Tiwi Islands small mammal protection through responsible cat ownership

Final Report to the Threatened Species Commissioner's Office

~ 31 August 2017 ~

Executive Summary

This report presents the findings of a collaborative research project funded by the Threatened Species Commissioner's Office. The project aimed to reduce the potential impact of cats on native wildlife by promoting responsible cat ownership in the Tiwi Island community of Wurrumiyanga.

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Background

The Tiwi Islands are one of the few places in northern Australia to have retained their complete mammal fauna, and are home to viable populations of the brush-tailed rabbit rat (*Conilurus penicillatus*)and the bush-stone curlew (*Burhinus grallarius)*, two species targeted by the federal government for priority conservation management. However, recent surveys have indicated that populations of small mammals, including those of the rabbit rat, have declined markedly over the past 15 years. These declines appear to be associated with the occurrence of feral cats.

In contrast to some Aboriginal communities, Tiwi people have not kept cats as pets. Recently, however, there has been an uptake in cats as pets in the Tiwi community of Wurrumiyanga; and with no interventions in place to prevent breeding, the pet cat population is steadily increasing.

Project Team

Tiwi Land Council (TLC):

Kate Hadden (Manager - Land & Resources)

Willie Rioli (TLC Ranger)

Colin Kerinauia(TLC Ranger)

University of New England (UNE) Researchers:

Dr Wendy Brown (Senior Lecturer - Animal Science,Canine & Equine Research Group)

Brooke Kennedy (PhD candidate)

Animal Management in Rural and Remote Communities (AMRRIC):

Dr Bonny Cumming (Project Officer)

Courtney Falls (Education Officer)

The Ark Animal Hospital:

Dr Stephen Cutter (Veterinarian)

Research Methods

Cat Census

UNE researchers and TLC rangers undertook a door-to-door survey of Wurrumiyanga residents to identify the number of owned cats in the community and record cat population demographics (gender, reproductive status, age). Owners were informed of the up-coming vet visit following an informal discussion about the benefits of de-sexing, and if the owners were agreeable, their house numbers were recorded to facilitate the collection of cats for de-sexing.

Cat Questionnaire

Local Wurrumiyanga community memberswere recruited during the door-to-door census to complete a questionnaire to ascertain their attitudes towards cat ownership. TLC rangers invited community members to respond, and UNE researchers conducted face-to-face interviews with each participant. A copy of the questionnaire is included in the Appendix.

Community Education

AMRRIC Education Officer Courtney Fallsdelivered a cat education program in Wurrumiyanga (5 – 9 June). The focus of education was on de-sexing, impacts of cats on wildlife and responsible pet ownership. Informed by the results of the cat questionnaire, tailored and culturally appropriate educational resources were developed for both school and community education.

Vet Visits

Two vet visits were arranged to provide de-sexing for cats in Wurrumiyanga, free of charge to the cat owners. The veterinary services were provided by Stephen Cutter (The Ark) with support from other project team members who collected and transported cats. The first vet visit (8 & 9 June) was delivered on the final 2 days of the community education campaign.The second visit (16 August)was scheduled for when kittens present at the first vet visit were old enough for surgical de-sexing.

Cat Roaming Behaviour

Cat roaming behaviour was monitored both directly and via remote sensing cameras in two observational studies. In the first study, UNE researchers and TLC rangers conducted direct observations whilst driving along a pre-determined transect (Figure 1) through the community every 4 hours (2am, 6am, 10am, 2pm, 6pm, 10pm) for 3 days(18 – 21 April). Owned pet cats identified during the cat questionnaire and census were given hi-visibility reflective collars to

enable these cats to be distinguished from unowned cats. Observed cats were recorded as being owned or unowned, and roaming or not roaming (outside or inside of owners' house yards). In the second study, direct observations were repeated for a further 3 days(5 – 8 June), along the same transect and at the same time points. Additionally, 29 remote sensing cameras were installed along four tracks on the edge of the community, running in different directions (Figure 1).Cameras were deployed for six nights from June 5.

