2013 Annual Report on the Commercial Harvest of Kangaroos in Western Australia

This report is provided to the Australian Government as requirement of the *Management Plan for the Commercial Harvest of Kangaroos in Western Australia 20013–2014* under Aim 6, Action 17, Performance Indicator 30.

March 2013

Department of Parks and Wildlife

CONTENTS

1. HARVEST STATISTICS

Table 1.1. Commercial harvest figures for red kangaroos for the 2013 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	10,434	60.7	23.8	15.0
Northern	10,308	65.7	24.8	16.6
South East	16,120	58.0	24.3	15.3
South West	0	-	-	-
Totals (WA)	**36,862**	**60.9**	**24.3**	**15.5**
State quota	77,200			
Proportion state quota harvested	47.7%			

Table 1.2. Commercial harvest figures for western grey kangaroos for the 2013 calendar year.

Population Monitoring Zone	Number harvested	Sex ratio (% male)	Average male carcass weight (kg)	Average female carcass weight (kg)
Central	5,070	60.3	24.8	17.8
Northern	0	-	-	-
South East	14,660	61.1	25.6	15.6
South West	61,357	60.4	29.4	17.5
Totals (WA)	**81,087**	**60.5**	**28.4**	**17.2**
State quota	106,000			
Proportion state quota harvested	76.5%			

2. INDUSTRY COMPLIANCE

Table 2.1. Summary of compliance monitoring of the commercial kangaroo industry in Western Australia for the 2013 calendar year.

Category	**Commercial Activity**			
	Regulation 6: Licence to Take Kangaroos for Sale	**Regulation 7**: Licence to Process	**Regulation 8**: Active Chiller Units*	**Regulation 10**: Licence to Deal in Skins
Valid licences	427	18	130	7
Inspections	34	16	46	2
Alleged offences	16	5	7	0
Type of alleged offence	• Possession of three untagged carcasses • Failing to submit monthly return • Failing to comply with licence conditions	• Possession of three untagged carcasses • Failing to display licence • Failing to have records onsite • Displaying expired licence	• Failing to display registered number on chiller • Chiller not at registered location	
Letters of warning	0	0	0	0
Caution notices	15	2	5	
Prosecutions initiated	0	0	0	0
Convictions	1#	1#	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.
# Offences occurred in 2012 and were prosecuted in 2013.

During 2013, a compliance operation was run in the department's Swan Region targeting kangaroo processors and registered chillers.

3. UNUSUAL CIRCUMSTANCES

3.1 Rainfall and Drought

The following text is an extract from the annual climate summary for Western Australia published by the Bureau of Meteorology (product code IDCKGC11R0) and available from http://www.bom.gov.au/climate/current/annual/wa/summary.shtml (accessed 5 March 2014):

"Western Australia in 2013: Warmest year on record

- **Maximum temperature:** highest on record for WA; fourth highest for southwest WA
- **Minimum temperature:** second highest on record for WA and southwest WA
- **Rainfall:** above average for WA; near average for southwest WA

Introduction

Averaged across the State as a whole, 2013 was WA's warmest year since comparable records commenced in 1910. Maximum temperatures were very much above average across most of the State, with a few sites in southern parts of WA recording their warmest year on record.

WA also recorded its second highest annual mean minimum temperature on record. Minimum temperatures were similarly very much above average across most of WA, with a number of sites, particularly in southern WA, recording their warmest year on record in terms of overnight temperatures.

Rainfall in WA during 2013 was above average for the State as a whole, with above average rainfall reported across large parts of northern WA, and to a lesser extent southeast WA, with record annual rainfall reported at a few sites in the Kimberley, Pilbara, and Southeast Coastal. Overall near average rainfall was reported in southwest WA in 2013.

Rainfall

Areas of very much above average rainfall were reported in the west Kimberley, east Pilbara, and Northern Interior in 2013, largely as a result of the passage of tropical cyclone *Rusty* through the region in late February and tropical cyclone *Christine* towards the end of December, along with significant Northwest Cloudband events in May and June bringing unseasonal heavy rainfall. As a result, Pardoo Station in the Pilbara recorded its highest annual rainfall in a 98 year recording history. Port Hedland Airport, and Cape Leveque in the Kimberley, also reported their wettest year on record. The southern Goldfields and Southeast Coastal also reported very much above average rainfall, mainly as a result of frequent rain events in March, as well as significant events in May and September. Erinair, west of Esperance, recorded its wettest year in its 44 years of record. In contrast, the west Gascoyne and parts of the Central West recorded below to very much below average rainfall in 2013, mainly as a result of a lack of winter rainfall in the region.

Averaged across WA as a whole, rainfall during 2013 was above average. Wet months were observed in May and June, as significant Northwest Cloudband events occurred across the northern half of the State, September, with significant rainfall across the southern half of WA, November, with early wet season rainfall in the Kimberley and the passage of tropical cyclone *Alessia* near the north Kimberley coast, and December, with heavy rainfall in parts of the Kimberley due to a nearby weak tropical low, then the west Kimberley and east Pilbara with the passage of tropical cyclone *Christin*e. Only August saw below average rainfall for the State as a whole, with little, if any, rainfall reported outside the Southwest Land Division (SWLD).

