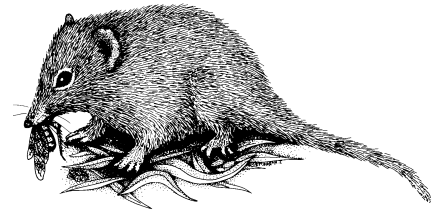


## Student Notes:

These pages will assist you in your note-taking during the *Brilliant Biodiversity* presentation.



1. What is biodiversity?

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2. How is it measured?

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3. Why is biodiversity important?

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4. List three criteria for designation as a Biodiversity Hotspot

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5. List some of the *Threatening Processes* that are occurring in the wild

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6. The Extinction Vortex is a model that illustrates the effect of threatening processes on populations in the wild. Complete the model to show where conservation action is most effective.

Small, Fragmented, Isolated Populations

Increased mortality and decreased birth rates

Extinction Vortex

Inbreeding

Reduction in individual fitness and population adaptability



7. List the key components of a Species Recovery Plan:

- a) \_\_\_\_\_
- b) \_\_\_\_\_
- c) \_\_\_\_\_
- d) \_\_\_\_\_



8a) Breed for Release – Numbat

Conservation Status:
Habitat:
Threats:
Other Information:

8b) Recovery Challenge #1 – Numbat Predator Awareness

Captive breed numbats are not used to fending for themselves. Suggest something that you could do to increase their chances of survival.

\_\_\_\_\_

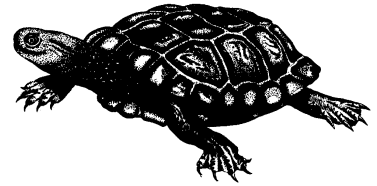
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8c) After the session, check out the Breed for Release area in Zoo HQ. What are the six stages of the Breed for Release process and what do each involve?

- 1. \_\_\_\_\_
- 2. \_\_\_\_\_
- 3. \_\_\_\_\_
- 4. \_\_\_\_\_
- 5. \_\_\_\_\_
- 6. \_\_\_\_\_



## 9a) Research – Western Swamp Tortoise



Conservation Status:

Habitat:

Threats:

Other Information:

## 9b)

Recovery Challenge #2 – Western Swamp Tortoise and Climate Change

Western Swamp Tortoises are threatened by Climate Change. What research or planning could you undertake to ensure their future in the wild?

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## 10a) Rear for Release – Orange-bellied Frog

Conservation Status:

Habitat:

Threats:

Other Information:

## 10b)

Recovery Challenge #3 - Rear for Release

What planning or research needs to occur before rearing this species in captivity?

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11a) Rehabilitation – Black Cockatoos

Conservation Status:

Habitat:

Threats:

Other Information:

11b)

Recovery Challenge #4 – Rehabilitation

What kind of evidence would indicate that the rehabilitation of cockatoos is a worthwhile conservation strategy?

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If you are on a self-guided visit, this activity can be used while in the Zoo. Alternatively, information can be sourced from the Perth Zoo website.

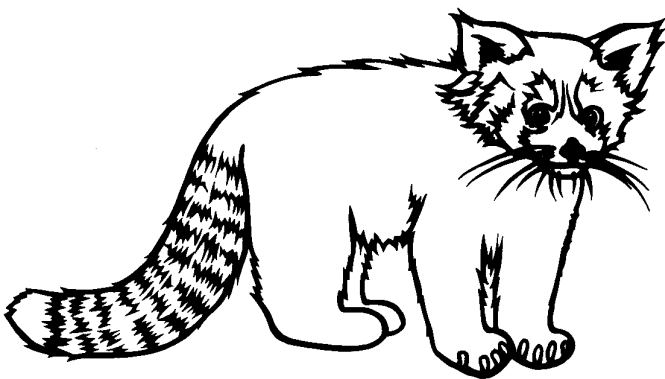
## Develop your own Captive Breeding Program

A captive breeding program can assist in repopulating threatened species in the wild.

1. The first step in designing your captive breeding program involves understanding your species.

Choose one of the following species found in the Asian or African sections of Perth Zoo: White-cheeked Gibbons, Painted Dogs, Asian Elephants or Red Pandas.

Species: Scientific Name:	Number of young: Gestation:
Distribution:	



Describe the elements of the species' habitat:

2. Outline the threatening processes affecting your species, e.g.:

<b>Introduced Species</b> <ul style="list-style-type: none"><li>• Competition</li><li>• Predation</li><li>• Disease</li></ul>	<b>Hunting, Poaching, Smuggling</b> <ul style="list-style-type: none"><li>• Killed for meat</li><li>• Killed for sport</li><li>• Illegal pet trade</li><li>• Traditional medicine</li><li>• Perceived as a 'pest'</li></ul>	<b>Habitat Loss</b> <ul style="list-style-type: none"><li>• Agriculture</li><li>• Urbanisation</li><li>• Mining</li><li>• Logging</li><li>• Climate change</li></ul>
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Which of these threatening processes affect your species and how?

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## Develop your own Captive Breeding Program

When developing a captive breeding program for a species it is important to consider various actions such as in-situ versus ex-situ conservation.

3. You will need to consider the following in preparing your species breeding program. Further research into your chosen species may be needed.

### Breeding:

Is your species monogamous or does it have multiple breeding partners? How will this affect your breeding program?