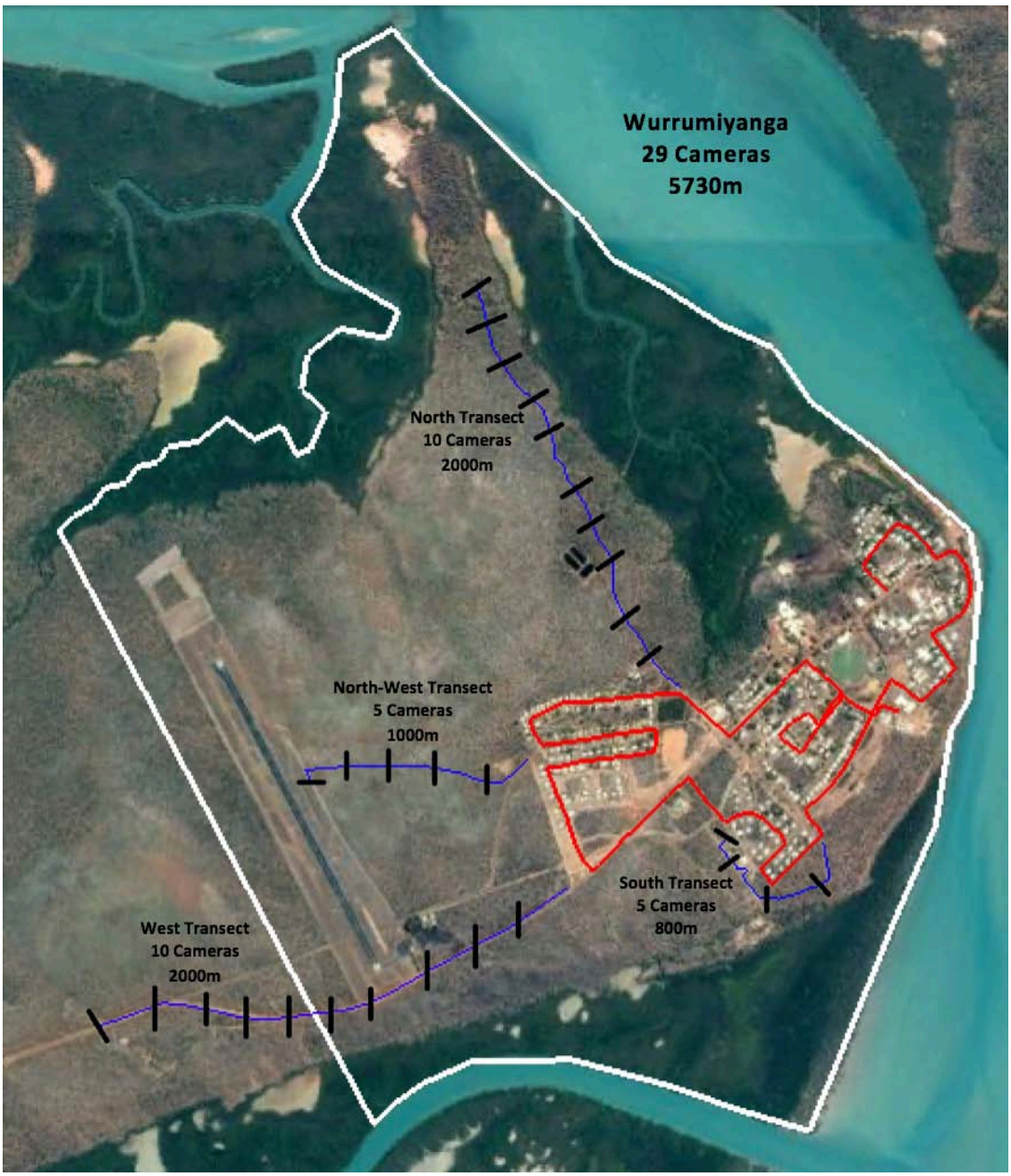

Figure 1. Cat roaming behaviours in the community of Wurrumiyanga, Tiwi Islands were measured by direct observations (red line) every 4 hours for 3 days, and by 29 remote sensing cameras (blue lines). Individual camera positions are indicated by black lines across the (blue) transects.

