

Kangaroo Harvesting Program

Annual Report 2021



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OFFICIAL

Acknowledgements

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Acknowledgment

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.

We are committed to genuinely partner, and meaningfully engage, with Victoria's Traditional Owners and Aboriginal communities to support the protection of Country, the maintenance of spiritual and cultural practices and their broader aspirations in the 21st century and beyond.



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Introduction

The Victorian Kangaroo Harvesting Program (KHP) began on 1 October 2019. This document reports on the operation of the program from 1 January until 31 December 2021.

The KHP operates according to the *Victorian Kangaroo Harvest Management Plan 2021-2023*ⁱ (KHMP). The Department of Environment, Land, Water and Planning (DELWP) sets the requirements for the KHP according to a series of objectives with associated management actions and targets, set out in the KHMP.

This report has been prepared to address a requirement of the KHMP, that DELWP and the Department of Jobs, Precincts and Regions (DJPR) will make relevant information available online so it is accessible to the public. This requirement contributes to Objective 6 of the KHMP, which is to maintain openness, accountability and transparency.

While this document has been prepared to report on the KHP, Authority to Control Wildlife (ATCW) figures are included as they are accounted for in quota setting. Only Eastern Grey (EGK) and Western Grey kangaroos (WGK) may be harvested through the KHP, and the quota does not differentiate between species. The combined take of both species through the KHP and ATCW permit system is provided in Table 4.

Roles and responsibilities

DELWP prepares the KHMP and is responsible for setting harvest quotas, as well as for managing the Authority to Control Wildlife (ATCW) system which 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 ATCW system is overseen by the Conservation Regulator within DELWP.

DJPR is responsible for administering the KHP, including establishing a transparent process to authorise harvesters, allocate quota to authorised harvesters and monitor compliance with the KHP requirements. DJPR engages the Game Management Authority (GMA) to carry out compliance activities and issue harvester authorisations in relation to the KHP.

2021 quotas

The 2021 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 2021*ⁱⁱ. ARI uses a spatial harvest modelⁱⁱⁱ to make recommendations for kangaroo harvest quotas. The model takes into account the most recent kangaroo population survey results, and environmental variables like rainfall to predict changes in grey kangaroo populations for years where no survey is undertaken. The model recommends that no more than 10 per cent of the population of grey kangaroos should be taken in a year. This includes through the KHP and the ATCW system.

Aerial and ground surveys were completed in late 2020 to provide the population estimates used to inform the 2021 quotas^{iv}. The next survey is planned to be undertaken in October 2022.

Table 1: Kangaroo quotas for Victoria (1 January 2021 – 31 December 2021)^v

Harvest zone	Population	KHP quota	Recommended total take (ATCW and KHP)
Central	658,954	25,500	65,900
Gippsland	172,714	9,050	17,250
Lower Wimmera	427,724	25,850	42,800
Mallee	37,307	1,110	3,700
North East	239,873	6,020*	24,000
Otway	236,969	16,500	23,700
Upper Wimmera	138,085	9,610	13,850
Total	1,911,626	93,640	191,200

* Adjusted down from 8,060 (see Quota adjustments in 2021)

Kangaroo take in Victorian harvest zones during 2021

A map of Victorian harvest zones and corresponding local government areas is provided in Appendix A.

Kangaroo Harvesting Program data

Summary

KHP statistics for 2021 are provided in Table 2. Overall, just over 62,000 kangaroos – or 3 per cent of the estimated population within harvest zones – were harvested through the KHP. As in 2020, harvesters did not use the full allocation of quota available to them. The use of quota varied greatly between harvest zones. Statewide, two thirds (66 per cent) of available quota was used.

Table 2: Kangaroo Harvesting Program statistics (1 January 2021 – 31 December 2021)

Harvest zone	KHP quota available	KHP quota harvested	% Males in take	% Available quota harvested	% Harvest zone population harvested
Central	25,500	19,935	64%	78%	3%
Gippsland	9,050	4,866	61%	63%	3%
Lower Wimmera	25,850	19,420	67%	75%	5%
Mallee	1,110	894	90%	81%	2%
North East	6020	4,731	62%	79%	2%
Otway	16,500	5,828	63%	35%	2%
Upper Wimmera	9,610	6,560	68%	68%	5%
Total	95,680	62,234	65%	66%	3%

Eastern and Western Grey kangaroos

While the KHP quota does not differentiate between EGKs and WGKs, harvesters are asked to report post-harvest on the numbers of each species they have harvested.

In total, 19,405 WGK and 29,863 EGK were self-reported by harvesters. The variance in the combined total of EGK and WGK self-reported by harvesters and the total KHP quota harvested reported (table 2) is due to harvester errors while using the app.

Further support for harvesters to correctly identify species when using the reporting app is being provided.

