



## Eastern Barred Bandicoot Recovery Program



Conservation & Natural Resources

Zoological Board of Victoria

### Recent Achievements

The last six months has seen continuing success in the Eastern Barred Bandicoot recovery program. From a total of about 250 bandicoots at the end of 1992, the figure has steadily increased to about 450 bandicoots at the end of June. The dark days in late 1991, when only about 110 bandicoots in total were known to exist are fast receding.

Special thanks to the many volunteers from the 'Friends' and other groups, and the hard-working National Trust, Zoo Board and Department staff who are all contributing to the remarkable success of the recovery program. The support for the program from other organisations such as Ballarat University College, the South Australian National Parks and Wildlife Service, Kyabram Fauna Park, Ballarat Wildlife and Reptile Park and the Zoological Parks Board of New South Wales has also been instrumental in this success.

### Hamilton Community Parklands

#### Monitoring and Progress Report

A major monitoring program was held in the Hamilton Community Parklands wildlife enclosure during April of this year. A total of 66 bandicoots (26 females and 40 males) were captured during five nights of trapping - 22 bandicoots (10 males and 12 females) were new animals not previously trapped or marked. Ten females had 16 pouch young.

Population simulation modelling indicated a population of about 80 bandicoots, similar to the figure from the November 1992 monitoring. The apparent plateau in the population in the enclosure may indicate that it is approaching carrying capacity. Reproduction was low, possibly reflecting the very dry autumn. There still appears to be a male bias in the population, which may be real, or simply an artefact of sampling a small population.

Twenty one people, including a large number of



*Weighing Bandicoots for monitoring (photo by Ian Smith).*

volunteers from the Friends, other groups and individuals were involved in the monitoring. Peter Goldstraw reports that there are numerous bandicoot diggings outside the enclosure near the HIRL buildings. These are probably juvenile bandicoots that have escaped by squeezing through the fence or through mesh over culverts, and appear to have established themselves in the long grass, shrubs and perhaps gardens at HIRL.

### GHP

#### Monitoring and Progress Report

At the April monitoring at GHP about 60 people were involved in the 5 day exercise. It was certainly a baptism of fire for the new bandicoot project ranger, Graeme Bowley! Janine McKay was there to show Graeme 'the ropes', and the logistics of organising 60 people in making baits, setting and checking traps, and collecting and entering data were handled very professionally and smoothly.

The monitoring was extremely successful, with a total of 122 bandicoots (64 females and 58 males) captured over the five nights. Seventy six bandicoots (42 females and 34 males) were new, unmarked animals. Thirty four females were carrying a total of 57 pouch young. Population simulation

modelling gave an estimated total population of about 150 bandicoots in the reserve. About 90 bandicoots had previously been released into the nature reserve, and this is the first indication that the population had increased **above** the number of bandicoots released. The high number of new animals indicates that the bandicoots are breeding well. The success of the Gellibrand Hill re-introduction has given the recovery program a major boost.

Enquiries: Graeme Bowley on 333 1185.

## Mooramong

The re-introduction project at Mooramong is proceeding at a rapid pace involving many organisations and individuals. There have now been five releases of captive bred animals, totalling 36 bandicoots (12 males and 24 females; 15 in December '92; 10 in February '93; 4 in March; 2 in August; 5 in September). Prior to the September release, a further three bandicoots were known to have died, probably from release related trauma, making a total of five bandicoots known to have died after release. At that stage, only one bandicoot was known to have been killed by a fox.

The September release has been the most disappointing. Of the five bandicoots released, three were killed by foxes (probably a single animal) during the night they were released. Another adult, released in February, was also found dead, killed by a fox on the same night. This is the worst known case of fox predation in the re-introductions so far. The newly released bandicoots were probably at a disadvantage in not having established territories or nest sites and were more exposed, especially immediately after release.

