

Kangaroo Harvesting Program

2023 Annual Report



Acknowledgements

The Department of Energy, Environment and Climate Action would like to acknowledge the Game Management Authority and the Department of Jobs, Skills, Industry and Regions for their contributions to the Kangaroo Harvesting Program and to this report.

This report has been updated as of April 2025 to correct previous errors in the data provided by the Department of Jobs, Skills, Industry and Regions, on the reported dependant young humanely euthanised under the Kangaroo Harvesting Program (page 5).

We acknowledge and respect Victorian Traditional Owners as the original custodians of Victoria's land and waters, their unique ability to care for Country and deep spiritual connection to it.

We honour Elders past and present whose knowledge and wisdom has ensured the continuation of culture and traditional practices.

DEECA is committed to genuinely partnering with Victorian Traditional Owners and Victoria's Aboriginal community to progress their aspirations.



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Introduction

The 2023 Kangaroo Harvesting Program (KHP) Annual Report (the Report) has been developed in line with the requirements of the Kangaroo Harvest Management Plan (KHMP) 2021-2023. It captures relevant information on the implementation of the KHP from 1 January 2023 until 31 December 2023.

The Report also includes information on Authority to Control Wildlife (ATCW) figures for grey kangaroos as these figures are considered in determining the annual quota for the KHP. Only Eastern Grey kangaroos (EGK) and Western Grey kangaroos (WGK) can be harvested through the KHP, and as outlined in the KHMP 2021-2023, the quota does not differentiate between species.

The ATCW system allows for the control of wildlife where it is causing damage to property, posing a risk to human health and safety, or impacting other environmental values.

The KHP operates within 7 Victorian Harvest Zones. A map of these Harvest Zones and corresponding local government areas is provided in **Appendix A**.

More information about the KHP, KHMP and ATCWs can be found here:

- [Kangaroo Harvesting Program \(wildlife.vic.gov.au\)](https://wildlife.vic.gov.au)
- [Wildlife management and control authorisations | vic.gov.au \(www.vic.gov.au\)](https://www.vic.gov.au)

2023 Quota

The 2023 kangaroo harvest quotas were set based on recommendations provided by the Arthur Rylah Institute for Environmental Research (ARI) in the report *Kangaroo harvest quotas for Victoria 2023* (Ramsey, 2022).

ARI uses a spatial harvest model to make recommendations on kangaroo harvest quotas. The model considers the most recent kangaroo population survey results, environmental variables like rainfall, and kangaroo control numbers (through the KHP and ATCW system) to predict changes in kangaroo populations for the years where no survey is undertaken. The model recommends that no more than 10 per cent of the grey kangaroo population can be taken each year. This includes take through both the KHP and under the ATCW system.

The 2023 quota was based on population estimates from an aerial survey in 2022.

Table 1: Kangaroo quotas for Victoria (1 January 2023 – 31 December 2023).

Harvest Zone	Population*	KHP quota available	Recommended total take (ATCW and KHP)
Central	820,550	65,100	82,050
Gippsland	176,550	13,600	17,650
Lower Wimmera	556,050	41,100	55,600
Mallee	55,900	1,550	5,600
North East	355,950	11,050	35,600
Otway	189,200	15,500	18,900
Upper Wimmera	209,650	18,850	20,950
Statewide total	2,363,850	166,750	236,350

* from modelled estimate provided in *Kangaroo harvest quotas for Victoria in 2023* (Ramsey and Scroggie, 2022).

Summary of Kangaroo take in Victorian Harvest Zones in 2023

KHP data

Summary

Overall, just over 72,000 kangaroos – or three per cent of the statewide estimated population within Harvest Zones – were harvested through the KHP. **Table 2** outlines 2023 KHP statistics for each Harvest Zone.

Approximately 4,000 more kangaroos were harvested in 2023 (72,232) compared to 2022 (68,346). There was 40 per cent more quota available to harvesters in 2023 (166,750) than in 2022 (118,980). The use of quota varied greatly between Harvest Zones.

In 2023, 43 per cent of the available KHP quota was used by harvesters, this is less than the 57 per cent that was used in 2022.

Table 2: Kangaroo Harvesting Program statistics (1 January 2023 – 31 December 2023).

Harvest Zone	KHP quota available	KHP quota harvested	% Available quota harvested	% Harvest Zone population harvested
Central	65,100	24,689	38%	3%
Gippsland	13,600	8,039	59%	5%
Lower Wimmera	41,100	19,463	47%	4%
Mallee	1,550	1,400	93%	3%
North East	11,050	6,588	60%	2%
Otway	15,500	7,919	51%	4%
Upper Wimmera	18,850	4,134	22%	2%
Statewide total	166,750	72,232	43%	3%

Harvesters are required to report on the number of each species, sex harvested and any dependant young euthanised due to harvesting activities upon completion of each harvest job.

