

Fortescue Marsh in the Pilbara is an important wetland that supports an abundance of birds, reptiles and mammals, and several endemic plants. In the past decade there has even been a recorded sighting of the cryptic and critically endangered night parrot. A partnership between Parks and Wildlife and Fortescue Metals Group is providing resources for cat baiting and monitoring in the hope that the native species found in this special area will prosper.

**by Dave Algar, Sarah Comer, Lucy Clausen,
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Moggies *on the Marsh*

Fortescue Marsh is an extensive intermittent wetland that occupies an area of 1000km² when in flood. The marsh is about 100km north-west of Newman in the Pilbara and is located in the Fortescue subregion between the Chichester and Hamersley ranges. There are plans for the marsh to be nominated as a Ramsar site and it is listed on the Directory of Important Wetlands because, when in flood, it supports several hundred thousand waterbirds. It is known to harbour populations of threatened species such as the bilby (*Macrotis lagotis*) and has several plant species that are endemic to the samphire shrubland that are integral to the wetland. Most notably, the marsh is the location of one of the very few confirmed sightings of the critically endangered night parrot (*Pezoporus occidentalis*) in the past decade. The marsh is also at the centre of an important mining hub, is a significant pastoral area and has considerable cultural and heritage importance to the local Aboriginal communities.

ACTING FOR CONSERVATION

Parks and Wildlife has been collaborating with Fortescue Metals Group in a feral cat baiting campaign at the Fortescue Marsh as part of environmental conditions under the Commonwealth Environment Protection and Biodiversity Conservation (EPBC) Act. This aims to reduce cat abundance and improve protection and long-term conservation of species listed in the Act, specifically the bilby, night parrot and also migratory bird species. The baiting program is being conducted at a landscape scale on the area of the marsh that is a proposed conservation reserve. It is hoped the five-year baiting program will establish methods for the most effective regimes to control feral cats in this important conservation area.

The optimum method to deploy baits for landscape-scale control of feral cats, using the feral cat bait *Eradicat*[®], is still being developed (see 'Controlling cats: the work continues', *LANDSCOPE*, Autumn 2013). The Fortescue Marsh



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Main A storm brewing over Fortescue Marsh.

Photo – Sarah Comer/Parks and Wildlife

Above The expansive plains of the Fortescue Marsh.

Photo – Louisa Bell/Parks and Wildlife



project was designed to be dynamic so it could be adapted as necessary, in a similar way to other projects managed by Parks and Wildlife. The project team comprises Parks and Wildlife staff from its Science and Conservation Division and Pilbara and South Coast regions. The South Coast staff bring experience gleaned from their work in a similar landscape-scale cat control program between Two Peoples Bay and Israelite Bay where they survey for cryptic fauna relevant to this project including the critically endangered western ground parrot (*Pezoporus flaviventris*) (see 'Kyloring, cats and conservation: the race to save the western ground parrot', *LANDSCOPE*, Summer 2013).

LAYING THE BAITS

Baiting was started in 2012 over an area of 832km² and a second program was carried out in 2013 over a similar, but slightly larger site. The size of the 2012 baiting program had to be modified due to the surface water brought by tropical cyclone Lua. Baiting was conducted in mid-winter when the weather conditions were cool and dry to maximise bait uptake by cats. In mid-winter, the abundance and activity of all prey types, in particular predator-vulnerable young mammals and reptiles, are at their lowest and bait degradation due to rainfall, ants and hot, dry weather is significantly reduced. The baiting was conducted from a plane, which deployed the baits at predetermined drop



Far left Collecting samples from a feral cat.
Photo – Lucy Clausen/Parks and Wildlife



Left Preparing the *Eradicat*® baits.
Photo – Rob Brazell/Parks and Wildlife

Above Experience gleaned from surveying for western ground parrots has been brought to the project.
Photo – Abby Berryman/Parks and Wildlife

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points. The plane flew at a nominal speed of 130 knots at 500 feet and a GPS point was recorded on the flight plan each time a cluster of baits was dropped. The ‘bombardier’ released 50 baits into each 1km map grid, along flight transects 1km apart to achieve a ground spacing of baits of about 200m by 50m.

