Attractions (department) in 2023.

## 5 Assessment of Management Plan actions against performance indicators

Table 4. Assessment of Management Plan against performance indicators.

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
1	Licence conditions for the commercial taking, processing and dealing of kangaroos will stipulate that kangaroos cannot be shot, sold or received unless they have been taken in accordance with the Commercial Code.	✓	✓	✓	✓	✓	
2	Copies of the Commercial Code will be made available from the department's website.	✓	✓	✓	✓	✓	See: <a href="https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia">https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia</a> .
3	The department will participate in and support any revisions to the nationally-endorsed Commercial Code.	✓	✓	✓	✓	✓	The department participated in the review of the Code of Practice 2020.

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
4	All prospective commercial kangaroo shooters must have completed an accredited test of marksmanship and completed accredited vocational training in Game Harvester Skill Set as a prerequisite before being issued with a licence to take fauna for commercial products.	✓	✓	✓	✓	✓	900-80638V01 - Game Harvester Skill Set.
5	Audits of licences issued for commercial activities are conducted annually to ensure licences are being issued appropriately in accordance with relevant legislation and departmental policies.	✓	✓	✓	✓	✓	
6	Databases are maintained to ensure licensee information is current and accurate.	✓	✓	✓	✓	✓	
7	Licence conditions are reviewed as required, and amended where necessary.	✓	✓	✓	✓	✓	The department participated in the review of the Code of Practice 2020.

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
8	Licencees are advised in writing of any changes to licence conditions within one month of such changes being approved by the CEO or delegate.	✓	✓	✓	✓	✓	
9	All active kangaroo processing establishments are inspected by authorised departmental officers annually to ensure compliance with legislative requirements.	✗	✗	✗	✗	✗	79.3% of establishments were inspected in 2023.
10	At least thirty percent of active chillers are inspected by authorised departmental officers annually to ensure compliance with legislative requirements.	✗	✓	✓	✗	✗	22.7% of active chillers were inspected in 2023. This performance indicator is very difficult to meet due to the vagrant nature of shooters.
11	Reports of unlicensed activities and activities in breach of legislation and licence conditions are investigated to the fullest extent possible and, where sufficient evidence is available, offenders are issued with expiation notices or prosecuted as appropriate.	✓	✓	✓	✓	✓	Government has a robust set of guidelines, policies, and procedures for investigating offences and determining compliance action outcomes. This is the standard that should be reflected in the performance indicator.



Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
12	Incoming industry returns are reviewed, and discrepancies are investigated.	✓	✓	✓	✓	✓	
13	A compliance database will be maintained and improved to support investigations and inspections.	✓	✓	✓	✓	✓	A revised compliance database is in development.
14	Aerial surveys are undertaken triennially for each monitoring zone and population estimates are calculated in accordance with the Management Plan.	✓	✓	✓	✓	✓	
15	Commercial harvest quotas are set in accordance with the Management Plan.	✓	✓	✓	✓	✓	
16	Population Monitoring Zone quotas and the state-wide quotas are never exceeded.	✓	✓	✓	✓	✓	

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
17	The Commonwealth Government is advised of commercial harvest quotas via a quota report for the following calendar year by 30 November.	x	x	x	x	x	The Commonwealth was advised of the commercial harvest quota on 15 January 2024.
18	The quota report will be made available to the public via the department's website.	✓	✓	✓	✓	✓	See: <a href="https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia">https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia</a> .
19	Sudden, sustained or acute changes in the information provided through harvest returns will be investigated to identify possible causes of the change.	✓	✓	✓	✓	✓	

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
20	Commercial kangaroo harvest rates will be reduced or the commercial kangaroo harvest suspended if density estimates reach the thresholds identified in the Management Plan (Table 2 of WAKMP 2019-2023). Any suspensions or reductions will remain in place until surveys or data indicates that kangaroo densities have increased above density thresholds.	✓	✓	✓	✓	✓	
21	Changes to the kangaroo management program will be communicated to relevant stakeholders via the department's website and directly to stakeholders where appropriate.	✓	✓	✓	✓	✓	
22	During the life of the Management Plan, the department will support research on harvested species of kangaroos or commercial harvest management as appropriate.	✓	✓	✓	✓	✓	

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
23	All proposals to undertake active adaptive management experiments are reviewed and assessed by the department in accordance with the criteria outlined in the Management Plan.	✓	✓	✓	✓	✓	
24	As a minimum, trends in population estimates, harvest tallies, carcass weights and sex ratios will be analysed annually and published on the department's website in annual and quota reports.	✓	✓	✓	✓	✓	
25	An annual report will be provided to the Commonwealth Government by 31 March of the following year.	✗	✓	✗	✗	✗	The Commonwealth was provided the 2022 annual report on 14 April 2023.
26	KMAC meets at least once per year to review the progress of the Management Plan in relation to the goal and aims of the plan.	✓	✓	✓	✓	✓	

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
27	KMAC is provided with annual updates on the commercial harvest and issue of tags issue throughout the life of the Management Plan.	✓	✓	✓	✓	✓	
28	KMAC is provided with other relevant information as required or as necessary throughout the life of the Management Plan.	✓	✓	✓	✓	✓	
29	<p>Throughout the life of the Management Plan, the department's website will contain the following information as a minimum standard:</p> <ul style="list-style-type: none"> <li>• the current management plan;</li> <li>• the current quota report;</li> <li>• the current annual report submitted to the Commonwealth Government;</li> <li>• information sheets on kangaroo biology and management;</li> <li>• the Commercial Code; and</li> <li>• relevant contact information.</li> </ul>	✓	✓	✓	✓	✓	See: <a href="https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia">https://www.dbca.wa.gov.au/management/kangaroo-management-western-australia</a> .

