



2021 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.

June 2022



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Conservation and Attractions**

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June 2022

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1 Harvest statistics

The statistics for Western Australia's red and western grey commercial kangaroo harvest are presented below in Table 1 and Table 2 and

Figure 1 and Figure 2. Commercial harvest for red kangaroos in 2021 was 9.6 % of the allowable quota and 29.7 % for western grey kangaroos.

1.1 Red kangaroos

Table 1. Commercial harvest figures for red kangaroos for the 2021 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	5,327	73.0	25.7	16.1
Northern	3,899	62.3	26.8	15.4
South East	13,588	74.4	24.3	15.1
Totals (WA)	22,814	71.8	25.0	15.4
State quota	170,670			
Proportion state quota harvested	13.4 %			

1.2 Western grey kangaroos

Table 2. Commercial harvest figures for western grey kangaroos for the 2021 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	6,357	68.8	26.0	16.4
South East	4,993	77.2	29.0	16.7
South West	51,449	64.9	30.2	18.0
Totals (WA)	62,799	66.2	29.6	17.8
State quota	211,210			
Proportion state quota harvested	29.7 %			

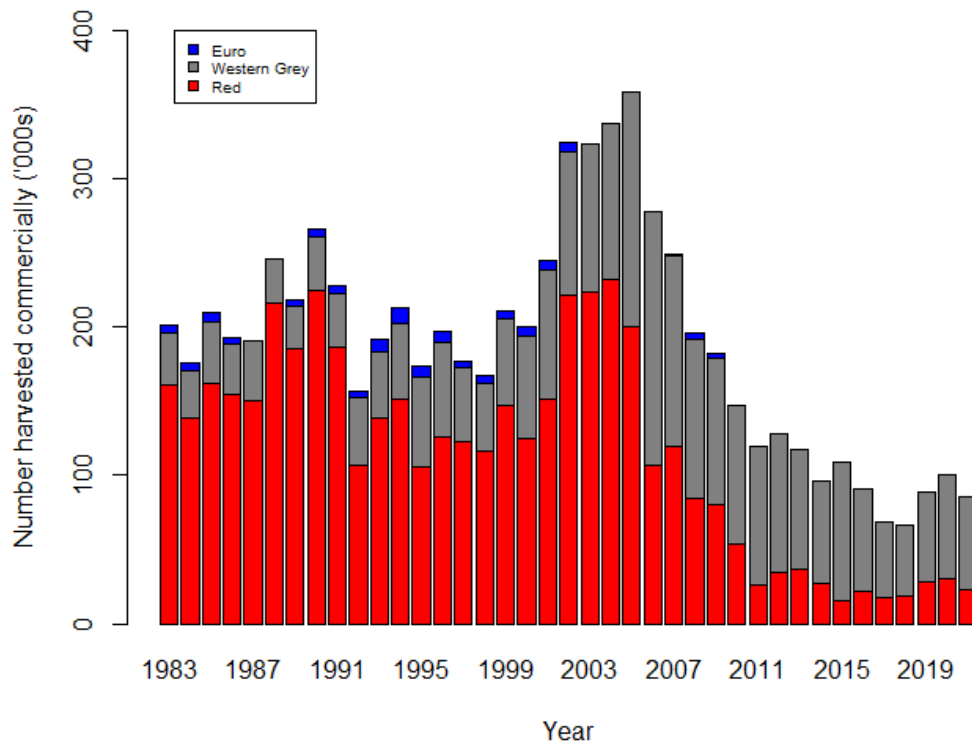


Figure 1. Total harvest in the State for red and western grey kangaroos.

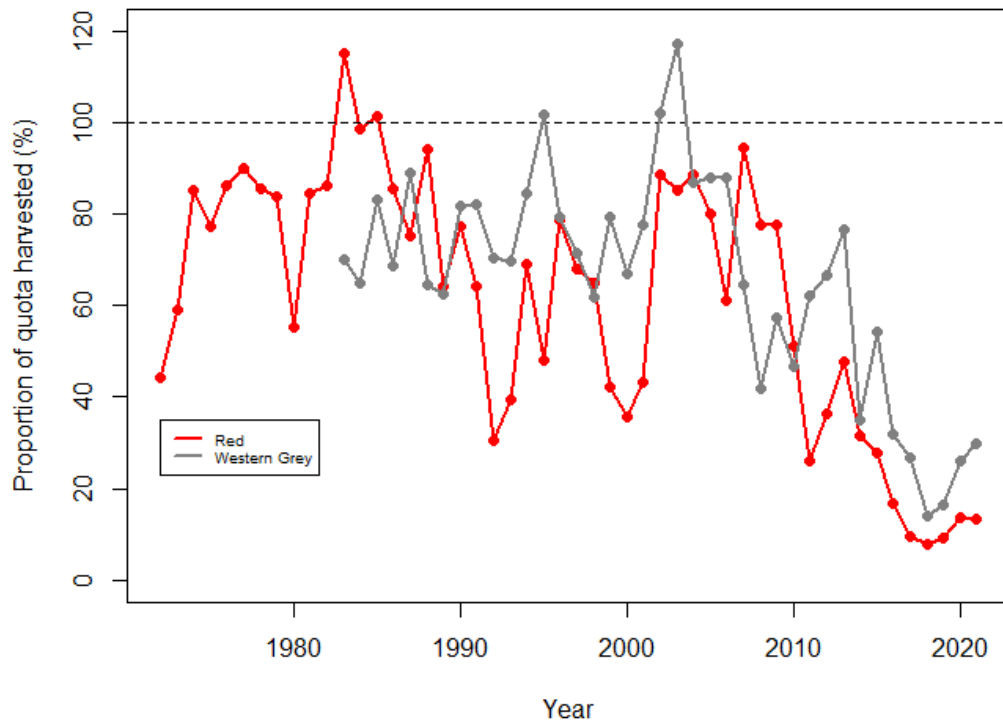


Figure 2. Proportion of quota harvested in the State for red and western grey kangaroos.

2 Industry compliance

Table 3. Summary of compliance monitoring of the commercial kangaroo industry in Western Australia for the 2021 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 2021	361	34	90	1
Licensees/premises inspected	12	6	19	0
Alleged offences	1	0	0	0
Type of alleged offence	Littering (offal)	0	0	0
Letters of warning issued	0	0	0	0
Caution notices issued	3	3	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 chillers identified on shooter returns where there is at least one shooting day of effort assigned to that chiller during the year.

