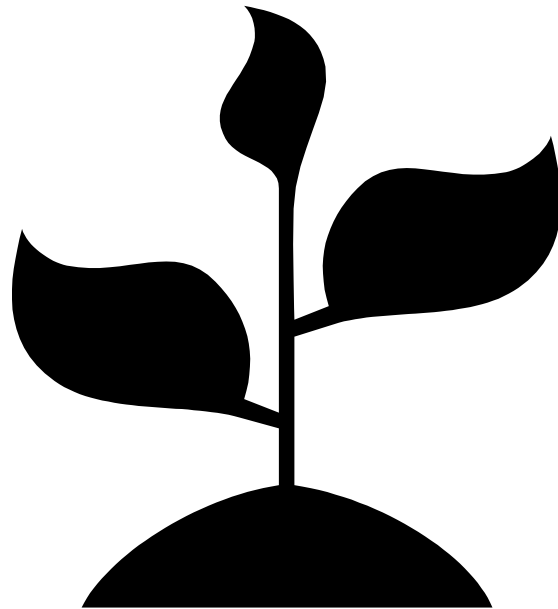


Save the Planet

Ecotrek in the Adelaide Botanic Garden



Adelaide Botanic Garden Education Service

This Outreach Education publication for schools is made possible by the partnership between the Botanic Gardens of Adelaide and the Department of Education and Children's Services. Outreach Education is a team of seconded teachers, managed through the Open Access College, who are based in public institutions.

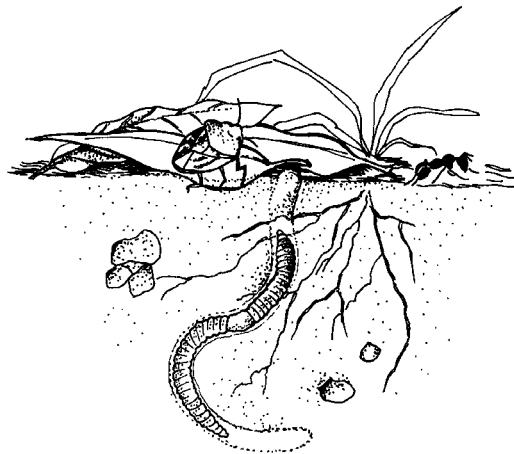
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Save the Planet

A self guiding Ecotrek in the Adelaide Botanic Garden

Primary



For school visits, bookings are essential.
Contact the Bookings Officer, Adelaide Botanic Garden
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Revised January 2007

Adelaide Botanic Garden Education Service



Government of South Australia
Department of Education and
Children's Services

Botanic Gardens
of ADELAIDE



Teacher Information

Purpose

The Save the Planet Ecotrek is designed for students in years 4 to 8. The walk takes in some of the garden's most important and spectacular areas, using them to provide stories that relate to a range of environmental issues that include: biodiversity, sustainability, introduced species, inter-relationships and traditional Aboriginal use of the land. Students are encouraged to observe, record, think and analyse as they learn about different perspectives of the Australian environment.

Planning

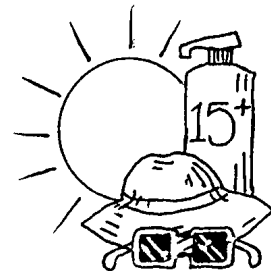
- The plants listed in this guide are numbered and may be found by referring to the map of the Adelaide Botanic Garden and by looking for plant name labels. They may be visited in any order.
- The material in this booklet should be photocopied so that each student has a copy of student activity materials.
- Prior learning – it would be useful if students have an understanding of terms like biodiversity, sustainability, introduced species and inter-relationships prior to their visit.
- This excursion is outdoors; students will require sun protection.

Guidelines for School Groups

In the garden students should be supervised at all times.

Before starting your walk please remind your group that :

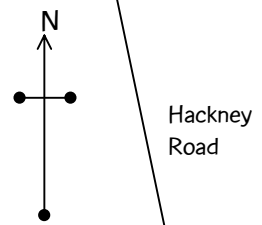
- Gardens are peaceful places for people to relax and enjoy.
- Walking slowly and talking quietly ensures everybody and everything will enjoy the gardens.
- Plants are fragile, touch them gently.
- Flowers, leaves, bark, seeds etc. growing on plants or lying on the ground are there for all to enjoy.
When you have finished with plant material found on the ground always return it back to the garden.
- Keeping to paths and not walking on beds or borders avoids damage to plants.