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
30	Publicly available information on kangaroo management is provided to interested parties as soon as practicable on request.	✓	✓	✓	✓	✓	
31	Relevant departmental staff will participate in interviews with the media where appropriate.	✓	✓	✓	✓	✓	
32	Media releases are prepared for issues of interest to the community when appropriate.	✓	✓	✓	✓	✓	
33	As a minimum, all first time commercial kangaroo licence holders, or those who have not held a valid licence during the term of the current Management Plan, will be provided with an up to date information pack to make licence holders aware of relevant requirements and responsibilities.	✓	✓	✓	✓	✓	

# Appendices

## Appendix 1 Harvest statistics for PMZs

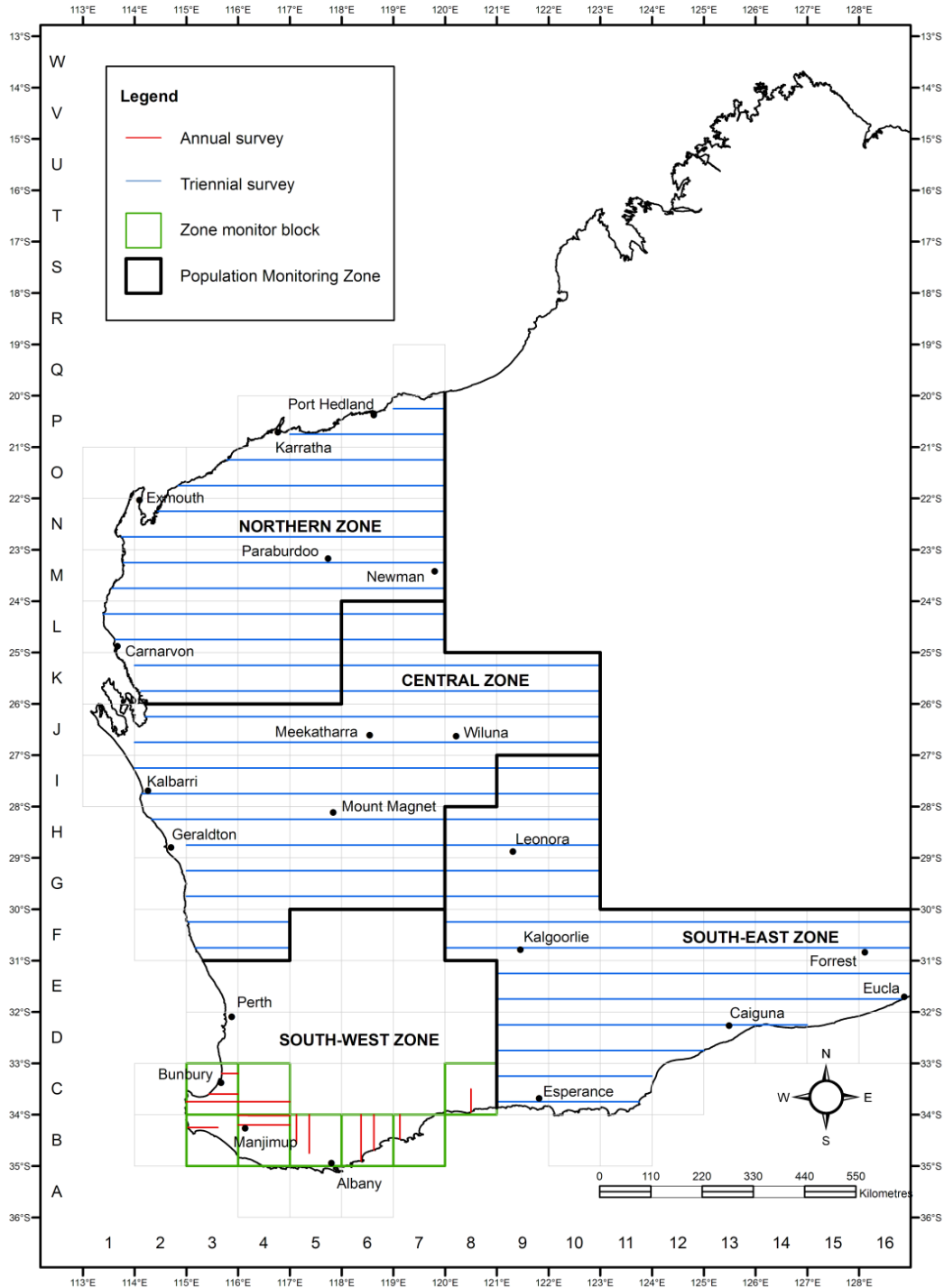


Figure 7. Map of PMZs for the commercial harvest of kangaroos in Western Australia.

