Teachers Notes (Middle Years)
by Janet Anderson

Endangered! Working to save animals at risk
Rick Wilkinson
ISBN 9781865086644
Recommended for ages 8 - 14

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INTRODUCTORY ACTIVITIES

CONCEPT MAP – THE ZOO

Concept maps provide a visual representation of the links between ideas and concepts in topic content. An important message of this book is that the zoo is more than just a place to go to look at exotic animals.

Use a concept map about the zoo to help students articulate and record their growing understanding of the role that zoos play in the conservation of endangered species:

1. Before reading the book with the class have students draw an individual concept map about the zoo (see Activity Sheet 1). Have them share their individual maps with the rest of the class.
2. Summarise the individual maps onto one class concept map. The individual maps and the discussion that ensues from this activity will give you a good idea of the students’ understanding at this point.
3. Revisit the class map periodically as you complete activities on the book and add to it.
4. As a concluding activity, have students revisit their initial maps and evaluate them in light of what they have learned from the book. Discuss what additions are needed.
5. Have students draw a new individual concept map about the zoo. These revised individual maps will provide a record of the changes in student understandings that have occurred as a result of studying this book.

GLOSSARY JIGSAW

Do this activity before the class reads pages 4 and 5. It will help define terms for the students and will generate interest in the subject matter.

Use the definitions from the glossary listed on Activity Sheet 2 in a game of jigsaw, which requires students to match a term with its corresponding definition:

1. Give each student either one term or one definition on a card and have them move around the room to search for the person with the corresponding card.
2. Once the person with the corresponding card is found, both students sit.
3. The game ends when all students are seated.
4. Students check against the entries in the glossary (page 32) to see if they have correctly matched the terms and definitions.

It will be necessary to duplicate the terms and definitions cards so that there are enough for each student. Cards can either be left as uniform rectangles or can be reshaped like jigsaw pieces depending upon the level of challenge required for the activity.

WRITE A DEFINITION - SAFE HAVENS

This activity will help students focus on the concept of ‘Safe Havens’ which is central to the book and is introduced on page 4.

Have students write their own glossary definition for ‘Safe Haven’ in groups and then check this against the entry in the glossary to see if they have included all the important ideas:

1. Organise the class into groups of four or five. Provide each group with copies of Activity Sheets 3A and 3B.
2. Use the concept map (Activity Sheet 3B) to record key ideas from the passage. (It may be useful to broaden the discussion beyond the passage at this stage. As a guide, an example of a typical concept map derived from Endangered! is provided in Activity Sheet 3C)
3. Use the boxes (Activity Sheet 3D) to record a definition for ‘Safe Havens’ that includes these key ideas. Remind students that glossary definitions are short – about one or two sentences in length.

4. Compare the group’s definition with the one in the glossary on page 32.

5. Write a class definition of ‘Safe Havens’ on a poster and display it in the classroom.

**Dictagloss - Genetic Diversity**

Genetic diversity is another key concept introduced on page 5.

Dictagloss is a co-operative listening activity which helps students focus on the meaning of a passage. This activity will allow students to interact with the concepts involved in genetic diversity:

1. Read the passage entitled ‘Genetic Diversity’ (p.5) aloud to students and have them write down key words and phrases.
2. Reread the passage to provide an additional opportunity to note key words and phrases.
3. Have students work in groups of four or five to reconstruct the passage. They must seek to include all the important points about genetic diversity.
4. Each group then compares their version with the original and corrects any omissions.

Have each group publish their final versions and display them in the classroom.

**Activities that focus on the animals**

A glance at the contents page immediately shows the wide variety of species covered in this book. These species face many different types of problems that are being addressed by people working towards their conservation in Australia and overseas. Two themes are central to the book:

- the negative impact of humans upon species through hunting, urbanisation, growth in agriculture, introduction of foreign species, use of pesticides, land clearing and local border skirmishes which has led to their endangerment;
- the positive impact of humans upon species through the work of the zookeepers, curators and conservationists which is contributing to their conservation.