Sex ratio of harvested kangaroos

As in previous years, data shows that there is a male bias in harvested kangaroos. Modelling completed by ARI^{vi} indicates that there is minimal risk to kangaroo populations when harvesting programs target males in preference to females. While there are no requirements for harvesters to meet set sex ratios as part of this program, there is a natural tendency for commercial harvesting to have a male bias as males are typically larger thereby offering greater economic return for harvesters.

Dependant young

Harvesters reported that a total of 19,343 dependant young were destroyed in 2021. This number does not contribute to the KHP quota as dependant young are not included in the population estimate that was used to set the KHP quota.

Dependant young must be destroyed in line with requirements under the *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes*^{vii}.

Authority to Control Wildlife permit data

Summary

Authority to Control Wildlife permits (ATCWs) allow the lethal and non-lethal control of wildlife that is damaging property, farmland, or the environment, or posing a risk to human health and safety. ATCWs are issued on a case-by-case basis by the Conservation Regulator. ATCWs operate alongside the KHP and are issued to private landholders and public land managers.

A summary of Eastern and Western Grey kangaroos approved for control under an ATCW in each KHP zone from January-December 2021 is shown in Table 3. 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 3 are numbers of kangaroos approved for control during this period – not kangaroos actually controlled. This is because:

- ATCWs are typically issued for a 12-month period from date of issue. For example, an ATCW issued in October 2020 would be accounted for in the 2020 data even though kangaroos might be controlled until September 2021.
- ATCW holders are not required to report the actual number of animals controlled. The number approved for control represents that maximum that may be controlled. An ATCW may not be fully exhausted prior to its expiry (e.g., if kangaroos disperse as a result of shooting activities).

Table 3: Number of kangaroos (Eastern and Western Grey combined) approved for control under an ATCW within harvest zones (1 January 2021 – 31 December 2021)

Harvest zone	Kangaroos approved for control	% Of est. population approved for control through ATCWs
Central	14,558	2%
Gippsland	3,265	2%
Lower Wimmera	10,689	2%
Mallee	4,219	11%
North East	18,814	8%
Otway	3,335	1%
Upper Wimmera	2,062	1%
Total	56,942	3%

ATCWs outside of harvest zones

ATCWs have been issued for Eastern or Western Grey kangaroos in areas of Victoria that fall outside of the harvest zones. This data is not included in this report. However, the Conservation Regulator publishes annual data on ATCWs issued for all species, across all of Victoria which can be found at www.vic.gov.au/operational-licences-permits-issued-conservation-regulator.

Total take of kangaroos in Victorian harvest zones in 2021

Summary

Across the seven harvest zones, 6 per cent of Eastern and Western Grey kangaroos were taken, either through the KHP or controlled under ATCW permits. This within the 10 per cent maximum recommended by ARI, and is comparatively less than in 2020, when more than 8 per cent of the population were taken.

North and Mallee zones

The total combined take of kangaroos in two zones, the Mallee and North East, reached or was above the recommended figure. DELWP monitors the total number of kangaroos taken through the KHP and ATCWs throughout the year.

The KHP quota for each zone was released quarterly. Prior to the final quarterly release of quota, DELWP identified the total take in the North East zone was likely to reach or exceed the recommended maximum if the full allocation of quota for this zone was released, due to higher than anticipated uptake of ATCWs. To protect this population from being impacted, the KHP quota for this zone was adjusted and there was no final quarter allocation of quota in this zone. See *Quota management in 2021* below for more information.

Monitoring of take in the Mallee did not show high levels of take prior to the final release of quota, therefore no adjustment was made to its quota at the time. A significant increase in the number of kangaroos approved for control through ATCWs in the final weeks of 2021 led to the reported level of take in this zone exceeding the recommended maximum. ATCW permits are valid for 12 months and control approved under a permit can be carried out at any point during that time. It is highly unlikely that all control approved through ATCWs issued late in 2021 was enacted before the end of the year.

As required in the KHMP, DELWP will monitor the number of kangaroos taken throughout 2022 and will take steps to ensure that the sustainability of kangaroo populations is maintained.

Table 4: Number of kangaroos (Eastern and Western Grey combined) approved for control under an ATCW or taken through the KHP within harvest zones (1 January 2021 – 31 December 2021)

Harvest zone	Population ^{viii}	Recommended total take (including both ATCW and KHP quota)	Total take (ATCW and KHP combined)	Total take (% of population)
Central	658,954	65,900	34,493	5%
Gippsland	172,714	17,250	8,131	5%
Lower Wimmera	427,724	42,800	30,109	7%
Mallee	37,307	3,700	5,113	14%
North East	239,873	24,000	23,545	10%
Otway	236,969	23,700	9,163	4%
Upper Wimmera	138,085	13,850	8,622	6%
Total	1,911,626	191,200	119,176	6%

General Program updates in 2021

Quota management in 2021

Quotas for the KHP were released quarterly in 2021. When applying for quotas, harvesters must specify which harvest zone they are applying for a quota in. Tags (with quota ID) are then posted to harvesters for attaching at the time of harvesting. Harvesters must only harvest the number of kangaroos they have been allocated tags for, and only in the zones the tags specify.