The fox kills happened in spite of an intensive poisoning campaign. An integrated approach to fox control is vital. Den detection and destruction, and spotlight shooting, possibly using professional shooters, will be stepped up. Regular spotlight shoots will occur prior to further releases. The regular poisoning program will be maintained.

On the brighter side, the regular monitoring conducted during the same week saw 14 adults trapped, and another wild-bred, independent young captured. It seems that established bandicoots are still surviving well, and are less at risk of predation, possibly by having established territories and some-

where to hide, or are able to better avoid foxes. Over 90 pouch young have now been recorded, and ten of these (7 males, 3 females) have subsequently been trapped as independent young. All three females have been breeding, thus producing a second generation of wild-bred bandicoots. Despite the bitter disappointment of the recent losses to fox predation, the results overall are still better than predicted at the start of the releases. The population is now starting to show the first signs of self-maintenance as bandicoots begin to breed in the wild.

Students from Ballarat College have continued the dietary and radio-telemetry studies of bandicoots, and have gathered important information on the biology of the species. Their field work for 1993 is drawing to a close and we look forward to reading their reports.

### Ranger at Mooramong

The new National trust ranger for the nature reserve, Tym Barlow, has started work at Mooramong. Tym has a background in native plants research, having undertaken extensive studies in the flora of the basalt plains. He is keen to learn more about bandicoots, and will be on a fast learning curve, having already been involved in releases and monitoring. Tym's presence will certainly improve the level of predator control, and he plans to acquire a terrier to help with cat control work! Welcome aboard Tym.

If you are interested in assisting with the monitoring program at Mooramong during December or January, please contact Jim O'Brien or Robert Humphries on (053) 336782 for further information. Monitoring usually lasts 3 days & 2 nights, accommodation is available at Mooramong and transport from Ballarat may be available - space permitting.

## Other Events

A review of the scientific aspects of the recovery program was commissioned, and undertaken by Dr Peter Mitchell, a biologist who has previously worked on koalas and other mammals. Dr Mitchell has prepared a report, and his recommendations are being progressively implemented into the research aspects of the recovery program.

The recovery program leaders, Gary Backhouse and Gary Slater, have prepared an Annual Report from



*Eastern Barred Bandicoot (photo Kay Aldridge).*

January '92-June '93. This is intended to be the first of a series of annual reports on the recovery program.

### Other Re-introduction Sites

In the April Newsletter, a list of draft criteria for assessment of possible release sites was published. At this stage, we will try to proceed with only one new re-introduction site during 1994, probably in the Hamilton district. The recent experience at Mooramong has clearly demonstrated that predation by foxes (and perhaps cats?) is the single biggest challenge to re-establishing Eastern Barred Bandicoots in the wild. Predator control in any area considered for bandicoots will almost certainly have to include poisoning, trapping, shooting and sympathetic neighbours supportive of these measures.

Kay Aldridge from the Friends group has forwarded details of a number of potential sites near Hamilton. If your property fits the criteria for a potential release site, and you are interested in the recovery program, please send details to Gary Backhouse, Flora and Fauna Branch, Arthur Rylah Institute, P O Box 137, Heidelberg Victoria, 3084.

### Foxoff Study

Melbourne Zoo is currently undertaking Foxoff bait trials with Eastern Barred Bandicoots.

Foxoff is a meat based bait formula designed to be used in conjunction with 1080 (flouroacetate) for

### My time at Healesville Sanctuary

In early May I spent a week working as a volunteer at Healesville Sanctuary to gain further experience in wildlife care and handling. My work areas included Animal Care, Education plus Dingoes and Owls, Hospital and Quarantine, Captive Breeding, Reptiles and Nocturnal House plus Bandicoots. I will long treasure my wildlife close-ups, especially with those species from central and western Australia and Tasmania, as well as our own illusive eastern species. There was much to learn about feeding, housing and handling of birds, reptiles and mammals including the endangered Eastern Barred Bandicoot. Thank you Healesville Sanctuary.