** *Biodiversity Conservation Act 2016*

3 Unusual circumstances

3.1 Rainfall and drought

The following information is an excerpt taken from the annual climate summary for Western Australia published by the Bureau of Meteorology (product code IDCKGC51R0; accessed 14 June 2022). The full annual climate summary is available from <http://www.bom.gov.au/climate/current/annual/wa/summary.shtml>

Rainfall in 2021 was above average in the west of Western Australia, the southern Kimberley and the eastern borders of the Southern Interior District, whilst the remainder of the state saw close to average rainfall. Some areas in the Gascoyne and the South West Land Division reported their highest annual rainfall on record. Annual mean maximum temperatures were above average in the far north and south-east, areas surrounding the Gascoyne District, and along the west coast. Annual mean minimum temperatures were above average for much of the southern half and coastal north-west of WA.

Wet in the west

- Above average rainfall was recorded in the west of WA, the southern Kimberley and the eastern borders of the Southern Interior District, while close to average annual rainfall was observed elsewhere.
- Western Australia annual rainfall in 2021 was 9% above the 1961–1990 average.
- Many locations in the Gascoyne District and the South West Land Division (SWLD) recorded their highest annual rainfall on record or highest for at least 20 years.
- A number of highest all-time daily rainfall records were registered during the first half of the year.
- Two tropical lows moved across the Kimberley and Pilbara districts and produced daily rainfall in excess of 100 mm in late January; Myroodah in the west Kimberley recorded WA's highest daily total of the year on the 31st with 260.0 mm, and Old Mornington Homestead had its all-time daily rainfall record set on the 30th.
- March was wet for western and north-eastern WA, and the statewide averaged March rainfall was 40% above the 1961–1990 average
- A broad trough and a weak low pressure system produced daily rainfall totals between 50 mm and 100 mm in a large part of the SWLD on the 3rd or 4th of March, including a number of all-time daily rainfall records
- A broad low pressure trough lingered in northern WA, and produce thunderstorms and showers during the middle of March; Flora Valley in the south-east Kimberley recorded its all-time daily rainfall record on the 15th with 177 mm.
- April was wet in the western parts of the state. Severe tropical cyclone Seroja and its remnants produced widespread moderate rainfall in the west from the North West Cape down to the South Coastal and South East Coastal districts, with locally heavy daily falls in excess of 100 mm on the 12th, including a number of all-time daily rainfall records.

- The passage of two cloudbands in May resulted in above average rainfall in the west of WA. Locally heavy daily rainfall totals of 80–100 mm were recorded on 3 May around Walpole in the south coast from thunderstorms.
- Although June rainfall was below average in the Gascoyne, northern Goldfields and much of the SWLD, the southern coastal areas recorded above average rainfall. A strong cold front and associated low pressure system brought widespread moderate rainfall to most of the SWLD on the 21st, with daily rainfall of 166.2 mm recorded at Wereroa, near Denmark in the South Coastal District.
- The frequent passage of frontal systems saw the SWLD record 50% above July average rainfall, and the wettest July since 1996 for the region.
- After the state experienced a dry August and September, October rainfall was above average for WA, and the SWLD had their wettest October since 2011.
- Rainfall in the SWLD during the cool season (April–October) was 13% above the 1961–1990 average, the wettest cool season since 2005.
- For WA as a whole, November was the ninth-wettest November on record, and wettest since 2012, although it was dry in parts of the south-west.
- December rainfall was below average for most of WA, with the western half of the state and along the southern coastal areas recorded little to zero rainfall.

Above average daytime temperature in the Kimberley

- Annual mean maximum temperatures were above average in the far north and south-east, areas surrounding the Gascoyne District, and along the west coast; the remainder of the state saw close to average mean maxima.
- Western Australia annual mean maximum temperature was 0.67 °C above the 1961–1990 average, but it was the lowest since 2011.
- Annual mean minimum temperatures were above average for much of the southern half, and coastal north-west of WA.
- Western Australia annual mean minimum temperature was 0.24 °C above the 1961–1990 average, but it was the lowest since 2012.
- Western Australia mean temperature in February was the lowest since 2006.
- On the 30th of March, areas around Esperance in the South East Coastal District had their hottest day and last day of 40 °C or higher in 2021, while Esperance Airport and Munglinup West also had their all-time high daily minimum temperature on record
- Western Australia mean maximum temperature in June was the lowest since 1993. Much of WA observed a cold spell between the 21st and 25th, with maximum temperatures below 20 °C in the Pilbara, and 10 °C or lower in the Central Wheat Belt, Great Southern and South East Coastal districts on the 21st, including a number of all-time low maximum temperature.
- Western Australia mean temperature in July was the second-highest on record, and the highest since 1973.
- In September, the southern WA observed a number of frosty nights, between the 3rd and 5th, and between the 12th and 14th.
- Western Australia mean temperature in November was the lowest since 2008, but the third-highest on record for December. An extreme heatwave along the north-west and west coast during the Christmas period saw a number of all-time daily maximum temperature, and daily minimum temperature records.