The garden is beautiful. Please leave it as you find it.

Save the Planet

Adelaide Botanic Garden

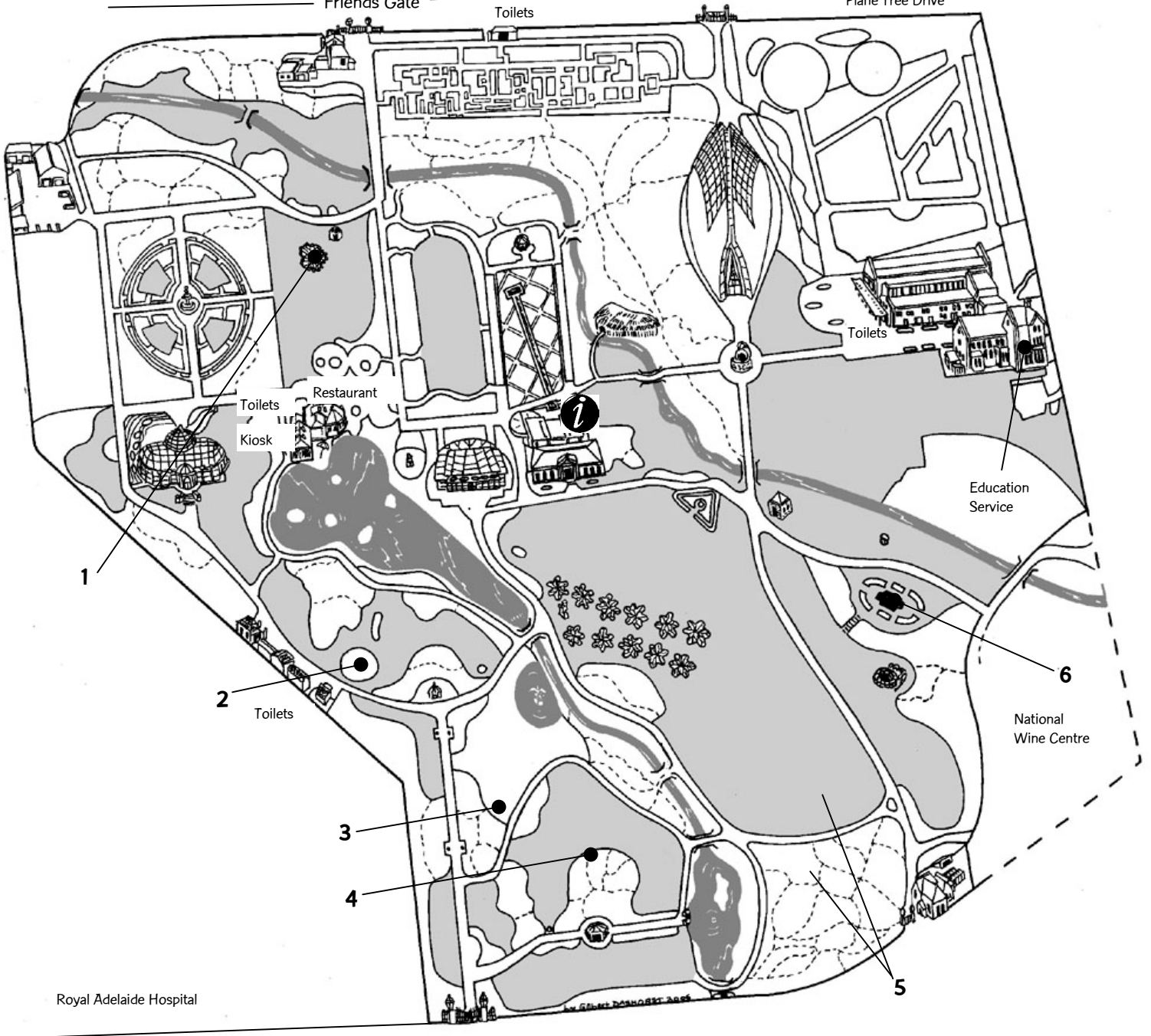


Botanic Park

Friends Gate

Toilets

Plane Tree Drive



Toilets

Restaurant

Kiosk

Toilets

Education Service

National Wine Centre

Royal Adelaide Hospital

North Terrace

Main Gate

Teacher Guide

This section provides teachers with background information on each plant. Some suggested student responses are included; they are by no means exhaustive. The student section is designed to encourage students to observe, record and then examine the information they collect. Major areas of the curriculum frameworks covered by the trail include Society & Environment and Science. Extra enrichment information is provided in text boxes.

