

**Busselton Health Campus
Western Ringtail Possum Monitoring
Annual Report
2020**

Prepared for
WA Country Health Service



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Abbreviations

Abbreviation	Definition
Astron	Astron Environmental Services
BHC	Busselton Health Campus
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
WACHS	WA Country Health Service
BC Act	<i>Biodiversity Conservation Act 2016</i>

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Executive Summary

Astron Environmental Services conducted the 2020 western ringtail possum monitoring survey to satisfy the relevant environmental conditions of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* approval (EPBC 2011/6011) for the Busselton Health Campus redevelopment. The survey was undertaken from 7 to 8, and 10 November 2020. Over two consecutive nights, 89 and 94 western ringtail possums were recorded, respectively. This equates to a mean count of 92 individuals for the 2020 monitoring period.

The recording of 92 western ringtail possums during the 2020 monitoring survey is above the 20% population reduction trigger value (54 individuals). The mean abundance of western ringtail possums in 2020 was the third highest recorded since monitoring began in 2009 (including baseline surveys) and the population appears to have recovered from 2018 after high levels of predation from a resident red fox.

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1 Introduction

Astron Environmental Services (Astron) was engaged by the WA Country Health Service (WACHS) to conduct an annual monitoring program for western ringtail possums (*Pseudocheirus occidentalis*) within the grounds of the Busselton Health Campus (BHC), located approximately 2.5 km to the west of the Busselton town centre. The annual monitoring has now been undertaken in the years 2018, 2019, 2020 and is planned for 2025, consistent to the methods and details specified in the Western Ringtail Possum Management Plan (Coffey Environments Australia Pty Ltd 2013) specific to the BHC site. The western ringtail possum monitoring program is a regulatory requirement under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval conditions (EPBC 2011/6011) (Table 1).

The BHC has undergone a redevelopment project that included the removal of western ringtail possum habitat; peppermint trees (*Agonis flexuosa*) and the translocation of 20 western ringtail possum individuals. The western ringtail possum monitoring program has been conducted on a biannual basis from 2009 – 2016 and annually from 2017 - 2020. Under the Western Ringtail Possum Management Plan (Coffey Environments Australia Pty Ltd 2013) a reduction of more than 20% of the baseline population (threshold value of 54 individuals or less) would trigger a management response.

The objective of the 2020 monitoring program was to obtain a western ringtail possum abundance count for the BHC and compare the survey results with the baseline data and previous year's survey data.

Table 1: Relevant regulatory conditions under the EPBC approval (EPBC2011/6011).

Regulatory document	Condition no.	Requirement	Evidence
Development of the Busselton Health Campus (EPBC 2011/6011)	Condition 9 (c)	Details of a western ringtail possum monitoring program for the project area	This report.

2 Background Information

2.1 Ecology

The western ringtail possum is a folivorous (leaf eating herbivore) marsupial endemic to south-western Australia. The current distribution of this species is restricted to a patchy occurrence along the south coast (from east of Albany to west of Walpole), the west coast (from Bunbury to Augusta), and inland populations in Harvey, Perup and Manjimup. The peppermint woodland around the Busselton area is classified as habitat critical to survival of this species (Department of Parks and Wildlife 2017).

The diet of the western ringtail possum almost exclusively comprises the dominant or co-dominant upper and midstorey myrtaceous plants. In urban areas the western ringtail possum may also feed on introduced garden species (Department of Parks and Wildlife 2017).

In some coastal populations, western ringtail possums breed year round with breeding peaks in late autumn and winter and a lull in late summer (Van Dyck and Strahan 2008). During the day western ringtail possums shelter in dreys (nests made of vegetated matter), tree platforms, tree hollows, hollow logs, *Xanthorrhoea* spp. skirts, under sedges, forest debris and disused rabbit warrens.

2.2 Conservation Status and Threats

The western ringtail possum is classified as Critically Endangered under the Commonwealth EPBC Act and the Western Australian *Biodiversity Conservation Act 2016* (BC Act).

Since colonial settlement the western ringtail possum has undergone a substantial range contraction, up to 90% of the predicted original range. The Ludlow-Busselton area has long been known as the last substantial stronghold for western ringtail possums left on the Swan Coastal Plain. This Swan Coastal Plain population has been contracting since the early 1990s, mostly due to habitat loss and fragmentation from urban development and mining (Woinarski, Burbidge, and Harrison 2014). The effect of the south-west's drying climate on the peppermint stands and canopy in this area is also considered a contributing factor of the decline (Jones and Francesconi 2007). Most of the populations within the Busselton area that have had sufficient monitoring to detect a decline over the last 5 to 12 years have shown declines of 20 to 80% (Woinarski, Burbidge, and Harrison 2014). From existing survey data, the population in the Bunbury to Dunsborough region is possibly between 2,000 and 5,000 animals (Department of Parks and Wildlife 2017). The major threats to this species survival include:

- habitat loss and fragmentation
- introduced predators (red foxes and cats)
- climate change
- timber harvesting
- altered fire regimes.

