



Western Ringtail Possum Survey 2010:

Community perceptions of the Western Ringtail
Possum and Peppermint tree health in Busselton

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Table of Contents

1.0	Executive Summary.....	3
2.0	Introduction	4
3.0	Background	4
3.1	WRP Background	4
3.2	Urbanisation and wildlife management	4
3.3	Agonis flexuosa pathology	4
4.0	Study Area.....	5
5.0	Survey Methodology.....	6
5.1	Survey method.....	6
5.2	Sample properties and return rate	6
5.3	Questionnaire design.....	8
5.4	Data analysis	8
6.0	Results.....	8
6.1	General exposure to possums	10
6.2	General knowledge.....	10
6.3	Knowledge of the conservation status of the WRP	10
6.4	Knowledge regarding survivorship of translocated WRPs.....	11
6.5	Attitudes towards the WRP	11
6.6	Attitudes towards urban removal of WRPs	11
6.6.1	Factors influencing attitudes towards the urban removal of WRP	12
6.6.2	Limitations	12
6.7	General perceptions of WRPs	13
6.8	Attitude trends in areas of community engagement initiatives.....	14
6.9	Perceptions of Peppermint tree decline.....	16
7.0	Discussion	16
7.1	Recommendations for future studies.....	17
8.0	Limitations of the study	17
9.0	References	17
10.0	Appendices	18
10.1	Appendix A - WRP Survey 2010	Error! Bookmark not defined.
10.2	Appendix B.....	18

Table of Figures

TABLE 1	5
TABLE 2	7
TABLE 3	8
TABLE 5	13
TABLE 6	14
FIGURE 1	11
FIGURE 2	15
FIGURE 3	15
FIGURE 4	16

1.0 Executive Summary

This report details the findings of the community survey carried out in 2010 over a series of strategically selected areas of Busselton, Western Australia. The aim of this survey was to achieve an unbiased representative sample of the Busselton community and evaluate their attitudes towards the nationally threatened Western Ringtail Possum (WRP), *Pseudocheirus occidentalis*, and Peppermint tree, *Agonis flexuosa*, decline. The information gained from this survey will be used by the Geographe Catchment Council (GeoCatch) to apply for future funding, build baseline data for forthcoming projects and guide strategic direction for Geocatch’s ‘Peppies for Possums’ program.

The results of the survey suggested that the sampled population had an adequate understanding of the threatened status of the WRP and the majority of the community’s attitudes were positive. The knowledge scores were particularly high in areas where environmental awareness initiatives have been carried out, suggesting that such initiatives may have had a positive influence on the community’s attitudes.

The results also demonstrated that the sampled community had a distinct need for more knowledge and awareness in two areas. Firstly, the logistics of translocating WRPs were often misunderstood. Secondly, the community perceived the local Peppermint trees to be in good health, contradicting the scientific observations recorded by both GeoCatch and the Centre for Excellence for Climate Change Woodland & Forest Health regarding Peppermint tree decline in the Busselton Area. Thus, this report recommends that WRP translocation issues and Peppermint tree decline be added to the community awareness initiatives carried out by GeoCatch in the future.

2.0 Introduction

This report details the findings of the Western Ringtail Possum survey conducted in 2010 by GeoCatch Project Coordinator Gene Hardy and Murdoch University Intern, Pip Marshall for the 'Peppies for Possums' program. This ongoing program aims to strategically rehabilitate and replace urban habitat in the Busselton area for the Western Ringtail Possum – a threatened species living in the urban areas of Busselton, and improve environmental awareness within the community about the species.

The aim of this survey was to achieve an unbiased representative sample of the Busselton community and evaluate their attitudes towards the WRP and Peppermint tree decline. The information gained from this survey will be used to apply for future funding, build baseline data for forthcoming projects and guide strategic direction for the 'Peppies for Possums' program.

3.0 Background

3.1 WRP Background

The Western Ringtail Possum (WRP), *Pseudocheirus occidentalis*, is a small arboreal animal, which is endemic to the southwest region of Western Australia. The WRP is classified as threatened both nationally and internationally. It is listed under Australia's Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* as threatened and vulnerable to extinction within 10 years. Land clearing for building development is currently placing pressure on the last major coastal population stronghold within the town of Busselton and the nearby surrounding areas (Clarke, PhD). Informed management for wildlife care is integral to the survival of the species.

3.2 Urbanisation and wildlife management

Anthropogenic disturbances such as urbanisation of the natural landscape have created new challenges for managing threatened wildlife (Patterson 2003). The physical challenges within urbanising rural landscapes are often tangible and visible such as land clearing and habitat fragmentation. The consequences of such physical challenges within the Busselton area have been impacting upon the natural wildlife, in particular the WRP.

