Preliminary assessment of Feral Cats for the Ground Parrot program within the Fitzgerald River National Park

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Plate 1. View of Fitzgerald River National Park from Short Rd., trap line

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DEPARTMENT OF Conservation AND LAND MANAGEMENT
Conserving the nature of WA

Introduction

Feral cats (*Felis catus*) pose a serious threat to populations of small to medium-sized native vertebrates (Dickman 1996; Anon. 1999). Anecdotal evidence has indicated that predation by feral cats, either acting singly or in concert with other factors, has resulted in the local extinction of a number of species on islands and mainland Australia. Predation by feral cats also affects the continued survival of many extant native species persisting at low population levels (Dickman 1996; Smith and Quin 1996; Risbey *et al.* 2000) and has been identified as one of the major obstacles to the reconstruction of faunal communities as it has prevented the successful re-introduction of species to parts of their former range (Gibson *et al.* 1994; Christensen and Burrows 1994; Dickman 1996; Anon. 1999).

Management of introduced predators is now generally viewed as a critical component of successful reintroduction, recovery or maintenance of small to medium-sized native fauna populations (Christensen and Burrows 1994; Fischer and Lindenmayer 2000). It has also been suggested that competition by feral cats with native carnivorous species (eg. some dasyurids, predatory birds and larger reptiles) may reduce their population viability (Cross 1990). However; compelling evidence for competition has not been obtained (Dickman 1996). Cats are also the hosts and reservoirs for a number of diseases such as *Toxoplasmosis* that can affect wildlife (Cross 1990; Dickman 1996; Anon 1999).

As a consequence of these impacts, control of feral cats is recognised as one of the most important fauna conservation issues in Australia today. The impact of feral cats on native fauna is acknowledged by Commonwealth legislation, as outlined in Schedule 3 of the *Environment Protection and Biodiversity Conservation Act 1999*. The national '*Threat Abatement Plan for Predation by Feral Cats*' (Anon. 1999) lists 38 species on Schedule 1 of the above Act for which there is a known or inferred threat from feral cat populations. That is, 38 endangered species have been identified as potentially benefiting from effective feral cat control, as part of their management/recovery programs.

The Department of Conservation and Land Management (CALM) has been developing control strategies for feral cats under the umbrella program 'Western Shield'. This research has led to the successful design and development of an effective trapping technique and a bait that is readily consumed by cats and can be used over broad-scale areas for their control.

The recent decline in Ground Parrot (*Pezoporus wallicus flaviventris*) numbers at Fitzgerald River National Park has been of concern to the South Coast Threatened Birds Recovery Team (A. Burbidge and J. Blyth pers. comm.). As feral cat predation of the Ground Parrot may be a potential causal or contributory factor in this local decline, an assessment of feral cat numbers and control options at the site was requested. Researchers visited the site, 10-17 February 2003 to conduct a feral cat trapping program. Documented in this report are their findings and recommendations for feral cat control at the site.

Methodology

Trapping Program

Department researchers have developed a highly successful technique to trap feral cats. The technique, described below, in conjunction with assessment of track activity also provides a simple and effective method to assess cat abundance (Algar *et al.* 1999).

The trapping technique utilises padded leg-hold traps, Victor 'Soft Catch'® traps No. 3 (Woodstream Corp., Lititz, Pa.; U.S.A.), a Felid Attracting Phonic (FAP) that produces a sound of a cat call, and a blended mixture of faeces and urine (Pongo). Each trap site consists of a channel slightly wider than the width of one trap and 80 cm in length, cleared into a bush to create a one-way (blind) trap set. The bush also provides shelter for the captured animal. Two traps, one in front of the other are positioned at the entrance of the blind set, at each trap site. A trap bed is made so that when lightly covered with soil, the traps are level with the surrounding ground surface. A guide stick is placed in front of the traps to force animals to lift their foot then push down onto the pressure plate. Both traps are secured in position by a chain of length 30 cm to an anchor peg of length 30 cm. A circular (12.5 cm ∅) piece of inner tube rubber was placed over the plate to prevent soil from falling into the trap bed and compacting under the plate. The traps are then lightly covered with soil.

Two lure systems, (FAP + Pongo) and Pongo only, were employed at alternate trap locations along the trapping grid. The FAP is located at the back of the trap set, either concealed under leaf litter or hidden within the bush. The Pongo consisted of a blended mixture of cat faeces and urine in a ratio of approximately 1:1. Approximately 20 ml of this mixture is placed in a shallow depression about 30 cm from the centre of the trap plate.

