Bandicoot Survival

Student Workbook

VCE Biology Unit 1: How do living things stay alive?
Area of Study 2: How do living systems sustain life?

Pre-excursion Reading

Eastern Barred Bandicoot *Perameles gunnii*

The mainland subspecies of Eastern Barred Bandicoot, *Perameles gunnii*, is now considered extinct in the wild. They are listed as Endangered federally (EPBC Act 1999).

Bandicoots were once widespread across grasslands and grassy woodlands of western Victoria and South Australia. By 1991, the subspecies was on the brink of extinction, primarily due to habitat loss and predation by introduced foxes and cats.

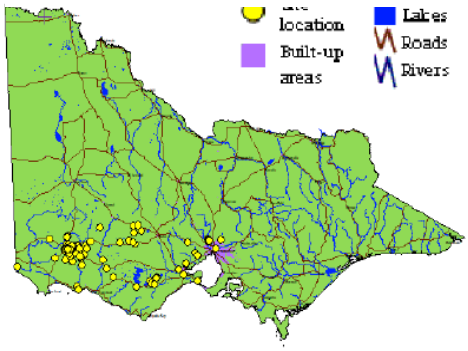
A captive breeding program was established sourcing Eastern Barred Bandicoots from the last known population at Hamilton. Since then, a coordinated Recovery program has focused on captive breeding, habitat management and predator control. There are currently reintroduced populations of Eastern Barred Bandicoots at Woodlands Historic Park, Mt Rothwell, Hamilton Community Parklands, Churchill Island and Phillip Island. Zoos Victoria coordinates the captive breeding program and plays a key role in the recovery of this species through:

- Supplementing reintroduced wild populations through captive breeding for reintroduction
- Maintaining an insurance population in captivity
- Conducting research to improve breeding and reintroduction success
- Increasing community awareness and support for the Eastern Barred Bandicoot

The Australian Trail precinct at Werribee Open Range Zoo is a 3.7ha large protected, predator proof enclosure containing natural habitat. The site enables Zoo visitors to connect with Eastern Barred Bandicoots and their basalt plains environment.

To find out more go to www.zoo.org.au/werribee/animals/eastern-barred-bandicoot

Former distribution of the mainland subspecies of Eastern Barred Bandicoot



Distribution in Victoria
(Victorian Fauna Database DSE 2007)

Data collection at the Zoo

Survival through adaptations

Understanding bandicoot adaptations for survival are key to effectively managing the species in captivity and breeding for release.

Spend some time observing an Eastern Barred Bandicoot.

1. In the table below describe at least one example each of a structural, behavioural, and physiological adaptation that would enable the bandicoot to survive in a grassland habitat and maintain a viable population size over time.

Structural adaptation	Behavioural adaptation	Physiological adaptation

Bandicoot Release and Carrying Capacity

The carrying capacity of a region for a given species is the maximum number of individuals that the region's resources can sustain indefinitely without significantly impacting on those resources.

Population modelling suggests that the carrying capacity for Eastern Barred Bandicoots is 1 animal/1.5ha.

2. List the factors that would need to be considered when determining the carrying capacity of a site for Eastern Barred Bandicoots.

Relationships between organisms in an ecosystem
Commensalism: *One organism benefits from another without affecting it.*
Ammensalism: *One species hurts the other but doesn't benefit from the interaction.*
Mutualism: *Each individual benefits from the activity of another.*
Parasitism: *One species benefits at the expense of another.*
Predation: *Predator feeding on prey*.

Grassland organisms

3. As you move through the Australian Journey grasslands observe two biotic factors that have the potential to interact with an Eastern Barred Bandicoot. Record the details in the table below:

Organism	***Evidence*** *e.g. scats, sighting, feather, call, etc.*	**Producer or consumer?** (circle)	**Relationship with a Bandicoot** *eg. predation, mutualism, commensalism, ammensalism, parasitism or none.*	**Inputs** *i.e. what does the organism take in to survive?*	**Outputs** *i.e. what does the organism release into its environment?*
		Producer Primary consumer Secondary consumer Tertiary consumer			
		Producer Primary consumer Secondary consumer Tertiary consumer			

Data collection sites in the Australian Trail at Werribee Open Range Zoo

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Eastern Barred Bandicoot Habitat Preference

Aim: To determine the suitability of the Australian Trail site for supporting a small population of Eastern Barred Bandicoots.

4. Each school participating in this program will collect field data. Quadrats are set at particular sites indicated on the map and will be allocated to ensure an even distribution of data. The accumulated data will be collected using EpiCollect and made available to view online.
   The factors below are considered important for Bandicoot interaction with a site. These factors will be measured in $1m^2$ quadrats adjacent to the trapping sites to determine the characteristics of sites that the Bandicoots interact with.

Quadrat number:		**Quadrat number:**	
Air Temperature	(ºC)	Air Temperature	(ºC)
Percentage Plant cover <15cm	%	Percentage Plant cover <15cm	%
Percentage Plant cover > 15cm	%	Percentage Plant cover > 15cm	%
Woody debris cover (eg. branches, bark, etc.)	%	Woody debris cover(eg. branches, bark, etc)	%
Plant litter cover (eg. dead leaves, stems, flowers)	%	Plant litter cover (eg. dead leaves, stems, flowers)	%
Artificial cover (cement, bricks, fence palings)	%	Artificial cover (cement, bricks, fence palings)	%
Bare ground cover (including rocks)	%	Bare ground cover	%
Distance to the nearest cover that would conceal an EBB , ie clusters of plants >15cm in height	m	Distance to the nearest cover that would conceal an EBB , ie clusters of plants >15cm in height	m
Number of species of plants		Number of species of plants	
Number of surface invertebrates		Number of surface invertebrates	
Number of different type/ species of invertebrates		Number of different type/species of invertebrates	
Rabbit abundance (circle)	0 1 2 3 Not present ← → Recent activity (fresh scats, diggings)	Rabbit abundance (circle)	0 1 2 3 Not present ← → Recent activity (fresh scats, diggings)
Soil moisture content (circle)	Dry Moist Wet	Soil moisture content (circle)	Dry Moist Wet