Ref: 2020-0120-002-gt



16 December 2020

Bernadette van der Wiele Endplan Environmental Planning PO Box 138 North Fremantle WA 6159

Re: Survey of Western Ringtail Possums and their dreys in Armstrong Reserve, Dunsborough

Dear Bernadette

Terrestrial Ecosystems is pleased to provide the results of the November 2020 survey for Western Ringtail Possums (WRP) and their dreys in Armstrong Reserve, Dunsborough.

Introduction

The Western Ringtail Possum (*Pseudocheirus occidentalis*) is listed as Critically Endangered under the *Environment Protection and Biodiversity Conservation Act 1999* and the WA *Biodiversity Conservation Act 2016*.

The Western Ringtail Possum is a relatively small, arboreal marsupial with a slender, white-tipped prehensile tail. It is relatively abundant south from Bunbury to Augusta, with small populations in Dawesville, Yalgorup National Park, around Manjimup and Albany and with scattered small populations along the south coast (Department of Parks and Wildlife 2017). On the Swan Coastal Plain extending from Bunbury to Augusta it is typically found in peppermint (*Agonis flexuosa*) / tuart (*Eucalyptus gomphocephala*) forests (Department of Parks and Wildlife 2017). It is very agile in moving through the tree canopy but slow and relatively clumsy moving on the ground.

A Western Ringtail Possum survey of Armstrong Reserve (ATA Environmental 2006) based on nocturnal spotlighting and diurnal searches for dreys recorded 21 possible dreys and 11 tree hollows and 19 possums on 5 October 2005 and 21 possums on 7 October 2005. In 2011, Ecoscape (2012) undertook a survey of Armstrong Reserve, and used five transects surveyed over four consecutive nights and then used DISTANCE to estimate the density of Western Ringtail Possums present. A total of nine Western Ringtail Possums were seen. Based on an analysis using DISTANCE, the central estimate for the number of possums present was 29.5 with a 95% probability of between 12 and 72.2 possums. No discussion was provided on whether adequate data were collected to meet the assumptions for using DISTANCE as an appropriate methodology to analyses these data.

EndPlan Environmental Planning on behalf of CapeCare requested a two night count on consecutive evenings for Western Ringtail Possums in the reserve, a count of dreys and an assessment of the suitability of the habitat for Western Ringtail Possums.

Methods

Dr Graham Thompson undertook nocturnal searches of Armstrong Reserve on 27 and 28 November 2020 and on 28 November 2020 searched the project area for dreys. Searches were undertaken by walking transects and using a hand-held halogen torch with a red filter and a much less bright halogen head torch.

The location of each Western Ringtail Possum and drey was recorded using a hand-held GPS. The species of tree, the height of the tree and the height of the drey were recorded for each observation. A photograph was taken of each drey and each drey categorised based on the criteria in Table 1.

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Table 1. Drey type classification criteria

Туре	Description
1	Dense, well-made ball or slightly elongate form with a distinct entrance hole. In this type of drey
	the possum is completely enclosed
2	Dense, well-made cup-shaped nest with some material over the top, but the possum is not fully
	enclosed
3	Dense, well-made cup-shaped nest with an open top. The possum sits deep inside the cup of the
	drey and may not be visible from the ground
4	Platform of twigs, often in a tree or branch fork, with no more than a shallow depression where the
	possum rests

Limitations

The presence of water in the drains and the swamp required that the spotlighting transects were not straight. The vegetation around the wet areas was very dense, often up to 750mm with many fallen trees spread throughout the dense ground cover. This dense vegetation needed to be traversed and negotiated at night and drains and water bodies circumnavigated which resulted in non-linear transect searches. Although non-linear, adequate searching was undertaken to completely assess the project area.

It rained and was overcast on 27 November and had been quite windy during the day (30km/h). The wind eased in the evening. There were scattered clouds on 28 November but it did not rain, however, it was windy. The weather was not considered to be a limitation for the field assessments.

An accurate classification of a drey requires that the drey can be seen in three dimensions to determine whether it is ball shape and has a distinct entrance hole or is a cup-shaped nest with some material over the top. Most dreys were in tall trees and it was not possible to see the upper surface of a drey, so the classification is based on what could be seen from the ground level. The tree canopy contained many dead sticks that had broken off and fallen, only to be caught in the lower vegetation. Some of these may have been dreys but were not recorded.

Results

Western Ringtail Possums did not flee when spotted at night using a torch light and remained relatively still.

Nine Western Ringtail Possums (Plate 1) were recorded on 27 November 2020 and five Western Ringtail Possums were recorded on 28 November 2020 (Table 2; Figure 1). No Brushtail Possums were recorded.

ID	Date	Easting	Northing
Possum 1	27/11/2020	324261	6279350
Possum 2	27/11/2020	324244	6279342
Possum 3	27/11/2020	324213	6279402
Possum 4	27/11/2020	324214	6279403
Possum 5	27/11/2020	324160	6279431
Possum 6	27/11/2020	324119	6279481
Possum 7	27/11/2020	324094	6279473
Possum 8	27/11/2020	324090	6279477
Possum 9	27/11/2020	324055	6279448
Possum 10	28/11/2020	324059	6279444
Possum 11	28/11/2020	324083	6279466
Possum 12	28/11/2020	324093	6279477
Possum 13	28/11/2020	324120	6279494
Possum 14	28/11/2020	324153	6279511

Table 2. Location of Western Ringtail Possums (Zone 50, GDA94)

Seven Western Ringtail Possum dreys were recorded (Table 3; Figure 1).