Study Site

The trap sites were located along Twertup Rd. (10 km), Short Rd. (22 km), and Firebreak Track (11 km) at approximately 0.5 km intervals adjacent to vehicle access tracks. Their locations were recorded using a Garmin GPS 12XL and are shown in Figures 1-3. In total, 88 trap-sets covered 22 km in the ground parrot area and 21 km in the control area and provided 475 trap nights. The duration of the trapping program was restricted because heavy rainfall deluged the trap sets and also caused access problems. The location, trap numbers and dates of commissioning and decommissioning trap sets are indicated in Table 1. All traps were routinely checked at first light each day.

Table 1. Dates of commissioning and decommissioning traps

Location	Trap Nos.	Commissioned	Decommissioned	Trap nights
Twertup Rd.	01-19	11/2/04	17/2/04	133
Short Rd.	20-48	12/2/04	17/2/04	174
Short Rd.	49-65	13/2/04	17/2/04	85
Firebreak Trk	66-79	14/2/04	17/2/04	56
Firebreak Trk	80-88	15/2/04	17/2/04	27
Total				**475**

Necropsies and Analyses

Trapped cats were humanely destroyed using a 0.22 calibre rifle. All animals captured were sexed, weighed and a broad estimation of age (as either kitten, juvenile or adult) was recorded according to their weight. The pregnancy status of females was determined by examining the uterine tissue for embryos. The number of foetuses present indicates the probable litter size. Stomach contents were collected and preserved in 10% formalin for diet analysis. The mammals collected in the stomach contents were identified according to hair structure as described in Brunner and Coman (1974).

Figure 1. Trap sites on located along Twertup access road

Figure 2. Locations of traps in ground parrot study area

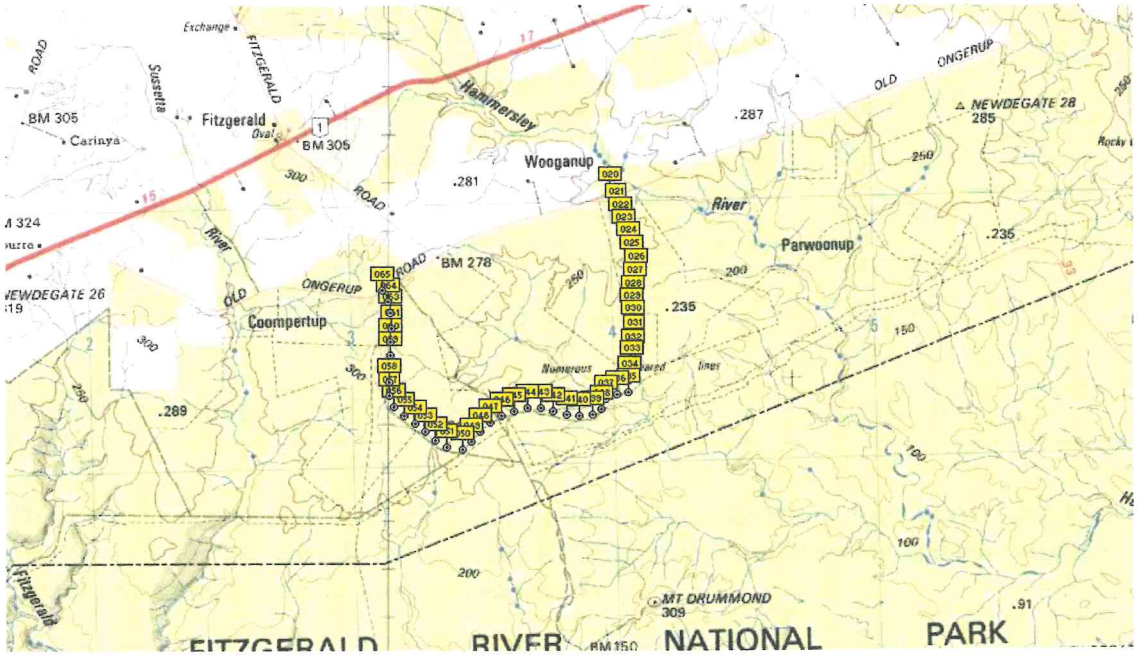
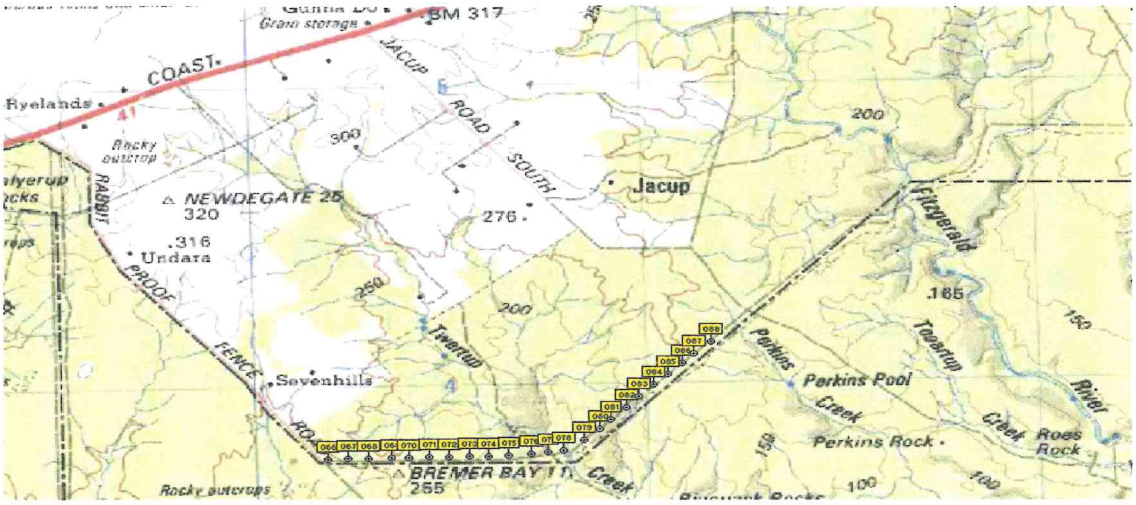