While less tangible, urbanisation also creates challenges within the social-landscape that can have a significant influence upon humans' values and meanings of the non-human natural world (Patterson 2003). People living in the urbanised environment are increasingly more distant from nature in both in the physical and social contexts. Over time this urban trend has altered the cultural structure whereby a growing proportion of society is separated from nature within which the perceptions of animals have been traditionally constructed (Patterson 2003).

The close interaction between people and wildlife is therefore becoming increasingly unique. While the presence of the WRP within the urban regions of Busselton confronts wildlife managers with many challenges, it also increases opportunities for people to re-connect with nature in the urban context. Understanding community attitudes and perceptions towards nature is therefore essential to managing threatened species in close interaction with people.

3.3 *Agonis flexuosa* pathology

The Peppermint trees, *Agonis flexuosa*, across the south-west are slowly dying due to unknown causes (John McKinnney GeoCatch's Biodiversity Hotspot Coordinator). The Peppermint is one of the most dominant and widely spread species in the Busselton area. Considering that Peppermint trees are the main habitat and

food source for the WRP, continued decline could have a catastrophic effect on the Western Ringtail Possum (John McKinney GeoCatch’s Biodiversity Hotspot Coordinator).

As the knowledge of Peppermint tree decline increases, signs and symptoms become more apparent across the Geographe Catchment. The decline of the Peppermint has become more noticeable in the past few years and seems to affect trees within a wide range of ages and across different landscapes. Visible signs and symptoms include yellowing of the leaves followed by a dying back and eventual death of the whole tree (see photos in **Error! Reference source not found.**).

There are a number of other tree species in the area that are also in decline such as Marri, Flooded Gums and Tuart. While the exact cause of the decline is currently unknown, the Centre for Excellence for Climate Change Woodland & Forest Health has recently launched a research project focussing of the decline and possible treatments. This is an important project as further loss of habitat could have a devastating effect on the struggling populations of the WRP.

4.0 Study Area

Busselton is situated in the south-west of Western Australia approximately 228km south of the State capital Perth. The study area was defined by strategically selecting ten quadrats at intervals across the Busselton area, beginning as far east as Port Geographe and finishing as far west as Abby (See map in Appendix). Quadrats 1, 4, 5, 6, 7, and 9 were selected for their close proximity to urban reserves where higher densities of ringtails may occur, and Quadrats 2, 3, 8 and 10 were selected as non-reserve areas to achieve an adequate representation of the Busselton urban landscape (See Table 1 below).

Table 1

Quadrat properties

Quadrat Nō	Location (based on dominant feature)	Urban Reserve	Non Urban Reserve
1	Longlands	✓	
2	Fairbairn St		✓
3	Duchess St/Geographe Bay Rd		✓
4	Margaret St	✓	
5	Melaluca Drive	✓	
6	Heppingstone Rd	✓	
7	Broadwater Boulevard	✓	
8	Averil St, Abby		✓
9	Cambridge Estate	✓	
10	Provence Estate		✓

5.0 Survey Methodology

5.1 Survey method

Our main concern during survey design was the risk of achieving a biased representation of community attitudes towards the WRP and low return rates of questionnaires. Surveys that had been carried out in the past identified this as an issue. These past surveys were printed in the local newspaper and achieved very low return rates. Of the surveys that were posted back, majority surmised attitudes which were biased towards either extreme negative reactions to possums or extreme positive reactions to possums, ultimately misrepresenting the community attitudes of neutral status. The survey was also extremely limited by the targeted demographic which was restricted to people who were engaged newspaper readers.

In order to mitigate some of the shortfalls of GeoCatch's previous surveying techniques a more comprehensive approach was employed. The targeted group that we studied was more diverse including the general public ≥ 16 years of age, from all backgrounds, genders and socio-economics. In order to achieve this diverse sample, the survey methodology involved mapping out transects through the 10 quadrats, and door-knocking at random along these transects to personally deliver the questionnaires. The surveys were then left with the residents and collected the following day.

The aim of this technique was to increase the integrity of the sample by including a broad spectrum of community attitudes, and increase the rate of return by placing the subjects in a situation where they were accountable to the GeoCatch representative who would be returning to their properties to retrieve the questionnaire. This approach was based on the studies conducted by Kaczensky *et al* (2003) on '*Public attitudes towards brown bears in Slovenia*' and Dowle and Deane (2009) on '*Attitudes to bandicoots in the urban environment*'.

