WARRON

Eastern Barred Bandicoot Newsletter
Number 12
December 2006

EBB
EASTERN BARRED BANDICOOT RECOVERY

'Warron' is the Kirrae Whurrong word for the Eastern Barred Bandicoot (EBB). The newsletter was named 'Warron' in honour of Wayne Drew after his passing in 2001. Wayne was the 'Bandicoot Ranger' for Woodlands Historical Park and a member of the Kirrae Whurrong people from the western district of Victoria.

The EBB is one of Victoria's most endangered mammals. It was formerly widespread throughout the grasslands and grassy woodlands of western Victoria, but is now virtually extinct in the wild. Only a handful of wild bandicoots survive and they live in and around the City of Hamilton.

In this issue;

Educational posters ideal for the classroom

A set of 12 information boards has been designed that make excellent posters or teaching aids; and it's available free on CD.

The boards were initially designed for the Hamilton Institute of Rural Learning (HIRL), situated on the outskirts of Hamilton within the Hamilton Community Parklands. Both HIRL and the Parklands have a long history of involvement in the EBB recovery program. The Hamilton Community Parklands is one of the four bandicoot release sites still being actively managed, and the 'Bandicoot Room' at HIRL was purpose built back in the '80s for use as the Eastern Barred Bandicoot interpretive centre.

For many years the 'Bandicoot Room' at HIRL has had a great display which included a number of free standing information boards, originally prepared by Kay Aldridge. After such a long service, the boards are about to be updated, and Kay has again worked with the Recovery Team to develop the new set of boards.

There will be 12 new boards covering subjects from community involvement in the recovery program to predation of bandicoots – probably the greatest threat to bandicoots around Hamilton (see sample board below).

After completing the boards, we realised the designs used are also ideal for use by schools who may want to make their own display by printing a copy of the boards. We hope to have these available on the web soon but if you would like a copy on CD we can send a free copy now. Please contact Tim Burnard 55812250 if you would like a free CD copy of the 12 information boards for use at your school.

BANDICOOT PREDATION

The fox is considered the primary cause of extinction of a number of Australian mammals, particularly small to medium-sized ground mammals like the Eastern Barred Bandicoot.

Cats may be an even greater threat to bandicoots. While they occasionally kill adults they generally prey on young bandicoots. Improving the survival of young bandicoots is one of the keys to the survival of the species.

Foxes and feral cats live on the outskirts of Hamilton, in the same areas shared by bandicoots. Further pressure comes from uncontrolled domestic cats prowling between dusk and dawn.

By Kay Aldridge

The new Bandicoot enclosure at Werribee Zoo.

The Werribee Zoo has recently opened a new Volcanic Plains exhibit that will soon feature the EBB.

The enclosure of 3.2ha aims to realistically recreate an area of Basalt Plains environment using native trees, shrubs and grasses as well as basalt rocks.

The area is already open to the public with a walkway meandering through an area of trees and on to a grassland area, but bandicoots are yet to be released. In the long run the area will be used as a 'soft release' for EBBs that have been bred at the Melbourne Zoo. 'Soft' release refers to a release into an area that is managed specifically to improve chances of survival, as compared to a release direct into the wild. Following the work done by Jasmine Ferguson (see her article on page 5) this type of release is now only suitable in a zoo environment such as found at Werribee.

An essential part of the enclosure at Werribee is fencing that excludes foxes and cats, the main predators of the EBB. The fencing was paid for jointly by 'Friends of the Zoo', the Wildlife Conservation & Science Department of Zoos Victoria, and the Department of Sustainability and Environment. It uses specifications from the Arthur Rhylah Institute and comprises electric fencing and a 'floppy' top backed up with constant monitoring to ensure foxes have not made their way into the enclosure.

While the Zoo team hope to introduce the first bandicoots soon, they still need to carry out a survey to ensure the food source for bandicoots (mostly small invertebrates, like insects, beetles, crickets, caterpillars and earthworms) is readily available.

In the future there are also plans for a range of information boards that will describe the animals and plants of the Basalt Plains as well as how the environment was formed through volcanic activity over the past eons.