Results

Cat Census

The door-to-door cat census conducted in April (18 – 21) revealed a total of 72 cats, of which less than 30% were de-sexed (Table 1). The population demographics were updated in June (5 – 9) with a further census (Table 2). The total cat population in June had increased to 80, of which 53% were de-sexed following the vet visit. The remaining34 entire catswere targeted for de-sexing in the second vet visit.

Table 1. Demographics of Wurrumiyanga pet cat population determined by census (April 2017, pre vet visit)

	De-sexed	Entire	Covinan*	**Total**
Female	14	23	1	38
Male	6	15	-	21
Unknown	0	13	-	13
Total	20	51	1	**72**

*Covinan injections are given to postpone oestrous in cats that are too young for surgical de-sexing.

Table 2. Demographics of Wurrumiyanga pet cat population determined by census (June 2017), post vet visit.

	De-sexed	Entire	Covinan*	**Total**
Female	29	15	4	48
Male	13	17	-	30
Unknown	0	2	0	2
Total	42	34	4	**80**

*Covinan injections were given to postpone oestrous in the cats that were too young for surgical de-sexing.

Cat Questionnaire

Of the 301 houses occupied by Indigenous Tiwi residents, a total of 142 households (47%) participated in the questionnaire;and responses to questions 5 to 8 are presented in Table 4.Respondents were able to give more than one response to some questions. For instance, when asked whether cats should be allowed on Tiwi islands, if undecided, a yes and no response was recorded. Overall, residents were happy to participate, and some commented that they appreciated being consulted about their views. Only residents that owned cats were asked to respond to questions 1 to 4, and all known cat owners were surveyed (26 houses in the first census). In response to question 2, most cat owners (81%) stated that their cats were free to be both indoors and outdoors during the day. During the night,46% said their cats were free to be both indoors and outdoors, 29% said their cats were indoors only, and 25% said their cats were outside. When questioned about their cats' hunting activities, 92% said they had seen their cat hunting. The most reported prey observed was lizards (76%) followed by rats (68%), then insects (28%), frogs (24%) and birds (20%).

Table 3. Summary of responses to questionnaire (April, 2017)

Question	Response
Should cats be allowed on Tiwi islands?	
YES	90 (61%)
NO	57 (39%)
Reasons for having cats	
Eat pests (mice, rats)	85 (94%)
Pet for children	68 (76%)
Companion for adult	65 (72%)
Good to have animals around	52 (57%)
Teach children responsibilities	55 (60%)
Fun to watch	56 (62%)
Reasons for not having cats	
Health risk to people	26 (46%)
Can scratch children	26 (46%)
Dirty	12 (21%)
Harmful to wildlife	46 (81%)
Should owners be made to de-sex their female cats?	
YES	95 (67%)
NO	46 (32%)

Question		Response
Should owners be made to de-sex their male cats?		
	YES	91 (64%)
	NO	49 (35%)
Should owners be made to de-sex their cats if instructed by Traditional Owners or TLC?		
	YES	85 (60%)
	NO	52 (37%)
Are cats important for Tiwi culture?		
	YES	29 (20%)
	NO	108 (76%)

Cat Roaming Behaviour

The transect used for direct observations of cat roaming behaviours was 8.24 km in length, and incorporated 75.5% of the total street area in this community. No unowned cats were observed during either of the two observational studies. In the first study, a total of 92 cat sightings were recorded over the 3 days (18 time points), an average of 5 cats per drive. Approximately 11% of these were observed 'roaming' outside of the owner's yards, but none of these were more than a few meters from the nearest house yard. In the second study, a total of 55 cat sightings were recorded with approximately 19% observed 'roaming'. Total numbers of cat sightings for each of the two study periods are presented in Table 5.