Figure 3. Location of traps on dual firebreak: fauna monitoring site



Results

Trapping Program

A total of six feral cats was trapped over the survey period, the capture locations and individual cat records are presented in Table 2. In addition to the feral cats, two foxes (*Vulpes vulpes*) were also captured.

Table 2. Capture locations and records of trapped cats, * K = Kitten, J = Juvenile, A = Adult

Date	Sample No.	Trap No.	Sex	Weight (kg)	Coat colour	Age (K/J/ A)*
12/2/04	FRNP01	6 (Twertup Rd.)	F	3.0	Grey Tabby	A
12/2/04	FRNP02	48 (Short Rd.)	M	5.0	Grey tabby	A
14/2/04	FRNP03	18 (Twertup Rd.)	M	4.5	Grey tabby	A
14/2/04	FRNP04	44 (Short Rd.)	M	4.5	Grey tabby	A
14/2/04	FRNP05	79 (Firebreak Trk)	M	4.2	Ginger tabby	A
14/2/04	FRNP06	67 (Firebreak Trk)	F	2.2	Grey tabby	A

The trapped population were all adult animals and comprised four males and two females. The female cats (FRNP01 and FRNP06) were both lactating and had recently given birth to four and two kittens respectively.

6 cats from 475 trap nights
2 from WGP area & 4 from
Central areas

Plate 2. Trapped cat at Fitzgerald River National Park

Despite considerable effort to exclude non-targets from trap sets at Fitzgerald River NP, a number of non-target species were still trapped. Resultant trap injuries to a number of animals required them to be destroyed. The list of animals unharmed and released and those that had to be destroyed is given below: -

One Varanid (*Varanus rosenbergii*) was caught and released unharmed, one Currawong (*Strepera versicolor*) died of trap injuries, one Western Whip Bird (*Psophodes nigrogularis*) died of trap injuries, two Emus (*Dromaius novoehollandiae*) both quarter grown chicks, one released and one died from trap injuries, eight Possums (*Trichosurus vulpecula*) all released unharmed, three Brush Wallabies (*Macropus irma*) two released and one died because of trap injuries, nine Grey Kangaroos (*Macropus fuliginosus*) two died because of injuries and seven released unharmed.

As a consequence of non-target issues during this trapping program, researchers, while on-site, investigated a number of methods to reduce any further adverse impact to non-target species, while maintaining cat trapping efficiency. Traps set with sticks strategically placed above (see Plate 3) overcame the problem by discouraging most non-target animals from entering the set. Since this time, traps are now set as described when there is a non-target risk present.