The EBB Recovery Team has worked closely with Zoo staff to ensure that bandicoots have another safe home that will help to ensure their ongoing survival.

News from the Hamilton Community Parklands

We have good news and bad news from the Parklands.
The good news is that the new fence, installed last financial year is working very well. The 'floppy top' design has proved to be very effective in excluding foxes, and in the almost 18 months since its installation we have had only 2 foxes in the reserve. Both of these have been able to push underneath the fence through older sections of the 'apron' of wire which extends out from the base of the fence. Gavin Lewis the contractor and sharpshooter who looks after the fence is very happy with the performance of the fence. He has been replacing the old sections of apron.

The bad news is that we haven't been able to record any definite sign of bandicoots for about a year. Bandicoot sign was present but rare up until mid 1995. The reserve is now very dry like all of western Victoria, and with a release planned for late autumn, early winter, we are seeking permission from the parklands management committee to undertake some experimental watering prior to the release, to attempt to increase food availability.

Summary of a review by Amy Winnard 'Sixteen years of Eastern Barred Bandicoot *Perameles gunnii* reintroductions in Victoria'

This review outlines the history of each reintroduction site and evaluates possible reasons for the current status of EBBs at each reserve. The reserves include Woodlands Historic Park (our first site) through Hamilton Community Parklands, Mooramong, Floating Islands Nature Reserve, Lake Goldsmith Wildlife Reserve, Lanark, Cobra Killuc Wildlife Reserve and our latest site at Mount Rothwell.

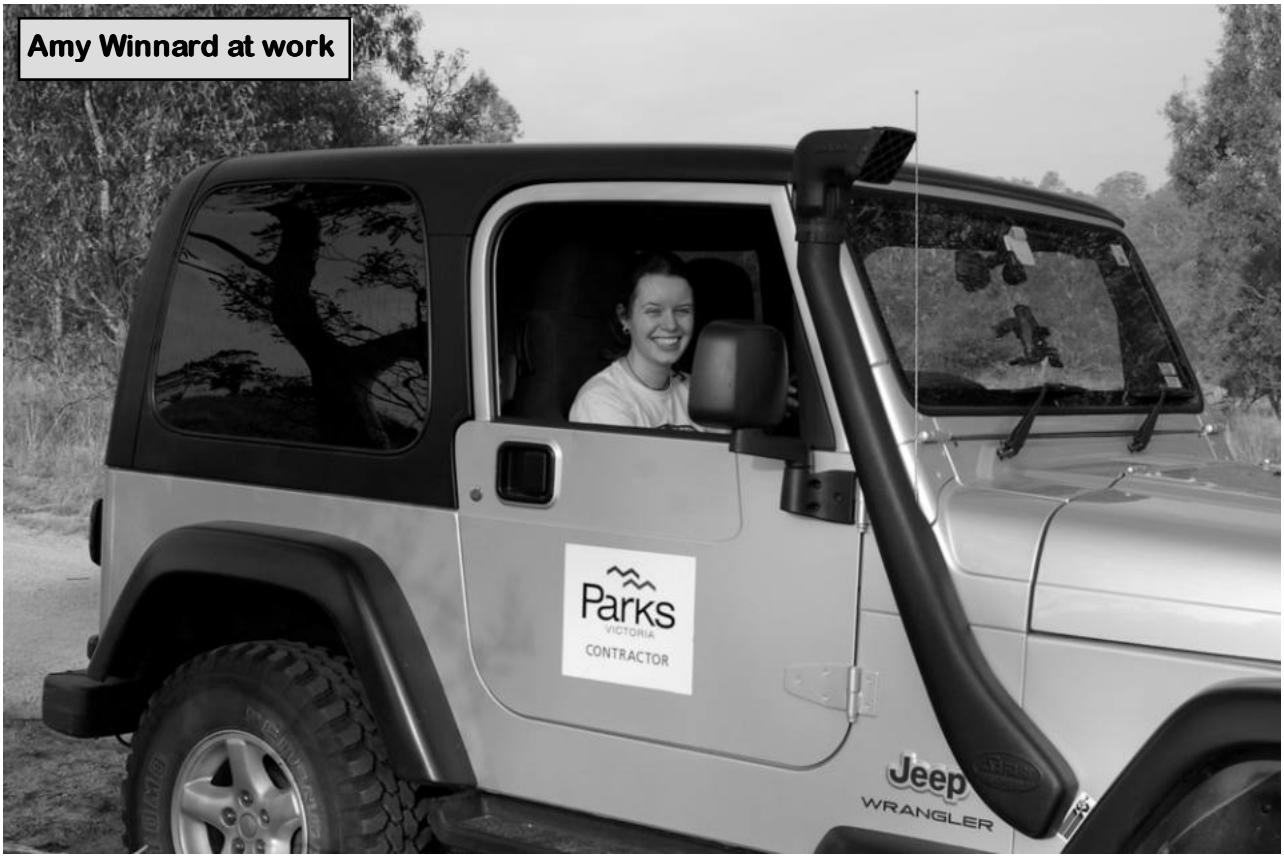
The review considers a range of potentially influencing factors such as drought, predation by foxes and cats, standard of fencing at sites, community involvement and the nature of release.