STATIONS

1. Highrise Homes

River Red Gum (*Eucalyptus camaldulensis*)

Tall, majestic and long lived; the river red gum is one of our most loved local trees. Notice how this 250 –year old specimen is hollowed out in the centre.

Old hollow trees like this one provide important highrise homes for many animals including possums, rosella parrots and wood ducks. See if students can find where these animals might live in the tree.

The thick bark, leaves and roots are also a haven for many different types of spiders, insects and grubs.

Long after river red gums die they continue to remain homes for our wildlife. Dead or alive, leave them standing, as long as it is safe to do so.

Housing Shortage

Fewer old trees means less homes for our native animals. Introduced animals, like wild European bees, add to the problem by taking over the homes of native animals.

Bird and bat boxes placed in trees helps to overcome the housing shortage.

Original Owners

This river red gum was growing here when the Kurna Aboriginal people were living a traditional life on the Adelaide Plains. To help preserve some of the history and original flora of this site, young red gums, grown from the seed of this tree, have been planted nearby. Landcare groups across the state are also replanting areas with local native plants.

2. Feral Invader

Camphor Laurel (*Cinnamomum camphora*)

This plant is an overseas invader brought from Asia last century. It is an attractive tree and has been used for street planting and as a feature tree in many Australian parks and gardens. It is suited to the warm humid climate of northern New South Wales and Queensland where there are few natural enemies to hold it back. Populations are now starting to take over rainforest areas especially along creek lines.

Camphor laurel has escaped into the wild by:

- having birds eat its fleshy fruit and spread the seeds,
- suckering from roots, and
- releasing a chemical that may stop certain plants from growing nearby.

How you can help

Join your local park care, land care or bush care group. Find out more about problem plants from your local council.

Once it gets to the size you see here it is not an easy plant to control.

Things to notice:

- smell of the leaves (taken from the ground)
- large spreading canopy supported by many branches, fruits, bird visitors, any suckering?
- information on the plant label

War on Weeds

Botanic gardens of the 1800's and Acclimatization Societies were responsible for introducing some of today's weeds. These groups introduced plants, especially those of economic value, from overseas into Australia to see how they grew under local conditions. At the time, people were not aware of the future problems many of these introduced plants would create. Today we still need to be very careful about introducing new plants into our gardens.

3. Bush Tucker

Bunya Pine (*Araucaria bidwilli*)

This massive Bunya Bunya from Queensland produces some of the largest cones in the world. The ripening of the cones once signaled it was time for large groups of Aboriginal people from south eastern Queensland to come together for a harvest festival. Sustained by a plentiful food supply, it was an occasion for feasting, celebrations, sport, gossip, dance and music.

Women using vine ropes and notches cut into the bark of the tree scaled the trunk and branches to reach the fresh juicy young seeds held in the cones. The very sharp leaves (feel them carefully!) would not have made the task an easy one.

Living with the Land

Aboriginal people lived sustainably in Australia for over 40 000 years without a single supermarket or takeaway. Important to their success was the deep and intimate knowledge they had of their land and the plants and animals that lived in it.

Things to notice:

- spiral patterns on the end of the leaves
- typical dome canopy at the top of the tree
- beautiful patterns on the trunk

Believe it or not

A close relative of this tree, the Wollemi Pine, was discovered in only 1992, growing less than 50 km from Sydney. The Royal Botanic Gardens Sydney is cloning thousands of these plants in the hope it will help protect the wild population from being damaged by thoughtless collectors. We have one growing in a cage nearby

4. It's a Rare Thing

Red Cedar (*Toona ciliata*)

The red cedar is an Australian tree that produces one of the world's finest cabinet timbers. The search for its beautiful, wavy-grained red timber opened up much of our rainforest in New South Wales and Queensland. It also quickly led to a rapid fall in numbers of this large tree.

So devastating was the logging that by 1890 the cedar industry as it had existed up to then was over. The timber has become so valuable that in 1989 some rare cedar logs achieved a price of \$1072 per cubic metre at auction.