What specific breeding behaviours or conditions may need to be replicated?  
(You may need another sheet of paper).

If your species fails to breed, what options might you try?

### Habitat:

Describe the habitat you will need to provide for breeding. Will this be in a natural setting, in an enclosure, in a specialist breeding room, or in a lab?

### Disease:

Will you need to set up quarantine? If so suggest some possible methods that could be used.



### Diet:

What are the dietary requirements of your species, and how will you be able to provide it?



## Develop your own Captive Breeding Program

A captive breeding program can assist in repopulating threatened species in the wild.

How can you measure if the program is successful and what can you do to monitor the long term success of the project?

4. For your captive breeding program, come up with your own criteria for success or failure.

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5. Will you need to set up a monitoring system? How long will you be monitoring for?

\* Remember there can be fluctuations in population size (natural and unnatural).

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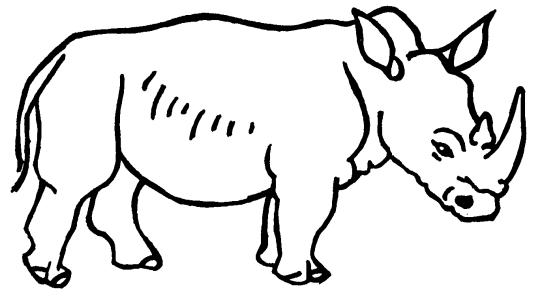
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**Discussion:** At what point will you stop your breeding program?

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## Develop your own Captive Breeding Program

Some things to consider:

### Genetic diversity:

There are concerns over long term captive breeding and the possible loss of genetic diversity. If your species is on the brink of extinction, will a breeding program assist in restoring the species or will there be insufficient genetic diversity to maintain a viable population in the wild? What are some of the ways that you can increase genetic diversity in your breeding program?

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### Habitat:

Consider where you will release your species upon breeding success. Is there sufficient habitat remaining, or is habitat loss an issue? What can you do about it?

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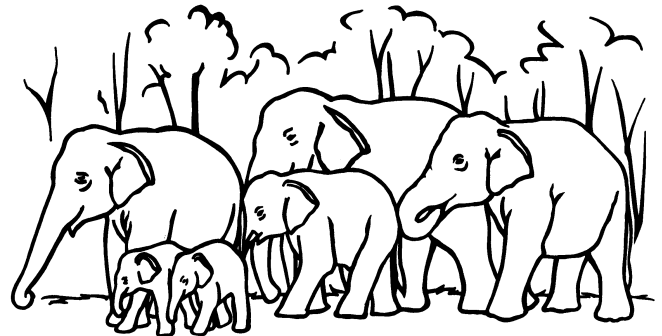
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How can you make the habitat safe from predators?

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In light of issues such as carrying capacity, and species territory, can the habitat support increases in population size?

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**Class Discussion:** Considering resources required, do you think that limited funds are best used to protect habitat or develop a breeding program?



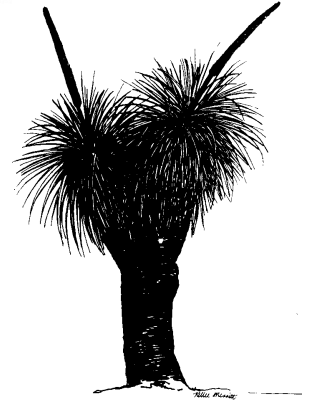


## Appendix 1: Recovery Plan

Captive breeding is one element of a recovery plan.

A recovery plan is a document that is prepared to describe the steps that need to be taken to assist a self-sustaining population of a threatened species in the wild.

When designing a recovery plan, it is important to set criteria for measuring success or failure. These criteria need to be realistic, remember 100% recovery is not always possible.



### Example of a recovery plan taken from the Gilbert's Potoroo Conservation Action:

#### Recovery Objective:

The objective of the Gilbert's Potoroo Recovery Plan is to increase both the numbers of individual Gilbert's Potoroos known to be alive in the wild and the number of locations in which they occur.

#### Recovery Criteria:

The Recovery Plan will be deemed successful if:

- The number of individuals known to be alive in the wild remains stable or increases, and
- The species is found at, or successfully reintroduced to, at least one other location.

The Recovery Plan will be deemed to have failed if:

- The estimated total number of mature individuals declines by more than 20% within five years.

#### Recovery Actions:

1. Protect the existing wild population and habitat.
2. Increase understanding of ecology and population biology of Gilbert's Potoroo to underpin management strategies.
3. Search for new populations of Gilbert's Potoroo outside Two Peoples Bay.
4. Establish and maintain a captive breeding colony of Gilbert's Potoroo.
5. Develop techniques to enhance the reproductive potential of Gilbert's Potoroo.
6. Enhance the breeding capacity of Gilbert's Potoroo.
7. Extend the range of Gilbert's Potoroo through translocation of animals to suitable habitat outside Two Peoples Bay.

Suggested Activities:

- Discuss what some of the challenges might be in the Gilbert's Potoroo Recovery Plan.
- Outline what are 'realistic' goals and why they are needed.
- Design a Recovery Plan for your Zoo species.

**For further information look at the Gilberts Potoroo Recovery Plan in more detail:  
<http://www.potoroo.org/conservation.html>**