DELWP monitors quota consumption for the KHP alongside take 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 populations, action will be taken to limit overall take and ensure kangaroo populations remain sustainable

During 2021, DELWP identified that the number of kangaroos being taken in the North East harvest zone was likely to exceed the 10 per cent recommended maximum. As a result, the quota for the KHP was adjusted for that zone from 8,060 to 6,020 and there was no final quarter release of quota in this zone.

Quota management in 2022

The release of quotas has been adjusted in 2022. Fifty per cent of the quota allocated in each zone was made available to harvesters in January, a further 25 per cent will be released in July, and the final 25 per cent released in October.

Harvester authorisations and compliance figures

DJPR engages the GMA to carry out compliance activities and issuing harvester authorisations in relation to the KHP. Compliance activities continued to be impacted by COVID-19 restrictions during 2021.

The total number of harvesters authorised to operate during 2021 is provided in Table 5. The number of harvesters who received quota in each of the harvest zones is provided Table 6.

Many authorised harvesters operate across multiple zones, which is why the number of harvesters who received quota is higher than the total number of authorised harvesters provided in Table 5.

Table 5. Harvester authorisations (1 January – 31 December 2021)

Activity	Count
Number of applications for authorisations received	143
Number of harvesters authorised after meeting requirements	123

Table 6. Harvesters who received KHP quota in each harvest zone (1 January – 31 December 2021)

Zone	Number of harvesters
Central	66
Gippsland	37
Lower Wimmera	40
Mallee	5
North East	66
Otway	28
Upper Wimmera	20

Table 7. Compliance figures (1 January – 31 December 2021)

Activity	Count
Percentage of active harvesters ¹ subject to programmed in-field audits	36%
Percentage of active harvesters subject to unannounced in-field audits	17%
Number of desktop/phone audits on private property where harvesting occurs	19
Number of Information Reports submitted specifically relating to the KHP	36
Number of complaints received against Authorised Officers undertaking duties in accordance with the KHP	0

¹ Active harvester is a harvester who records an annual take equal to, or more than the state-wide mean. For 2021, this was 610 kangaroos.

Tags

In support of the Victorian Government’s commitment to banning problematic single-use plastics from 2023, Victoria no longer issues plastic kangaroo tags. Instead, locally made and recyclable Tyvek tags are used. Victoria is the first state to do this, noting that other states are now looking at transitioning to similar products.

Research

In order to provide its quota recommendation for 2022^{ix}, ARI used a kangaroo harvest model to predict the abundance of grey kangaroos at the end of the 2021 calendar year. The 2022 quota was set using this projected abundance.

The model used data from the 2020 aerial survey and allowed for grey kangaroo recruitment and take during the intervening period from both the KHP and ATCW permit system. The projected abundance was similar to population estimates from the 2020 survey, resulting in the 2022 recommended total take being similar to 2021.

The ARI report recommends “consideration could be given to setting quotas for years where no surveys are undertaken based on the most recent aerial survey estimates, after adjusting for the projected uptake of ATCW permits. This should be coupled with an annual review to assess whether modifications to the quota might be required, based on current environmental conditions”.

The DELWP project team is reviewing this recommendation and how it may be implemented.