Things to notice:

- scaly bark
- size and shape of the tree
- compound or pinnate leaf (made up of smaller leaflets)
- leaflet points or drip tips

“Why not grow this timber tree in forests?” Unfortunately wherever red cedars are grown together in large numbers they are attacked by the red cedar tip moth. This ruins the trunk shape for future timber cutting.

Conservation parks, research and replanting all help to support the future survival of this species.

Back from the Brink

Over the last 200 years more than 80 Australian plant species have become extinct and a further 2000 suffer various threats to their populations.

Botanic gardens play an important role in the conservation of threatened plants by:

- identifying wild plants under threat
- growing rare and endangered plants in their gardens
- re-introducing threatened plants back into the wild

5. Biodiversity - the variety of life

Mallee

Take a look around this spot. Notice the large area of green lawn dotted with neat stately trees. You could almost be in Europe. The early settlers yearned for the comfort of a familiar landscape similar to the one they had left behind in Europe.

Now compare this scene to the much wilder looking nearby Mallee display. Notice the greater variety of life or *biodiversity* the mallee holds in its leaf litter, its understorey and its canopy layers.

Cheap Travel

Botanic gardens create landscapes which let visitors travel the world. In this garden you can see an Asian tropical rainforest, a Mexican desert and even a formal Italian garden. All within a few minutes walk of each other. The garden brings the world to you.

Things to look for:

- scattered deciduous trees growing in the lawn
- low growing mallee gum trees
- layers of vegetation in the Mallee section

Mallee is an Aboriginal word that refers to low growing, multi stemmed gum trees. Plant products from the mallee include broombush for brush fencing, eucalyptus oil, honey and wild quandong fruits. Sustainable harvesting from this fragile environment needs to be managed carefully.

The mallee in southern Australia was once seen as useless native scrub and rapidly cleared for agriculture. Today we know better. We now understand how these fragile belts of life are vital to the well being of the land. We have also grown to admire the unique beauty of the wild Australian bush for its own sake. How times change!

6. Down to Earth

Sunken Garden

All life depends upon plants and in turn most land plants depend upon the soil. Soil provides plants with the water and essential nutrients required for strong healthy growth.

An open and free draining soil allows the plant roots to breathe and prevents them getting rot diseases.

The garden soil here has been improved by:

- resting the bed from annual flowers over winter
- adding pea straw and compost, and
- growing lupins to add nitrogen and other nutrients.

Nature's Slow Release Fertilizer

Years of cultivation can lead to a very poor soil structure. The addition of compost and organic matter feeds worms and huge number of bacteria, fungi and microscopic animals. These in turn release nutrients back into the soil in a form plants can use. They also help to open up the soil.

Things to notice about our healthy soil:

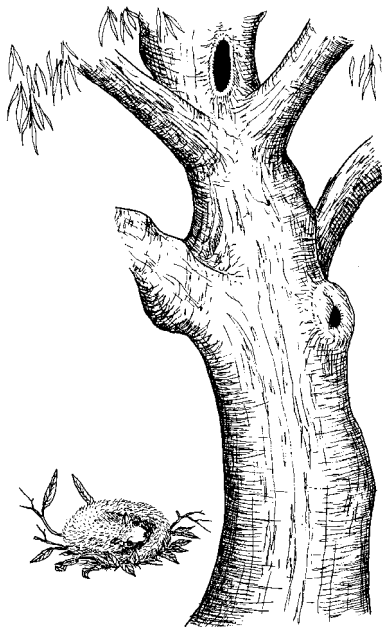
- the dark colour
- the earthy smell
- the rich crumbly texture

Student Guide

1. Highrise Homes

River Red Gum

Hollows in old gum trees like this river red gum are homes for many Australian animals.



Find the possum hollow.

It is about ____ metres above the ground.

The bee hive in this tree is **above / below** the possum hollow.

These bees are not native.

Discuss with a friend the problem this causes for native animals.

There are **2 3 4** young river red gums growing in the lawn.

How long might it take for them to become hollow homes for animals?

10's or 100's of years.

2. Feral Invader

Camphor Laurel

Introduced plants from overseas and other parts of Australia can invade and take over local natural environments.

Camphor laurel came from the following two countries _____ and _____

A feature of the plant that helps it invade rainforest areas is _____

The leaves smell like _____

This smell may protect the tree by _____

I think people first brought this plant to Australia because _____

How many people in your class **agree** with laws that stop people bringing pest plants to Australia?