Western Australian rainfall deciles 1 January to 31 December 2021

Australian Gridded Climate Data

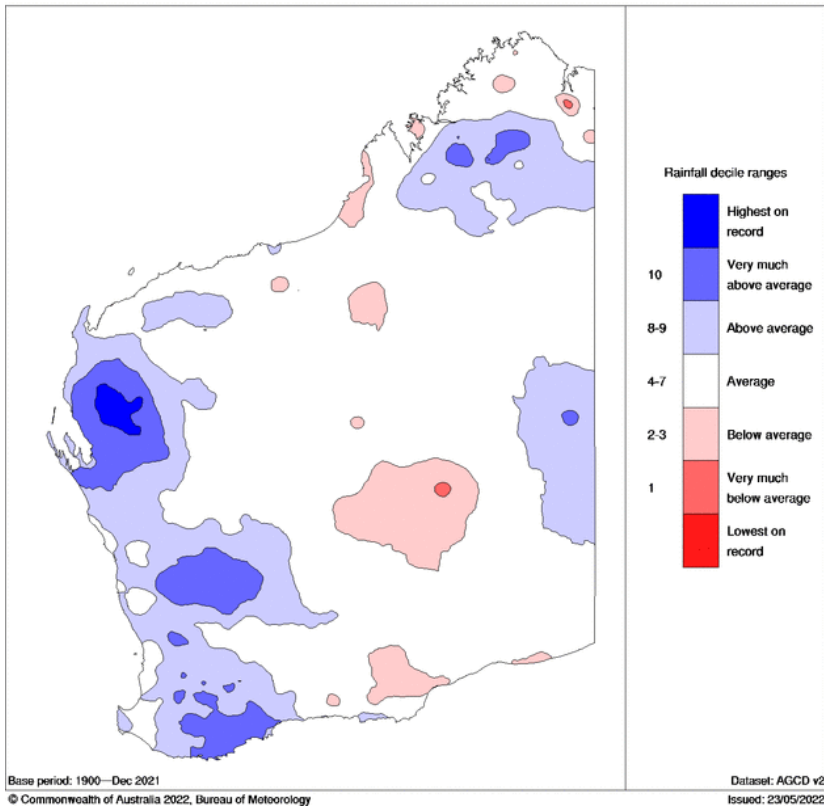


Figure 3. Rainfall deciles for Western Australia for the 2021 calendar year.

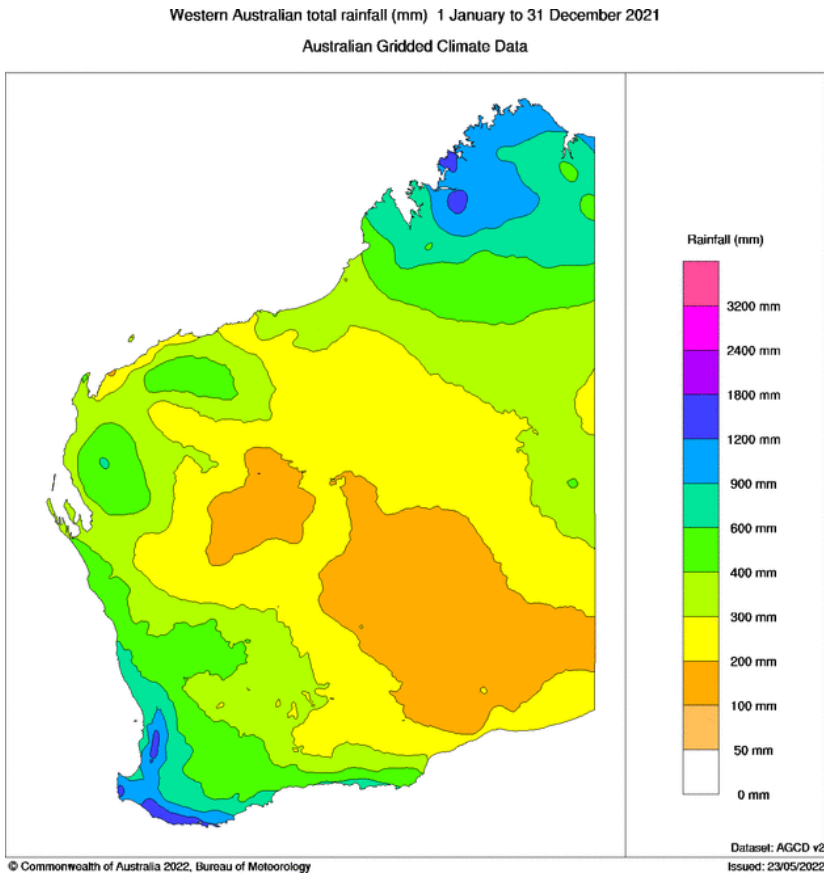


Figure 4. Rainfall totals for Western Australia for the 2021 calendar year.

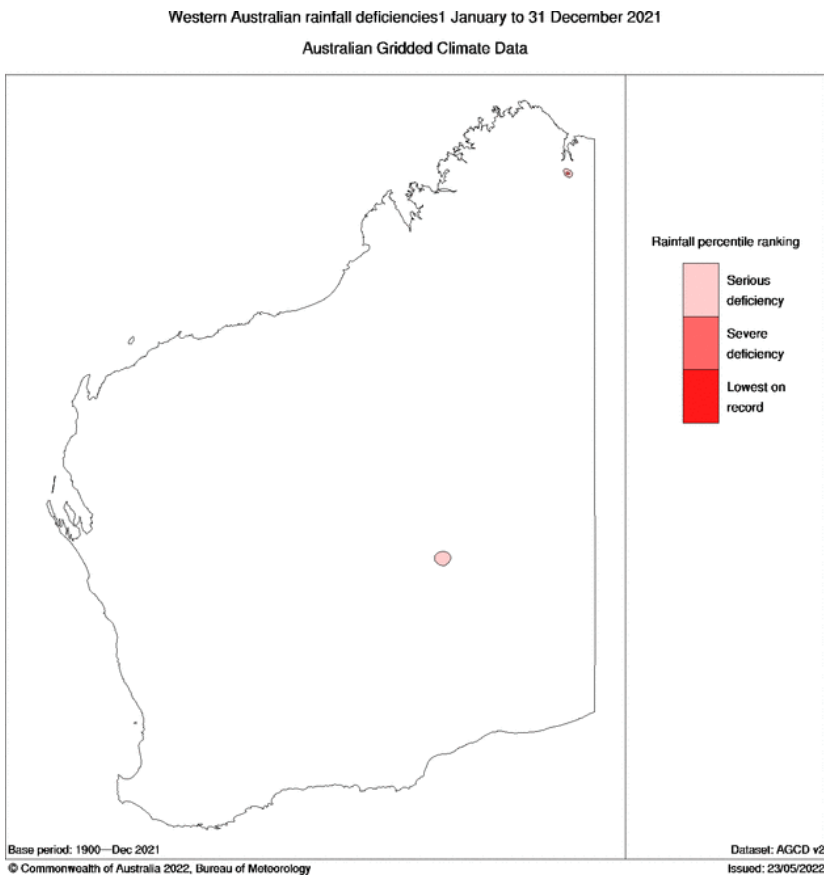
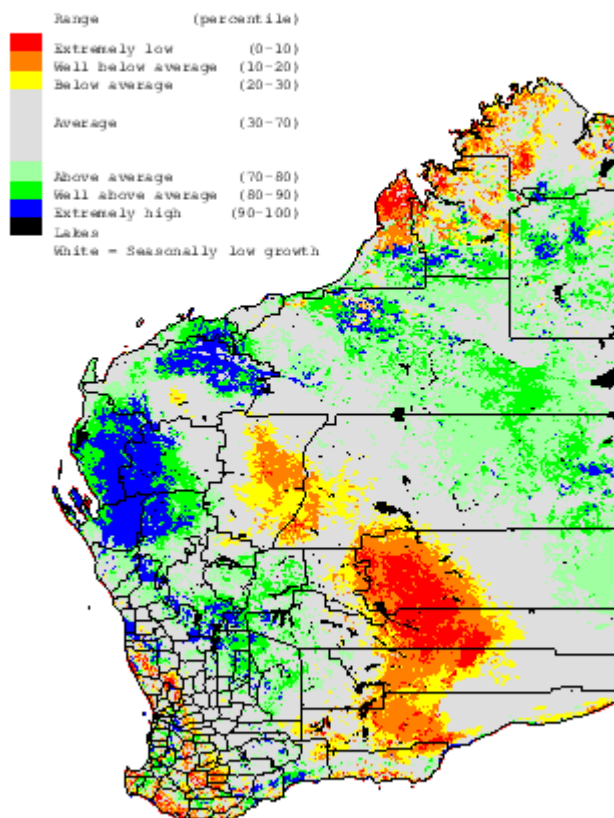