## Northern PMZ

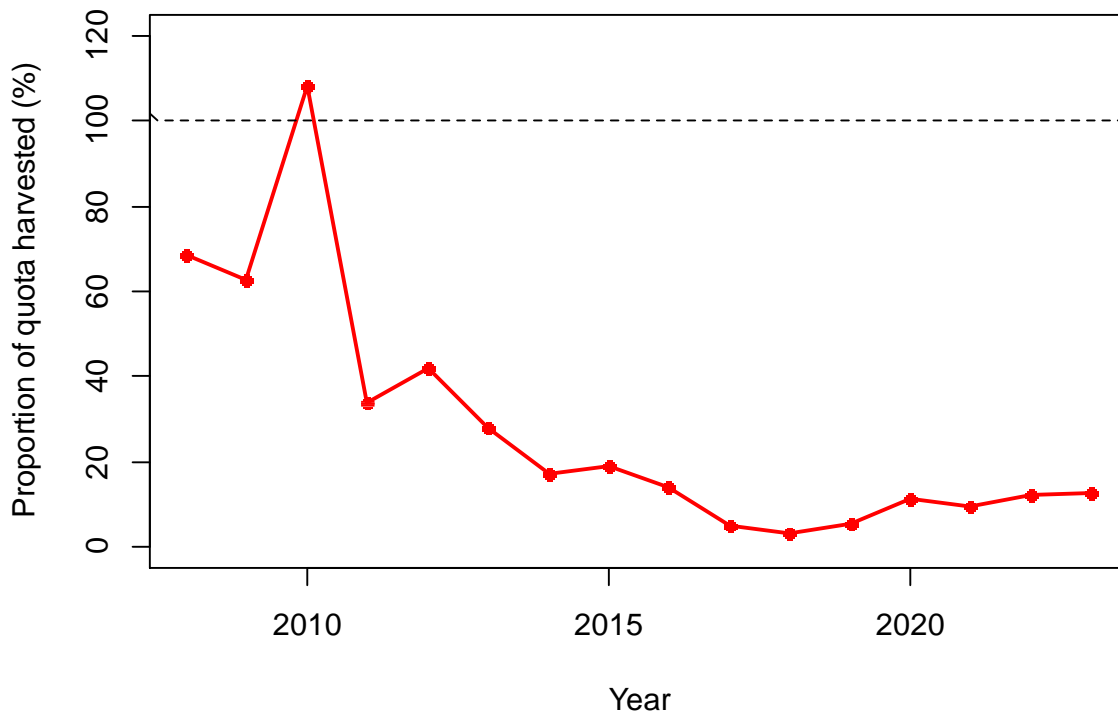


Figure 8. Proportion of total red kangaroo quota harvested (%) in the northern PMZ.



Figure 9. Average carcass weights of male and female red kangaroos harvested in the northern PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.



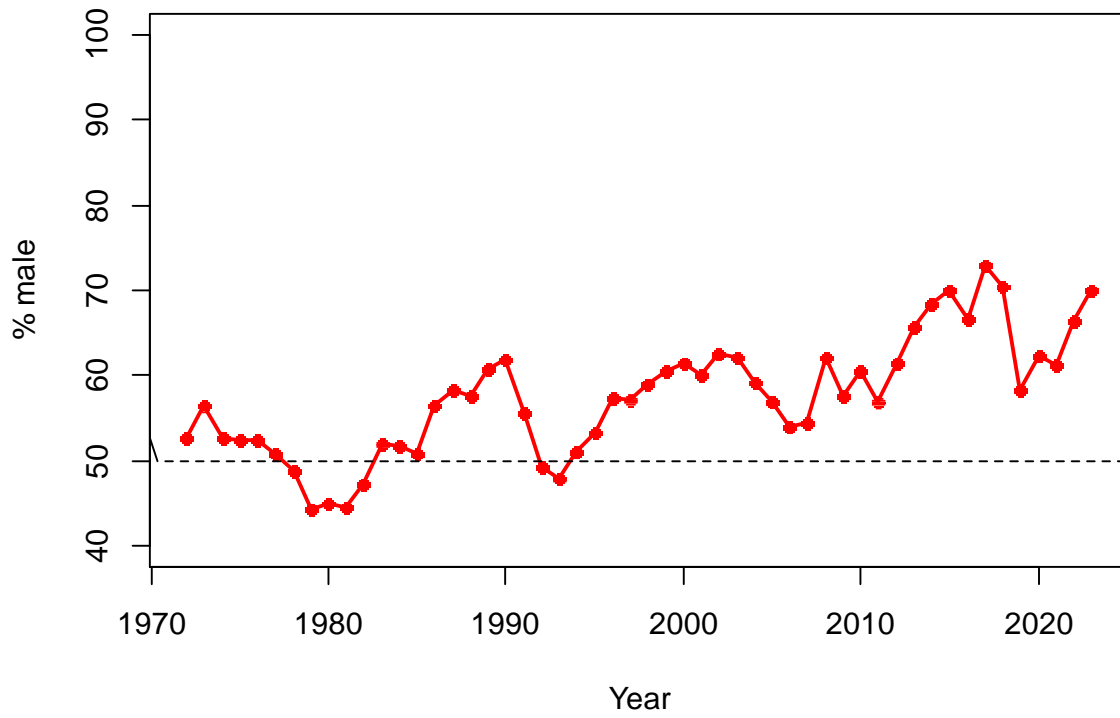


Figure 10. Sex ratio (expressed as a percentage) of male to female red kangaroos harvested in the northern PMZ.

