



## FAST FACTS

The Eastern Barred Bandicoot, otherwise known as the EBB, is a native Australian marsupial. This small nocturnal mammal is extinct in the wild due to habitat loss and fox predation.

Current work is being conducted to release populations of EBBs back into fox-free areas, including fenced reserves and islands.

## RECENT EVENTS

- One year anniversary of supplementing the EBB population at Hamilton Community Parklands
- Thirteen litters have been born in captivity and will be released at sites this year
- Tasmanian EBBs have arrived at Mt Rothwell for breeding trials

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## IN THIS ISSUE:

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## An Unseen Threat?

*Kath Adriaanse, the University of Melbourne*

I'm Kath, a veterinary resident at Melbourne Zoo. As a part of my residency, I'm doing a Master's degree at the University of Melbourne investigating the parasite *Toxoplasma gondii* and the risk it presents to EBB populations at new release sites, such as Phillip Island, and possibly French Island in the future. *Toxoplasma* is a parasite of cats that can cause disease in a wide range of different species including wildlife, livestock and humans. Cats spread the parasite in their faeces and it can stay around in the soil for up to 2 years!! EBBs probably pick up *Toxoplasma* while they are digging in the soil looking for invertebrates to eat. We know from the trial release on French Island in 2012, and some other studies, that EBBs can become infected with this parasite, get very sick, then die. However, we don't know much else. We don't know if some animals can be infected and not get sick, or if there's a certain level of soil contamination that is 'safe' and doesn't cause disease in EBBs. We also don't know how much *Toxoplasma* there is on Phillip or French Island. My project is trying to figure out the answers to all of these questions and more. The aims of my research are to determine how much *Toxoplasma* is present in the feral cat population, the feral rabbit population, and in the soil, on both Phillip and French Islands by looking for *Toxoplasma* DNA in samples from cats, rabbits and the soil. After that, I'll be investigating the potential

impact this might have on bandicoots when released into areas containing *Toxoplasma*.

Understanding the significance of this disease in EBBs is important for establishing populations at new release sites, and the recovery of this species. Gaining more knowledge about *Toxoplasma* in EBBs will also be useful for recovery programs of other endangered marsupials that are also susceptible to this disease.



Wildlife vet Kath Adriaanse and one of her non EBB patients



# Ecosystem Engineers

*Lauren Halstead, Deakin University*

I'm completing my honours degree in Environmental Science at Deakin University. My research project will be focusing on EBBs by investigating their roles as ecosystem engineers. EBBs are classified as extinct in the wild on mainland Australia, the species only survives on predator-free land and in captivity. The focus population for my study was released onto introduced predator-free Churchill Island (57 ha), in 2015. Consistent monitoring since the release has shown that the population is growing in size. This growth indicates that fox-free islands may be an ideal location for securing these insurance populations and allowing them to flourish. Nearby areas such as Phillip Island and French Island are potential future candidates for further EBB releases. However, the impacts EBBs have on the ecosystem is largely unknown, so to allow continued release of this species, further ecological information about their digging effects is required.

The EBB is an omnivorous digging marsupial that creates foraging pits and nose pokes in the soil when searching for food. The benefits provided by the diggings of other Australian mammals has been well studied and the findings suggest that digging mammals play important roles as ecosystem engineers by maintaining ecosystem health. However, no research has focused on the effects of digs created by EBBs.

To reveal the potential effects of this species and their diggings, I will:

1. Measure the individual soil turnover rate (e.g. soil mass per year per hectare) of EBBs in order to assess the potential impact an accumulation of diggings can have on landscapes.
2. Determine the influence EBB diggings have on soil characteristics by measuring water repellence levels of the soil, moisture content levels within the soil, soil strength (the amount of force it takes to break the soil crust), and soil chemistry. To investigate the effect of diggings, tests



Lauren Halstead before she switched to studying animals with stripy bums and pointy noses

will be conducted in dug and undug areas and results will be compared.

I predict diggings will help water absorb into the soil easier and increase water infiltration rates, leading to higher moisture levels within the soil. This impact may be highly important in drought periods and can also assist in seed germination and soil fertility. Such functions may help to restore degraded ecosystems. This research will reveal the conditions EBB diggings create, highlighting the role they may play in maintaining ecosystem health and function, and therefore allowing increased effort in ensuring the survival of this important species.



**Far left:** A juvenile EBB digging for onion grass bulbs (photo A. Coetsee)  
**Left:** A typical EBB dig (photo A. Coetsee)



# How to Train Your Bandicoot

*Rachel Taylor, the University of Melbourne*



**Above left:** Rachel Taylor. **Above right:** a stalking feral cat (*photo Another Eye*)

I'm completing my honours degree in Animal Science and Management at the University of Melbourne. My research is looking at whether EBBs recognise cats as predators. I suspect they don't, so I will attempt to train the EBBs to be more vigilant in the presence of cat odours. Captive EBBs with their new cat avoidance skills will then form part of a group of EBBs planned for release onto Phillip Island later this year.