3 Methods

3.1 Monitoring

The 2020 monitoring program was conducted by Principal Zoologist Jessica Johnston, from 7 to 8, and 10 November 2020. The methods used are consistent with those previously used for the BHC site (Coffey Environments Australia Pty Ltd 2013). The weather conditions during both survey nights were cool and calm on 7 November 2020 and cool and light winds on 8 November 2020. Western ringtail possum activity did not appear to be impacted by the weather conditions.

Nocturnal spotlighting was conducted between 1930 and 2130 hours on both nights, consisting of transects approximately 20 - 25 m apart around the areas of BHC within intact vegetation (survey effort shown in Figure 1). Western ringtail possums have distinctive eye shine that is easily detectable using this technique (Department of Parks and Wildlife 2017).

A drey census was conducted during the daylight hours of 10 November 2020 through areas containing intact vegetation (survey effort shown in Figure 1). Dreys were categorised into one of the following four categories based on Thompson and Thompson (2009):

- Category 1 - Flat bed of vegetative material.
- Category 2 - Slightly concave nest of vegetative material.
- Category 3 - Dome shape nest with an open top.
- Category 4 - Completely conical nest that is fully-enclosed.

All western ringtail possum and drey locations were marked using a handheld GPS.

3.2 Limitations

No limitations to the survey scope were encountered.

4 Results and Discussion

A total of 89 western ringtail possum individuals were recorded on the night of the 7 November 2020 and 94 individuals on the night of the 8 November 2020 (Table A.1, Appendix A). This equates to a mean count of 92 individuals for the 2020 monitoring period. As the 2020 survey was undertaken during the post breeding period, the records were generally from lone adults (Plate 1) or adult/s accompanied by a sub-adult or juvenile (Plate 2). The density of western ringtail possums within BHC is approximately 27.5 individuals per ha of canopy, based on an estimated remaining canopy area of 3.35 ha (Coffey Environments Australia Pty Ltd 2013). A summary of the western ringtail possum monitoring results from 2009 to 2020 is displayed in Table 2.



Plate 1: Solitary western ringtail possum recorded in *Callistemon* sp.



Plate 2: Group of three western ringtail possums in a peppermint tree.

Table 2: Western ringtail possum abundance and density.

Survey timing	Abundance	Density (individuals/hectare of canopy)
February 2009	58	13.1
November 2009	61	13.8
February 2010	44	10.0
December 2010	77	17.4
March 2011	57	12.9
November 2011	77	17.4
March 2012	82	18.6
October 2012	68	20.3
March 2013	61	18.1
October 2013	70	20.9
March 2014	64	19.1
October 2014	68	20.3
March 2015	68	20.3
October 2015	108	32.2
March 2016	79	23.6

Survey timing	Abundance	Density (individuals/hectare of canopy)
October 2016	104	31.0
March 2017	78	23.3
October 2018	64	19.1
November 2019	62	18.5
November 2020	92	27.5

A total of 29 dreys and one suitable hollow were recorded across the BHC. The dreys constitute four dreys classified as category 1, five dreys classified as category 2, nine dreys classified as category 3 and 11 dreys classified as category 4 (Table A.2, Appendix A). The location of the western ringtail possums and the dreys recorded are displayed in Figure 1.

One cat (*Felis catus*) was flushed from planted vegetation on the eastern side of the health campus on the night of 8 November 2020. It is unknown whether it was a pet or feral. The conservation area is still heavily impacted by rabbit (*Oryctolagus cuniculus*) grazing, with a large resident population occurring across the BHC (see Plate 2). Although not in direct competition with the western ringtail possum for food or shelter, the continued presence of rabbits at the BHC will impact the long-term health of the under-storey vegetation, in addition to providing a food source for feral predators, such as cats and foxes and thereby attracting them to the area.

Figure 1: Survey effort and location of Western Ringtail Possums and dreys.

The long-term data for the western ringtail possum abundance at the BHC follows a trend of higher numbers in October/November following the seasonal breeding over winter, followed by a decrease in February/March coinciding with sub-adult dispersal and mortalities (Figure 2).