### Central PMZ

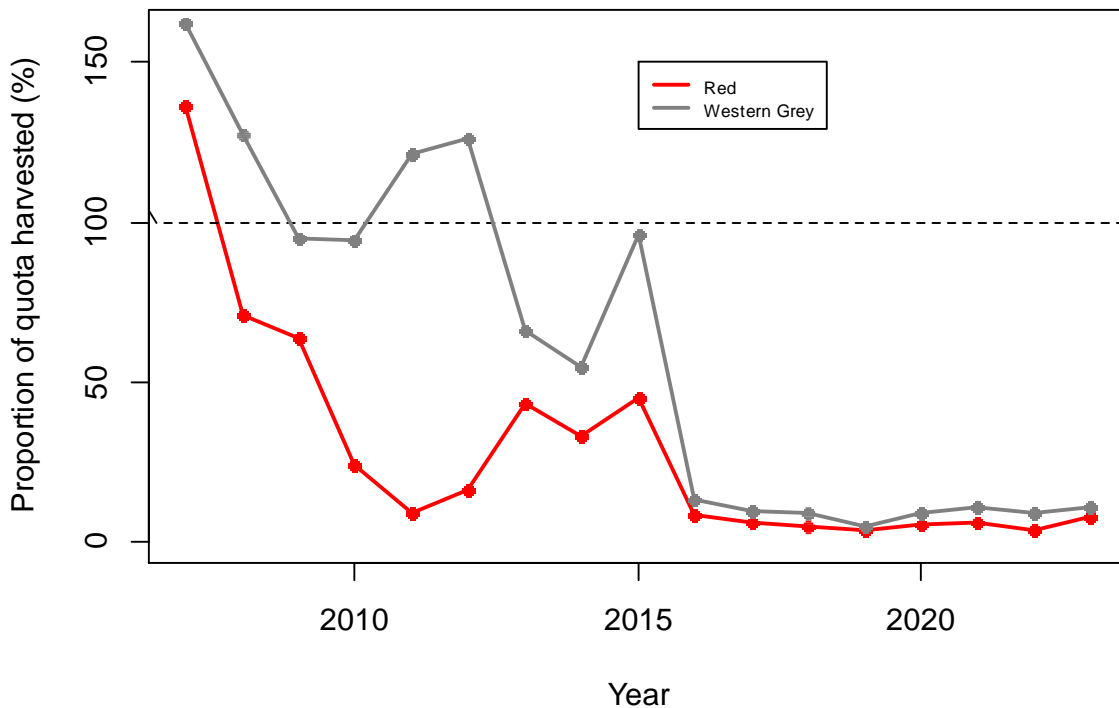


Figure 11. Proportion of total red and western grey kangaroo quota harvested (%) in the central PMZ.



Figure 12. Average carcass weights of male and female red kangaroos harvested in the central PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.