Remote sensing cameras were deployed between the 5thand11th June along the four transects. No cats were captured on camera in the North, North West or West transects. Three different cats were captured on the South Transect, on three different nights, on three different cameras. All three cats were owned, and able to be identified by Kennedy.

Table 4. Total number of cat sightings over 3 days (18 time points)

	Study 1	Study 2
Roaming	9	9
Not Roaming	83	46

Community Education

School-based education about responsible cat ownership was delivered to Murrupurtiyanuwa Catholic Primary School to grades 1/2, 3/4 & 5 /6. A total of 90 students actively participated in the cat education sessions over the week, including 3 classes visiting the vet surgery site to meet the vet team and view firsthand the process of de-sexing. Community education was delivered through door to door visits and a community event held at the local store. The community event involved a free BBQ, cat face painting, screening of the Tiwi Cat Keeping video (see below) and cat information resources. Over 100 community members attended the event. To further support responsible cat keeping messages, a video featuring Traditional Owners speaking about cat ownership and responsibility was played in the local shop over the week, which helped to attract attention and reinforce the educational campaign. Overall, the education was well received by both the community and school groups.

Educational material developed for this project, and used in the community education campaign, are summarized below (Table 6)and full versions can be found in the Appendix.

Table 5. Educational and teaching materials developed for the project

Educational and teaching materials
Domestic vs non-domestic animals (lesson)
Felt Cat (activity)
Cats eat, cats don’t eat (lesson)
Vet visit poster
Traditional Owners cat interview (video)
Cat based art activities
Cat overpopulation (PowerPoint)

Vet Visits

A total of 41 cats were surgically de-sexed as part of the project:28 cats (17 females and 11 males) during the 2-day vet visit in June, and a further 13 cats (9 females and 4 males) on the 1-day vet visit (16 August). Castrations and ovario-hysterectomies were performed under general anaesthesia.Cats were collected and transported from owners' homes to the surgery site, and returned after surgery.Following the 2nd vet visit, we estimate that 69% of thepet cats in Wurrumiyanga are de-sexed (Figure 2).

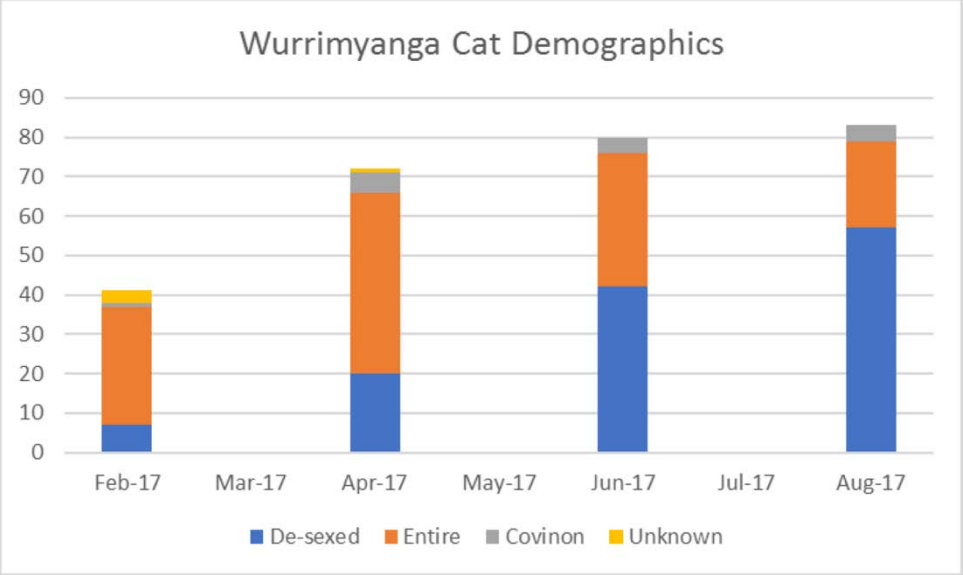

Figure 2. Estimated demographics of Wurrumiyanga pet cat population (August 2017).

