Results from the Peninsula Count Your Mob Project

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Executive Summary

A comprehensive ground survey of Peninsula Eastern Grey Kangaroos (EGK) has been conducted under the title of 'Count Your Mob'. As of September 10, 68 community observers have made 410 EGK observations, with checking by a further 81 observers. They have found a total population of perhaps 2,200 with the bulk occurring in a broad arc from Bushrangers Bay to Greens Bush, Arthurs Seat and up to Devilbend.

This number is comparable to, but lower than the 3,000 obtained by a previous survey for the Shire by Mal Legg in 2007-2011. And it is much less than the 2020 DELWP assessment of 7,000 as part of their Victoria-wide kangaroo count.

The differences with Legg indicate that the Peninsula population may have declined in the past decade. In any case there is no evidence for an increase in numbers.

The 2020 DELWP assessment estimated 7,000 EGK across the Shire, which was essentially a doubling of the 3,700 estimate for 2018. These estimates were based on EGK density across Gippsland based on sophisticated interpolation algorithms between aerial observations from helicopter. No data were collected on the Peninsula and the assessment was made on the assumption of a single EKG density across all of Gippsland.

Our results indicate that the DELWP population assessment is excessive and not consistent with local observations. Their main error lies with the incorrect application of the Gippsland-wide density observation to the entire Peninsula. Our assessment, supported by previous local counts and advice from several experts, is that Peninsula EGK are largely constrained to the relatively narrow zone provided in the first para.

Table 1 provides a comparative summary of the Count Your Mob survey and the DELWP assessments. It is notable that the kangaroo density estimates are essentially the same, the only real difference is with the area over which kangaroos are found.

	Population	Population	Occurrence	Density	Density
		Range	Area (km ²)	(km ⁻²⁾	Range (km ⁻²)
DELWP	7,000	4,000 -12,100	644	10.6	6.2-18.8
СҮМ	2,200	1,900 - 3,000	200	12.0	

Table 1: Comparison of DELWP and Count Your Mob (CYM) survey results.

We recommend Shire plans and actions are made on the basis of EGK populations of around 2,000 individuals, with the large bulk being in the general vicinity of an arc extending from Bushrangers Bay through Greens Bush, Arthurs Seat, and up to Devilbend.

These numbers will be updated towards the end of the year and, should any information be found to the contrary in the meantime, the Shire will be immediately notified.

Details of both the DELWP and Count Your Mob approaches are provided in the following. *Background: The DELWP Victorian Kangaroo Population Assessment*

The DELWP 2020 EGK population estimates for Victoria were published by the Arthur Rylah Institute (ARI¹) in March 2021.

The base observing system was a series of short transects by helicopter at 60 m with trained observers on board (see Fig. 1 for the transects). The locations of the transects were randomly chosen based on previous modelling studies of the areas of potential kangaroo presence shown in Fig. 2. The resulting data were interpolated or extrapolated across the unobserved areas using a sophisticated method developed by ARI². Note that areas of dense bush were not included in the analysis because of the inability to accurately survey populations from the air. Areas of dense human population also were not included because of air-regulatory constraints and an assessment that kangaroo populations there were very low.



Figure 1: Transects flown for the 2020 Victorian Kangaroo Assessment¹. A blow up for the Peninsula and Bass Coast also is shown.

The raw results were distilled down to a single density count for a number of regions across the state – with the greater Gippsland area density estimate being 10.9 km⁻². Kangaroo estimates for all Gippsland Local Government Areas used essentially the same density, and 10.6 km⁻² was used for the Mornington Peninsula Shire (MPS). The final counts were (2018 numbers in brackets for comparison):

• Peninsula Habitat Area: 644 km²

- Peninsula population: 7,000 (3,700)
- Range: 4,000-12,100 (2,000-6,600).



Figure 2: Areas (in red) of presumed kangaroo habitat¹. The white areas are thick bush, heavy urban developments, or other areas of kangaroo exclusion. A Peninsula blow-up also is shown – note how the entire Peninsula aside from the national and state parks is considered to be EGK habitat.

Problems with DELWP Assessment

The DELWP assessment caused considerable local consternation with the major issues being:

- No observations were taken in the MPS and the Shire was assumed to be a uniform extension of the rest of Gippsland with no apparent ground-truth verification. This assumption is considered to be invalid, for the following reasons:
 - MPS has a high human population density compared to the rest of Gippsland (e.g. 230 km⁻² compared to Bass Coast 43 km⁻²)
 - The extensive urban developments on the Port Phillip side are included as kangaroo zones
 - The Peninsula has large numbers of small holdings in rural areas that are unfriendly to, or exclude EGK
 - It is well known that there is a distinct heterogeneity in EGK populations across the Peninsula, with high numbers in an arc from Bushrangers Bay past Greens Bush and Arthurs Seat and up to Devilbend, and essentially none on the Westernport half (aside from Cerberus) and along the entire Nepean Peninsula. Yet all areas were populated at the full density rate.
- The assessed remarkable increase from 3,700 in 2018 to 7,000 in 2020 is not considered to be viable even from a biological perspective
 - This is a population increase of 90%

- A typical population increase in good year might reach 10%, or 30-35% over 2018-2020
- 2018-19 were drought years so even 10% per annum would be expected to be high.