**Kay Aldridge**

Friends of the Eastern Barred Bandicoot

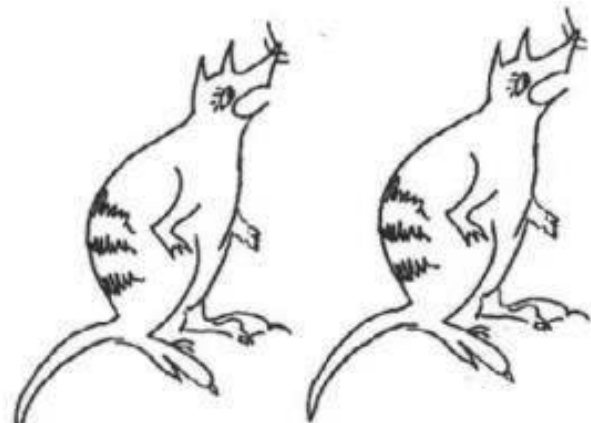
the baiting of foxes, however the risk of baits being taken by non-target species has only been superficially investigated. As foxes are a significant predator of Eastern Barred Bandicoots it is important to establish whether bandicoots will dig up and eat these baits.

The study involves burying Foxoff baits which do NOT contain any 1080 at 10cm depths. Then bandicoot faeces are examined for the presence of coloured beads, which had been impregnated in the Foxoff bait. Other factors being monitored are temperature, rainfall, weight and normal food intake. Videotaping is done weekly.

The results of the study so far indicate that certain animals are digging up and eating Foxoff baits. Healesville Sanctuary is also completing similar studies with both Eastern and Tiger Quolls.

**Anne Phillips**

Native Mammal Section, Melbourne Zoo





## Captive Breeding Working Group

After the low period during winter, the bandicoot breeding program is now starting to pick up again with many females at all properties carrying pouch young (see Peter Myroniuk's report). In August another seven captive bred animals were transferred to Mooramong for eventual release.

Healesville & Gellibrand Hill Park have been involved in producing a segment for HSV 7's 'Talk to the Animals' program on the captive breeding aspects of the recovery effort. This was screened earlier this year. Recently a number of TV stations covered the Gellibrand Hill November monitoring exercise. Both John Seebeck and Jenny Kingston starred next to the bandicoots.

The total population in intensive captivity is 124 animals. This is the number we plan to have in breeding pens, with potential offspring, next year. This year we hope to have 70 EBBs to re-introduce.

Kyabram Fauna Park has recently received additional animals to place into their new breeding pens. These pens were partly sponsored by 'Australian Geographic' and local businesses. Thank-you.

The South Australian National Parks and Wildlife Service facility at Monarto, near Murray Bridge, is producing many bandicoots and is a great asset to the program. A recent article in the 'Adelaide Advertiser' on their work helped boost their profile.

## Rabbit Control Program

### Gellibrand Hill Park

Earlier this year the casual observer may have been excused for thinking that the nature reserve at Gellibrand Hill Park was undertaking a rabbit breeding program! Successful predator (fox) control programs and good years had resulted in the densest rabbit population ever recorded in Victoria. It was estimated that rabbit numbers had reached about 120 rabbits per hectare.

Rabbits in such large numbers were threatening the success of the nature reserve because :-

- they destroy seedlings of native trees, shrubs etc..
- they compete with native animals for food

- their burrowing causes tunnel erosion
- they are an important food source for foxes and feral cats, which also prey on native animals

The rabbits were finally brought under control in 1993 with an extensive poisoning program. The program achieved about a 96% control with an estimated total kill of approximately 48,000 rabbits. Unfortunately three bandicoots appear to have been accidentally poisoned, despite precautions being undertaken. However, signs in the field indicate that the Eastern Barred Bandicoot colony is thriving and has not been affected by the poisoning program.

Follow-up control work on the remaining rabbits is vital to ensure their numbers cannot build up quickly.

The present follow-up works include:-

- shooting during predator control program
- destruction of burrow sites
- fumigation of burrows

Ongoing management of the rabbit population at Gellibrand Hill Park will prevent the rabbit numbers from reaching the levels observed earlier this year.