Plate 3. Trap set with strategically placed sticks and bushes.

Study Site Track Activity

Daily feral cat activity on the tracks/transects could not recorded *en route* because the soil and state of access (eg. Plate 4) was not conducive to observing activity without considerable effort being made to improve the tracks/transects. Preliminary dragging of these tracks/transects with a rail and chain would make them more suitable for observation of cat activity.

Plate 4. Typical section of Fitzgerald firebreak.

Stomach Contents

Of the six cats trapped, all but one had items in their stomachs. The stomach volume and contents of captured cats and also the two foxes are reported in Table 3.

Table 3. Stomach volume and contents of trapped cats

Sample No.	Approximate stomach volume (%)	Stomach content
FRNP01	50	*Rattus fuscipes, Pseudomys* sp., *Antechinus flavipes*, *Ctenotus* sp.
FRNP02	80	*Rattus fuscipes*
FRNP03	0	-
FRNP04	30	*Rattus fuscipes*, *Varanus* sp., *Coturnix* sp.
FRNP05	30	*Rattus fuscipes*
FRNP06	20	*Rattus fuscipes*, *Macropus* sp.
Fox 1	0	-
Fox 2	10	*Rattus fuscipes*, *Macropus* sp., *Varanus* sp.

Discussion and Recommendations

Evidence from this trapping program, despite being curtailed because of rainfall, suggests that feral cats are relatively abundant across Fitzgerald River National Park. The Park Ranger has also indicated that feral cats are common as he often sees cat tracks whilst conducting his various duties (P. Wilkins pers. comm.). Staff undertaking recent Ground Parrot surveys have also reported abundant cat activity, particularly in the northern section of the Park (S. Comer pers. comm.). Several farmers adjacent to the Park have also commented on the degree of cat activity on the northern Park boundaries (S. Comer pers. comm.). In contrast, both the trapped foxes were caught at the edge of the Park adjacent to farmland. No sign of fox activity was observed within the Park, suggesting that the current fox baiting regime is providing an adequate and effective control strategy.

The relatively abundant feral cat population within the Park is of obvious concern because of the presence of the critically endangered Ground Parrot and other vulnerable native species. It is recommended that some measure of feral cat control should be undertaken within the Park, particularly in areas where threatened species are located. It is suggested that an interim localised feral cat trapping program be implemented in sites of high conservation value. Consideration should be given to the nature of the control measure as to whether an experimental design is used with appropriate control and replication. Standard population parameters should be recorded for feral cat captures. Also, of particular importance, stomach contents should be removed and dietary items analysed to determine predation events on critical species.

Effective and cost-efficient broad-scale control of feral cats can only be achieved through baiting campaigns. With the development of the feral cat bait and research into optimising baiting strategies, such control should be possible in the future. At

present all experimental and operational baiting programs are conducted under an experimental permit (PER5356) issued by the Australian Pesticides and Veterinary Medicines Authority. Fitzgerald River National Park is not currently listed on this permit and if baiting programs are to be considered, an extension of the permit would be required. Acquisition of the permit should not prove to be a problem however, if baiting campaigns are to provide the long-term solution to feral cat control in the Park, it will be necessary to conduct trials on bait deployment/presentation and assessment of the potential risk to non-target species that consume baits. A collaborative program between Regional, District and Science Division staff would seem to offer the most suitable approach for development and optimising feral cat control measures in the Park.

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Steps to experimental control project for Cats on FRNP.

1. Design and implement 'immediate' interim cat trapping program.
2. • Trials on bait deployment/presentation
   • assessment of non target uptake
3. Add FRNP to 'baiting permit'
4. Design & implement experimental field baiting program
5. Agree on roles of Regional/District & Science staff.

Note • Presumably the interim cat trapping control program (and the final baiting program) need to cover the same areas, and be designed in the same replicated way, with appropriate control sites? • Where would these be? At other WGP population sites ~~or outside such sites~~? • What replication needed if done as in fig below? Three triple pairs & one control? • Monitoring method & regime? (One option might be to bait/trap at sites adjacent to WGP popns and in suitable habitat. Then, if cats are limiting, their removal should allow expansion of WGPs into control sites. Problem how to be sure WGPs interpret suitability of habitat in the same way we do!)

ideal