There also is concern that cull permits are issued:

- Without any independent verification of indicated numbers by property owner.
- On the basis of satisfying the permitted cull over all of Gippsland.

Thus, there appears to be no guarantee that permits issued here could not become disproportionately high.

However, our major issue was with the apparently unrealistically high EGK assessment, and the lack of any direct observations in arriving at this assessment. This resulted in the establishment of the "Count Your Mob Population Survey" project under the auspices of the Mornington Peninsula Wildlife Action Group and Landcare.

The Count Your Mob Population Survey

Approach:

- Data were collected by large number of individuals contacted by word of mouth, newsletters and other means
 - All data archived on iNaturalist with photos to ensure objectivity these observations will remain available for research and other purposes forever
 - Detailed instructions were provided to participants, with help where requested
 - Specific additional surveys of high and low regions were made as deemed necessary
 - Spot checks were made of information to confirm accuracy.
- Other information sources:
 - Mal Legg 2007-2011 surveys for the Shire (comparison of Peninsula numbers and areas of EGK presence)
 - Atlas of Living Australia Observations prior to 2021 (areas of EGK presence)
 - Road-kill Reports (road crossing areas as an indicator of EGK zones)
 - Advice from experienced Peninsula experts on potential habitat areas.

The observations collected as of 10 September 2021 are shown in Fig. 3.

Figure 3: Observations received on iNaturalist (red flags) as of Sep 10³.

Each flag is a separate observation. On the iNaturalist web page, clicking on any of these brings up the submitted images along with any relevant information.





An example from clicking the blue flag is shown in Fig. 4.

Figure 4: Example observation² recorded at the blue flag in Fig. 3. In the top left is the submitted image, with the observed number immediately below. Further down on left are the submitter (carranya) and the independent verifier (bushbandit). On the right is various ancillary information and bottom right indicates that the observation has been picked up automatically by both the MPS Biodiversity folks and our Count Your Mob project.

Simply adding up all the observations will not work as one mob may have had several entries. So we adopted the approach of checking all entries in roughly100-200 Ha areas, taking the maximum reported group size and rounding that up to the nearest ten. This provides a conservative count that should include EGK hidden in any one entry. It may also

include groups from nearby that have been counted twice, so the final number is most likely an overestimate.

In addition, all large group observations were field confirmed by an expert – and road surveys were made of potential habitat areas where no observations were submitted.

We also checked the observed locations against those from the previous survey by Mal Legg (available in Shire records). The aerial overlap is excellent, with the major exceptions being a mob at Cerberus that were missed in the Legg survey, and a lack of observations by us around Devilbend and a couple of other locations - which were given preliminary estimates awaiting confirmation (see blue numbers in Fig.5). The observations also conform zones of significant road-kill figures kindly provided by Shire staff.

The resulting survey as of 10 September is in Fig. 5.



Figure 5: Derived EGK numbers, with each number representing the likely population at that location. Yellow indicates confirmed numbers, blue numbers are uncertain and being further investigated, and pink numbers indicate ones that have changed since 10 August.

Compiling these observations leads to the following initial population estimate for the Peninsula of 2200 kangaroos. It is likely that there are several small EKG groups scattered

around with no observations and some larger groups may still be missing. Making a conservative assumption of these numbers could increase this to perhaps 2,500. Note that there is almost certainly some double counting in some of the denser population areas around Greens Bush, so 2,200 is at the top end of the range of possible numbers.

The previous 2007-11 survey by Mal Legg estimated around 3000 kangaroos - this leads to several possible scenarios:

- 1. Our count is accurate and therefore there has been a substantial decrease in Peninsula EGK populations
- 2. We have missed a substantial number and the 2011 population remains today
- 3. Somewhere in between.

We note that both surveys found kangaroos across similar zones. Thus, a general population decrease is the most likely conclusion.

Based on these findings, the assessment of 7,000 EGKs by DELWP is simply not possible. The massive increase from 3,700 in 2018 to 7,000 in 2020 also is not justifiable on either biological or observational grounds, as noted earlier.

See the Executive Summary for a complete summary, including comparison of areal density.

We emphasize that these continue to be interim figures. It will take several months to check out remaining doubtful numbers and to survey other parts of the Peninsula to ascertain the accuracy of the finding by ourselves, Legg, and other consulted experts that substantial parts of the Peninsula have essentially no kangaroos at all. However, we shall be surprised if any major changes are discovered by these remaining activities.

We shall continue to issue updates as the observational effort continues.

References

¹<u>https://www.wildlife.vic.gov.au/___data/assets/pdf__file/0024/520881/Statewide-Kangaroo-</u> Report-2021-FINAL.pdf

²<u>https://www.environment.gov.au/system/files/consultations/14b5b0e9-3473-48b8-b4b6-17de025c2f7d/files/kangaroo-pet-food-trial-survey.pdf</u>

³https://inaturalist.ala.org.au/observations/86656834