Figure 5. Drought map for Western Australia for the 2021 calendar year.

Pasture Growth Percentile Relative to Historical Records from 1957 January to December 2021



www.LongPaddock.qld.gov.au

Figure 6. Pasture growth in Western Australia relative to historical records from 1957.

3.2 Disease

No significant disease outbreaks were detected or reported in populations of commercially harvested kangaroo species in Western Australia in 2021.

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 been no significantly increased 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 in 2021.

5 Assessment of plan actions against performance indicators

Table 4. Assessment of 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: http://www.dpaw.wa.gov.au/plants-and-animals/animals/kangaroo-management-in-western-australia
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.	✗	✗	✗			Sixty-five percent of processors were inspected in 2020. This is an increase of 52% compared to 2019.
10	At least thirty percent of active chillers are inspected by authorised departmental officers annually to ensure compliance with legislative requirements.	✗	✓	✓			

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
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.	✓	✓	✓			
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.	✓	✓	✓			

Performance Indicator	Description	Year					Comments
		2019	2020	2021	2022	2023	
16	Population Monitoring Zone quotas and the state-wide quotas are never exceeded.	✓	✓	✓			
17	The Commonwealth Government is advised of commercial harvest quotas via a quota report for the following calendar year by 30 November.	✗	✗	✗			The Commonwealth was advised of the commercial harvest quota on 26 December 2021.
18	The quota report will be made available to the public via the department's website.	✓	✓	✓			See: http://www.dpaw.wa.gov.au/plants-and-animals/animals/kangaroo-management-in-western-australia
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 (WAKMP 2019-2023 Table 2). 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.	✗	✓	✗			
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"> • the current management plan; • the current quota report; • the current annual report submitted to the Commonwealth Government; • information sheets on kangaroo biology and management; • the Commercial Code; and • relevant contact information. 	✓	✓	✓			<p>See: http://www.dpaw.wa.gov.au/plants-and-animals/animals/kangaroo-management-in-western-australia</p>