MEASURING RESULTS

Two ways of measuring baiting efficacy were proposed. Firstly, the number of deaths of radio-collared cats was counted and, secondly, changes in the site occupancy of feral cats before and after baiting, based on remote camera detection was observed. Data from radio-collared animals was, unfortunately, precluded due to a combination of issues, including technical failures. However, ‘occupancy modelling’ provided adequate results. Occupancy modelling addresses

the inherent difficulties in estimating numbers of cryptic, secretive, far-ranging carnivores that occur in low abundances. Determining occupancy levels is often used as a surrogate measure when determining actual abundance is not practical. It calculates the probability of a particular animal being at a given site, in this case a camera trap. In addition, occupancy surveys support lower sample sizes than abundance surveys. In 2012, 2767 ‘camera nights’ were achieved while, in 2013, 4660 camera nights were achieved. The images collected provided data on feral cat presence and also a suite of other fauna species.

A significant decline in site occupancy by feral cats in the baited area was observed in both years after baiting. These results are similar to the cat declines observed following baiting campaigns in other sites, from the rangelands to the

South Coast. Of particular relevance was the data collected by the team from Cape Arid National Park on the South Coast following feral cat baiting programs conducted during the past four years. Populations of the critically endangered western ground parrot, the most closely related species to the night parrot, appear to have stabilised and populations of the southern brown bandicoot or quenda (*Isodon obesulus*) increased significantly.

Despite the initial problems with the GPS radio-collars, some very useful data on feral cat activity patterns and habitat use is emerging. The data that has already been collected, combined with what is expected to be collected in the future, will form the basis of a more strategic approach to baiting to replace the blanket operation currently being employed. This information will be combined with knowledge of the presence

and extent of water in the marsh, which occurs irregularly and is variable, but is also important in defining feral cat habitat preferences. Knowledge of cat movement patterns and habitat use will enable a more focused approach to baiting activities, making them more effective and cost-efficient.

A GREATER PERSPECTIVE

In addition to the feral cat work being conducted on the marsh, the project team is evaluating the area for threatened mammal and bird species listed under the EPBC Act. Due to their obvious scarcity, there are tremendous challenges in both detecting and monitoring these species. Surveys have been conducted for suitable northern quoll (*Dasyurus hallucatus*) habitat, and none was identified in the marsh project area. Signs of the bilby, a highly nomadic species, were observed when remote camera trapping sites were established. A single animal was detected on a remote camera in 2012. Signs of bilbies are uncommon in the marsh, and monitoring of areas of activity will be increased in future years. Brush-tailed mulgara (*Dasyercus blythi*) habitat occurs throughout the baiting area, although no animals have been detected and previous surveys have only found this species in small areas outside the baiting area.

In 2013 Parks and Wildlife teams started surveying the area for birds, using distance sampling and deployment of autonomous recording units (ARUs). The information collected provides baseline data to help measure the impact that feral cat control can have on populations of native birds. Of the birds listed in the EPBC Act that were previously recorded at the marsh, only one species – the



rainbow bee-eater (*Merops ornatus*) – was observed. No other listed species – which includes the night parrot, sighted once in 2006, and the fork-tailed swift (*Apus pacificus*), a summer migrant to Australia – were recorded. While many of the rarer birds are likely to benefit from feral cat control, their low numbers mean they are often difficult to detect. So the project team has identified a number of more common ground-dwelling birds that are also likely to respond positively to a decrease in predation pressure from cats. These species will be monitored using cameras and ARUs to track their trends.

The group also hopes that recordings

from the ARUs will help to detect other birds of conservation interest, in particular the night parrot.

Although still in its early days, the research conducted so far shows considerable promise for the provision of long-term, sustained and effective feral cat control at Fortescue Marsh. The program demonstrates that collaboration between a conservation agency and a mining company can potentially provide the first step to the reconstruction and conservation of biodiversity for this important area in northern WA where night parrots may eventually become a more commonly seen bird.



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Above right Plumed whistling ducks (*Dendrocygna eytoni*) at Minga Well.
 Photo – Sarah Comer/Parks and Wildlife

Right Eradicat® baits.
 Photo – Louisa Bell/Parks and Wildlife