5.2 Sample properties and return rate

The population demographics were recorded to indicate the representative nature of the sample compared to the entire population. The sample comprised of 0.34% of the entire local population of Busselton (refer to Table 2). Compared to the population parameters of Busselton, the sample was slightly biased towards females equalling 59% of respondents. Notably, the age brackets of <18 and 18-25 years were largely underrepresented at 0% and 4.5% respectively. The remaining age brackets were relatively even with a slight bias towards the age bracket of 61+. This may be attributed to the fact that the surveys were distributed within business hours. These slight biases should be noted when drawing conclusions about the entire population.

The return rate of surveys was particularly high at 87%. One hundred surveys were distributed and a total of 87 surveys were retrieved. The acceptance rate of the community members (the percentage of people who agreed to participate when first approached) was also high at 96.5%. Although the door-knocking approach was labour intensive requiring two full days to distribute and collect the surveys, the 87% return rate and high participation was a great achievement; making this survey the most comprehensive study of community attitudes that has been conducted by GeoCatch to date.

Table 2

Parameters of the local population living within the sample area compared with the local population sample with questionnaires

Population Parameters	Busselton Area	Sample Area	Sampled % of Busselton Population
Total population	25,354	87	0.34%
Age structure (%)		~% of total persons sampled	
		<18	0%
		18-25	4.5%
		26-35	20.6%
		36-45	17.2%
		46-60	23.0%
		61-75	25.2%
		75+	9.0%
Sex ratio (%)			
Males	49%	39%	0.27%
Females	51%	59%	0.4%
Occupation (%)			
Trade	18.9%	11.5%	
Working non-trade	58.3%	38.0%	
Retired	*	29.0%	
Non-working parent	*	18.4%	
Unemployed	3.4%	2.2%	

NB (values do not equal 100% due to blank entries)

Source of other data: Australian Bureau of Statistics 2006; <..\Access data base\WRP Possum Survey.laccdb>

*data not available from ABS

5.3 Questionnaire design

The respondents were asked to use their knowledge about WRPs to complete a series of questions consisting of yes/no answers, multiple-choice questions and questions with a symmetric five-point Likert scale from “strongly agree” to “strongly disagree” (see survey in **Error! Reference source not found.**). “Do not know” options were avoided where possible to encourage people to give an answer. This questionnaire design was based on the recommendations of Kaczensky *et al* (2003).

The survey comprised of 21 questions and was divided into three sections. Section 1 assessed the respondents’ general exposure to WRPs on their individual properties. Section 2 assessed general knowledge about and attitudes towards the WRPs; and Section 3 assessed the respondents’ perceptions of Peppermint tree health in their own areas.

5.4 Data analysis

Microsoft Access and Excel 2007 were used to analyse the data. The analysis carried out was simplistic due to a lack a time and resources. More sophisticated statistical analysis is required to determine assumptions about the entire Busselton population.

6.0 Results

The data was recorded into Microsoft Access 2007 where the data were manipulated to give the results of the questionnaire. A complete display of the results is shown

Table 3 below.

Table 3

Complete table of results

Question	Answer	~% of People	Total Number of People
<i>Please indicate the size of your property</i>	Less than 500m ²	18%	16
	500-1000m ²	69%	60
	Greater than 1000m ²	10%	9
<i>Do you currently have ringtail possums on your property?</i>	Yes	53%	46
	No	47%	41
<i>Do you live in a house with open eaves?</i>	Yes	23%	20
	No	77%	67
<i>Do you currently have possums in your roof or shed?</i>	Yes	9%	8
	No	91%	79
<i>Have you ever had possums in your roof / shed?</i>	Yes	33%	29
	No	67%	58
<i>Have you had possums on your property in the past?</i>	Yes	74%	64
	No	25%	22

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<i>Do you currently have peppermint trees on your property or front verge?</i>	Yes	54%	47
	No	45%	39
<i>What type of garden do you have?</i>	Native	14%	12
	Non-native	18%	16
	Both native and non-native	60%	52
	No garden	8%	7
<i>Do you own a cat or a dog?</i>	No pet	33%	29
	Cat	14%	12
	Dog	43%	37
	Both	9%	8
<i>Having possums in your backyard is a good thing.</i>	Agree	59%	51
	Neutral	29%	25
	Disagree	13%	11
<i>The Western Ringtail Possum is a nationally recognised species.</i>	TRUE	90%	78
	FALSE	8%	7
<i>The Western Ringtail Possum is...</i>	Critically endangered	21%	18
	Threatened and vulnerable	59%	51
	A common species of <u>no</u> concern to conservation	3%	3
	Don't know	16%	14
<i>The South West of WA is the only place in the world where western ringtail possums live.</i>	TRUE	83%	72
	FALSE	11%	10
<i>Possums should be translocated or moved out of people's back yards.</i>	Agree	23%	20
	Neutral	29%	25
	Disagree	48%	42
<i>Possums that are translocated have a good survival rate.</i>	Agree	36%	31
	Neutral	25%	22
	Disagree	33%	29
<i>I consider ringtail possums to be....</i>	A nuisance	7%	6
	Neither annoying or important	14%	12
<i>It is illegal to kill Western Ringtail Possums</i>	Important to look after	78%	68
	TRUE	100%	87
	FALSE	0%	0