Drey #	Tree type	Tree height	Drey height	Classification	Easting	Northing
		(m)	(m)			
Drey 1	Melaleuca	4.5	4.0	2	324178	6279502
Drey 2	Melaleuca	4.0	3.5	1	324116	6279400
Drey 3	Eucalypt	7.5	7.0	3	324050	6279450
Drey 4	Eucalypt	7.0	6.5	1	324053	6279454
Drey 5	Peppermint	10.0	9.5	3	324076	6279466
Drey 6	Peppermint	7.0	6.0	2	324118	6279498
Drey 7	Eucalypt	9.0	8.5	2	324145	6279514

Habitat

Armstrong Reserve contains a variety of habitats that are heavily influenced by the presence of drains. There is a drain that run approximately parallel to Gifford Road (north-south) and two other drains that run east-west, with one of these drains along the northern boundary of the developed/construction area. There is a low lying area in the central bushland area which contains standing water.

There is dense vegetation (Plates 11, 15 and 17) to a metre high surrounding the drains and standing water (Plates 12, 13 and 14). Adjacent to the dense ground level vegetation are scattered trees with shrubs and a dense ground cover mostly to about 50cm (Plates 10, 16 and 18). The size and density of trees varies, with some very old and well established peppermint trees and eucalypts, and numerous much younger trees. There is a cleared east-west track that is used by people to pass through the reserve near the northern boundary. On the north side of this track are numerous tall eucalypt and peppermint trees over an understorey of shrubs and grasses that varied in density. The tree canopy was patchy and continuous in some sections, particularly around the drains, and north of the walk-way. In other areas, the canopy was more open and discontinuous.

The Western Ringtail Possum is adapt and a very agile climber in trees, enabling it to easily move around in the tree canopy and where there is a closed tree canopy from one tree to the next. However, it is relatively slow and less agile when moving on the ground, and typically only comes to the ground to move from one tree to another in areas with discontinuous canopy; it seldom covers large distances on the ground. It is therefore very vulnerable to terrestrial predators such as foxes when on the ground. Because of its limited ability in a terrestrial environment it is probable that it would find it difficult to move over or through the dense and very uneven undergrowth, particularly around the drains and waterbodies. It is also probable that it would be the reluctant to enter the water, so movement across drains and water bodies would probably occur via the tree canopy.

Based on the known preferred habitat [i.e. peppermint (*Agonis flexuosa*) / tuart (*Eucalyptus gomphocephala*) forests (Department of Parks and Wildlife 2017)] and its less agile and slow movement in the dense ground vegetation it is most likely to be recorded in areas of connected tree canopy. During the 28 November 2020 nocturnal survey, all five Western Ringtail Possums were recorded near the northern boundary where possums were able to move among trees, and during 27 November four of the nine possums were recorded in this area.

Nocturnal counts of Western Ringtail Possums vary (Thompson and Thompson 2011), with Wayne et al (2005a, 2005b) suggesting environmental factors such as rain, wind, cloud cover and vegetation structure affecting counts, although the start time for surveys after sunset did not affect detection rates. Western Ringtail Possums are typically detected based on reflectance from eye shine during nocturnal surveys. When their eyes are seen in torchlight at night they are very obvious and difficult to miss. It is our observation that they will look toward observers or the source of a noise as observers move through the vegetation, which results in their presence being detected, however, if they don't look toward the observer, for whatever reason then they are unlikely to be seen. Similarly, if they are in a tree hollow, in a drey that has a dense base or in thick canopy vegetation, then they are unlikely to be recorded. Variability in counts are therefore normal, and invariably nocturnal surveys are an underestimate of their actual abundance, which is likely to be the case for this survey.

Quenda

There was an abundance of Quenda (*Isoodon fusciventer*) diggings in the eastern section of the reserve around the wetter sections (Plate 20). The dense understorey provides quality habitat for this medium sized marsupial

as there is an abundance of foraging opportunities and the dense low vegetation offers protection from predators such as unowned cats and foxes.

Conclusion

A population of Western Ringtail Possums continues to persist in Armstrong Reserve. The habitat in the reserve is variable and influenced by the drains and the standing water in the central area. Areas around surface water were densely vegetated and this vegetation would limit possum movement on the ground. Areas of continuous and connected tree canopy with a limited understorey and reduced access for predators provide the best habitat for this possum in Armstrong Reserve.

Please do not hesitate to contact the undersigned on 0438 491 227 should you have any queries.

Yours sincerely

Dr Graham Thompson Partner and Principal Zoologist

References

ATA Environmental. 2006. Fauna Assessment Armstrong Reserve, Dunsborough. Perth.

Department of Parks and Wildlife. 2017. Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Perth.

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Plate 6. Drey 5



Plate 7. Drey 6

Plate 8. Drey 7



Plate 13. Standing water surrounded by dense vegetation

Plate 14. Standing water surrounded by dense vegetation





Plate 15. Drain surrounded by dense vegetation

Plate 16. Trees with an understorey of low shrubs and grasses



Plate 17. Drain surrounded by dense vegetation



Plate 18. Trees with an understorey of shrubs and grasses



Plate 19. Walkway



Plate 20. Quenda diggings

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