The recording of a mean of 92 western ringtail possums during the 2020 monitoring survey is well above the 20% population reduction trigger value (54 individuals), as well as the mean abundance recorded during the baseline surveys (65 individuals). The mean abundance of western ringtail possums recorded in 2020 is the third highest recorded from all surveys undertaken (including baseline) during the post-breeding season, with only October 2015 and October 2016 recording higher abundances (Figure 2). Numbers of western ringtail possums post-construction appear to be similar or slightly higher than numbers recorded during the baseline surveys, suggesting that western ringtail possums have re-established within the BHC following translocation and construction. The population appears to have recovered from 2018, when there were high levels of predation from a resident red fox that was eradicated.

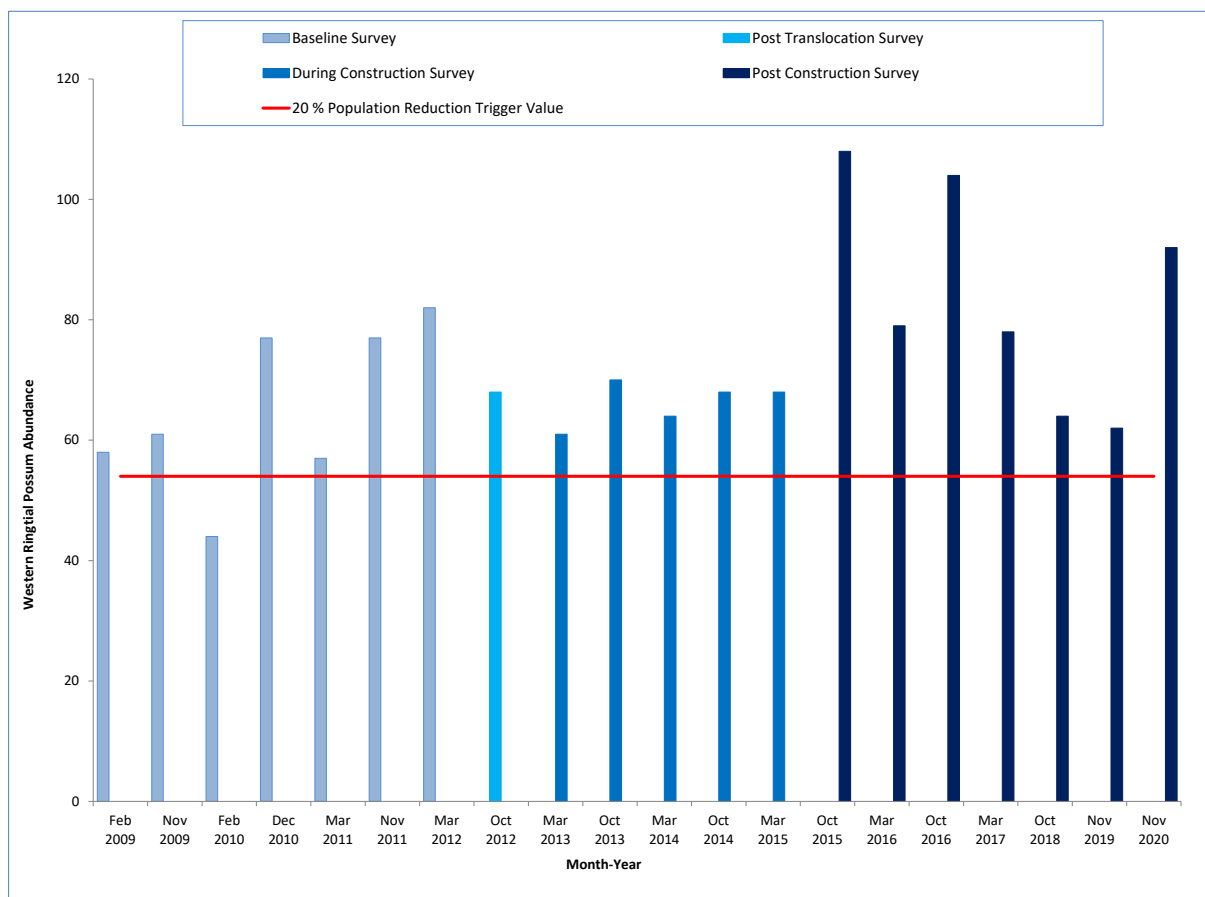


Figure 2: Western ringtail possum abundance at BHC from 2009 to 2020.

5 Conclusions

As the western ringtail possum population remains above the 20% trigger value, a management response involving an increase in monitoring frequency, further population investigation or consultation with the Department of Water and Environmental Regulation and the Department of the Environment and Energy is not required at this stage (Coffey Environments Australia Pty Ltd 2013). The mean abundance in 2020 was the third highest recorded since monitoring began in 2009 (including baseline monitoring) and the population appears to have recovered from 2018, when there were high levels of predation from a resident red fox.

6 References

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