## Eastern Barred Bandicoot Recovery Program

### Captive Population Statistics to 31 Aug '93:

Total no. animals registered in stud book: (living, dead, released)	487
Current captive population:	124
Total no. of captive births:	349
Births for the period 31/12/92 - 31/8/93:	36
Total no. of releases from captive population:	135
Hamilton Community Parklands:	11
Gellibrand Hill Nature Reserve:	94
Mooramong Nature Reserve:	30
Total no. of deaths in captivity:	146

The captive population is made up of 8 sub-populations at Melbourne Zoo, Healesville Sanctuary, Werribee Zoological Park, Taronga Zoo, Western Plains Zoo, Monarto Fauna Complex SA, Kyabram Fauna Park and Gellibrand Hill Park. A ninth facility, Mooramong is technically not included as part of the captive population, as like the pens at Gellibrand Hill Park, it is a transition or acclimatisation facility between intensive captive management and release to wild or semi-wild.

The captive population is highly managed according to the principles of conservation genetics. These principles are based on the goal of preserving the original genetic diversity present in the wild caught founders of the captive population. Our long term aim is to ensure not more than 10% of this original genetic diversity is lost over the duration of the captive propagation program. This can only be achieved by accurate recording of family trees (pedigrees) for each individual bandicoot. This information is compiled into a studbook, from which managers can analyse the genetic diversity of the population and its demographic structure.

The captive population requires this intensive management to ensure genetic diversity, as it is the secure captive population that is supply animals for release. Once several free-ranging wild and semi-wild populations are established, genetic interchange between them and the captive population will need to occur - Managed Migration (Figure 1).

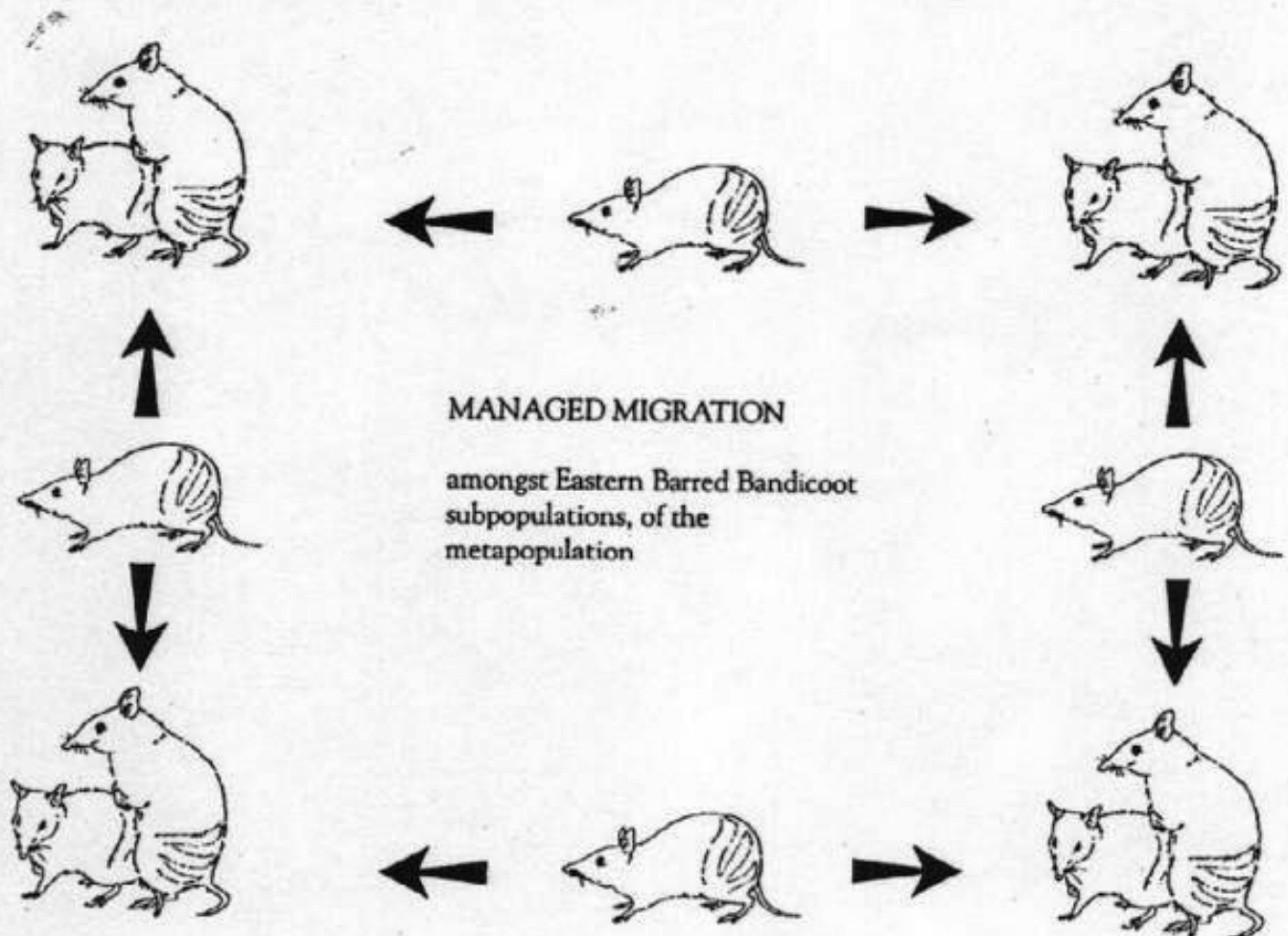
To-date, the captive population has retained 97% of the original genetic diversity of its wild founding