<i>If a ringtail possum is removed from a property, another possum is very likely to take its place.</i>	Agree	60%	52
	Neutral	24%	21
	Disagree	9%	8
<i>What do you think is the Western Ringtail's <u>main</u> food source?</i>	Fruit and berries	18%	16
	Rose bushes and flowers	7%	6
	Peppermint tree leaves	80%	70
	Marri tree leaves	1%	1
	Don't know	15%	13
<i>Please rate the health of the Peppermint trees <u>within 100m</u> of your house</i>	Very good	25%	22
	Good	53%	46
	Fair	15%	13
	Poor	3%	3
	Very poor	0%	0
	Dead	0%	0
	No peppies to rate	3%	3
<i>Would you plant peppermint trees on your property to provide habitat and food for possums?</i>	Yes	25%	22
	No	23%	20
	No Answer	52%	45

NB: Not all values within categories will equal 100% due to multiple or blank entries

Source: [..\Access data base\WRP Possum Survey.laccdb](#)

6.1 General exposure to possums

Answers to Section 1 of the survey indicated that 53% of the residents currently have WRPs on their property whilst majority (74%) of the residents stated that WRPs had been present on their properties in the past. Of the residents that indicated WRPs are currently on their property 22% have open eves on their houses, and of the houses that have open eves 35% have possums in their rooves.

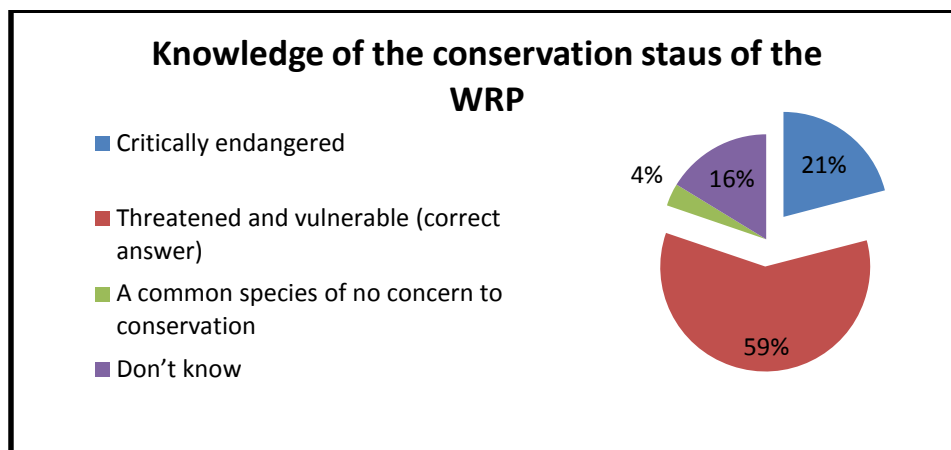
6.2 General knowledge

The WRP survey also assessed the general knowledge of the respondents. The respondents scored high in the knowledge areas about the WRP's threatened conservation status (59% answered correctly); the national significance of the species (90% answered correctly); knowledge of the South West as the only habitat base for the WRPs (83% answered correctly); knowledge of the illegal nature of killing WRPs (100% answered correctly), and knowledge of peppermint tree leaves as the main food source of possums (80% answered correctly).

6.3 Knowledge of the conservation status of the WRP

The respondents scored moderately with 59% providing the correct answer for the conservation status of the WRP (See Figure 1). While the correct answer for this question is threatened and vulnerable, 21% of people believe possums are critically endangered. For the purpose of this survey, we will regard 'critically endangered' responses to be correct. Considering that only 20% of the respondents had insufficient knowledge regarding the status of the WRP [with only 4% believing WRPs are a 'common species'], the general knowledge of the respondents across the whole sample was adequate.

Figure 1



6.4 Knowledge regarding survivorship of translocated WRPs

Translocation is only used when Peppermint trees are removed from development sites and WRP are consequently displaced. For this purpose, translocation from the Busselton area to conservation sites began in 1991 (Clark *n.d*). This project aimed to re-establish populations of the species within suitable habitat outside the WRP's normal range (Clark *n.d*). The translocation was successful in the initial stages but followed shortly by a drastic decline in the newly established population at one site. The causes of this decline were unclear. Judy Clark, BVSc, MSc, PhD candidate - Murdoch University and WA Department of Environment and Conservation has recently completed her thesis investigating factors presently limiting translocation success for the WRP.