Eastern and Western grey kangaroos

Harvesters reported 1,897 Western Grey Kangaroos, and 71,726 Eastern Grey Kangaroos were harvested. The variance in the combined total of EGK and WGK reported by harvesters and the total KHP quota harvested (**Table 2**) is due to harvester recall-bias. This has no impact on population modelling as the number of quota harvested is closely monitored through the tag system and these numbers are what contribute to population estimates.

To ensure robust data and reduce discrepancies for 2023, reports of harvested WGKs have only been applied in Harvest Zones (Mallee, Upper Wimmera, and Lower Wimmera) where the species is known to have existing populations.

GMA will provide further support for harvesters to correctly identify species when using the reporting app.

Sex ratio of harvested kangaroos

There is a known bias towards harvesting male kangaroos in commercial harvest programs. In 2023 harvesters reported 23,321 female kangaroos were harvested under the KHP.

The risk of male bias was considered by ARI in the report *A spatial harvest model for kangaroo populations in Victoria* (Scroggie and Ramsey, 2020), which indicates that there is minimal ecological risk to kangaroo populations when harvesting programs target males in preference to females given the regular monitoring that occurs to ensure kangaroo harvesting is sustainable.

Dependant Young

A total of 19,842 dependant young were reported euthanised by harvesters in 2023. Dependant young of harvested female kangaroos must be euthanised humanely in line with requirements under the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes* (AgriFutures, 2020).

The number of dependant young euthanised does not contribute to the data used to determine the KHP quota. The quota is determined using modelling and population estimates from aerial and ground surveys and these surveys do not count dependant young.

ATCW data

Summary

Wildlife can sometimes cause damage to property or farmland, or can adversely impact the environment. Wildlife can also pose a threat to human safety, or where the species is over-abundant, lead to animal welfare issues. Wildlife management may be needed to manage these issues. In these cases, land managers may apply for an ATCW to allow them to manage impacts.

The Conservation Regulator undertakes rigorous assessments of all ATCW applications to ensure that claims of damage are substantiated, and all practical non-lethal measures have been exhausted prior to any lethal control being approved. This includes ensuring consideration of exclusion measures such as fencing or netting where they can be practically applied. ATCWs for kangaroos operate alongside the KHP and can be issued to private landholders and public land managers.

The *Wildlife Act 1975* (Wildlife Act) requires that wildlife control be undertaken with consideration of animal welfare and environmental values. All ATCWs include strict conditions to ensure that animals are controlled humanely.

A summary of grey kangaroos approved for control under an ATCW in each KHP zone from January-December 2023 is shown in **Table 4**. As noted above, these figures are included in this report to enable an assessment of total kangaroo control across the KHP and the ATCW system.

It is important to note that the ATCW figures reported in **Table 4** are the maximum numbers of kangaroos approved for control during this period. The actual number controlled by a landholder may be lower than the maximum authorised. This may occur if, for example, kangaroos disperse because of shooting activities.

There was a 28 per cent increase in number of grey kangaroos approved for control under ATCWs within Harvest Zones in 2023 (75,375) from 2022 (58,771).

Table 4: Number of kangaroos (EGK and W GK combined) approved for control under an ATCW (1 January – 31 December 2023).

Harvest Zone	Predicted ATCW	Kangaroos approved for control	% of est. population approved for control
Central	16,950	21,538	3%
Gippsland	4,050	4,161	2%
Lower Wimmera	14,500	13,341	2%
Mallee	4,050	5,963	11%
North East	24,550	23,813	7%
Otway	3,400	3,916	2%
Upper Wimmera	2,100	2,643	1%
Statewide total	69,600	75,375	3%

ATCWs outside of Harvest Zones

The data on ATCWs issued for EGK or W GK outside of KHP Harvest Zones in 2023 is not included in this report. The Conservation Regulator publishes annual ATCW data for all species across Victoria on its website: vic.gov.au/operational-licences-permits-issued-conservation-regulator

Total take (ATCW and KHP combined) of kangaroos

Summary

In 2023 less than 7 per cent (147,607) of Victoria's grey kangaroo population was controlled through the KHP and approved for control under the ATCW system within the seven Harvest Zones, (**Table 5**). This is within the 10 per cent maximum (236,350) recommended by ARI. The total take in 2022 was 127,117.