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 monitoring zones

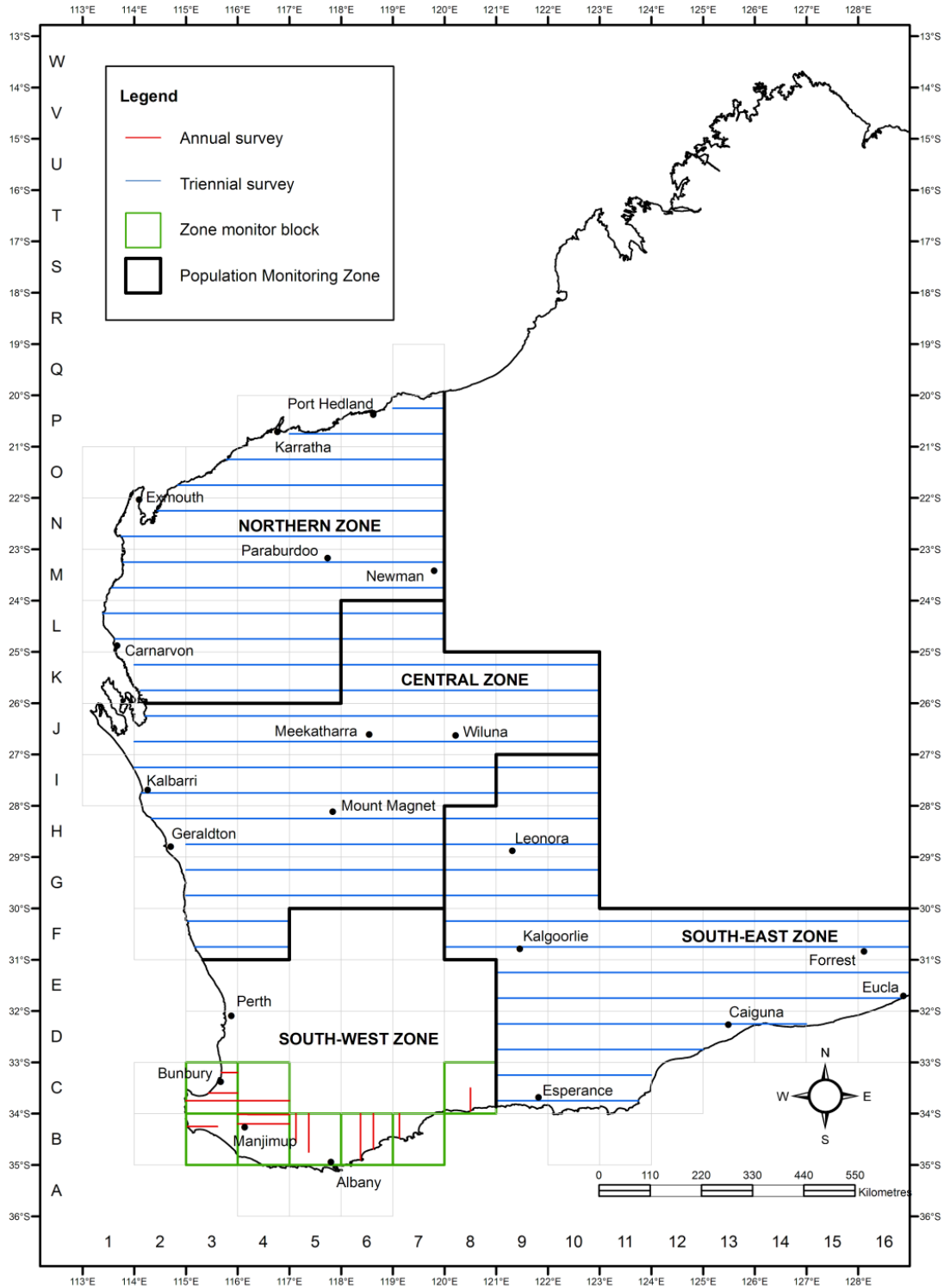


Figure 7. Map of Population monitoring zones for commercial harvesting of kangaroos in Western Australia.

Northern zone

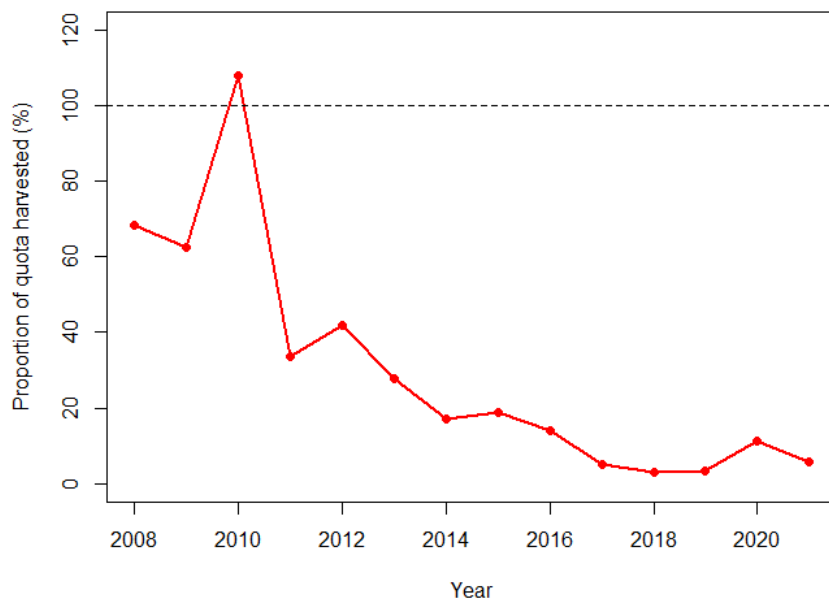


Figure 8. Proportion of total quota harvested (%) for red kangaroos in the Northern Zone.

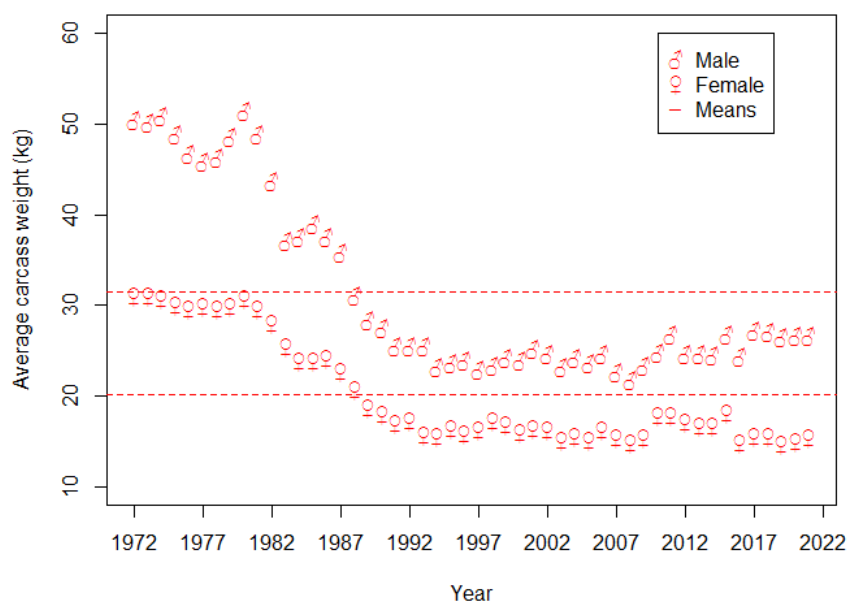


Figure 9. Average carcass weight of male and female red kangaroos harvested in the Northern Zone. The upper red dashed line represents the average carcass weight for male kangaroos across all years and the lower red dashed line is the average carcass weight for females.

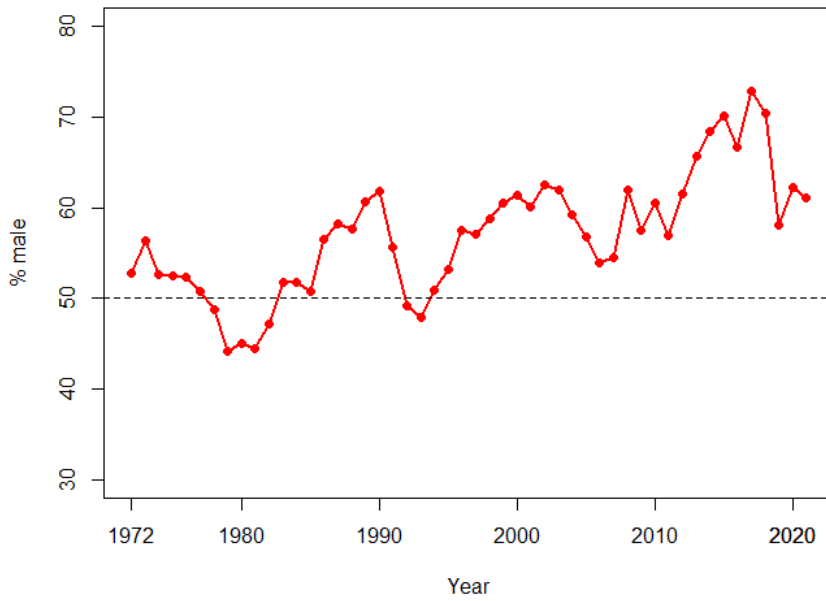


Figure 10. Sex ratio (expressed as a percentage) of male to female red kangaroos harvested in the Northern Zone.