It concludes that after sixteen years of reintroductions and continuous management, the Victorian EBB population remains small. An estimate of the current population size is not available, but it could be as few as 100 individuals. It is not clear which processes are influencing populations the most. A combination of drought and inadequate fox control are the most likely limiting factors.

It is likely that populations have declined due to a series of below average rainfall years, and that any increase in numbers has been inhibited by predation. However, it could be that inadequate fox control initiated the decline at some sites, and then the effects of drought were exacerbated due to a small population size.

Investigations are currently underway to assess the relative importance of predator activity, food availability and vegetative structure on EBB population performance at Woodlands, Hamilton and Mooramong. One of the outcomes of this work will highlight if it is necessary to actively intervene at a site during certain abnormal conditions such as below average rainfall.

The EBB recovery team is also continuously reviewing site performance and monitoring techniques but, with limited funds and staff, there is only so much that can be done. EBB recovery is expensive and requires a continuous input of resources, without recognition and acceptance of this, the Victorian EBB population may forever be restricted to a handful of small reintroduction sites.



Amy Winnard at work

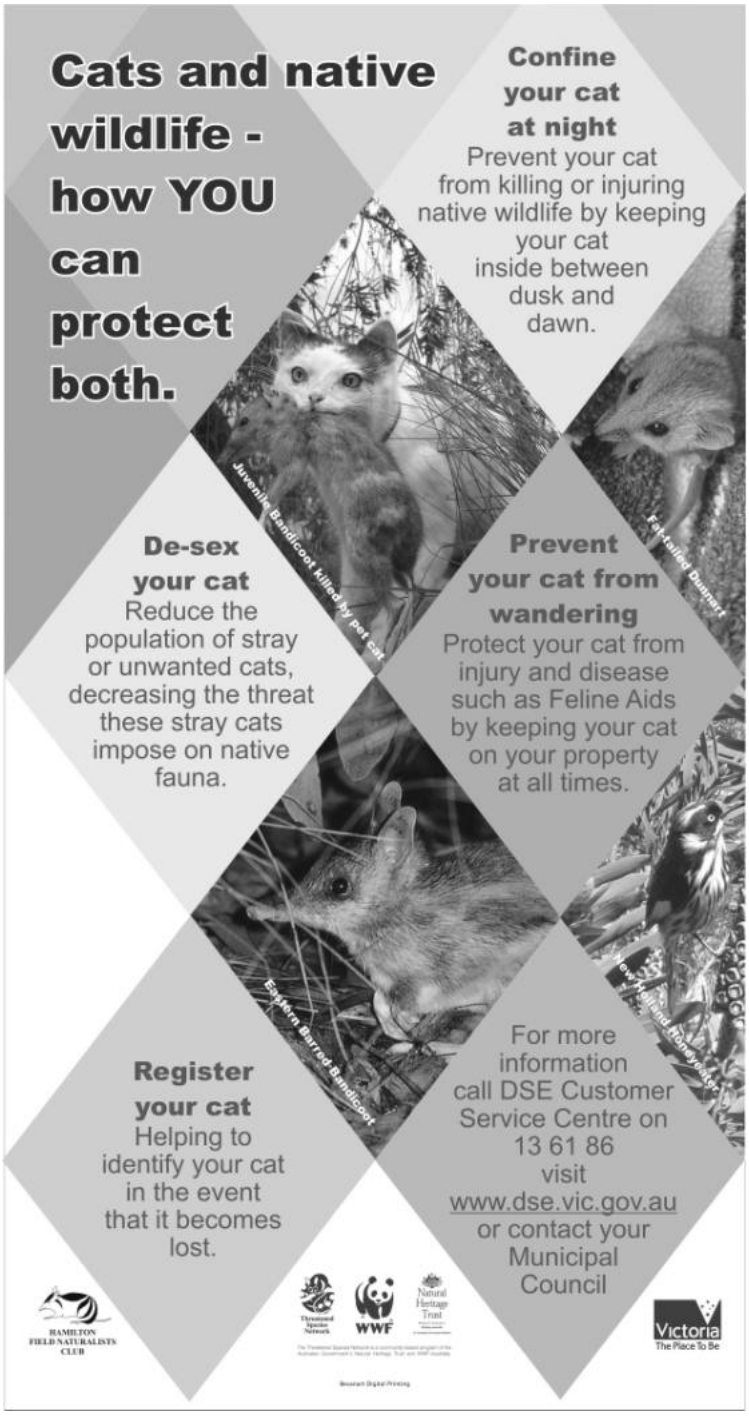
Hamilton Field Naturalist's help the Eastern Barred Bandicoot.

The Hamilton Field Naturalist's Club have put been working to reduce the threat to bandicoots from cats in their area. Their project has been funded through a WWF Threatened Species Network grant and has two main thrusts; education and trapping of feral cats.

The group has worked for many years to educate the local community on the threat to bandicoots from cats. This is normally conducted via articles in the local press, but the group now has an impressive banner that is being used throughout the community. The banner is nearly two metres high and reminds cat owners that allowing cats to stray at night time is dangerous for cats and native wildlife alike.