Clark's findings confirmed "mortality rates of translocated WRPs were high. The majority of WRP deaths were attributed to predation, with foxes, cats, pythons and raptors. Some WRPs died in poor body condition from apparent hypothermia/hypoglycaemia, with moderate to heavy parasite burdens present at necropsy".

Clark's thesis is currently being assessed and her findings will be published in greater detail in the future. Currently there is limited published research regarding the survivorship of translocation WRPs. More research is needed to establish the success rate of translocation.

6.5 Attitudes towards the WRP

One of the main aims of this study was to establish an understanding of people's attitudes towards the WRP. There are three areas that this report will focus on. The first focus area is the evaluation of people's attitudes towards the urban removal/translocation of WRPs from urban backyards. The second focus area is an evaluation of the respondents' general attitudes towards the WRP such as whether the respondents believe the species is important to conserve or a nuisance/pest. And the third area focuses on Quadrat 9 – Cambridge Estate and Quadrat 10 – Provence Estate to evaluate the impact of education initiatives of the respondents' general attitudes towards ringtails.

6.6 Attitudes towards urban removal of WRPs

The survey addressed the respondents' attitudes towards possums by asking them if they believed possums should be translocated/removed from urban backyards (see Table 3). Considering translocation only occurs when animals are displaced by land clearing, it was interesting to note that 23% of the respondents believe possums should be translocated or moved out of people's urban backyards. In addition, there was a lack of

awareness regarding the poor survivorship of translocated ringtails with 36% of people believing WRPs have a good survival rate when translocated. Of the respondents that understand that it is very likely that another ringtail will quickly adopt the vacated habitat, 23% still advocate for removal of the species out of urban backyards.

6.6.1 Factors influencing attitudes towards the urban removal of WRP

It was difficult to determine from the data any clear reasons that may influence a person's attitude towards the removal of possums from urban backyards. It was hypothesised that one factor could be the presence of ringtails of a person's property. However, our data showed this was not an influential factor. The percentage of people who recorded possums on their property and approved urban removal was 10% of the entire sample. Likewise the percentage of people who approved translocation and did not record possums on their property was 13% of the sample, suggesting no distinct difference between the two factors (See Table 4 below).

Similarly, there was no significant distinction between those who disagreed with translocation. The residents who recorded ringtails on their properties and disagreed with translocation was slightly higher at 29% compared to those who did not record ringtails on their properties was 20% (Table 4). This data shows that the respondents' attitudes towards translocation were not influenced by the presence of ringtails on their properties.

6.6.2 Limitations

The questionnaire did not address the respondents' reasons to advocate for translocation. For example, people may have agreed with translocation if possums were in danger from domestic pets, or property developments. The data is limited as it displays these attitudes as negative when they can also be interpreted as positive. Investigation into the factors that influence these attitudes is recommended for future studies.

Table 4

Attitudes towards the translocation/removal of WRPs from urban backyards

Variable	WRPs should be translocated or moved out of urban backyards		
	Agree %	Neutral %	Disagree %
Quadrat Nō Name Urban Reserve present			
1 Longlands <i>Urban Reserve</i>	3	2	3
2 Fairbairn St <i>no reserve</i>	1	3	6
3 Duchess St/Geographe Bay Rd <i>no reserve</i>	3	0	6
4 Margaret St <i>Urban Reserve</i>	3	0	5
5 Melaluca Drive <i>Urban Reserve</i>	1	6	5
6 Heppingstone Rd <i>Urban Reserve</i>	0	6	6
7 Broadwater Boulevard <i>Urban Reserve</i>	3	2	5
8 Averil St, Abby <i>no reserve</i>	2	1	8
9 Cambridge <i>Urban Reserve</i>	0	5	3
10 Provence <i>no reserve</i>	5	3	2
Urban reserve			
Reserve in quadrat	11	21	26
No reserve in quadrat	11	8	22
Gender			
Male	6	10	24
Female	17	18	24
Age			
18-25	0	2	2
26-35	6	7	8
36-45	1	7	9
46-60	6	8	9
61-75	6	3	16
75+	5	1	3
Presence			
WRPs on property	10	14	29
No WRPs	13	15	20
Totals	23%	29%	48%

6.7 General perceptions of WRPs

Overall there was a positive response from the sampled population regarding the importance of the species. 79% of respondents regarded the WRP to be an important species to conserve while 7% considered them to be a nuisance and 14% had a neutral response (see Table 5). Again, the respondents' general perceptions of possums were not influenced by the presence WRPs on their properties (see Table 5).