The Lower Southwest (southwest of a line from Jurien Bay to Bremer Bay) saw near average rainfall in 2013, as a result of above average rainfall in March, May, and August, and the fourth wettest September on record, the wettest month of 2013 for the Lower Southwest, combined with below average rainfall in April, and the second driest June on record. The SWLD similarly recorded a near average year largely due to above average rainfall in autumn and spring in combination with the ninth driest winter since comparable records commenced in 1900.

Significant rainfall events during the year were as follows:

- Tropical cyclone *Peta* moved over the central Pilbara coast as a category one system on 23 January and brought some localised heavy falls, the highest daily total being 261.6 mm at Hooley on 24 January, which was the highest daily total in 30 years of recording at the site. Flooding impacts were generally localised and mostly minor.

- Severe tropical cyclone *Rusty* crossed the coast east of Port Hedland on 27 February and brought heavy rainfall to the east Pilbara and west Kimberley in the last week of February. The highest daily fall reported during the event was 263.4 mm at Bamboo Creek in the east Pilbara on the 28th, although the rain gauge overflowed so the actual total was likely higher than this. It was the highest daily rainfall total reported in WA in 2013. Major flooding of the De Grey river was reported as a result of the slow moving severe tropical cyclone. Ex-tropical cyclone *Rusty* moved through central parts of the State in early March and brought heavy rainfall to the Southern Interior and Goldfields, and several sites in these districts observed their wettest autumn day on record on the 1st and 2nd, whilst Glen-Ayle (Southern Interior) recorded a daily total of 177.5 mm in the 24 hours to 9am on the 1st, its wettest day in 64 years of record.

- Numerous unseasonal rainfall events occurred across northern WA in May 2013. Rain and thunderstorms were common across the Kimberley from the 12th to 24th with some heavy falls reported. Very heavy rainfall in excess of 150 mm was reported on the northern Dampier Penninsula on the 19th and 20th as Cygnet Bay observed 155.4 mm in the 24 hours to 9am on the 21st, its wettest May day in 50 years of record, and Lombadina Airstrip reported 182.5 mm, the highest daily rainfall total in WA for autumn 2013. Cape Leveque recorded 157.7 mm on the 21st, which contributed significantly to its autumn total rainfall of 409.9 mm, the highest autumn 2013 total rainfall in WA.

- A weak tropical low drifting close to the west Kimberley coast on 5 and 6 June brought thunderstorms and the re-intensification of a cloudband over northern WA with extremely heavy falls reported in the west Kimberley as a result, and a number of sites registered their highest daily rainfall on record for winter in the 24 hours to 9am on the 6th or 7th. West Roebuck, near Broome, recorded 202.0 mm in the 24

hours to 9am on the 6th, which was the highest daily total recorded during the event. Broome Airport recorded 146.4 mm on the 6th exceeding the previous winter daily record at the airport of 127.0 mm on 24 June 1968, and also exceeding the highest winter daily rainfall at the Broome Post Office of 143.0 mm on 15 June 1901, thus becoming the wettest winter day in the town since recording began in 1889.

- A number of sites in the Pilbara saw exceptionally heavy rainfall from late on 23 June to the morning of 25 June as a cloudband developed over the northwest. Roebourne recorded 223.6 mm on the 25th, the highest winter daily fall at the site since records commenced in 1887, and the second highest daily fall at the site for any month, only slightly behind 233.7 mm on 7 March 1945. It was also the highest daily fall in winter 2013 in WA. A number of other sites in the Pilbara also reported their highest winter daily rainfall as result of this event.

- A complex low pressure system moved across the southern half of WA between 11 and 13 July bringing widespread significant rainfall to the SWLD and adjacent Gascoyne and Goldfields. Several sites in the northern Great Southern and southern Central Wheat Belt recorded their wettest winter day on record on the 12th, including Kondinin in the Great Southern, which recorded 71.0 mm, its wettest winter day in 97 years of record.

- A slow moving cold front moved through the SWLD on 15 July bringing widespread heavy showers to the region, and falls of 60 mm to 100 mm were reported in the Margaret River region of the Southwest district with some localised flooding reported. A daily total of 99.4 mm at Witchcliffe on the 15th was the highest daily rainfall in July in the State.

- Numerous cold fronts impacted southwest WA in September with notable events on the 7th and 8th, 13th and 14th , 21st to 23rd, and 29th, producing heavy rainfall and a number of record breaking daily falls for September.

- Frequent thunderstorm activity occurred in the Kimberley during November with heavy falls reported, including 120.0 mm at Emma Gorge on the 22nd, the highest daily fall in WA during spring 2013. Tropical cyclone *Alessia* brought moderate to heavy falls to the north Kimberley coast on the 23rd and 24th November. Cygnet Bay recorded its highest spring daily fall in 50 years of record with 41.0 mm on the 23rd.

- Severe tropical cyclone *Christine* made landfall on the Pilbara coast between Whim Creek and Roebourne as a category three system on 30 December and brought heavy rainfall to the west Kimberley and central and east Pilbara, the highest daily total being 168.6 mm at Abydos North on the 31st.