The Club has also used the grant to purchase a number of specially adapted traps. The traps are put out at night in members back gardens and used to trap feral cats in the Hamilton township. Any cats trapped are picked up by the local council and taken to the council pound. If registered cats are trapped, the owners are contacted to arrange for pickup.

Anyone wanting to use the display at an event can organise this by contacting Yvonne Ingeme on 55 730 734.



Our new logo

Earlier this year, 10 students from the Grenadi School of Design (Melbourne) agreed to help the Recovery Team by designing an EBB logo. We have never had an official logo and so it is an opportunity for the team to present a more professional image to the community.

The students spent considerable time each coming up with their own designs based on information provided by the team. The options provided by the students were fantastic but after a lot of deliberation the design presented by Viet Le was selected.

The Recovery Team is very proud of the final logo and wishes to express their thanks again to the students from Grenadi School of Design for their hard work.

'Soft release versus hard release' A summary of a paper by Jasmine Ferguson with conclusions for eastern barred bandicoot re-introductions

There is very little published literature regarding the initial success of EBBs at re-introduction sites. Most re-introductions thus far have used a 'hard-release', with animals released directly into the site after transport from the zoo. A 'soft-release' has been used at the *Mooramong* site with some success, where bandicoots were housed and supplementary fed in a 2 ha pen for at least one month before release.

This kind of soft-release is known as acclimatisation and involves holding pre-release animals in a protected enclosure at the release site (with food, water and shelter provided) so they can adjust to the new surroundings before release. It is based on the principle that animals which are allowed to become gradually accustomed to the new environment will survive and perform better after release than those which are hard-released. However, when acclimatisation is trialled without a simultaneous hard-release, it is impossible to determine if acclimatisation contributes to success or if it is due to other factors.