Table 5

Respondents' general perceptions of the WRP

Variable	Perception of the WRP		
	Important to conserve %	Nuisance %	Neither annoying nor important %
Quadrat Nō Name Urban Reserve present			
1 Longlands <i>Urban Reserve</i>	5	3	1
2 Fairbairn St <i>no reserve</i>	8	1	1
3 Duchess St/Geographe Bay Rd <i>no reserve</i>	6	1	2
4 Margaret St <i>Urban Reserve</i>	7	0	1
5 Melaluca Drive <i>Urban Reserve</i>	11	0	0
6 Heppingstone Rd <i>Urban Reserve</i>	8	0	2
7 Broadwater Boulevard <i>Urban Reserve</i>	8	1	1
8 Averil St, Abby <i>no reserve</i>	7	0	5
9 Cambridge <i>Urban Reserve</i>	8	0	0
10 Provence <i>no reserve</i>	10	0	0
Urban reserve			
Reserve in quadrat	47	5	3
No reserve in quadrat	31	2	8
Gender			
Male	29	6	0
Female	48	1	0
Age			
18-25	3	0	1
26-35	20	0	0
36-45	11	1	5
46-60	20	2	1
61-75	20	2	3
75+	5	1	3
Presence			
WRPs on property	39	5	8
No WRPs	39	2	6
Totals	79%	7%	14%

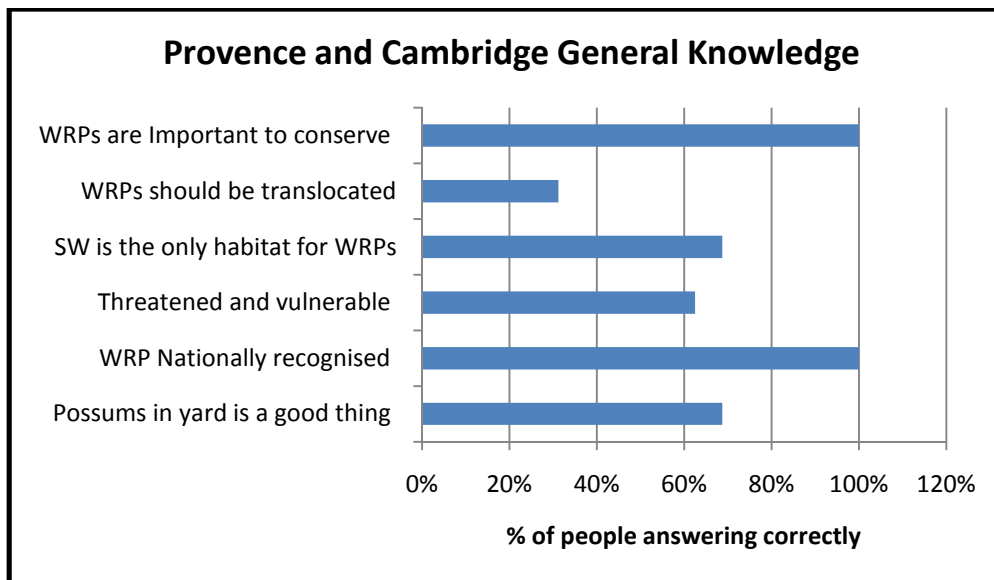
Source: <..\Access data base\WRP Possum Survey.laccdb>

6.8 Attitude trends in areas of community engagement initiatives

While it was not an initial aim of the study to evaluate the impacts of community engagement upon respondents' attitudes, the data showed some interesting results within the areas of Cambridge Estate and Provence Estate where community engagement initiatives have been implemented. At Provence Estate, community engagement exercises such as school incursions, school planting days, possum nightstalks, and resident information evenings have been carried out by GeoCatch. At Cambridge Estate, members from F.A.W.N.A Inc (Fostering and Assistance for Wildlife Needing Aid) have carried out both information evenings and nightstalks with the residents and school children.