Below is an explanation of activities which require students to explore these two themes by interacting with the information in the book. Some activities are suitable for all the animals featured in the book while others are suitable to specific animals. These are listed beside the activity title. Choose activities from the wide range of options according to class focus and student interest. Activity sheets are provided for some of the activities.

**Make a Database**

**All Animals**

Help students focus on these themes by having them make and use a database of the species in the book:

1. Organise students into pairs and have them choose a species from the contents page of the book.
2. Have students use the fields on Activity Sheet 4 to produce a record bank of the information about this species. This will help them to become ‘experts’ on the problems it faces and the solutions being sought for its conservation.
3. Students use this record bank to share about the species with the rest of the class. This can be done either in small groups (four to six children) or as a whole class activity.
4. Discuss the things that still need to be learned about each species.
5. Combine the completed charts to form a class database about the species in the book.
6. Enter the information onto a computer database. Search the database to find the most common threat to the survival of different species, types of actions taken to conserve species, common problems/successes in breeding species and types of information about species which still need to be researched.

**ROLE PLAY**

- **Romer’s Tree Frog page 6**
- **Leadbeater’s Possum page 8**
- **Snow Leopard page 14**
- **Tiger page 14**
- **Helmeted Honeyeaters page 16**
- **Orange-bellied Parrot page 17**
- **Gibbon page 18**

Loss of habitat is a common problem threatening the survival of species in this book. Read about one or more of the species threatened by loss of habitat listed above and then involve students in a role play to explore the implications of loss of habitat:

1. Turn the class into a local community – each student’s desk is their home.
2. Over a recess or lunch break cordon off half of the classroom and display the appropriate sign:
   - This site is reserved for an airport (Romer’s Tree Frog).
   - These trees marked for logging (Leadbeater’s Possum).
   - This land to be used for new pastures for sheep, goats and yaks (Snow Leopard).
   - This land to be used for crops and logging (Tiger).
   - This land to be drained and used to graze sheep and cattle (Helmeted Honeyeater).
   - This land to be used for industrial development and housing (Orange-bellied parrot).
   - These trees marked to be slashed and burned (Gibbon).
3. When the class return, have them sit in the remaining half of the classroom and discuss the following issues:
   - Where does land for development come from?
   - How does it feel to be displaced by new development?
   - How does crowding affect the individual?
4. Following the discussion cordon off a further quarter of the classroom – cutting off the doorway to the classroom. All the students are now crowded into one quarter of the room.
5. Discuss the following issues:
   - Loss of home
   - Loss of food
   - Crowding
   - Feelings of powerlessness
   - What could you do if this happened to you in real life?
   - What happens to plant and animal communities when this happens to them?
**WANTED POSTER**

*Leadbeater’s Possum page 8*
*Mountain Pygmy Possum page 9*

Both possums featured in the book – Leadbeater’s Possum and Mountain Pygmy Possum – were once thought to be extinct but surprisingly turned up alive in the 1960s! Their survival continues to be under threat. Read pages 8 and 9 and have students choose one of the possums to be the subject of a ‘Wanted Poster’ (see Activity Sheet 5).

Student Challenge: Find other species that were once thought to be extinct but have been found alive.

**POSTERS AND BROCHURES**

*Tenkile page 10*
*Turtles page 28*
*Crocodiles page 29*

In the book, conservationists have used posters and brochures to educate local people about how to help preserve endangered species. Read about one of the species listed above and then have students produce their own colour poster or brochure to inform other children in the school about these endangered animals. Use the stunningly textured and coloured presentation of the book as inspiration!

1. Include information about the following:
   - Name of the Species
   - Description of the Species
   - Threats to the survival of the species
   - Habitat
   - Plans for Conservation
   - An explanation of groups involved in its conservation
   - A story about the animal (fiction based on the reality explained in the book)
   - A picture of the species

2. Prepare a short verbal presentation to accompany the posters.
3. Present the posters and verbal explanation to other classes in the school.