Central zone

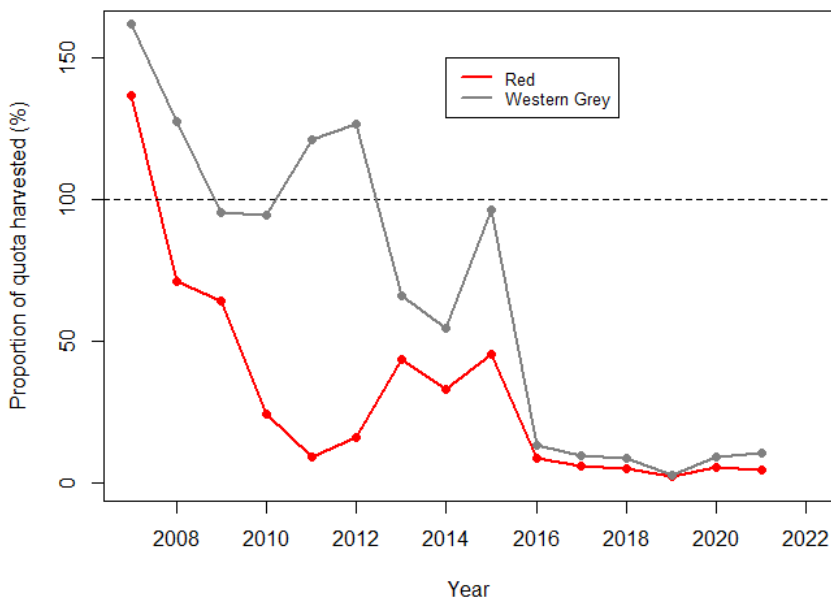


Figure 11. Proportion of total quota harvested (%) for red and western grey kangaroos in the Central Zone.

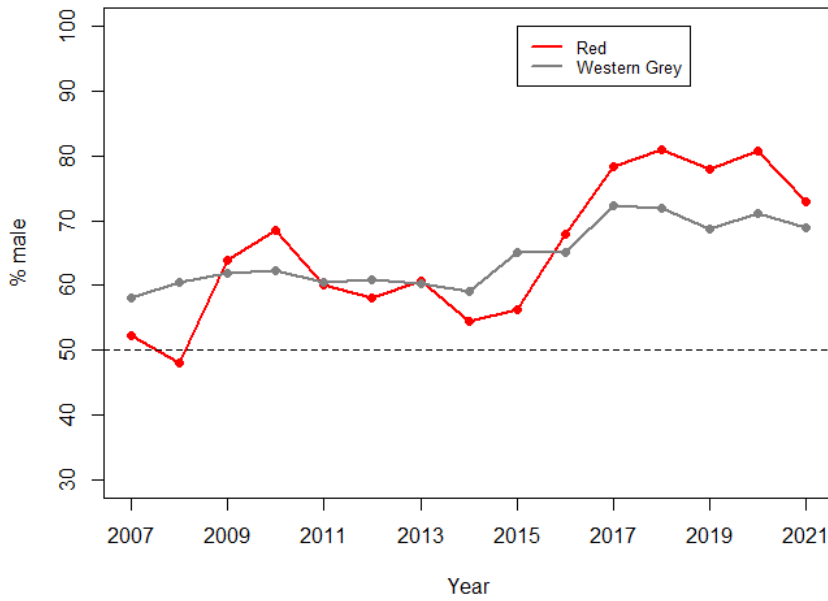


Figure 12. Sex ratio (expressed as a percentage) of male to female kangaroos harvested in the Central Zone.

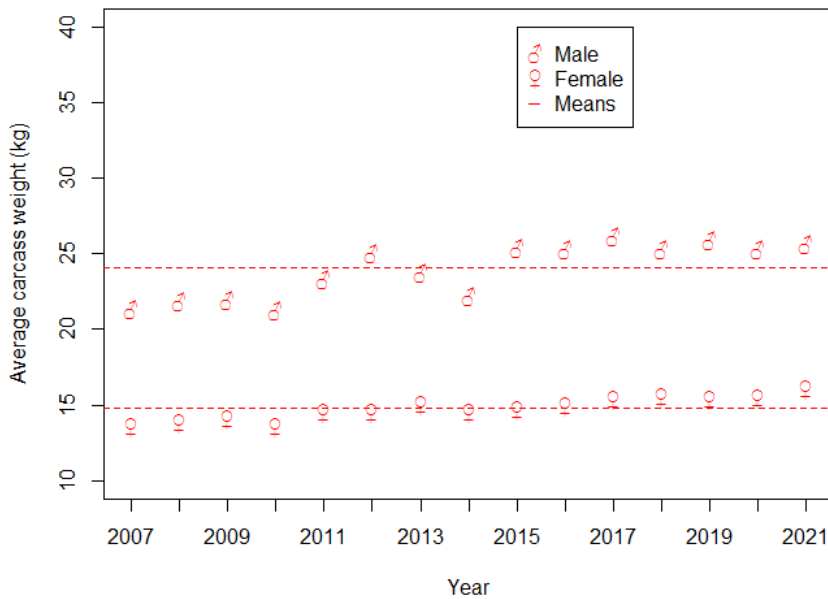


Figure 13. Average carcass weight of male and female red kangaroos harvested in the Central Zone. The upper red dashed line represents the average carcass weight for male kangaroos across all years and the lower red dashed line is the average carcass weight for females.