Jasmine Ferguson radio tracking bandicoots

Until a recent study by Melbourne University Honours student, Jasmine Ferguson, there has been no experimental comparison of release protocols to investigate if acclimatisation improves re-introduction success for this species.

Jasmine released captive-bred bandicoots into *Mount Rothwell*, near Geelong, (the newest re-introduction site for this species) using two different release protocols: soft-release (with one week acclimatisation before release) and hard-release (directly into the site). She then compared their initial (one month) success in terms of survival, reproduction, weight change, nesting and foraging behaviour, dispersal and movement, and habitat selection. She found that acclimatisation did not offer sufficient benefits to justify its inclusion in release protocols for the EBB.

Scarlet eating mealworms

The two release groups exhibited similar behaviour and habitat selection, and lost the same amount of weight overall. Of the six hypotheses tested, only one - the hypothesis of reduced dispersal and movement - confirmed an increased success of soft-release bandicoots.

Cont. over page

'Soft release versus hard release' A summary of a paper by Jasmine Ferguson with conclusions for eastern barred bandicoot re-introductions . (cont.)

Jasmine found that hard-release bandicoots dispersed further on the first night after release and that they moved over larger distances. However, this did not coincide with adverse outcomes such as decreased survival, increased weight loss or failure to reproduce. Therefore the decreased movement of soft-release bandicoots provided no justification for the additional resources required to acclimatise them before release. This is especially true for fenced re-introduction sites like *Mount Rothwell* where dispersal is limited to the confines of the reserve.

Jasmine also found positive signs that both soft-release and hard-release bandicoots adapted well to the semi-wild environment at *Mount Rothwell*. They all built cryptic nests, foraged successfully and some females even had pouch young within two weeks of release! Furthermore, both groups of bandicoots in this study had higher survival rates than those from previous re-introductions at 'free-ranging' sites and those with incomplete fox control. This suggests that, in the absence of foxes, captive-bred bandicoots can survive in the wild, whether they are hard-released or soft-released.

Given the costs involved in acclimatisation and the fact that it provides only a small number of short-term benefits, hard-release into a protected (i.e. fox and cat free) environment is the best option for re-introduction of the EBB.

News from Woodlands

Habitat preferences and EBB abundance have been key themes for monitoring programs in the Back Paddock at Woodlands Historic Park throughout 2006. Expertise associated with this year's monitoring has been provided through collaborative research between Melbourne University and Parks Victoria; a project initiated through the Parks Victoria Research Partners Panel.

Although no bandicoots were trapped throughout the three week Winter trapping program, digs were observed and recorded at eight of the fifty plots placed across the entire Back Paddock. Spotlighting also revealed one very swift and elusive bandicoot just south of the pens in a dense stand of Kangaroo Grass (*Themeda triandra*). Due to low trapping numbers, Spring brought about an adjustment to monitoring with efforts focussed on dig locations across the original grid; with trapping now based on areas of high dig density.

Spring has also seen the commencement of sand pad monitoring to determine appropriate control methods to deal, primarily, with the establishment of juvenile foxes in and around the Back Paddock area. Although it's believed we are still experiencing some set-backs since last February's flood - in terms of predator establishment - control methods between March and August resulted in the eradication of five foxes outside the electric predator fence and fortunately two inside.

It is pleasing to report that the Recovery Team was successful in obtaining Natural Heritage Trust funds to aid in intensive efforts by Parks Victoria to maintain and improve predator proofing of the Back Paddock. Since June 2006, with the assistance of these funds, staff have achieved 4.6kms of extensions towards predator and rabbit-proofing the fence.

News from Mt Rothwell

Mount Rothwell, located on the northern end of the You Yangs Range encompasses 700 hectares of fox and cat free habitat. Since 2002, several mammal species have been reintroduced including Rufous Bettong, Southern Brown Bandicoot, Long-nosed Potoroo, Brush-tailed Rock-wallaby and the Eastern Barred Bandicoot.