Maximum temperature

Maximum temperatures were well above average across most of WA in 2013, with only parts of the Pilbara recording near average mean maxima. A few sites in the SWLD and Eucla recorded their hottest year on record, including Narrogin in the Great Southern with 82 years of record.

Averaged across WA as a whole, the annual mean maximum temperature for 2013 was the highest since comparable records commenced in 1910. The previous hottest year for WA was 2002. Almost all months in 2013 saw mean maxima for the State above the average, with five months ranked in the top 12 hottest for their respective month: January

(eleventh highest), April (third), August (second), September (tenth), and October (second). Only June was below the long-term average for WA as a result of Northwest Cloudband activity and rainfall across the northern half of the State. WA has recorded only one below average month in terms of the mean maximum temperature for the State since April 2012.

The Lower Southwest (southwest of a line from Jurien Bay to Bremer Bay) saw a very much above average annual mean maximum temperature in 2013, recording its fourth-warmest year since comparable records commenced in 1910. The Lower Southwest recorded its warmest year on record in 2010, and second warmest year in 2012. With the exception of a cool March, the Lower Southwest saw monthly mean maximum temperatures above the long-term average for all other months in 2013, notably in February (sixth highest on record), April (third), August (fourth), and November (eighth) . A run of above average monthly mean maximum temperatures has extended back to 2009 for the region, with only three months below the average since September 2009.

A significant heat event impacted Australia in the first half of January (Special Climate Statement 43), and brought very high temperatures to southern, central, and eastern parts of WA with numerous daily maximum temperature records broken. The first few days of January 2013 saw very high temperatures across southern WA as Eyre in the Eucla district recorded a maximum of 47.7 ºC on the 2nd, followed by Eucla on the 3rd with 48.2 ºC, the highest temperatures at these sites in 31 and 57 years of record respectively. Very high temperatures cleared southern WA the following day but persisted over eastern inland WA before intensifying across central and eastern WA on the 6th and 7th. On the 8th, temperatures were reported in the 47 ºC to 48 ºC range in the inland Gascoyne, northern Goldfields, and Southern Interior, with several sites recording their highest temperature on record, including Meekatharra Airport with a maximum of 47.1 ºC, its highest temperature in 64 years of recording. Very high temperatures persisted on the 9th and Leonora recorded a maximum of 49.0 ºC, the highest temperature in WA during the event and for the 2013 year. The maximum temperatures at Leonora of 47.8 ºC (7th), 48.3 ºC (8th), and 49.0 ºC (9th), initially equalled the previous daily record at the site in 57 years of recording, then broke it on consecutive days. High temperatures became confined to central eastern parts of the State on the 10th and eased before returning to central eastern parts of WA in the middle of the month. On the 16th, Giles Meteorological Office recorded a maximum of 45.7 ºC, its highest temperature in 58 years of recording.

Another notable hot spell occurred in the middle of December as a strong high moved slowly through the Bight bringing prolonged hot conditions to southern WA. Daily maximum temperatures above 35 °C started in western parts of the SWLD on the 12th and intensified and gradually shifted south and east and ended in the Eucla district on the 18th. Temperatures above 44 °C were reported in the Central West, Central Wheat Belt, Goldfields, Southeast Coastal, and Eucla during the event with sites in the Central West and Southeast Coastal recording their highest December temperatures on record. Also later in December, a trough directed very hot northerly winds over southeastern WA on the 27th and Eucla recorded a maximum temperature of 47.4 °C, its highest December temperature in 52 years of record, and the highest temperature in WA for December 2013.

Wet and cloudy conditions on 7 July in the Goldfields and southern Gascoyne resulted in a cold day in the region. Yeelirrie in the Goldfields recorded the lowest maximum temperature in the State in July 2013, as well as the year as a whole, with 9.3 °C on the 7th, its second coldest July day in 39 years of record, only behind a maximum of 9.0 °C on 13 July 2004.

Minimum temperature

Minimum temperatures were also very much above average across most of WA in 2013, with only parts of the Kimberley recording a near average year. A number of sites in the SWLD, Goldfields, and Eucla, as well as Onslow in the Pilbara, recorded their warmest year on record in terms of overnight temperatures. Albany recorded its highest annual mean minimum temperature in its 93 year recording history, exceeding the previous record set in 2011.

Averaged across WA, the annual mean minimum temperature ranked as second highest on record, only behind the record warm year of 1998. All months in 2013 saw above average monthly mean minima for WA, and six months ranked at the top ten warmest for their respective month: January (third warmest), April (fifth), May (equal ninth), September (equal fourth), October (ninth) and November (eighth). Since September 2012, WA has recorded consecutive above average monthly mean minimum temperatures for the State.

For the Lower Southwest (southwest of a line from Jurien Bay to Bremer Bay), the annual mean minimum temperature was also very much above average during 2013, also ranking as second highest on record. Most months in 2013 saw above average mean minima, with only June and July below average, and six ranked at the top 12 for their respective month: January (eighth highest), February (eleventh), April (highest on record), August (third highest), September (second), November (second).