Appendix A: Kangaroo Harvesting Program – Harvest zones

Figure 1: Map of Victorian kangaroo harvest zones

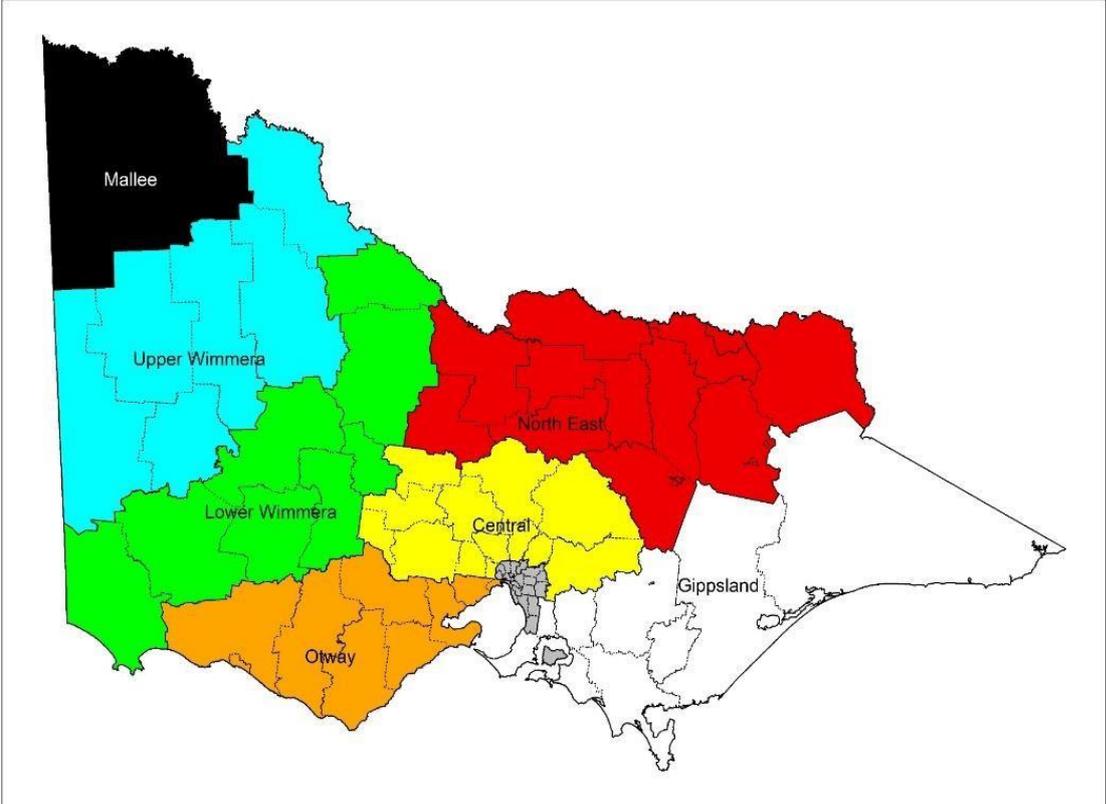


Table 8: List of Victorian local government areas (LGAs) within harvest zones

Zone	LGAs	Zone	LGAs	Zone	LGAs
Mallee	Mildura	Central	Ballarat	North East	Alpine
			Brimbank		Benalla
Upper Wimmera	Buloke		Hepburn		Campaspe
	Hindmarsh		Hume		Greater Bendigo
	Horsham		Macedon Ranges		Greater Shepparton
	Swan Hill		Melton		Indigo
	West Wimmera		Mitchell		Mansfield
	Yarriambiack		Moorabool		Moira
			Mount Alexander		Strathbogie
			Murrindindi		Towong
			Nillumbik		Wangaratta
			Whittlesea		Wodonga
		Yarra Ranges			
Lower Wimmera	Ararat	Gippsland	Bass Coast	Otway	Colac Otway
	Central Goldfields		Baw		Corangamite
	Gannawarra		Cardinia		Golden Plains
	Glenelg		Casey		Greater Geelong
	Loddon		East Gippsland		Hobsons Bay
	Northern Grampians		Latrobe		Moyne
	Pyrenees		Mornington Peninsula		Surf Coast
	Southern Grampians		South Gippsland		Warrnambool
			Wellington		Wyndham

ⁱ Department of Environment, Land, Water and Planning. (2021) *Kangaroo Harvest Management Plan 2021-2023*

ⁱⁱ Ramsey, D.S.L. and Scroggie, M.P. (2020). *Kangaroo harvest quotas for Victoria, 2021*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 323. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.

ⁱⁱⁱ 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 Environment, Land, Water and Planning, Heidelberg, Victoria.

^{iv} P.D., Ramsey, D.S.L., and Scroggie, M.P. (2021). *State-wide abundance of kangaroos in Victoria: results from the 2020 aerial survey*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 324. Department of Environment, Land, Water and Planning, Heidelberg, Victoria

^v Ramsey, D.S.L. and Scroggie, M.P. (2020). *Kangaroo harvest quotas for Victoria, 2021*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 323. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.

^{vi} 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 Environment, Land, Water and Planning, Heidelberg, Victoria

^{vii} *National Code of Practice for the Humane Shooting of Kangaroos and Wallabies for Commercial Purposes* AgriFutures Australia Publication No. 20-126

^{viii} P.D., Ramsey, D.S.L., and Scroggie, M.P. (2021). *State-wide abundance of kangaroos in Victoria: results from the 2020 aerial survey*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 324. Department of Environment, Land, Water and Planning, Heidelberg, Victoria

^{ix} Ramsey, D.S.L. and Scroggie, M.P. (2021). *Kangaroo harvest quotas for Victoria, 2022*. Arthur Rylah Institute for Environmental Research Technical Report Series No. 334. Department of Environment, Land, Water and Planning, Heidelberg, Victoria.