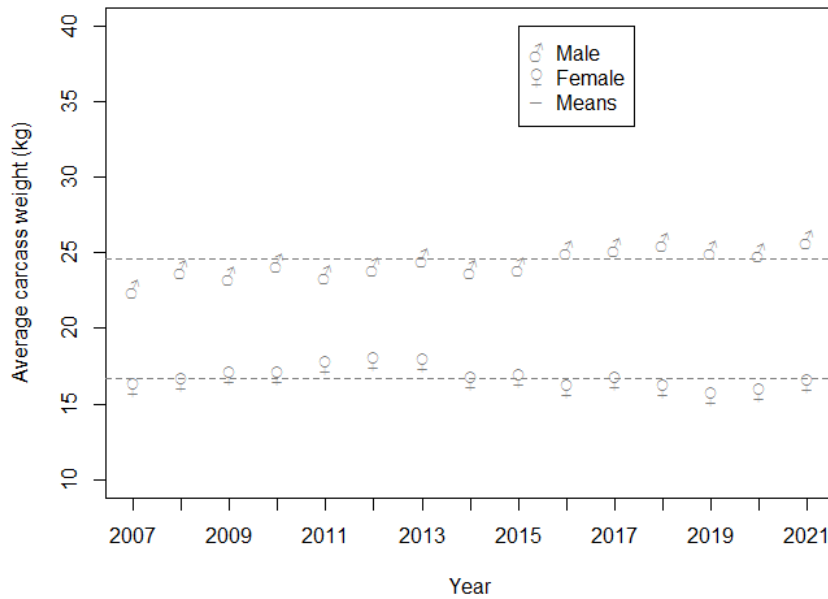


Figure 14. Average carcass weight of male and female grey kangaroos harvested in the Central Zone. The upper grey dashed line represents the average carcass weight for male kangaroos across all years and the lower grey dashed line is the average carcass weight for females.

South east zone

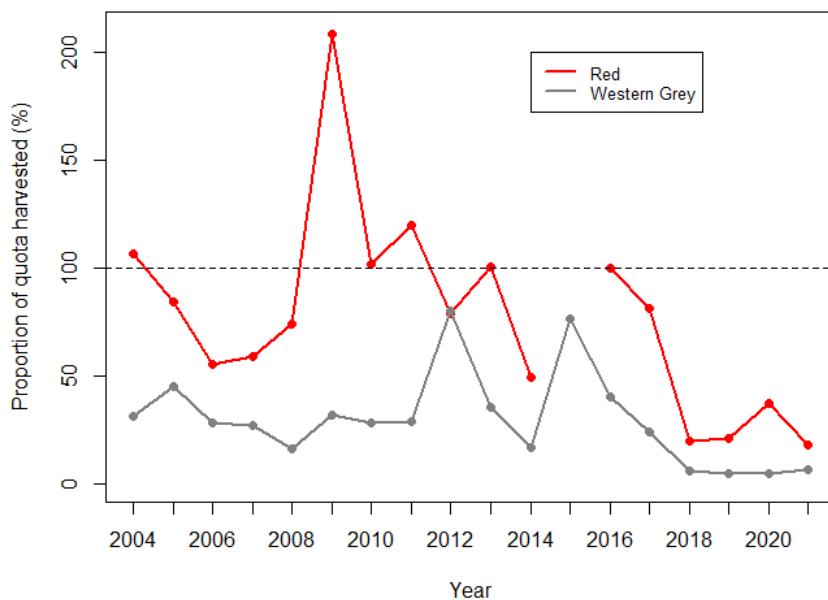


Figure 15. Proportion of total quota harvested (%) for red and western grey kangaroos in the South East Zone. Note: No red kangaroo harvest was taken in 2015.

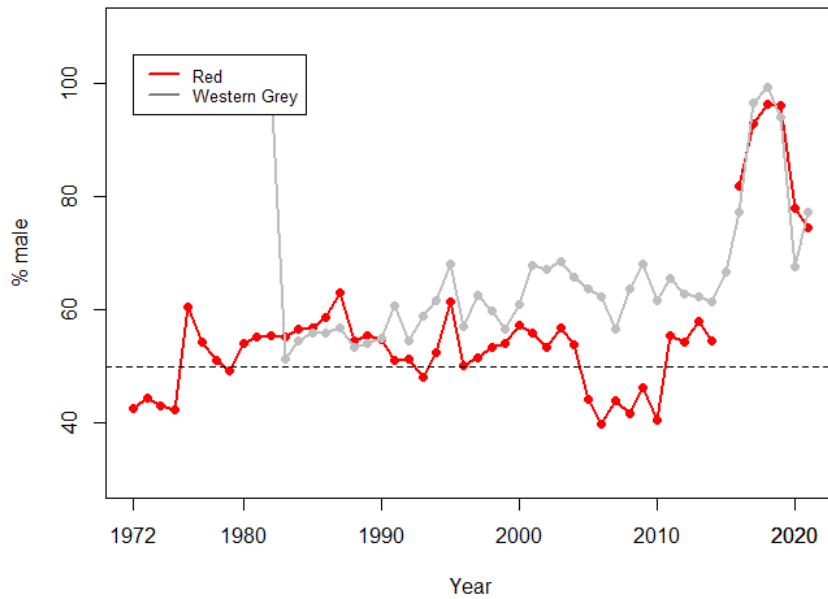


Figure 16. Sex ratio (expressed as a percentage) of male to female kangaroos harvested in the South East Zone. Note: No red kangaroo harvest was taken in 2015.

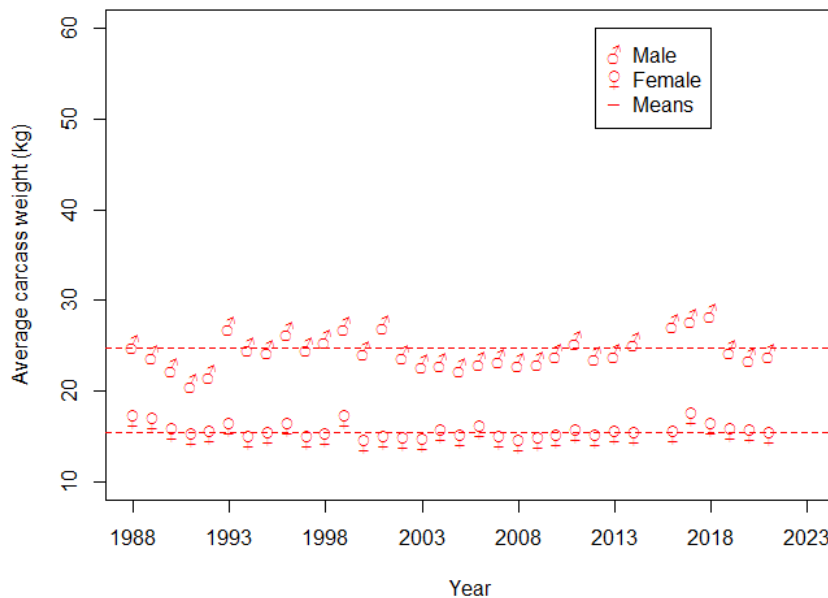


Figure 17. Average carcass weight of male and female red kangaroos harvested in the South East Zone. The upper red dashed line represents the average carcass weight for male kangaroos across all years and the lower red dashed line is the average carcass weight for females.