**HOT SEAT**

*Snow Leopard pages 13 – 15*
*Tiger pages 13 – 15*
*White Rhinoceros page 21*
*Red Panda page 23*

This book tells the stories of the animals through the eyes of the keepers, curators and conservationists involved with them: “If enough people know about the problems, it might be easier for conservation officials to set up national parks and stop the killing of these animals for skins and medicines.” (p. 15). Read about one of the species listed above and then put an animal in the Hot Seat to tell its story.

Hot Seat is a role-playing activity which gives students an opportunity to ‘tell stories’ in the form of an interview. It can be used to tell stories from different points of view. Start with telling from the animal’s point of view, and as
students become more familiar with the activity, put keepers, hunters, villagers, farmers, zoo keepers in the Hot Seat to tell things from their point of view.

1. One student takes on the role of an animal and sits in the Hot Seat.
2. The class take on the role of journalists and, in groups, prepare interview questions to ask the animal in the Hot Seat. The following are examples of possible questions:
   - Do you know why you live in a zoo?
   - What is happening to your species in the wild?
   - Do you know why it is hard for your species to find food in the wild?
   - What can your species eat if they can’t find natural food?
   - What things make it hard for your species to live in the wild?
   - What impact do humans have on your species?
   - What is your favourite food?
   - What’s your favourite part about being in the zoo?
   - What do you long for most?
   - Do you like your keepers? How are they helping your species?
   - What do you think of the people who come to look at you in the zoo?
   - What makes you feel safe?
3. The interview then takes the form of a press conference with the teacher mediating between the journalists and the animal in the Hot Seat.
4. Making and using a mask of the animal in the hot seat can provide a safe and stimulating way for students to get into character and talk in front of the class.
5. Expand the activity to put humans involved with the species in the Hot Seat – those whose actions are threatening the species in the wild and those who are involved in seeking to preserve the species in safe havens.

**DESIGN AN ENCLOSURE**

Legless Lizard p. 27  
Phasamid p. 30 – 31  
All Animals

The importance of having the correct conditions for healthy animals that will breed is emphasised throughout the book. Read about one of the animals listed above. Have students design an enclosure which meets the animal’s needs.

1. Consider the following:
   - Shelter from weather
   - Food and water
   - Breeding requirements
2. Design the enclosure on paper. Include photographs of areas that may be similar to what is required.
3. Build a model of the enclosure.
ANIMAL MASQUERADE

All Animals

The work of Cuc Phuong National Park in Vietnam in rescuing and breeding endangered primates and turtles is featured on pages 19 and 28. Melbourne Zoo is helping these programmes by raising money.

Raise funds to send to Melbourne Zoo by having an ‘Endangered Animal Masquerade’ day. This would make an excellent concluding activity to work on endangered species in the book:

1. Students bring a gold coin donation for the privilege of coming to school dressed as one of the animals in the book. They can wear a costume, paint their face, wear a mask or do something wild with their hair!
2. As part of the day have students present a short oral information report on the animal they are dressed as.
3. An information report begins with a General Classification, which identifies the subject and previews the descriptions to follow. The descriptions are clusters of facts organised in paragraphs around topic sentences. The following headings can be used as a basis:
   - Habitat
   - Distribution
   - Food Source
   - Description
   - Breeding
   - Threats to survival
   - Efforts to prevent extinction
   - Possibility of return to the wild
   - Things we still need to learn.

4. Send the funds to Cuc Phuong National Park Fundraising, c/- Chris Banks at Melbourne Zoo, P.O. Box 74, Parkville VIC 3052.

ACTIVITIES RELATED TO THE BOOK

MELBOURNE ZOO DISCOVERY AND LEARNING DEPARTMENT – KITS FOR SCHOOLS

The Melbourne Zoo Discovery and Learning Department are able to support studies of endangered species and habitats across the three properties featured in this book: Melbourne Zoo, Werribee Zoo and Healesville Sanctuary. A selection of programs suitable for early childhood and primary-aged children are highlighted in these notes below (see Zoo Visits with Melbourne Discovery and Learning Department). If you are unable to visit, the following kits are available to schools on loan.