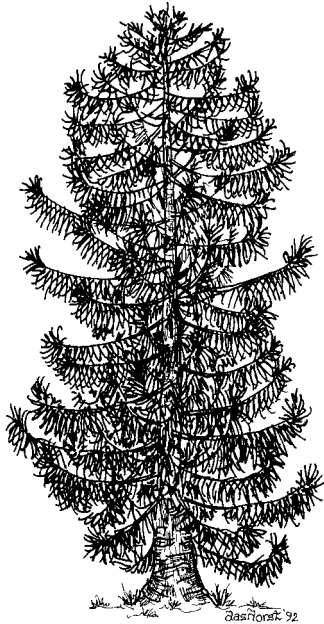
_____ out of _____



3. Bush Tucker

Bunya Pine

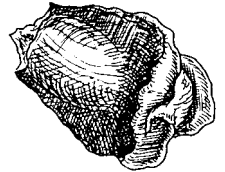
Aboriginal people used their vast knowledge of plants and animals to live with their environment for thousands of years.



Bunya Pines have the largest pine cones in the world. They contain large, edible seeds.

Aboriginal women climbed these trees to collect the seeds.

What made this a difficult job? _____



Guess how many giant cones fell from this Bunya tree in 1996:

20

50

160

How did the ripening of Bunya cones make possible festivals with large gatherings Aboriginal people? _____

4. It's a Rare Thing

Red Cedar

After less than a hundred years of settlement by Europeans this top quality timber tree was rapidly disappearing from native forests.

The red cedar is about ____ metres high and is ____ metres in diameter.

The size and shape makes

it **good / not good** for logging.



What would be a better way to get timber other than from native forests?

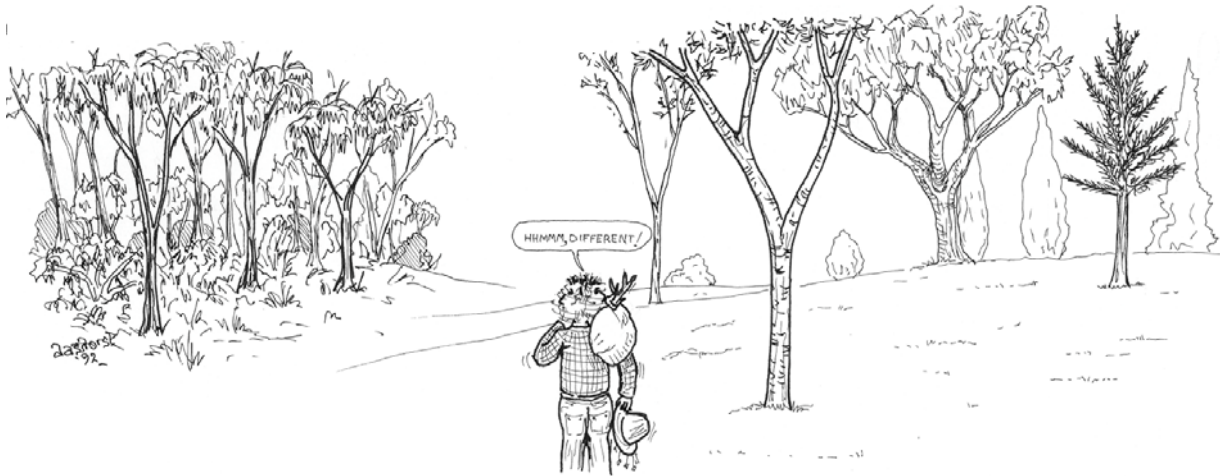
I could help to save our native forests from

logging by _____

5. Biodiversity- the variety of life

Mallee Scrubland

Early Europeans coming to Australia were faced with scrub like the mallee. Compare this with the park-like setting of the lawned area they would have left behind in Europe.



Explain to a friend major differences you notice between the two landscapes?

Why is it better to use South Australian plants in our home gardens?

Europeans saw little value in the native scrub and felt clearing only improved the land.

What do people in your class think? _____

6. Down to Earth

Sunken Garden

Good soil bursts with life. Caring for the soil means we can grow things generation after generation.

The soil has been improved here by adding _____.

You can tell this is good soil here because of the

(i) earthy smell, (ii) dark colour, (iii) crumbly look.

How does open, free draining soil help plants? _____

In the garden beds around you is recycled plant material called m _____.

What are **two** benefits of putting this on top of the soil? _____ and _____