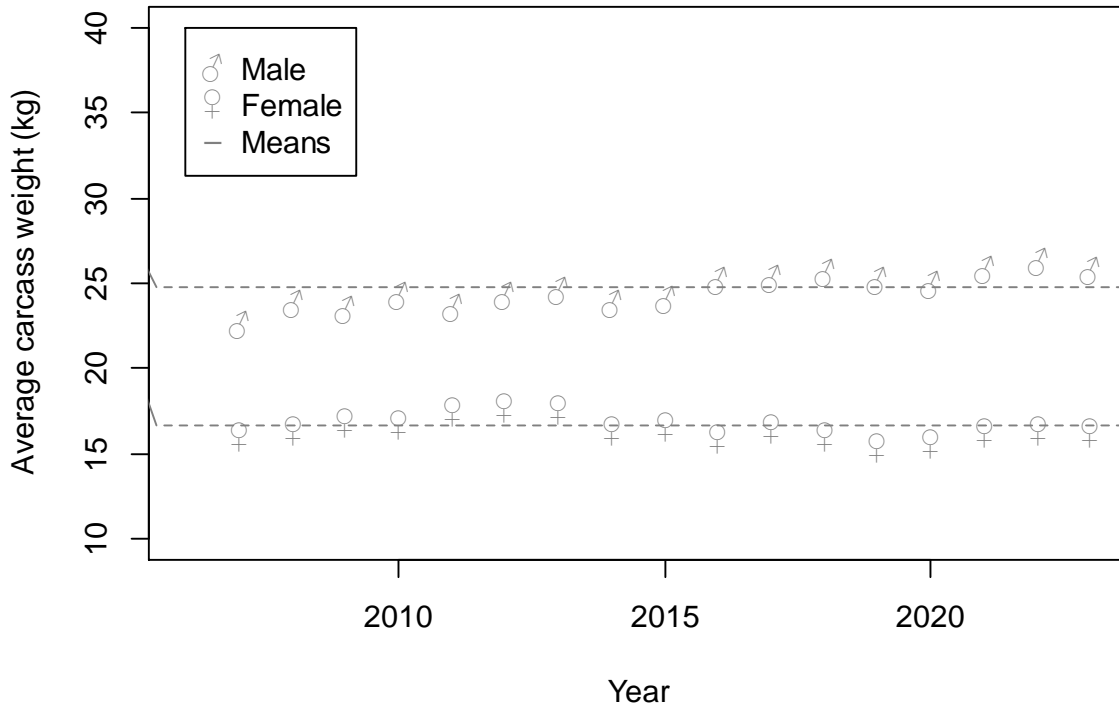


Figure 13. Average carcass weights of male and female western grey kangaroos harvested in the central PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.

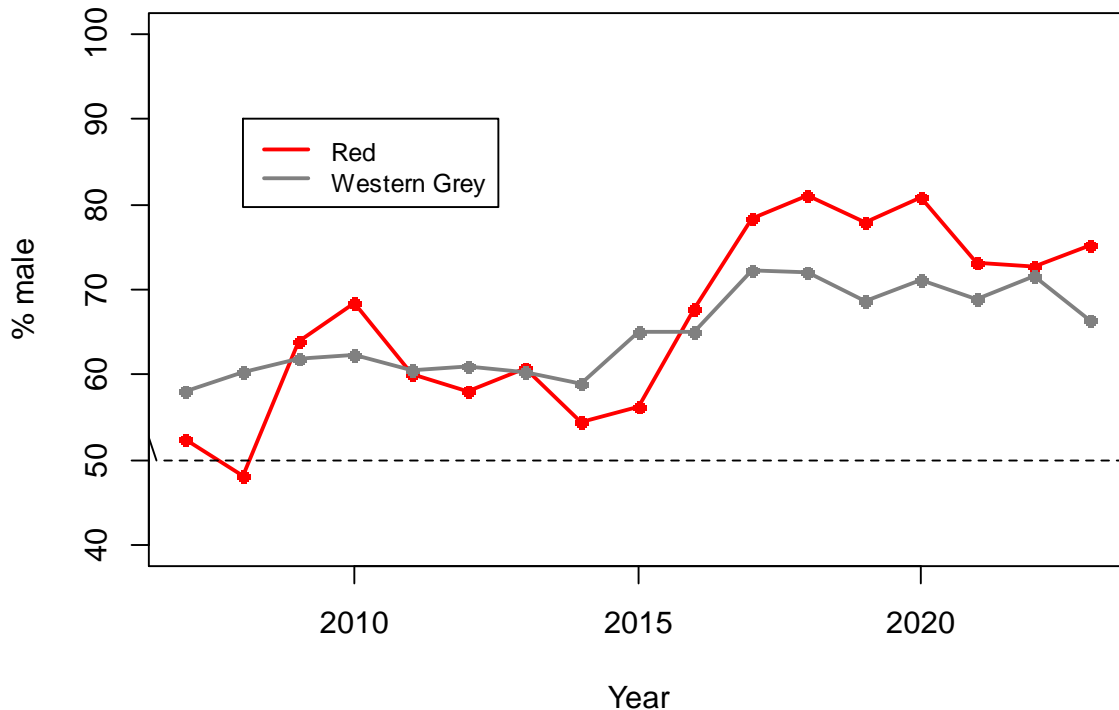


Figure 14. Sex ratio (expressed as a percentage) of male to female red and western grey kangaroos harvested in the central PMZ.

### South-east PMZ



Figure 15. Proportion of total red and western grey kangaroo quota harvested (%) in the south-east PMZ. Note: red kangaroos were not harvested in 2015.