Zoo Discovery Kit from Melbourne Zoo

Melbourne Zoo offers Early Childhood Centres the opportunity to hire these kits. They contain a set of teaching resources to support a program on the natural world and animal diversity. Children will use their senses to identify animals and manipulate concrete materials.
Three Environmental Education Activity Kits from Healesville Sanctuary;
Healesville Sanctuary offers the following on loan for $40 (plus return postage) for one month:

**Bright Eyes and Bush Tails Discovery Kit** (Early Childhood – Early Years of Schooling)
Develop awareness and appreciation of Australian wildlife and the environment through stimulating hands-on activities.

**Frolicking Frogs Activity Kit** (Early Childhood – Primary School)
An exciting box full of froggy activities, resources and ideas designed to assist educators in raising children’s awareness and stimulating their interest in frogs and their place in the environment.

**Going, going . . . gone!** (Primary School Years 3 – 6)
Resources, games and activities to highlight Australian endangered species and the processes that threaten them.

**AUSTRALIA AND ENDANGERED SPECIES**

"Over the last 400 years, 611 species have been documented as becoming extinct. The International Union for the Conservation of Nature estimates that many more species are endangered:

- 25% of all the world’s mammals
- 11% of birds
- 20% of reptiles
- 25% of amphibians
- 34% of fishes.

*At this rate, one third of the world’s species could be extinct in twenty years."* (p. 5)

Have students write an information report on one of Australia’s endangered species:

1. Ask students to write individually or in groups to produce an information report (see Activity 11) on an Australian endangered animal. Students should now move beyond *Endangered!* to other sources of information (suggestions below).
2. Share information as a class. Compile a database which records the type of human activity which poses a threat to endangered species.
3. Show distribution of endangered species in Australia on a map. Where are there most endangered species located?

**Research Resources for Information Report**

**Internet**

Environmental Web Directory – Wildlife
http://www.webdirectory.com/Wildlife/

Melbourne Zoo Conservation Programs

Australian Species Management Programs (in zoos)

Commonwealth of Australia – ERIN – Threatened Species in Australia
Threatened and Endangered Species Links and Fact Sheets

Green kids guide to Endangered Species

Endangered Species Program Brochures
http://www.erin.gov.au/about/publications/list.html#threatened

Print
The Gould League of Victoria
Genoa Street, Moorabbin, or P.O. Box 1117 Moorabbin, Victoria 3189.
Ph: (03)9532 0909 Fax: (03)9532 2860
Internet: http://www.gould.edu.au/
E-mail: gould@gould.vic.edu.au

Taronga Zoo Education Service
P.O. Box 20, Mosman, NSW 2088.
Ph: (02)9978 2455 Fax: (02)9978 4508
E-mail: tzed@zoo.nsw.gov.au

Environment Australia
GPO Box 636, Canberra, ACT 2601
Ph: 1800 803 772

EXTINCTION TIMELINE

1. Brainstorm as a class and make a list of extinct animals (include dinosaurs).
2. In pairs, students find out when these animals lived and when they became extinct.
3. Make a class timeline covering 300 million years and place pictures of the extinct animals on it.
4. Discuss the following questions:
   • Why are there a great many extinctions crowded in the last tiny part of the timeline?
   • What are some of the reasons for extinction?
   • Should we try to stop endangered animals becoming extinct because of human actions?

Research Resources for Extinction Timeline
McLish, Bruce  The Time Travellers Guide To Ancient Australia, Gould League, 1991

THINK GLOBALLY ACT LOCALLY

Rather than being overwhelmed by the threat to the world’s plants and animals, we must accept an obligation to care for our planet and for its plants and animals.

1. Have students work in small groups to brainstorm a list of things that can be done to help conserve resources and protect plants and animals in the following categories:
   • Using energy
   • Using natural resources (eg. air, rivers and oceans)
- Shopping
- In the kitchen
- In the laundry
- In the bathroom
- In the garden
- At school
- Travelling to school or to see friends
- On holidays

2. Have students work individually to prepare an individual plan to change the way they do at least three things in everyday life that relate to these categories.

