

Animal Interdependence – Year 9

Aspects of South Australian ecology

This Outreach Education Program for schools is made possible by the partnership between the South Australian Museum and the Department of Education and Children's Services. Outreach Education is a team of seconded teachers who are based in public institutions.

© Department of Education and Children's Services and SA Museum
This work may be reproduced by South Australian teachers for use with their students. For all other uses contact the S.A. Museum Education Service.

Authors: Chris Nobbs and Simon Langsford



Photo: R. James

Animal Interdependence – Year 9

Investigating Ecosystems

Ecosystems consist of communities of interdependent organisms and abiotic components of the environment. *Australian Science Curriculum, Biology Year 9*

This program involves students in collecting evidence from museum exhibits for various interactions animals have between their environment and each other. The chosen themes are;

1. Carnivores have evolved many effective ways of catching prey besides the obvious – chasing and biting.
2. Animals compete for many resources, including food and shelter. In some environments competition for space is a critical factor in the survival of a species.
3. Some of the most complex interactions between animals occur between parasites and their hosts.
4. Insects can be both harmful and helpful to plants.
5. As the seasons change, so do the populations of many animals. Some even leave Australia for part of the year.
6. Extinctions occur when habitats change too much. Humans are a major cause of such change.
7. Drought and fire are major abiotic factors affecting animals in Australia.

In the museum

The South Australian Biodiversity Gallery is a large gallery split into four colour-coded sections; Arid (red), Temperate (green), Coastal (brown) and Marine (blue). When your class first arrives we suggest you give the students a chance to explore the gallery and make their own connections. If you have enough supervisors you may allow the students to investigate the entire gallery between the exits at either end. If supervision is more limited, it may be better to explore one of the colour-coded areas at a time.

After students have had time to familiarise themselves with the gallery, discuss their discoveries. This discussion should form a major part of the excursion.

Then hand out copies of the activity sheets on the following pages. They ask students to find particular exhibits and collect information.

[A map of the gallery is provided to help students find the appropriate exhibits.]

South Australian Museum Education Program

Phone: (08) 8207 7429 • Fax (08) 8207 7430 • Email: Education@samuseum.sa.gov.au • Web: www.samuseum.sa.gov.au

Ecosystems

Find the FEEDING AT SEA display.

Carnivores have evolved many effective ways of catching prey besides the obvious – chasing and biting. Find evidence for this in the display **Feeding at Sea**, which has many examples of feeding methods. Record some of this evidence by completing the table below.

Name of animal	Method of feeding	Explanation or diagram of how it feeds
	<i>using poison</i>	
	<i>Grazing</i>	

To research later:

Do land animals have as many different ways to get prey as marine animals?

Find the JETTY PYLON or ROCKY REEF

Animals compete for many resources. Sometimes competition for space is critical for the survival of a species. The **Jetty Pylon** and the **Rocky Reef** show evidence for this. Here space is so limited that some animals are crawling over each other.

However, most of the animals cannot crawl. They are stuck in one place. We call them sessile animals. Use the photographs with labels to name two sessile organisms. (The photographs are in a pull out drawer next to the reef, or on the wall next to the jetty pylon.)



1. _____ 2. _____

Show that competition for space is important in these environments by estimating, in the most crowded section of the reef or pylon, how many animals live on an area about the size of this page.

To research later:

How do animals fight for space if they cannot move?

Ecosystems

Find WHAT'S EATING YOU?

Parasites live in or on other animals, which are called the parasites' hosts. Animals have defences against parasites, so only parasites that have evolved effective attacks survive. Provide some evidence about the complexity of parasites interaction with their hosts.

Find and record an example of ...

- * How a parasite holds on to its host.
- * How a parasite feeds on its host.
- * A parasite that lives in two different hosts.



Then view the video to find and record another fact about parasites and hosts.

To research later:

Which parasites attack humans? Are any of these found in Australia?

Find the BUTTERFLY WALL

Insects can be both harmful and helpful to plants. Butterflies, for instance, are very useful in moving pollen from one plant to another. As they feed on the nectar in a flower, some pollen sticks to them, only to fall off when the butterfly visits the next flower. However, baby butterflies are very destructive of plants.

What is a baby butterfly called?



Complete the following table.

Name of butterfly	Colour & description	Larva's food plant

To research later:

Insects are not the only pollinators of Australian flowers. What else pollinates flowers?

Ecosystems

Find the MANGROVES

As the seasons change, so do the numbers of animals in Australia. Some animals leave Australia for part of the year. Evidence for migration can be found in the Mangrove exhibit. Use the computer screen and the exhibit ion to answer the questions below.



How many animals in this exhibit migrate? _____

Which is the smallest migrating animal? _____

To research later:

Migration is a dangerous and difficult activity. What are the advantages?

Look in the EXTINCTIONS room

Extinctions occur when habitats change too much. Humans are a major cause of such change. The museum has collected evidence of extinctions. Go into the small room behind the Thylacine video to see some of the evidence.



The labels for these animals are colour coded into three groups.

Blue = a species has been made extinct in South Australia, but survives in other parts of Australia.

Red = a species that is completely extinct. They do not survive anywhere.

Green = species that was killed off in South Australia, but has been brought back from other parts of Australia where it survived.

Pick two species and say which group they belong to.

Species 1 _____ belongs to _____

Species 2 _____ belongs to _____

On the wall outside the room are pictures showing some of the reasons these animals became extinct. List them.

To research later:

What South Australian animals are currently threatened with extinction and what is being done about this?

Ecosystems

FIRE AND DROUGHT

Drought and fire are major factors affecting animals in Australia. The museum displays have many examples of the ways Australian animals are adapted to these dangers. Find evidence of successful adaptations to fire and drought to complete the tables below.



Name of animal	How it deals with bushfire

Name of animal	How it deals with drought

To research later:

**Do any overseas animals have the same adaptations as Australian animals have to fire or drought?
Are any of the Australian adaptations unique to Australia?**

Pick any display.

(The more interesting animals in it the better.)

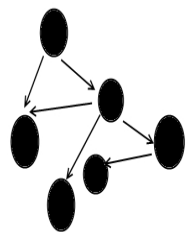
Energy flows through an ecosystem via food webs. Show this using animals from the display you have chosen. Select any three animals that can be connected in a food chain.



Now create another food chain using *one* of the animals in your first chain, and two *different* animals from the same display.



Create a food web that uses the five animals in these chains and one more animal from the display.



Gallery plan

Use this plan to help locate the displays you need to find.