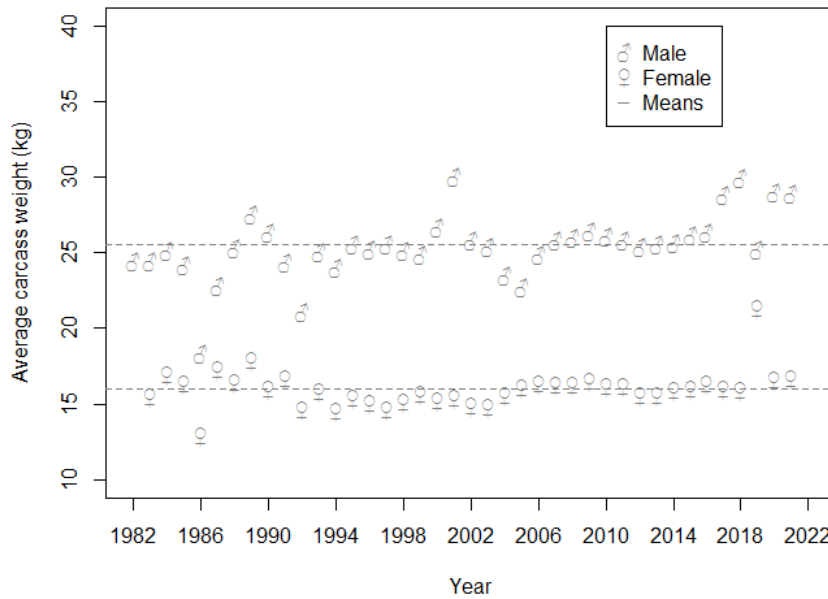


Figure 18. Average carcass weight of male and female grey kangaroos harvested in the South East Zone. The upper grey dashed line represents the average carcass weight for male kangaroos across all years and the lower grey dashed line is the average carcass weight for females.

South west zone

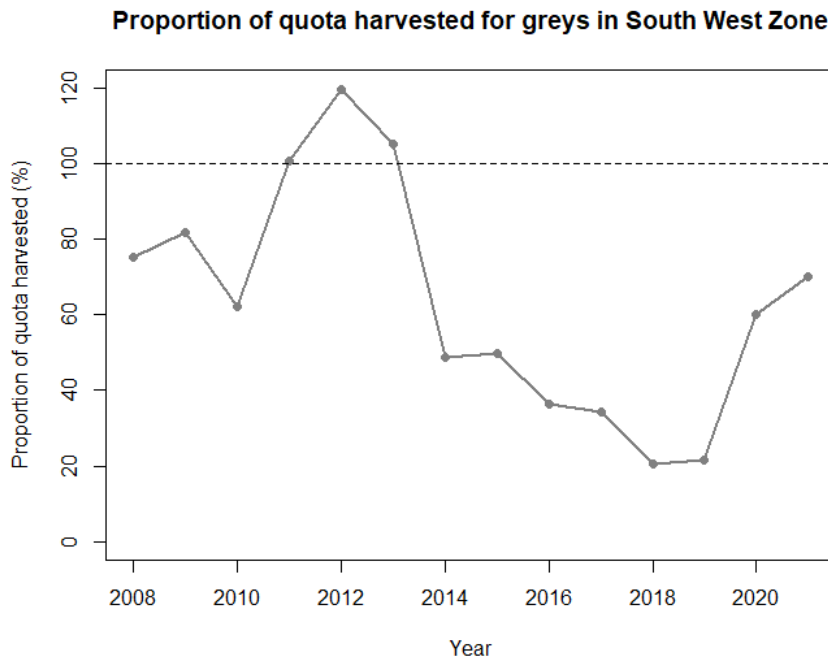


Figure 19. Proportion of total quota harvested (%) for grey kangaroos in the South West Zone.



Figure 20. Average carcass weight of male and female grey kangaroos harvested in the South West Zone. The upper grey dashed line represents the average carcass weight for male kangaroos across all years and the lower grey dashed line is the average carcass weight for females.

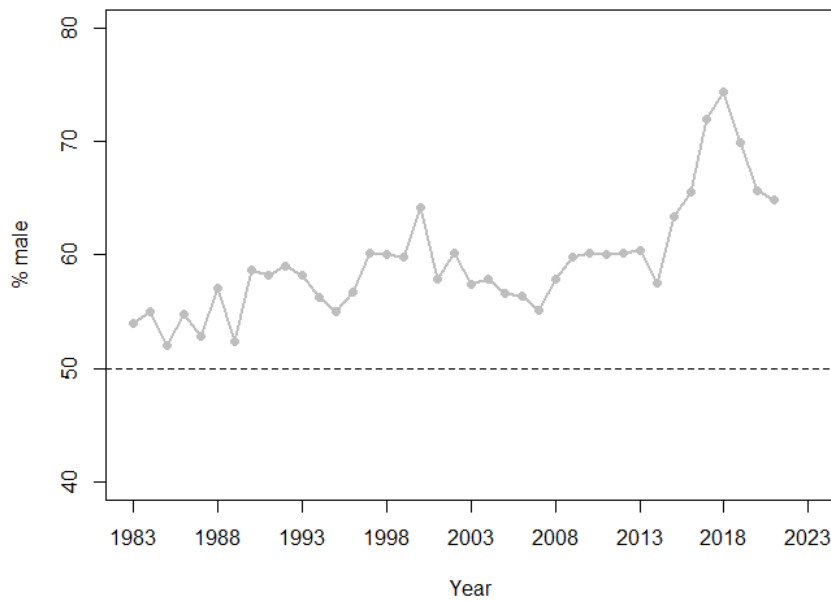


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