3. Implement for a week and then evaluate how hard/easy it was to make the changes and whether they can be maintained.

4. As a class, develop a group action plan which addresses an issue at school:
   - Eradicating weeds
   - Removing rubbish
   - Recycling program (and compost)
   - Revegetation of an area.

5. Implement for a month and then evaluate in terms of what has been achieved. Can the plan be maintained? Does it need to be expanded or scaled down?

IDENTIFYING HABITATS IN THE LOCAL AREA

1. Look at maps (or aerial photos, if available) of your local area.
2. Colour areas of parkland or bush onto an overlay.
3. Discuss:
   - How many coloured areas are there?
   - Are they large or small?
   - Are they scattered or close together?
   - Are there any areas of remnant natural bushland? What percentage of natural bush remains in your area?
   - Is there any habitat where the following animals live: kangaroos; parrots; lizards; possums; wrens?
4. Make a list of common and rare animals in your area.
5. Are there any species that are in need of help? Try asking your local municipal conservation officer or local National Parks and Wildlife officer. There may be a species you can help.

ZOO VISITS WITH MELBOURNE ZOO DISCOVERY AND LEARNING DEPARTMENT

A session in the Discovery Centre runs for 45 minutes and a wealth of programs are available across the three properties: Melbourne Zoo, Werribee Zoo and Healesville Sanctuary. Education officers contact the school prior to a visit to discuss program details and requirements. Booking details for all three properties are available at
www.zoo.org.au/education. Support materials in the form of detailed teachers’ notes and student booklets are also available.

Programs focused on endangered species are supported by a range of confiscated materials made available through the Customs Department: tiger bone medicines, snake leather accessories and shoes, snake wine, and elephant feet (used as umbrella stands) to name a few. These items help tell the story of the plight of animals all over the world. They also highlight the complex dilemma of how to save species and preserve the natural environment while supporting human needs and population growth.

MELBOURNE ZOO
Programs include:
Animal Habitats
Cycles of Life
Animal Care
All But Lost
Ecosystems – The Changing Landscape

HEALESVILLE SANCTUARY
Programs include:
Emblems of Australia
Homes and Shelters
Living with Wildlife
Going, going . . . . gone?

VICTORIA’S OPEN RANGE ZOO
Programs include:
Funny Features of Special Creatures
Where Have They All Gone?
A Hollow in a Tree is the Best Place for Me!
Endangered. . . But Fighting Back!
Habitats Under Threat
Behind Closed Doors (extended tour only)

These programs are updated regularly. Teachers are advised to visit the website at www.zoo.org.au/education for comprehensive information on these programs and many more.

ZOO VISITS AROUND AUSTRALIA

The following contact details will put teachers around Australia in contact with their nearest zoo and its education programs.

The most complete on-line list of zoos, wildlife sanctuaries and animal/marine parks in Australia can be found at www.zoos-worldwide.com/land/australia/australia.html

The principle zoos in Australia that run large educational services are also linked to regional zoos:

**NEW SOUTH WALES**

Taronga Zoo (Sydney) and Western Plains Zoo (Dubbo)  www.zoo.nsw.gov.au

but most contact is by phone to education officers: (02) 9969 2455

**SOUTH AUSTRALIA**

Adelaide Zoo  www.adelaide-zoo.com.au

Adelaide Zoo Education Service  www.oac.schools.sa.edu.au
Monarto Zoological Park
VICTORIA
Melbourne Zoo, Werribee Zoo and Healesville Sanctuary
WESTERN AUSTRALIA
Perth Zoological Gardens

Other zoos and sanctuaries include:
NORTHERN TERRITORY
Territory Wildlife Park
Alice Springs Desert Park
Lake Superior Zoo, Duluth

QUEENSLAND
Australia Zoo
Brisbane’s Alma Park Zoo
Lone Pine Koala Sanctuary

TASMANIA
Tasmanian Devil Park Wildlife Rescue Centre

ABOUT THE WRITERS
RICK WILKINSON
Rick Wilkinson is a geologist by training who has been writing about the petroleum industry in magazines and newspapers for the past 30 years. He has always been interested in the animal world and he lists zoology, biology, botany and palaeontology as his favourite subjects. He has written two non-fiction books for children and a fiction series in which all the characters are animals.