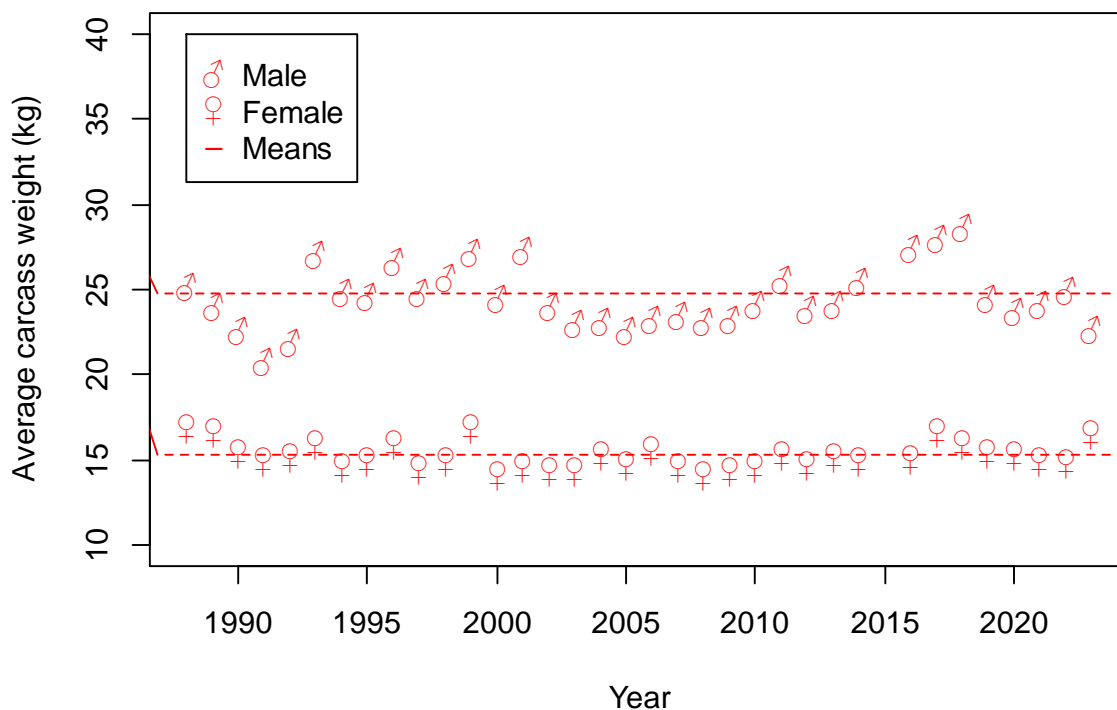


Figure 16. Average carcass weights of male and female red kangaroos harvested in the south-east PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.

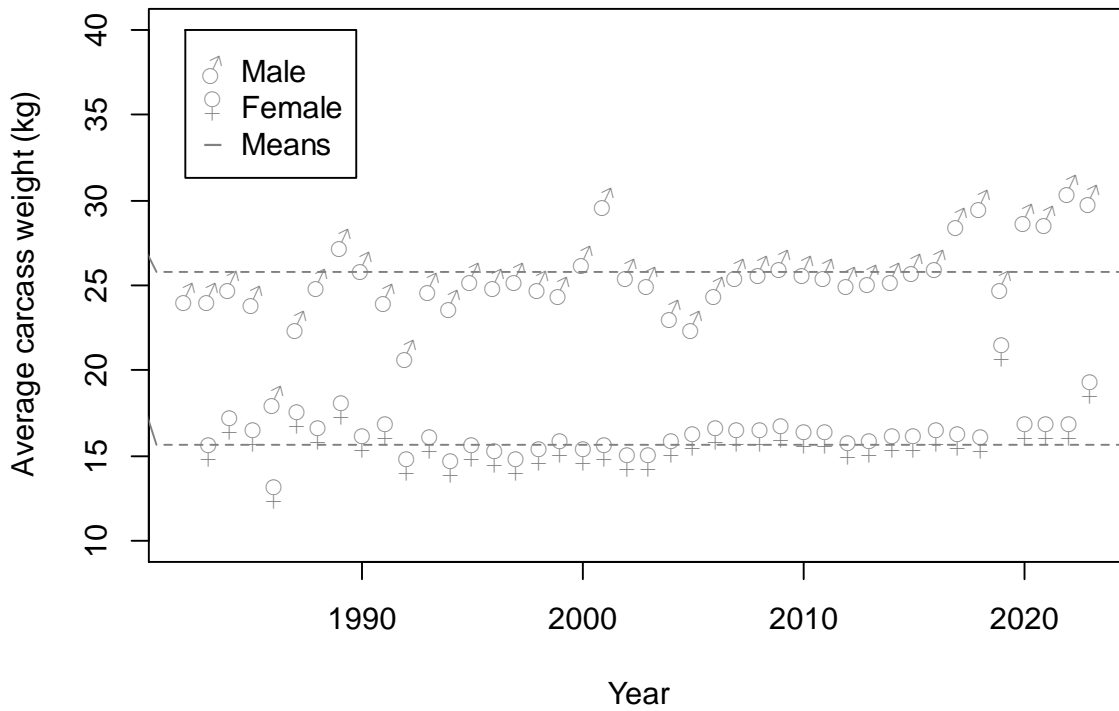


Figure 17. Average carcass weights of male and female western grey kangaroos harvested in the south-east PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.