Table 5: Kangaroo Harvesting Program statistics (1 January 2023 – 31 December 2023).

Harvest Zone	Recommended total take (Predicted ATCW and KHP quota available)	KHP (Quota harvested)	ATCW (Kangaroos approved for control)	Total take (ATCW and KHP)	Total take (% of population)
Central	82,050	24,689	21,538	46,227	6%
Gippsland	17,650	8,039	4,161	12,200	7%
Lower Wimmera	55,600	19,463	13,341	32,804	6%
Mallee	5,600	1,400	5,963	7,363	13%
North East	35,600	6,588	23,813	30,401	9%
Otway	18,900	7,919	3,916	11,835	6%
Upper Wimmera	20,950	4,134	2,643	6,777	3%
Statewide total	236,350	72,232	75,375	147,607	6%

Mallee Harvest Zone

The Department of Energy, Environment and Climate Action (DEECA) reviews the KHP quota quarterly and can make adjustments to the quota to ensure take is sustainable. As part of this, considerations are given to approvals under the ATCW system, remaining quota and kangaroo populations at zone and statewide levels.

The total take in the Mallee Zone exceeded the recommended maximum. This is due to higher than predicted ATCW permits for control of kangaroos on public land as part of kangaroo management plans.

DEECA identified potential for higher than predicted levels of take in late June, close to the release of the final allocation of quota in the Mallee zone. After thorough assessment, DEECA concluded that releasing the final quota would not have any material impact on the broader statewide kangaroo population or the kangaroo population in the Mallee Harvest Zone.

No adjustments were made due to the overall low quota available for that zone (1,500 for 2023) and there being only 500 quota remaining to be released at the time. A reduction or suspension of the remaining quota would not have made any significant impact on the total take given it represents less than 1% of the estimated population in the Mallee.

In response to the higher than predicted levels of control in the Mallee Harvest Zone in 2023, and the predicted levels of take for 2024 through the ATCW system, no KHP quota has been assigned to this zone for 2024.

A harvest quota of 10 to 20 per cent of kangaroo populations is considered sustainable. Victoria takes a conservative approach (10 per cent total control) when setting the kangaroo harvest quotas to ensure overharvesting is prevented. The Department considered this in its assessment of releasing the final quota.

Compliance and authorisations

Harvester authorisation and compliance figures

Summary

The Game Management Authority (as an agent of the Department of Jobs, Skills, Industry and Regions (DJSIR)), delivers compliance activities and issue KHP harvester authorisations. Compliance activities summarised in this report do not cover the ATCW system - this is overseen by the Conservation Regulator.

In 2023, compliance activities were undertaken in accordance with the 5 compliance priorities (Harvester Competency, Animal Welfare, Sustainability, Authorisations, and Public Safety) of the 2023 KHP Compliance Plan.

There were 17 active harvesters in 2023. An active harvester under the 2023 KHP Compliance Plan, is a harvester who was active throughout the previous four quarters.

All substantiated offences were minor in nature, relating to reporting requirements and application of correct tags (**Table 8**).

Table 6: Harvester authorisations.

Activity	Total
Number of applications for authorisations received	26
Number of applications authorised after meeting requirements	22
Number of authorisations suspended or cancelled	0

Table 7: Harvesters who received KHP quota for each Harvest Zone*

Harvest Zone	Total
Central	75
Gippsland	35
Lower Wimmera	51
Mallee	1
North East	44
Otway	34
Upper Wimmera	27

**Harvesters may operate across more than one Harvest Zone*

Table 8: Compliance statistics summary 2023.

Activity	Total
Number of audits conducted on harvester return data	2,749
Percentage of active harvesters subject to programmed in-field audits	158%
Number of investigations	4
Number of offences substantiated	4

General program updates in 2023

Quota management

2023

In 2023, quotas were released quarterly with generally one quarter of the quota being made available to harvesters for each Harvest Zone in January, April, July, and October.

When applying for quotas, harvesters must specify the Harvest Zone in which they are applying for a quota. Tags (colour coded and numbered) are then posted to harvesters for attachment to kangaroos at the time of harvesting. Harvesters must only harvest the number of kangaroos they have been allocated tags for, and only in the zone the tag specifies.

DEECA monitors quota consumption for the KHP alongside permitted control through the ATCW system to ensure the level of take across the two systems is within sustainable limits. As recommended by ARI, if the number of kangaroos taken across both the KHP and ATCW system approaches 10 per cent of the estimated populations, action may be taken to limit overall take to ensure kangaroo populations remain sustainable.

No quota adjustments were made in 2023.