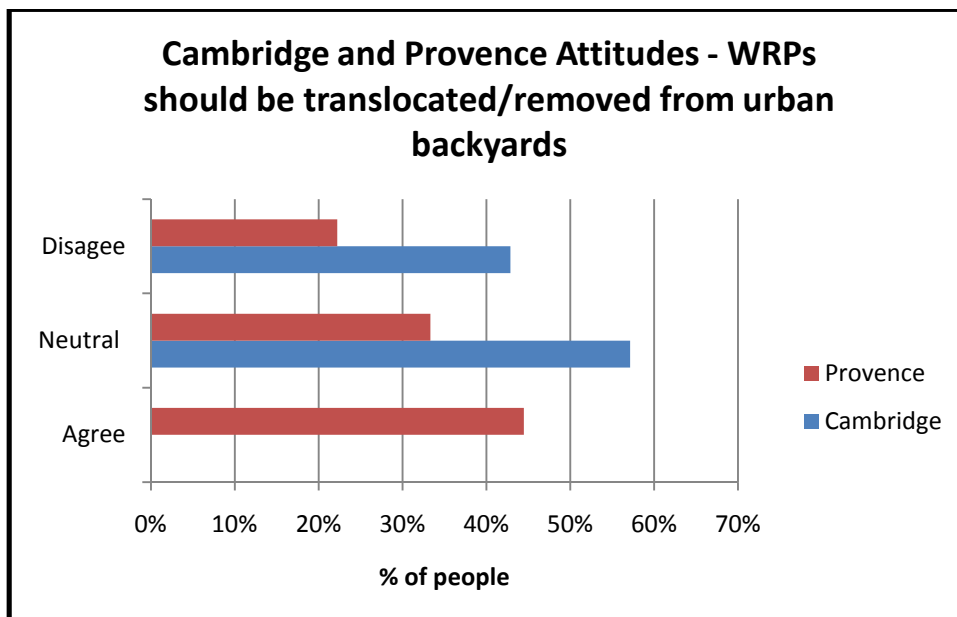
Figure 2 illustrates that 100% of the respondents within Cambridge and Provenance believe the WRP is an important species to conserve and 100% also understand that the WRP is a nationally recognised species. Figure 2 also shows the respondents scored high in the knowledge areas with 69% of people identifying the south-west as the only habitat for ringtails, 63% of people recognising the WRPs as threatened and vulnerable, and 69% agreeing that having possums in urban backyards is positive.

Figure 2



The area where knowledge lacked the most was with peoples’ attitudes towards translocation. Only 31% disagreed with translocating or removing ringtails from urban backyards (Figure 2). In Provenance particularly, majority of people (44%) believe possums should be translocated/removed from urban backyards (Figure 3). Provenance actually contained the highest percentage of residents advocating possum-removal across the whole sample (see Table 4). Cambridge scored higher with 0% agreeing with possum-removal, 43% disagreeing and 57% neutral.

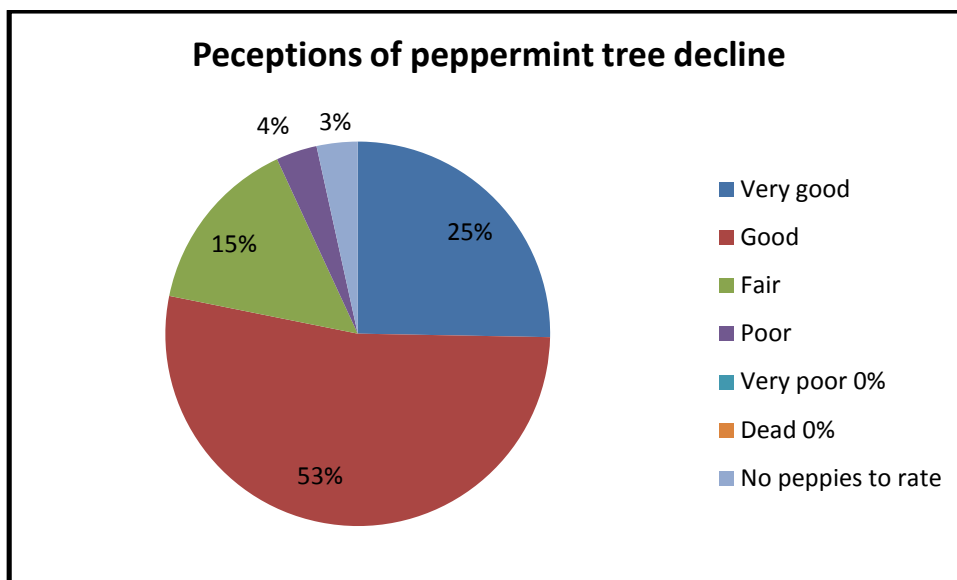
Figure 3



6.9 Perceptions of Peppermint tree decline

53% of the respondents rated the peppermint tree health as ‘good’ and 25% ‘very good’, while approximately 20% of respondents rated the tree health as ‘fair to poor’ (see Figure 4). While GeoCatch and the Centre of Excellence for Climate Change Woodland & Forest Health have recorded poor health of Peppermint trees, it appears that the majority of respondents have the perception that the trees are in good health.