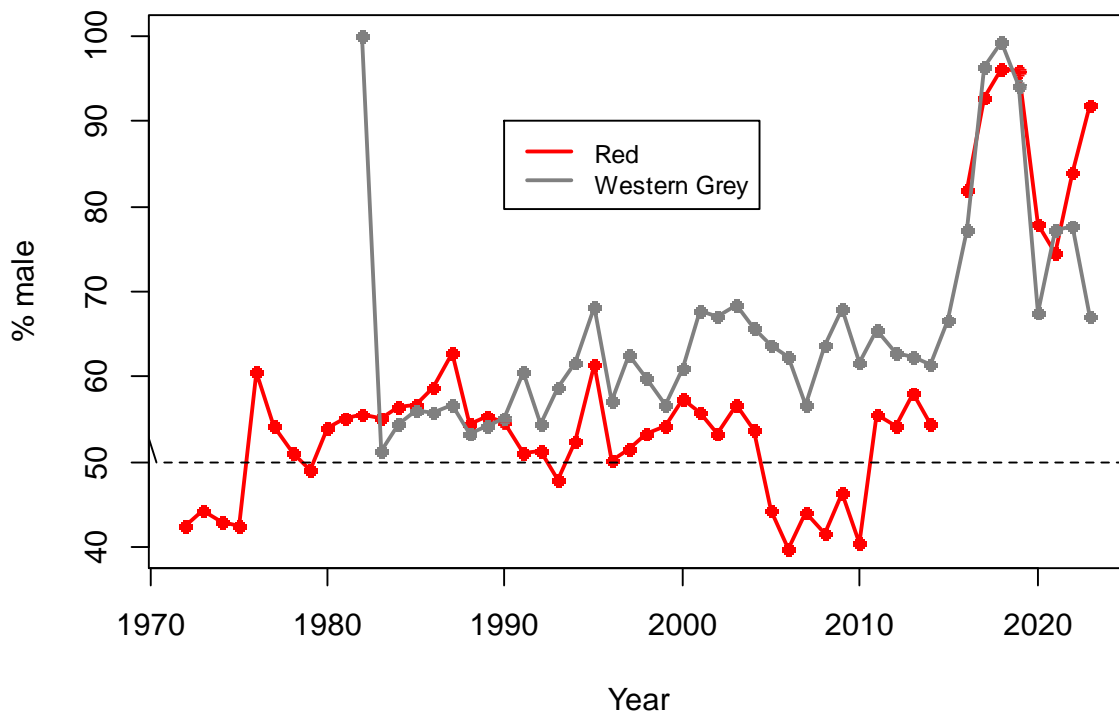


Figure 18. Sex ratio (expressed as a percentage) of male to female red and western grey kangaroos harvested in the south-east PMZ. Note: red kangaroos were not harvested in 2015.

### South-west PMZ

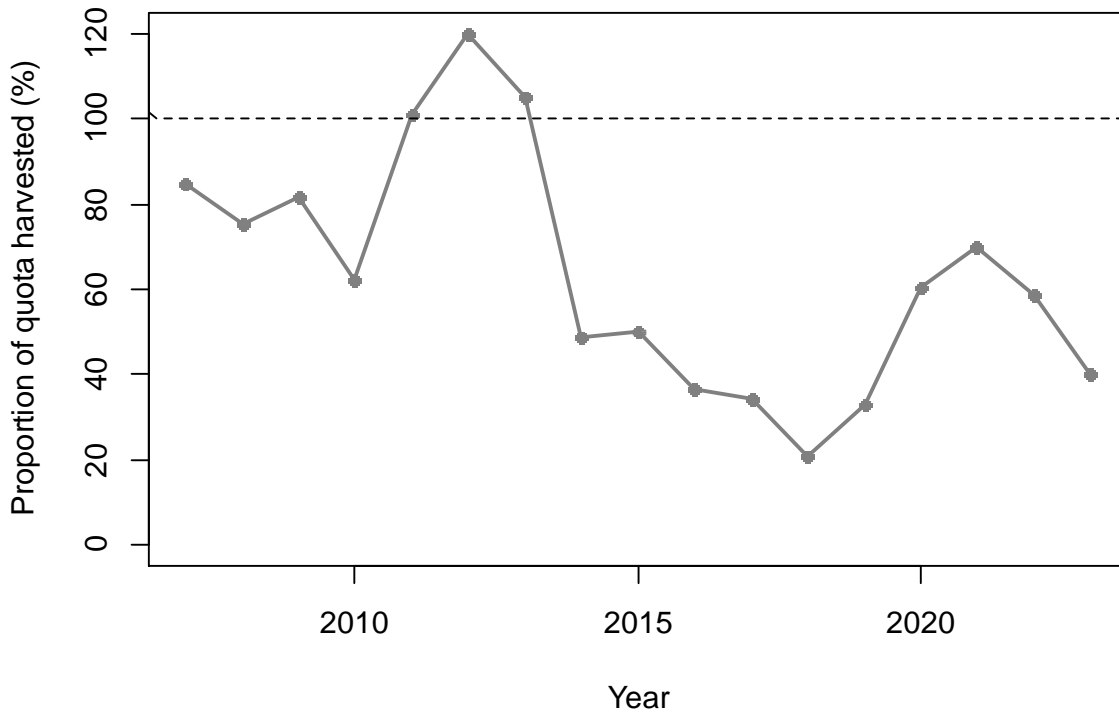


Figure 19. Proportion of total western grey kangaroo quota harvested (%) in the south-west PMZ.