Discussion and Recommendations

All the agreed research activities were conducted within the agreed timeframe, and the combined collaborative efforts of all parties contributed to the overall success of the project. The research findings are discussed in detail under the specific headings that follow.

Cat Census and Population Demographics

A census is an important aspect of any effective animal management program. Accurate estimates of population numbers and demographics are crucial forinforming management decisions, and planning the frequency and intensity of interventions aimed at population control. Accurate pet population data is also important for interpreting the impacts on other factors, such as wildlife and human health.The cat census conducted in June indicateda domestic pet cat population of 80and a population growth of 13% from the preceding census in April. This represents a stabilisation of the cat population and reduced population growth rate compared with the period of rapid population growth of 43% immediately prior to the

commencement of the study. The census data also revealed an adult gender ratio of nearly twice as many female to male cats.

Cat Questionnaire

The responses to the cat questionnaire can be considered representative of the Wurrumiyanga community as 47% of the Indigenous Tiwi households participated. Many community members expressed gratitude for being consulted about their views on animal management and appeared comfortable about expressing their opinions when informed that their contributions would be anonymous. The questionnaire results showed that the community was divided as to whether or not cats should be allowed on Tiwi islands, with 61% in favour of residents being allowed to own cats. This suggests that the community as a whole would not be accepting of a ban on cat ownership, and that other management options, such as incentives and support for responsible pet ownership, may be more successful in achieving sustained cat population control. The main drivers for cat ownership appear to be rodent control, reported by 94% of respondents. Therefore, providing an alternative method for rat and mice control could reduce the reliance on cat ownership and provide a disincentive to acquire new cats. This could be achieved with a large scale (whole community) professional pest control treatment.

Cat roaming behaviour

Contrary to expectations, cat roaming behaviour was rarely observed,withonly 3 cats (<4% of the pet cat population) observed to roam further than a few metres from the owners' houses.Two of these cats were identified as belonging to a multi-cat (n=14) household. No un-owned (feral) cats were observed during the study, either directly or with remote cameras. However, the 3 owned cats observed roaming highlights the potential for pet cats to become feral, particularly in situations where there are many cats in the one household competing for limited resources.

Community Education

The community education campaign waswell received by the community and school groups, with participants engaged in the teaching and learning activities. Formal, written feedback was limited as very few feedback forms were completed and returned. Most of these offered no insight about the education, and focused on other aspects of the activities such as the type and quantity of food provided at the free BBQ. Initially, the questionnaire was intended to be repeated after the education campaign, as a way to formally evaluate the effectiveness of the education. However, this could not be achieved within the time restraints of the project.

Vet Visits

During this project, a total of 41 cats were de-sexed, with a dramatic effect on the overall population demographics. In February, prior to this project commencing, the cat population had reached 41, and was steadily increasing, with only 17% of the cat population de-sexed. As a direct result of the cat de-sexing provided as part of this project, the percentage of de-sexed cats increased to 53% in June, and following the final vet day in August, we estimate that 69% of the cat population was de-sexed. This suggests that we have achieved a stabilisation of the cat population by the end of the project. Of course, populations are dynamic, and further regular opportunities for de-sexing must be provided to maintain this status quo, and regular cat census data must be collected to determine the demographics and the frequency of vet visits needed. The appointment of an Animal Management Worker within the Tiwi islands would be of great benefit in achieving sustainable population and health management of companion animals, with additional benefits of reduced impact on native wildlife.