A significant heat event in the first half of January 2013 across central and southern WA led to a number of record high minimum temperatures. Merredin in the Central Wheat Belt and Jarrahwood in the Southwest registered record high minimum temperatures on the 8th as cloud moved over the SWLD following a hot day on the 7th. The minimum of 29.7 ºC at Merredin was the highest minimum temperature in the town in 48 years of record. Very high minima were also recorded in the Goldfields and Southern Interior on the 9th and 10th, with overnight temperatures in the low 30s. Wiluna recorded the highest minimum temperature in WA for the year with 33.5 ºC on the 9th, only falling short of the record for the town by 0.1 ºC, whilst Carnegie registered 33.1 ºC, its warmest night in 25 years of record. With the return of very high day-time temperatures in the middle of January in central eastern WA, overnight temperatures were consequently also high in the region and Warburton Airfield recorded a minimum of 32.5 ºC on the 17th, the highest minimum at the site in 28 years of record.

Cold nights were reported across southern WA from the 5th to the 9th as a result of generally clear skies and light winds. Many sub-zero temperatures were reported, aided by particularly dry soils following an extremely dry June, and a number of sites in the SWLD experienced their coldest or equal coldest night in July on record on the 8th. Wandering in the Great Southern recorded a minimum of -4.8 °C on the 8th, the lowest temperature recorded in WA in July 2013, whilst Beverley, also in the Great Southern recorded a minimum of -3.8 °C, its coldest night in 45 years of record.

The lowest temperature recorded in WA in 2013 was -5.0 °C at Eyre in the Eucla on 14 October. This broke the record for the lowest temperature on record for WA in October, exceeding the previous record of -4.3 ºC at Eyre on 24 October 1995.

Other notable events in WA in 2013

- Severe tropical cyclone *Narelle* formed well north of the Australian coast on 8 January and took a general southwesterly track, intensifying to a category four system on the 11th north-northwest of Exmouth. *Narelle* moved south-southwest off the WA west coast and was downgraded to a low early on the 15th, over 500 km to

the west of Geraldton. Although threatening the Pilbara and Gascoyne coasts and disrupting shipping and offshore industries, Narelle remained far enough offshore not to directly impact the northwest coast. A tidal surge was recorded from Onslow to Busselton as a result of *Narelle*, causing some inundation of low lying areas, though any impacts were minor.

- With the passage off the WA west coast of ex-tropical cyclone *Narelle* on 15 January, a number of severe thunderstorms were reported in southwest WA. Just after 0600 WST on the 15th, a thunderstorm crossed the coast to the southwest of Capel in the Southwest district, in the vicinity of the Ludlow State Forest. A report from the area noted that large trees were down with a trail that was approximately 400 metres wide, the likely result of a tornado. Tuart Drive was blocked by large trees, and debris was also across the Bussell Highway. Later that day, high temperatures along with high humidity resulted in severe thunderstorms through the Central Wheat Belt, Great Southern, and Southeast Coastal districts during the afternoon. A thunderstorm moved through Karlgarin in the Great Southern around 1700 WST leaving approximately 10 buildings damaged (some significantly) and trees and power lines down. At Amrista Park, about 20 km south-southwest of Karlgarin, 38.4 mm of rain fell in 30 minutes, a greater than one in 100 year event, with a significant number of trees and fences down. The same storm system went on to produce 22.4 mm in ten minutes between 1834 WST and 1843 WST at Ravensthorpe (DAFWA) in the Southeast Coastal district, about 130 km southeast of Amrista Park, an almost one in 100 year event.

- A tropical low formed over the Kimberley on 20 January and tracked southwest through the west Kimberley then close to and parallel with the Pilbara coast before turning to the southwest towards the coast early on the 23rd. The system intensified into tropical cyclone *Peta* on the morning of the 23rd and crossed the Pilbara coast near Roebourne as a category one system, then weakened to a tropical low in the afternoon on the 23rd. Although tropical cyclone *Peta* was short-lived and relatively weak, its proximity to the coast resulted in disruptions to shipping and offshore industries. There was also very heavy rainfall along parts of the Pilbara coastline and in the Fortescue River catchment, with accumulated falls over 300 mm reported, leading to minor flooding.

- A tropical low developed in the waters off northwest WA on 22 February and was named tropical cyclone *Rusty* in the afternoon on the 24th, about 360km north of Port Hedland. *Rusty* continued to intensify as it moved slowly in a south to southeasterly direction towards the east Pilbara coast and became a severe tropical cyclone on the 25th, reaching category four for a brief period on the morning of the 27th. *Rusty* crossed the Pilbara coast about 10km east of Pardoo Station in the afternoon on the 27th and after landfall moved southward and weakened rapidly to below tropical cyclone intensity on the 28th over the east Pilbara but continued to produce heavy rainfall along its path. Water and structural damage to buildings was reported from both Pardoo Station and Pardoo Roadhouse, with many trees down and significant flooding. Pardoo Station also reported cattle loss as a result of hypothermia. Port Hedland Airport recorded sustained gale force winds for 39 hours from midnight on the 25th to 3 pm on the 27th (based on three-hourly synoptic observations), which is unprecedented in the wind record at the Airport that goes back to 1942. The highest wind gusts recorded were 124km/h at Bedout Island and 119km/h at Port Hedland Airport. Only minor damage was reported in Port Hedland but there was a significant disruption to shipping and offshore industries with Port Hedland port closed for 86 hours, as well as onshore mining operations near the

path of *Rusty*. Major flooding occurred in the De Grey River catchment as a result of the prolonged heavy rainfall.