Native predators of EBBs are birds of prey. The most appropriate behaviour to exhibit to avoid becoming a Boobook Owl's dinner, for example, is to freeze, as birds of prey rely heavily on movement to find prey items. This response wouldn't work quite so well when being stalked by a feral cat, as cats rely on scent, sound and movement when stalking prey. So EBBs need to learn to flee from cats,

rather than staying still as they approach. Cats were introduced to Australia at the time of European settlement, which is relatively recent, in the evolutionary timeline. This, and the fact that all EBBs in Victoria are found at cat free sites, means that EBBs probably don't recognise cats as predators and therefore lack appropriate cat avoidance skills.

Training EBBs to avoid cats will not be an easy task. The secretive nature of feral cats makes it difficult to determine the most appropriate cue that EBBs should respond to. Since this research will be conducted in the captive breeding pens at Melbourne and Werribee Open Range Zoos, I have decided to test the reaction of EBBs to cat odour and urine and use these scents along with a small jet of water so that the EBBs learn to associate

the scents with an unpleasant experience. The behaviour I am looking for them to exhibit is increased vigilance (i.e. looking around more). Being a flighty animal, a more uncomfortable experience and stronger response (i.e. running) than this could lead to EBBs injuring themselves in the pens. All captive bred EBBs due for release onto Phillip Island later this year will be trained in cat aversion.

It is thought that EBBs can establish a population in areas with low densities of feral cats. For example, Tasmanian EBBs live alongside low numbers of feral cats in Tasmania. However, in the first month after release EBBs will be particularly susceptible to feral cat predation as they learn how to survive in their new home. Therefore, any help they can get to boost their survival will help establish wild populations of EBBs at wild, fox free sites, such as Phillip Island.

## Recent EBB Publications

- Parrott ML, Coetsee AL, Hartnett CM and Magrath MJL (2017) New hope for the Eastern Barred Bandicoot *Perameles gunnii* after 27 years of recovery effort. *International Zoo Yearbook* 51: 1-11.
- Jakob-Hoff R, Coetsee A, Bodley K and Lynch M (2016) Disease Risk Analysis for the Proposed Translocation of Eastern Barred Bandicoots to French and Phillip Islands. IUCN SSC Conservation Breeding Specialist Group: Apple Valley, MN.
- Coetsee A, Harley D, Lynch M, Coulson G, de Milliano J, Cooper M and Groenewegen R (2016) Radio transmitter attachment methods for monitoring the endangered eastern barred bandicoot *Perameles gunnii*. *Australia Mammalogy* 38: 221-231.
- Coetsee A (2016) Recovering the mainland Eastern Barred Bandicoot. *Victorian Naturalist* 133: 98-102.
- de Milliano, J, Di Stefano J, Courtney P, Temple-Smith P and Coulson G (2016) Soft-release versus hard-release for reintroduction of an endangered species: an experimental comparison using eastern barred bandicoots (*Perameles gunnii*). *Wildlife Research*. 43(1):1-12.



The Eastern Barred Bandicoot Recovery Team was founded in 1989 after a continual decline was noted in the wild population. Although extinct in the wild on mainland Australia, populations of bandicoots can be found in predator-free areas at Churchill Island, Hamilton Community Parklands, Mt Rothwell Biodiversity Interpretation Centre and Woodlands Historic Park, occupying a total of 860 ha.

‘Warron’ is the Kirrae Whurrong word for the Eastern Barred Bandicoot. This newsletter was named ‘Warron’ in honour of Wayne Drew after his passing in 2001. Wayne was the ‘Bandicoot Ranger’ for Woodlands Historic Park and a member of the Kirrae Whurrong people from the western district of Victoria.



### FURTHER INFORMATION

Conservation Volunteers  
[www.conservationvolunteers.com.au](http://www.conservationvolunteers.com.au)

Department of Environment, Land, Water & Planning  
[www.delwp.vic.gov.au](http://www.delwp.vic.gov.au)

Mt Rothwell  
[www.mtrothwell.com.au](http://www.mtrothwell.com.au)

Parks Victoria  
[www.parks.vic.gov.au](http://www.parks.vic.gov.au)

Phillip Island Nature Parks  
[www.penguins.org.au](http://www.penguins.org.au)

Zoos Victoria  
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*Eastern Barred Bandicoot Recovery is a collabaoration of the following organisations:*



Department of Environment, Land, Water & Planning



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