2024

Harvest quotas will continue to be released quarterly in 2024 – scheduled for January, April, July, and October. This enables DEECA to adjust the quota throughout the year in response to any events (for example flooding) that may threaten the sustainability of kangaroo populations.

The 2024 quota is based on the ARI's recommendation in the report *Kangaroo harvest quotas for Victoria, 2024* (Ramsey, 2023).

Kangaroo Harvest Management Plan

In Victoria, the Kangaroo Harvest Management Plan (KHMP), sets the requirements for the KHP and commercial kangaroo harvesting has been allowed since 1 October 2019.

Review of the KHMP 2021-2023

The KHMP 2021-2023 expired on 31 December 2023. A review of the KHMP, including public consultation, was undertaken as part of the development of the KHMP 2024-2028.

The review of the KHMP 2021-2023 only related to the objectives and requirements within the KHMP, and not legislative influences surrounding it. The Wildlife (Interim) Regulations 2023, the Wildlife Act, KHP and ATCWs were not in the scope of the review.

Public Consultation

In June 2023, DEECA delivered a public consultation process on the KHMP 2021-2023 via the Engage Victoria platform. The consultation period ran from 16 June to 11 July, with 716 submissions received.

The public consultation summary report can be found here:

- <https://engage.vic.gov.au/download/document/33705>

KHMP 2024-2028 and International Trade

The KHMP 2024-2028 has been approved by the Secretary of DEECA and came into effect on 1 January 2024.

The Plan has been submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) seeking approval for it to be declared an approved Wildlife Trade Management Plan (WTMP). This will provide for Victorian harvested kangaroo products obtained through the KHP to be exported internationally.

As part of this process, DCCEEW conducted a public consultation in 2023 and will assess the KHMP 2024-2028 against the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The previous KHMP 2021-2023 was recognised under the EPBC Act as a Developmental Wildlife Trade Operation (DWTO) which allowed for Victorian harvested kangaroo products to be exported internationally. The DWTO expired on 10 December 2023.

Until the Commonwealth Minister for the Environment and Water declares the KHMP 2024-2028 an approved WTMP, Victorian harvested kangaroo products cannot be exported internationally unless evidence is produced that the kangaroos were harvested before 10 December 2023 under the pre-existing DWTO.

Victorian kangaroo abundance survey

A statewide aerial survey was conducted in September and October 2022. The survey results were used to estimate kangaroo abundance within the 7 Victorian Harvest Zones. The survey builds on data gathered from previous surveys in 2017, 2018 and 2020. The results of the survey are provided in the ARI report *Statewide abundance of kangaroos in Victoria 2022* (Moloney et al., 2023) and were used to set the harvest quota for 2023 and 2024.

The results found that there were more than 2.3 million grey kangaroos in Victoria, an increase of 24 per cent from the previous survey in 2020. The next survey will be undertaken in 2024 and will include both aerial and ground surveys.

Research

Under the KHMP 2021-2023, the assessment of kangaroo populations for management purposes was undertaken using a design-based approach. A new model-based approach has been developed and will be used for grey kangaroo population estimates under the KHMP 2024-2028.

The new model-based approach examines relationships between kangaroo densities along survey transects and the associated habitat or climate variables of those areas. These relationships are then used to predict kangaroo abundance across a Harvest Zone which can provide insight into the habitat preferences of grey kangaroos, as well as the ability to make predictions of kangaroo abundance for smaller areas than is possible with the previous design-based approach.

Initial investigations of the model-based approach indicate it can improve precision of population estimates (Scroggie et al., submitted).

Adoption of the new model-based approach will allow better flexibility for the setting of sustainable harvest quotas by allowing them to be set for any arbitrary area. For example, quota could be set for a modified Harvest Zone that excluded areas affected by emergencies such as bushfires or floods.