Figure 4



7.0 Discussion

The overall trend of the results indicates that the dominant attitudes towards the WRP were mainly positive. Majority of the respondents displayed sufficient knowledge about the WRP’s conservation status and considered the species to be important. Furthermore, 100% of respondents displayed a comprehensive understanding that harming WRPs is illegal regardless of whether their attitudes towards the species were

positive or negative. The general knowledge of the respondents was considered to be adequate across the sample, however, knowledge was lacking in the area of translocation/urban removal of WRPs and some less desirable attitudes in this area were uncovered.

This trend was also reflected in the case studies of Provence and Cambridge Estate. The knowledge base of the residents in both Provence and Cambridge was above the average of the whole sample. This could suggest that the community engagement initiatives that have been carried out in these areas have successfully raised awareness in the community about the threatened WRPs.

The attitudes of the residents were desirable in most areas except translocation/removal of WRPs from urban backyards. In the past, the GeoCatch education initiatives have not focussed on raising awareness about translocation. As a recommendation, GeoCatch should consider including information about translocation in future community engagement exercises. This will assist the community to better understand that the WRP population stronghold within the urban areas of Busselton is integral to the conservation of the species and translocation should be avoided where possible.

It was also noted that the community generally perceived the Peppermint trees to be in good health. Since tree decline is a concerning issue in the Busselton area and the Centre of Excellence for Climate Change Woodland & Forest Health has launched a project investigating tree decline in the south west, it is recommended that GeoCatch include peppermint tree decline in their education initiatives in the future. This may encourage people to consider protecting peppermint trees on their properties and encourage them to plant pebbie seedlings which are provided to residents free-of-charge as a part of the 'Peppies for Possums' program.

7.1 Recommendations for future studies

This study mainly focused on assessing the current knowledge and attitudes of the Busselton community. One of the main shortfalls of the study was that it did not investigate the factors influencing peoples' attitudes. The data could not determine the reasons for advocating translocation/urban removal of possums, nor did the survey address the reasons for disliking possums. Future surveys should include these queries in order to produce results to guide education initiatives that will help shift negative attitudes.

8.0 Limitations of the study

Survey Methodology

- In the future, surveys should make the age group categories the same as ABS for a comprehensive comparison
- Reasons for disliking possums was not addressed
- Reasons for wanting translocation was not addressed
- Knowledge of pebbie tree decline was not assessed
- Pick up and distribution of survey should happen at same time within quadrats. This will save time.

Access 2007

- The author of the Access form must ensure that the form is initially correct as it is not possible to alter the form once the data is entered.
- Access does not allow graphs to be exported to a Word document. Data must be transported to excel to make graphs.

Statistical analysis

- If time permitted and there were more resources available, a statistical analysis of the sample to allow for more accurate assumptions of the entire population would have been greatly beneficial to the study.

9.0 References

Clark, Judy n.d. Thesis Abstract.

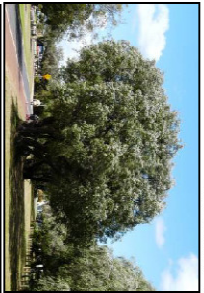
Dowle, Matthew and Elizabeth M. Deane. 2009. Attitudes to bandicoots in the urban environment. *European Journal of Wildlife Research* 55 (1): 45-52

Kaczensky, Petra., Mateja Blazic, and Hartmut Gossow. 2003. Public attitudes towards brown bears in Slovenia. *Biological Conservation* 118 (5) 661-674

Patterson ME., JM Montag, and DR Williams 2003. The urbanization of wildlife management: social conflict, conflict and decision making *Urban For Urban Green* (1): 171–183

10.0 Appendices

10.1 Appendix A - Quadrat Map Locations



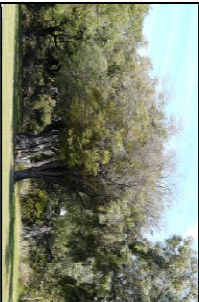
1. VERY GOOD
Healthy looking leaves, trunk and branches. Full canopy, no obvious symptoms of decline.



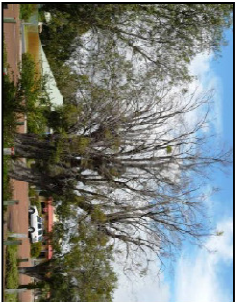
2. GOOD
Some minor loss of leaves, some dead or flagging branches. Tree is starting to look 'twiggy'



3. FAIR
Moderate flagging or death of branches in canopy or lower down.



4. POOR
Severe flagging or death of branches in canopy or lower down.



5. VERY POOR
Almost all leaves/branches are dead or dying.



6. DEAD TREE
All leaves and branches are dead.

21. Would you plant peppermint trees on your property to provide habitat and food for possums?

Yes or No