EBBs were initially released in what is known as 'Zone 1', but are intended to be allowed to move to other areas as habitat restoration continues. Unfortunately, as with many areas in regional Victoria, the lack of significant rainfall has begun to compromise habitat values resulting in Zone 1 grassland and understorey suffering significantly. Invertebrates (EBB food supply) are still plentiful however the ephemeral cycles associated with them requires vigilance and planning for supplementary feeding and or relocation to other zones that are fairing better.
The dry conditions has resulted in dams drying up and all water is now supplied for fauna via a network of pipes, pumps, troughs and tanks. This has bought on a significant reduction in animal relocations over the recent period.
Some EBBs that were already relocated to 'Zone 3', which is in better condition than Zone 1, are often sighted during other management activities but no trapping or dedicated monitoring has occurred over the past four months.

Analysis of Eastern Barred Bandicoot Capture Data, by Charles Todd, Joanne Potts & Alan Robley, Arthur Rylah Institute for Environmental Research.

Individual bandicoots have been captured, marked and recaptured at four sites around Victoria (Hamilton, Mooramong, Lanark and Lake Goldsmith) over an eleven year period from December 1992 to December 2003. Some bandicoots were marked and never caught again, and some were caught at regular intervals at particular sites. Both wild bred and captive bred animals were marked. The capture history of each individual when combined at the site level allows growth rates and population size to be estimated at each site. All the capture histories analysed together provide an overall view of bandicoot survival.

The data were partitioned to look at differences in survival between subadults and adults of wild bred animals and captive bred animals as well as the difference between sexes. The overall analysis reveals that subadult survival is less than adult survival for females in both wild and captive bred and survival of captive bred animals was lower than wild bred animals.

The results for males were somewhat counterintuitive. Subadult survival was less than adult survival in wild bred males, however this was not the case for captive bred males where adult survival was less than subadult survival. Furthermore, captive bred subadult survival was higher than wild bred subadult survival. In all circumstances the estimates of survival were quite high, with the exception of subadult captive bred females.

Further analysis was undertaken to examine whether survival of captive bred animals was different in the three months after release compared to the results stated above. This analysis indicated that female adult survival was much lower for captive bred animals in the three months after release. Similarly for captive bred males post release, except not quite as low. There were marginal changes in released subadults. There were virtually no differences in the three months after first capture of wild bred animals by sex or by age.

Growth rate is a summary measure of the dynamics of a population. The growth rate can simply be thought of as the ratio of the population size at two different points in time, N(2)/N(1). If the population has increased then the ratio is greater than one if the population has decreased then the ratio is less than one. The estimates of growth rate for the four sites were all close to one, with the exception of Mooramong which was 0.95 indicating population decline in the trapping area. These results suggest that the density of animals where the traps were placed was relatively constant. The result for Mooramong suggests that animals were likely to be moving away from the trapping area.

Over the eleven years it was estimated that Hamilton had 386 animals of which 165 were wild bred; Lake Goldsmith had 194 animals of which 38 were wild bred; Lanark had 241 animals of which 130 were wild bred; and Mooramong had 567 animals of which 342 were wild bred. These results indicate Lake Goldsmith to be the least productive site followed by Lanark. (Note that both of these sites have been discontinued as release sites)

New educational display for use at public events

The Recovery Team has recently produced a new display for use at public events. The display tells the story of the EBB and why it has become so rare covering subjects such as; original range, habitat, food source, predation by cats and foxes and what each of us can do to help save the bandicoot from extinction.

The display is intended for use at public events and also to be moved around schools, councils, shopping centres etc where it may help to spread the word on the plight of the EBB. The banner rolls down to a light easily transported tube. Anyone wishing to use the display can organise this by contacting Tim Burnard on 55 812250.

Richard Hill, EBB Recovery team convenor, stands with the new mobile display.

'Warron' the Eastern Barred Bandicoot newsletter is published and distributed free of charge by the Eastern Barred Bandicoot Recovery Team. If you would like to be included on the mailing list, please contact Tim Burnard on 5581 2250.

SURFACE MAIL

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