Appendix A: KHP Harvest Zones 2023

Figure 1. Map of Victorian kangaroo harvest zones

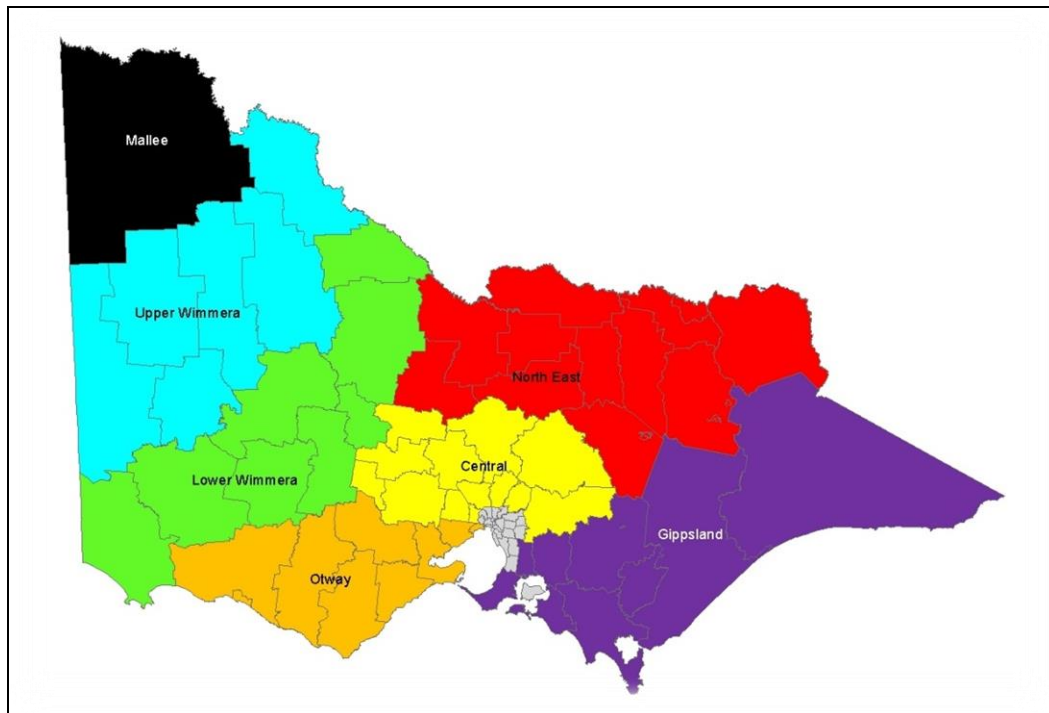


Table 1. Local Government Areas contained in each kangaroo Harvest Zone in Victoria.

Central	Gippsland	Lower Wimmera	Mallee	North East	Otway	Upper Wimmera
Ballarat Brimbank Hepburn Hume Macedon Ranges Melton Mitchell Moorabool Mt Alexander Murrindindi Nillumbik Whittlesea Yarra Ranges	Bass Coast Baw Baw Cardinia Casey East Gippsland Latrobe Mornington Peninsula South Gippsland Wellington	Ararat Central Goldfields Gannawarra Glenelg Loddon Northern Grampians Pyrenees Southern Grampians	Mildura	Alpine Benalla Campaspe Greater Bendigo Greater Shepparton Indigo Mansfield Moira Strathbogie Towong Wangaratta Wodonga	Colac Otway Corangamite Golden Plains Greater Geelong Hobsons Bay Moyne Surf Coast Warrnambool Wyndham	Buloke Hindmarsh Horsham Swan Hill West Wimmera Yarriambiack
Exclusion Zone (No harvesting, ATCWs only)						
Banyule Bayside Boroondara	Greater Dandenong Darebin Frankston	French Island Glen Eira Kingston	Knox Manningham Maribyrnong	Maroondah Melbourne Moonee Valley	Merri-bek Port Phillip Queenscliff	Stonnington Whitehorse Yarra City

References

- AgriFutures 2020. *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes*. AgriFutures Australia Publication No. 20-126.
- Department of Energy, Environment and Climate Action (DEECA) 2021. *Victorian Kangaroo Harvest Management Plan 2021- 2023*. Department of Energy, Environment, and Climate Action, Victoria.
- Moloney, P.D., Ramsey, D.S.L., and Scroggie, M.P. (2023). *State-wide abundance of kangaroos in Victoria: Results from the 2022 aerial survey*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 356. Department of Energy, Environment and Climate Action, Heidelberg, Victoria.
- Ramsey, D.S.L. (2022). *Kangaroo harvest quotas for Victoria, 2023*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 349. Department of Energy, Environment, and Climate Action, Heidelberg, Victoria.
- Ramsey, D.S.L. (2023). *Kangaroo harvest quotas for Victoria, 2024*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 371. Department of Energy, Environment, and Climate Action, Heidelberg, Victoria
- Scroggie, M.P., Moloney, P. and Ramsey, D.S.L. (2023). *Spatio-temporal trends in the abundance of grey kangaroos in Victoria, Australia*. Wildlife Research (submitted).
- Scroggie, M.P. and Ramsey, D.S.L. (2020). *A spatial harvest model for kangaroo populations in Victoria*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 315. Department of Energy, Environment and Climate Action, Heidelberg, Victoria.