- On 9 June, a low moving along the WA south coast triggered a line of thunderstorms near Albany. A line of damage approximately 500 metres long and 80 metres wide was reported from Elleker, west of Albany town, and hail the size of olives to golf balls was reported.

- Early on 25 June, a tornado reportedly moved through the Port Hedland port and then a construction area, causing some localised damage to vehicles and signs.

- A series of cold fronts moved through the SWLD between 15 and 17 July, bringing heavy rainfall and damaging winds to southern WA districts. Flash flooding was reported in the Southwest as rainfall totals in the 60 mm to 100 mm range were reported on the morning of the 15th and a river crossing was washed away as a result. Severe wind gusts of 100 km/h to 115 km/h were recorded at coastal sites in the Lower West, Southwest, and Southeast Coastal on the 16th and 17th, resulting in more than 6000 homes in the Perth metropolitan area and southwest WA to be without power. The WA Department of Fire and Emergency Services (DFES) received more than 138 calls for assistance.

- Numerous damaging wind gusts (between 90 km/h and 102 km/h) were recorded across southern WA from 25 to 27 July as a strong cut off low and associated cold front passed over the region. DFES received a total 53 calls for help during this period, with damage reported in the Mandurah suburbs of Halls Head and Silver Sands, as well as in Kalgoorlie, Moora, and York. In the Perth metropolitan area, 22 calls for assistance were received overnight on the 26th and on the morning of the 27th with damage occurring in the northern suburbs of Heathridge and Beldon.

- A suspected waterspout crossed the Perth metropolitan coast near North Coogee on 6 August, causing injury to 6 people (two serious) when scaffolding on a building site collapsed. Buildings were damaged and a heavy concrete building slab was lifted up.

- A series of strong cold fronts, associated with a deep, complex low pressure system, affected the SWLD from early 22 September until 24 September. A wind gust of 146km/h was recorded at Cape Leeuwin on the 22nd, the highest wind gust recorded in WA in 2013. A tornado was also reported in the southeast suburbs of Perth at Maddington, where significant structural damage occurred. The second, and strongest, cold front moved over the southwest region in the early hours of the 23rd as widespread damaging winds were experienced. About 20,000 properties were without electricity, in areas around Perth, Manjimup, Busselton, Pemberton, and Bunbury. SES Service volunteers responded to more than 88 calls for help, including at least 30 in the Gosnells and Maddington area. Flooding forced the closure of a northbound lane of the Kwinana Freeway in Como as a significant storm surge occurred along the southwest WA coast.

- A tropical low developed south of Java on 20 November and moved to the southeast and intensified into a category one tropical cyclone in the evening of the 22nd off the west Kimberley coast and was named *Alessia*. The system tracked eastward near the north Kimberley coast on the 23rd and 24th before weakening below tropical cyclone intensity on the evening of the 24th as it crossed the western Top End of the Northern Territory. The impacts of *Alessia* were generally minor with

some heavy rainfall and a wind gust to 94 km/h reported at Troughton Island at 0011 WST on the 24th.

- A tropical low off the northwest coast intensified into tropical cyclone *Christine* in the evening of the 28th and made landfall as a category three tropical cyclone on the Pilbara coast between Whim Creek and Roebourne on the 30th. *Christine* brought heavy rainfall to the west Kimberley and central and east Pilbara, with numerous daily totals between 100 mm and 170 mm, and destructive winds to the Pilbara region. Roebourne Airport recorded a wind gust of 172 km/h in the late evening on the 30th, the highest recorded wind gust during the passage of *Christine*."