stock. Forty wild founders are represented in the living descendant population however, due to unequal family sizes, certain wild founders are over-represented by their descendants, thus genetically the population looks as if it was started from only 19 wild founders all contributing equal family sizes to the population. This may appear to be poor however, geneticists have calculated that obtaining at least 20 wild caught founders, yields 97.5% of the genetic diversity of the original wild population.

Based on the above, the captive population appears to be in excellent condition genetically. There is some scope for improvement, and it is the challenge of the Studbook Manager, based on detailed scientific analysis of the pedigrees, to select appropriate pairings followed by a judicious selection of captive offspring for release to the wild. Animals need to be carefully selected for release so as not to deplete the genetic diversity in the captive population

**Peter Myroniuk**

Species Management Officer, Melbourne Zoo  
& EBB Studbook Manager



## Captive Facts

### Did you know?

That keeping staff spend, on average, 2.7 hours per day, seven days a week, caring for captive bandicoots. This does not include the sick or injured ones.

### Did you know?

That each month it takes approximately 5.9 hours to weigh, pouch check and give a complete physical to 30 bandicoots.

## Gellibrand Hill Monitoring Preview

WOW!! The monitoring at GBH was great. Seventy volunteers helped Graeme over the week averaging 32 people per day. The first day they were caught unaware as 110 animals were captured compared with 32 animals which had been captured on the first day of the March monitoring. Then 110, 106, 147 and 166 animals were trapped respectively on the following days. The total number of animals caught was around 312 of which 233 had to be tattooed as they had not been previously trapped. The sex ratio was about 50:50 male:female.

A more detailed analysis of the November monitorings at Gellibrand Hill, Mooromong and Hamilton will appear in the next newsletter. Stay tuned.

# Merry Christmas and a Happy New Year for 1994



Thank-you to everyone who has worked throughout the year to help save the Eastern Barred Bandicoot from extinction.

Our efforts are beginning to bear fruit as the bandicoots are now starting to breed well in captivity. We are all looking forward to 1994 as being a big bandicoot year.

Next big event is Easter - let's start campaigning for Bandicoot Chocolates. Cheers.