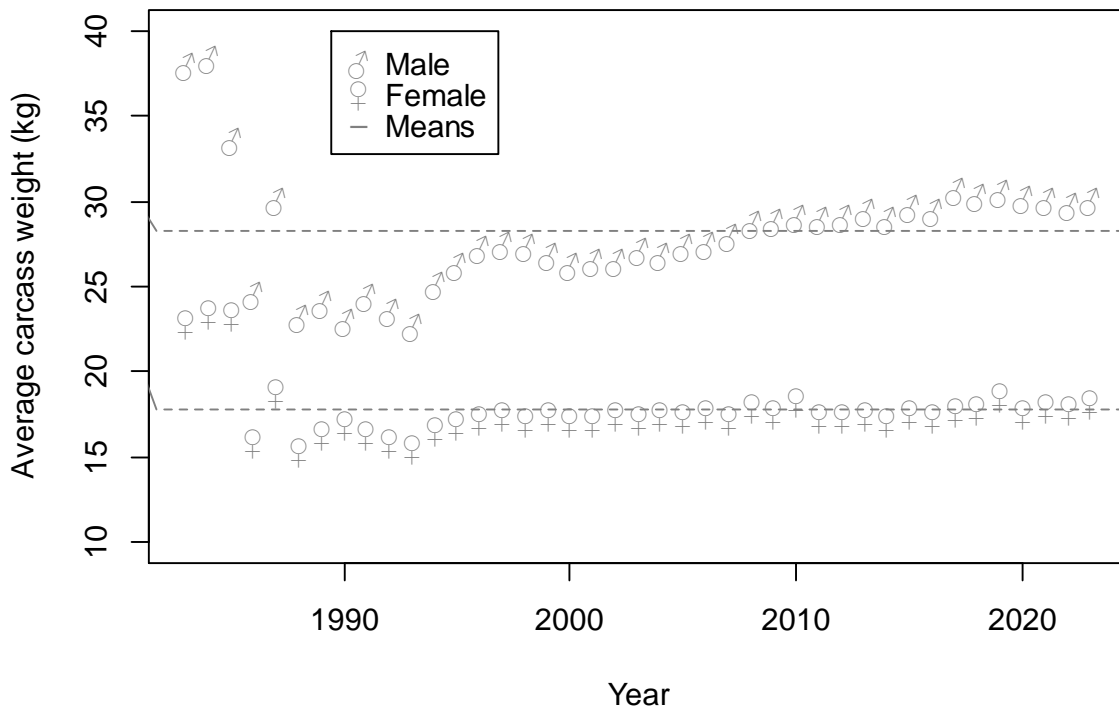


Figure 20. Average carcass weights of male and female western grey kangaroos harvested in the south-west PMZ. The upper red dashed line represents the average male carcass weight across all years and the lower red dashed line represents the average female carcass weight.

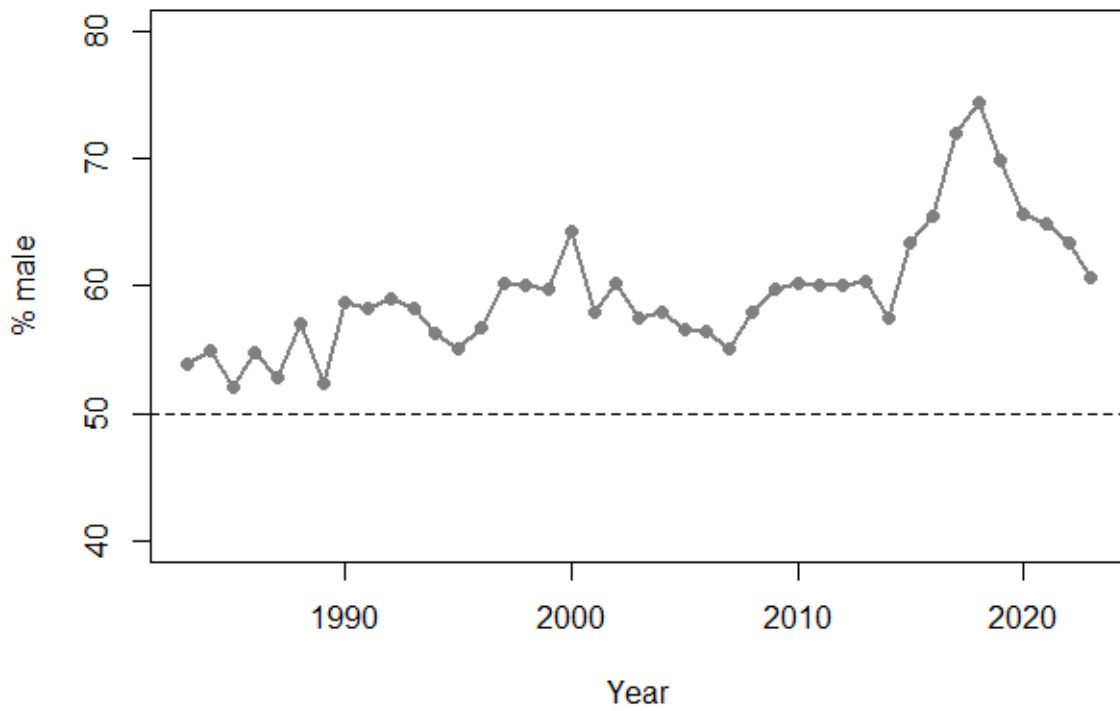


Figure 21. Sex ratio (expressed as a percentage) of male to female western grey kangaroos harvested in the south-west PMZ.