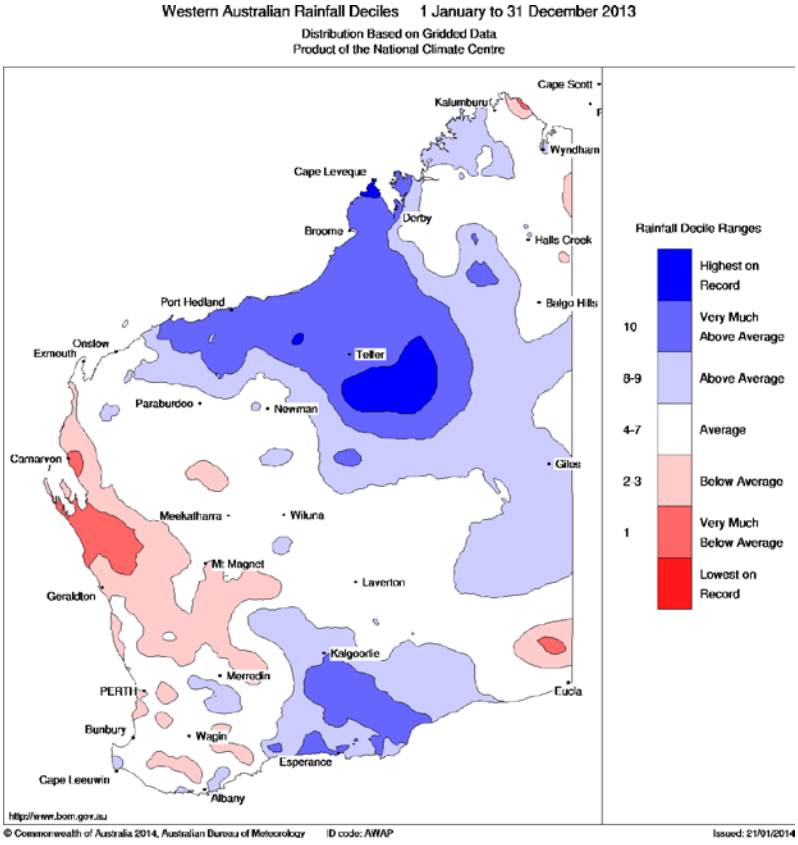

Figure 3.1A. Rainfall deciles for Western Australia for the 2013 calendar year.

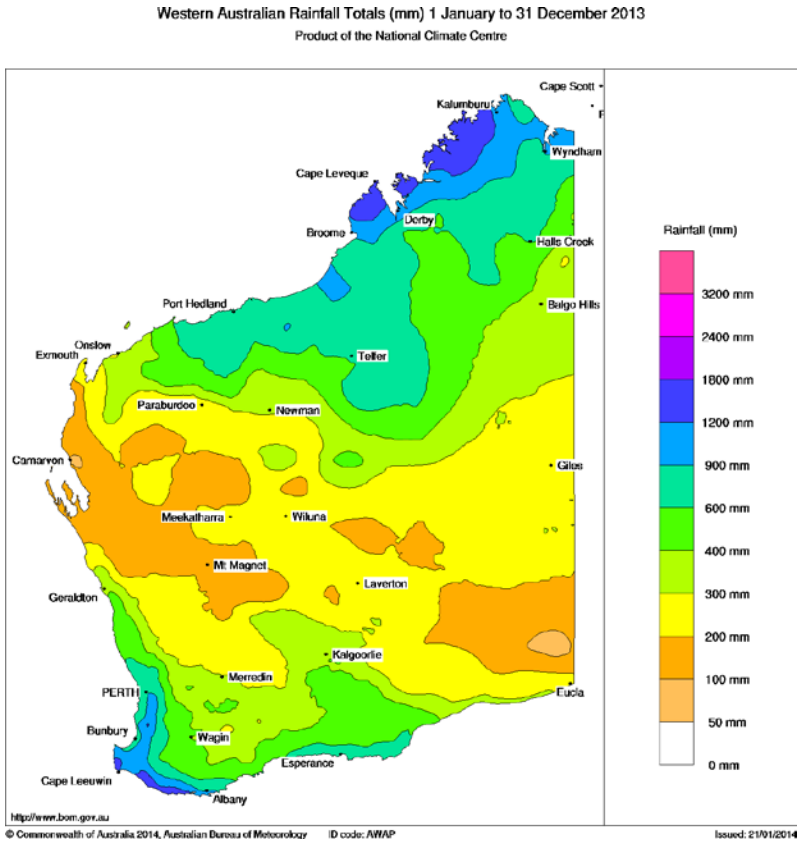

Figure 3.1B. Rainfall totals for Western Australia for the 2013 calendar year.

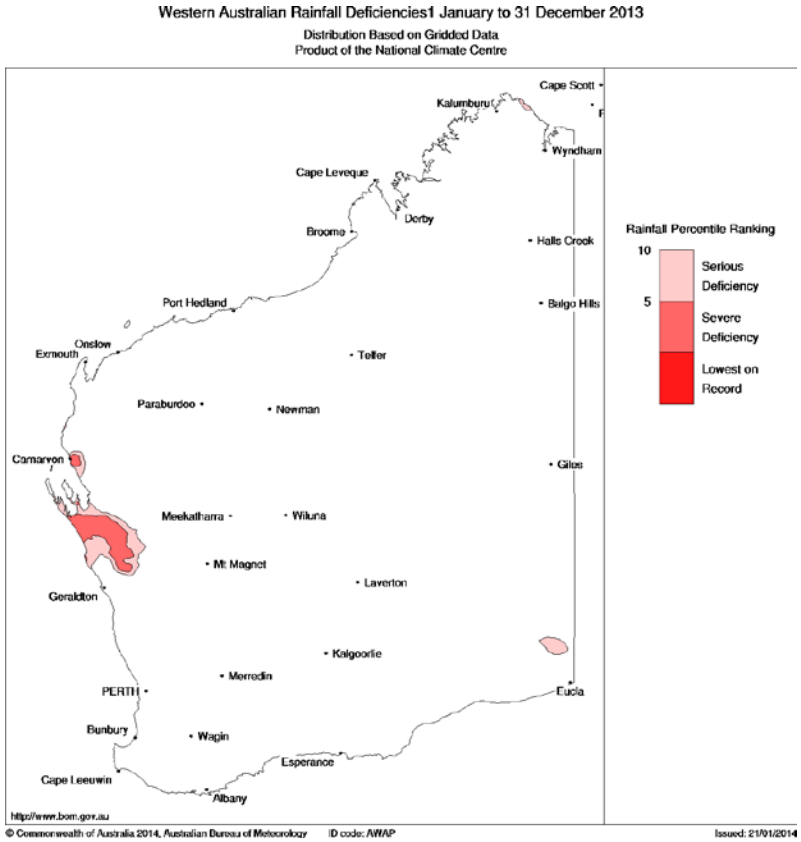

Figure 3.1C. Drought map for Western Australia for the 2013 calendar year.

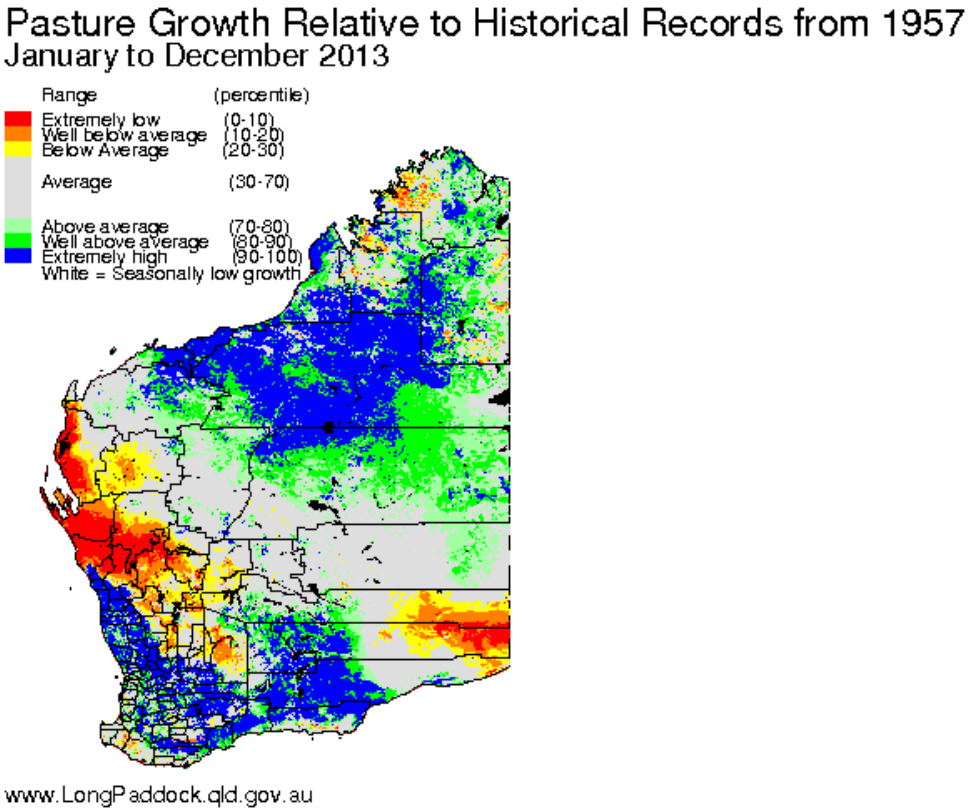

Fig. 3.1D. Pasture growth in Western Australia for the 2013 calendar year.

3.2 Disease

No significant disease outbreaks were detected or reported in populations of commercially harvested kangaroo species in Western Australia in 2013.

3.3 Market factors

No unusual market factors impacted on the commercial kangaroo industry in Western Australia during 2013. However, as in recent years, reduced demand for meat and skins and increasing input costs impacted on the profitability of the industry. Most kangaroo shooters work on a casual basis with very few full-time shooters operating in the industry. There was considerable discussion within the industry and independent of government of the merits of moving toward a male-only harvest to address animal welfare concerns. However, the sex ratio of the commercial harvest in 2013 was similar to previous years.

4. RESEARCH ACTIVITY

No research or adaptive management experiments related to the commercial harvesting of kangaroos were undertaken or sponsored by the Department in 2013.

5. ASSESSMENT OF PLAN ACTIONS AGAINST PERFORMANCE INDICATORS

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
1	Random audits of licences issued for commercial activities are conducted annually to ensure licences are being issued in accordance with WA legislation and departmental policies.	✓					
2	Databases are maintained to ensure licensee information is current and accurate.	✓					
3	Licence conditions are reviewed annually and where necessary amended.	✓					
4	Licensees are advised in writing of any changes to licence conditions within one month of such changes being approved by the Director of Nature Conservation or his delegate.	✓					
5	Licence conditions for professional shooters and processors will stipulate that kangaroos cannot be shot, sold or received unless they have been taken in accordance with the National COP.	✓					
6	Copies of the National COP will be made available from the department's website.	✓					
7	The Department will participate and support any revisions to the current, nationally-endorsed code of practice.	n/a					No revisions were made to the COP during 2013.
8	All prospective professional shooters must have completed an accredited test of marksmanship and completed NSW TAFE Course 5725 (Australian Game Meat, Hygiene and Handling) as a pre-requisite before being issued	✓					

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
	with a professional shooters' licence.						
9	All kangaroo processing works are inspected by authorised departmental officers at least annually during the life of the Management Plan to ensure compliance with Western Australian legislation.	✘					Not every processing establishment was inspected in 2013.
10	Twenty percent of active chillers are inspected by authorised departmental officers annually during the life of the Management Plan to ensure compliance with Western Australian legislation.	✓					
11	The vehicles of licensed professional shooters loaded with kangaroo carcasses are inspected opportunistically during the life of the Management Plan to ensure compliance with Western Australian legislation.	✓					
12	Develop and implement improved procedures for reporting on actions included under Performance Indicators 9 to 11.	✓					
13	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 expiation notices or prosecuted as appropriate.	✓					
14	During the life of this plan, all incoming industry returns are scrutinised and discrepancies are investigated and resolved.	✓					
15	A compliance database is maintained.	✓					

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
16	Aerial surveys are undertaken annually and population estimates are calculated in accordance with this management plan.	✓					
17	Commercial harvest quotas are set in accordance with the management plan.	✓					
18	Regional quotas and the state-wide quotas are never exceeded.	✘					The regional quota for red kangaroos was exceeded in the South East Zone by 20 animals (0.1% of quota) and the regional quota for western grey kangaroos in the South West Zone was exceeded by 3,057 animals (5.2% of quota) during 2013. Harvest figures were well under statewide quotas (Tables 1.1 and 1.2). Regional quotas were exceeded due to the late submission of some returns. As a result, the department will write to all shooters in 2014 reminding them of their obligations and will respond more aggressively to late returns. Action taken on late returns may include refusal to issue more tags, letters of warning, caution notices, prosecution or suspension of licences for repeat offenders.
19	The Australian Government is advised of commercial harvest quotas for the following calendar year by 30 November.	✓					
20	Following endorsement by the Australian government department responsible for administering the EPBC Act, the quota submission will be made available to the public via the department's website.	n/a					At the time of writing this report, DoTE had not endorsed the 2014 quota submission.
21	Sudden or acute changes in the average carcass weights are investigated to identify possible	n/a					There were no sudden or acute changes in average carcass weights for harvested kangaroos during 2013.

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
	causes of the change.						
22	Sudden or acute changes in the sex ratios of harvested kangaroos are investigated to identify possible causes of the change.	n/a					There were no sudden or acute changes in sex ratios during 2013.
23	Develop revised and updated trigger point methodology and trigger points by 30 September 2013 which will be incorporated into the next 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	All proposals to undertake active adaptive management experiments are reviewed and assessed by the Department in accordance with the criteria outlined in this management plan.	n/a					No active adaptive management experiments were undertaken in 2013.
26	All necessary approvals are obtained prior to the commencement of any experiments that test deliberate management interventions.	n/a					No experiments to test deliberate management interventions were undertaken in 2013
27	All adaptive management experiments are continuously monitored and conducted according to approval conditions.	n/a					No adaptive management experiments were undertaken in 2013.
28	Results of all experiments testing deliberate management interventions are published in an appropriate forum.	n/a					No experiments to test deliberate management interventions were undertaken in 2013
29	During the life of this plan, the Department will support research on the ecology of harvested species of	n/a					No research into the ecology of harvested species of kangaroos was sponsored by the department in 2013.

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
	kangaroos or commercial harvest management as appropriate.						
30	An annual report will be provided to the Commonwealth by 31 March of the following year.	✓					
31	KMAC meets at least once per year to review the progress of the Management Plan for the Commercial Harvest of Kangaroos in Western Australia 2013–2014 in relation to the goal and aims of the plan.	✓					
32	KMAC is provided with annual updates on commercial harvest and tag issue throughout the life of this plan.	✓					
33	KMAC is provided with other relevant information as required or as necessary throughout the life of this plan.	✓					
34	Throughout the life of this plan, the Department's website will contain the following information as a minimum standard: • The current management plan; • the current quota submission document; • the current annual report submitted to the Commonwealth; • information sheets on kangaroo biology and management; and • relevant contact information.	✓					See: http://www.dpaw.wa.gov.au/plants-and-animals/animals/128-kangaroo-management-in-western-australia
35	Publicly available information on kangaroo management is provided to	✓					

Performance Indicator	Description	Year					Comments
		2013	2014	2015	2016	2017	
	interested parties as soon as practicable on request.						
36	Relevant departmental staff will participate in interviews with the media where appropriate.	✓					
37	Media releases are prepared for issues of interest to the community when appropriate.	✓					
38	As a minimum, all prospective kangaroo shooters who are issued with a Licence to Take Kangaroos for Sale for the first time, or who have not held a valid licence during the term of the current management plan, will be provided with written information on the following: • pre-requisites for obtaining a licence • licence conditions; • regulations for taking kangaroos for damage mitigation; • open and close season areas for red and western grey kangaroos; • a copy of the National Code Of Practice; and • Fauna Notes 29 (western grey kangaroo) and 31 (red kangaroo) and any revisions thereof that are available on the department's website.	✓					