The spur to write *Endangered!* came from a trip Rick took to Indonesia to write about the oil industry. Esso’s emblem is the tiger, and in the course of researching and writing about the company’s work with Save the Tiger programmes, Rick interviewed people at Melbourne Zoo who were working with endangered animals. He learnt about captive breeding, and heard about the worldwide network of cooperation between zoos and wildlife centres. These interviews inspired *Endangered!,* a book which tells the stories of the animals through the eyes of zookeepers, curators and conservationists.

“My main aim was to highlight what is being done, and to show that, even though they are experts, the curators don’t yet have all the answers. There’s a lot still to find out - and there are so many people who contribute to the research, not just zoologists but also experts in computers and technology and many other areas. I thought maybe if kids knew this, some of them might become interested in working with endangered animals as a career.”

JANET ANDERSON
Janet’s career in education grew out of her time with a repertory theatre company that worked with groups as diverse as preschoolers in India to Marines in the United States. A love of drama and communication from the stage has connected to a love of literacy development in the classroom. Janet has had a career in Independent Schooling in NSW as both a classroom teacher and member of school executive. She holds a Masters Degree in Education specialising in teaching and learning.
ACTIVITY SHEET 1
Concept Map: The Zoo

ZOO
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endangered animal</td>
<td>A species of animal that is at risk of becoming extinct.</td>
</tr>
<tr>
<td>Extinct</td>
<td>A species that has completely died out, with no animal of that species left alive anywhere in the world.</td>
</tr>
<tr>
<td>Habitat</td>
<td>The natural home of a plant or animal</td>
</tr>
<tr>
<td>Introduced species</td>
<td>Animals which are not native to a particular area but have been brought there, usually by humans.</td>
</tr>
<tr>
<td>Species</td>
<td>A distinct type or kind of animal: a group of animals with the same biological characteristics</td>
</tr>
</tbody>
</table>
“Others concentrate on setting up safe havens - trying to save the most endangered animals from extinction by bringing them into zoos and wildlife sanctuaries. The purpose of safe havens is not just so that we can see these survivor animals before they die out. More importantly, zoo curators, keepers and conservation staff, researchers from universities, government wildlife departments and conservation groups can study endangered animals to understand their needs, maintain genetic diversity and create the right environment for them to breed in captivity.”

Page 4, *Endangered!* by Rick Wilkinson
Write a Definition: Safe Havens

Safe Havens

ACTIVITY SHEET 3B
Concept Map: To be completed by students
Write a Definition: Safe Havens
Write a Definition: Safe Havens

**Safe Havens**

- Save endangered animals by bringing them into zoos and wildlife sanctuaries
- Provide opportunity to see and appreciate survivor animals of endangered species
- Study endangered animals to understand needs
- Maintain genetic diversity
- Create right environment for animals to breed in captivity
- Maintain captive zoo population as last chance for survival of some species
- Breed enough animals so that some can be reintroduced to the wild
## ACTIVITY SHEET 3D

**Definition of "Safe Havens" to be completed by students**

**Write a Definition: Safe Havens**

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Haven</td>
<td></td>
</tr>
</tbody>
</table>
## ACTIVITY SHEET 4

*Make a Database*

*Activities that Focus on the Animals*

<table>
<thead>
<tr>
<th>Name of species</th>
<th>Location in the wild</th>
<th>Threats to survival</th>
<th>Actions to conserve the species</th>
<th>Success of breeding program</th>
<th>Possibilities of return to the wild</th>
</tr>
</thead>
</table>

Things that still need to be learned about the species...
BACK FROM THE DEAD?

Species Known As:

Date Found Alive: Location:

Preferred Hideout:

Diet:

Habits:

Threats which will kill it: Mugshot

Things still to be learned about it:

Plans for keeping it alive: