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National
TreeDay®

**ENVIRONMENTAL
EDUCATION KIT**



National Tree Day is organised by Planet Ark in partnership with Toyota Prius

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The 'Get Growing!': Environmental Education Kit has been produced by Planet Ark in partnership with the Australian Association for Environmental Education as an education and learning resource for teachers and students participating in Schools Tree Day and National Tree Day. *

This resource has been designed to increase the environmental, educational and community development outcomes of mass plantings of locally indigenous plant species and bush regeneration in benefiting Australian ecosystems, thereby satisfying the Aim of the National Tree Day project.**



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'Get Growing!' Environmental Education Kit

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* National Tree Day 2008 is organised by Planet Ark in partnership with Toyota and the AMP Foundation.

** For more information on the Vision, Aim and Objectives of National Tree Day, please go to: treeday.planetark.org.

*** The Australian Association for Environmental Education (AAEE) is the premier, national, professional association for those who identify themselves as working in the fields of environment or sustainability education.

**** The National Tree Day Environmental Advisory Committee was set up to provide technical and specialist advice to enhance the environmental and social outcomes of the National Tree Day project. Member organisations include: Trees For Life, the Australian Association of Bush Regenerators, Greening Australia, Landcare Australia, the Australian Local Government Association and Education for Sustainability. For more information on the NTDEAC, please go to treeday.planetark.org.

UNIT 2: HOW HAVE WE AFFECTED OUR NATIVE PLANT COMMUNITIES?



TEACHER NOTES

UNIT OBJECTIVES

After completing this unit, students will:

- Understand why some native plant communities have been cut down or cleared
- Understand how the human use of trees has impacted on our environment
- Gain knowledge of the economic benefit of trees and the products they provide
- Appreciate the need to conserve native plants and to adopt sustainable timber harvesting strategies
- Understand how introduced plant species have affected native plant communities

HELPFUL TERMS AND DESCRIPTORS (SEE GLOSSARY FOR DEFINITIONS)

- Adaptation
- Biodiversity
- Climate
- Desertification
- Land Clearing
- Resource
- Sustainable Forestry
- Weeds
- Wood Chipping
- Erosion

FOCUS QUESTIONS

1. Why have native plant communities been cut down or cleared?
2. How have we had an effect on our native plants?
3. How can we use trees and native plants more wisely?
4. How have introduced plants affected our native plants?

OTHER RESOURCES AND WEBSITES SUPPORTING THIS UNIT

An excursion to a State Forest is highly recommended so that students can see which trees are harvested, how replacement trees are planned and why certain trees are left on steep slopes and in riparian areas.

LAND CLEARING

http://en.wikipedia.org/wiki/Land_clearing_in_Australia

<http://www.australianforests.org.au/australiasforests/maps-facts.htm>

<http://www.greenhouse.gov.au/ncas/reports/pubs/tr04final.pdf>

SALINITY

<http://www.napswq.gov.au/publications/brochures/index.html>

EROSION

<http://www.kidcyber.com.au/topics/erosion.htm> (Pictures of wind, sheet and water erosion)

WEEDS

<http://www.weeds.gov.au> (Helps you identify main Australian weeds)

<http://www.weeds.org.au/weedident.htm>

<http://www.weedbusters.info/>

TREES AS A RESOURCE

<http://www.kidsface.org/pages/resource.html>

<http://www.ext.vt.edu/resources/4h/virtualforest/modules/renew.html>

BACKGROUND INFORMATION

When undertaking this unit schools are encouraged to talk to personnel from their local council, Botanic Gardens, relevant community or environment groups, National Parks, local native nurseries, environmental education centres, non- government agencies, or forestry department. Each of these community groups and Government agencies have specialised knowledge and skills, which can be transferred to students and teachers alike.

As much land has been cleared in the last 50 years in Australia as was cleared in the previous 150 years. People have been clearing vegetation from urban and rural sites since the first white settlement began in 1788. This is necessary to have space for housing, industry, leisure and farming, but the rate at which we clear land has always been higher than the rate at which revegetate it.

Land clearing can increase erosion and sedimentation of waterways, and reduce water quality. Land clearing also removes habitats, leading to the direct loss of millions of native animals and plants every year - a major cause of extinction. The clearing of vegetation from the land also increases runoff and salinity, allowing soil to dry out more quickly, and soil and nutrients to be blown away.

Since white settlement, 90% of native vegetation has been removed for agriculture, industry, transport and human habitation in the Eastern Temperate zone of Australia. Much of this vegetation was once dry woodland forest.

About 50% of Australia's rainforests have been cleared and the proportion of Australia covered by forest or woodland has been reduced by one third. Around 5% of Australia's native plant species, 7% of its reptiles, 9% of birds, 9% of freshwater fish, 16% of amphibians and 23% of mammals are listed as extinct.



Other negative effects of land clearing are:

Millions of parrots, honeyeaters, robins and other land birds are killed each year or die from exposure, starvation and stress

Australia has lost more plants and mammals to extinction than any other country. This contributes significantly to the loss of biodiversity that is being experienced worldwide. We are currently undergoing the 6th mass extinction on the planet, the first in 65 million years and the first, many scientists believe, to have been brought about by a single species – humans.

After vegetation has been cleared, water rises to the surface often bringing with it ancient salt deposits which could poison 17 million hectares of farmland by 2050. More than 200 regional cities could be affected by dryland salinity by 2050. This also causes the decay of buildings, building foundations, roads, ovals and transport routes.

Bulldozed, rotting and burning bush emits greenhouse gases into the atmosphere. Land clearing contributes significantly to Australia's greenhouse emissions, costing Australia around \$1.6 billion annually.

Loss of the economic, social and environmental benefits that trees provide, ranging from oils, chemicals and medicines, to timber for buildings and serving as wind breaks and shelter, or simply satisfying an aesthetic function.

STAGE 3

FOCUS QUESTION 1: WHY HAVE NATIVE PLANT COMMUNITIES BEEN CUT DOWN OR CLEARED?

Why have we cleared so much of our plant cover in Australia?

Materials

Photos to show different native plant groupings that are relevant to your area (e.g. Blue Gum High Forest, Coastal Riverine Bushland). See your State Department of the Environment website for information specific to your area.

Photos of cleared forest land showing stumps and burnt areas from your local area.

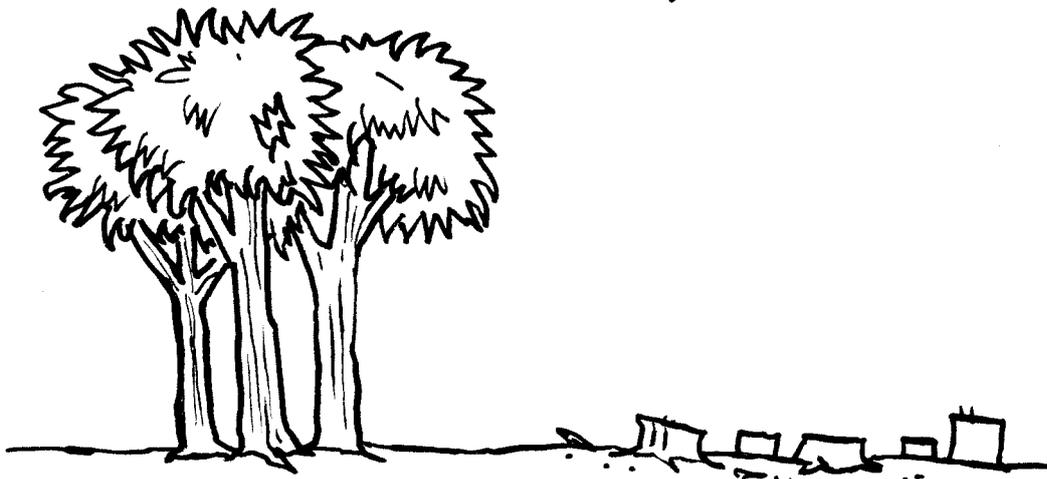
Activity Sheet 2.4

ACTIVITY

Examine each of the pictures, from their natural condition to their damaged condition.

Brainstorm as a class why areas of the land might have been cleared (housing, wood for furniture and buildings, paper, flooring, farming, industrial estates, mining etc).

Complete Activity Sheet 2.4



FOCUS QUESTION 2: HOW HAVE WE HAD AN EFFECT ON OUR NATIVE PLANTS?

Salinity: A consequence of deforestation

Materials:

Information Sheet F

ACTIVITY

Talk through the process that leads to salinity problems by referring to or re-drawing bit by bit, the process shown in Information Sheet F.

Students should then get into groups and make up a role-play that acts out the process that leads to salinity problems.

As a class, brainstorm different methods of combating salinity (interspersing trees throughout crops to maintain a suitable penetration depth of root systems to impede the rising salty water, carefully managing crops, replanting trees in areas that have been cleared etc).

Ask students to brainstorm other ways human activity has impacted on native plants (eg: extinction of species, loss of biodiversity, CO2 emissions, erosion, etc).

FOCUS QUESTION 3: HOW CAN WE USE TREES AND NATIVE PLANTS AS A RESOURCE MORE WISELY?

How should we manage our plant resources?

Materials

Internet resources

ACTIVITY

Help students to recall the tension between using trees as their land as a resource, and the problems associated with clearing large areas of land.

Each student should complete research assignment on the different opinions on how forests should be used. They should start by defining the difference between Plantation Forests and natural ecosystems such as Woodland Forests.

To gauge different opinions on the issue of using forest resources, students should visit the Australian Conservation Foundation website (<http://www.acfonline.org.au> and go to Forests) and summarise their information on the use of Australia's forest resources; and then visit their relevant State or Territory forestry website (e.g. <http://www.dse.vic.gov.au> and go to Sustainable Forest Management) and compare their thoughts with those of the ACF.

Having researched a number of opinions, students should then give their opinion about how this issue should be addressed.

To further generate thought and discussion, assign different students to different sides and have a debate. Make sure students base their arguments on research, and on what they have learnt from the above activities, taking different viewpoints into account. Students should also state reasons for their conclusions.

Debate topics could be: "Australia should immediately stop logging our native forests", "Sustainable forestry is good for biodiversity" or "Only native species should be used in plantation forests". After the debate, undertake a debrief with the class, analysing how students reached their conclusions.



FOCUS QUESTION 4: HOW HAVE INTRODUCED PLANTS AFFECTED OUR NATIVE PLANTS?

How can introduced plants affect native plants?

Materials

Support from local council ranger or school custodian

Research materials for plan of management

ACTIVITY

Invite a local Bushcare, Landcare, National Parks or council weeds officer to the school and ask him or her about the effect some introduced plants have had on Australia's native plants, and the problems we can have in trying to remove the invading plants.

Look around your school or local area. Discuss the weeds you can see and the impact they have.

As a class, work with the local council or school to draft a weed control plan to help remove some of the invasive species in your school or local area.

Activity Sheet 2.4 – Stage 3:

Why have we cleared so much of Australia?

Name: _____ Date: _____

Cut out the sentences and glue them in order in the small boxes under the blank squares. Then draw a picture in each big square to illustrate the sentence.

Paste sentence HERE	Paste sentence HERE	Paste sentence HERE	Paste sentence HERE
Paste sentence HERE	Paste sentence HERE	Paste sentence HERE	Paste sentence HERE

Why do we need both planted (or plantation) forests (for human use) and natural (or native) forests? _____

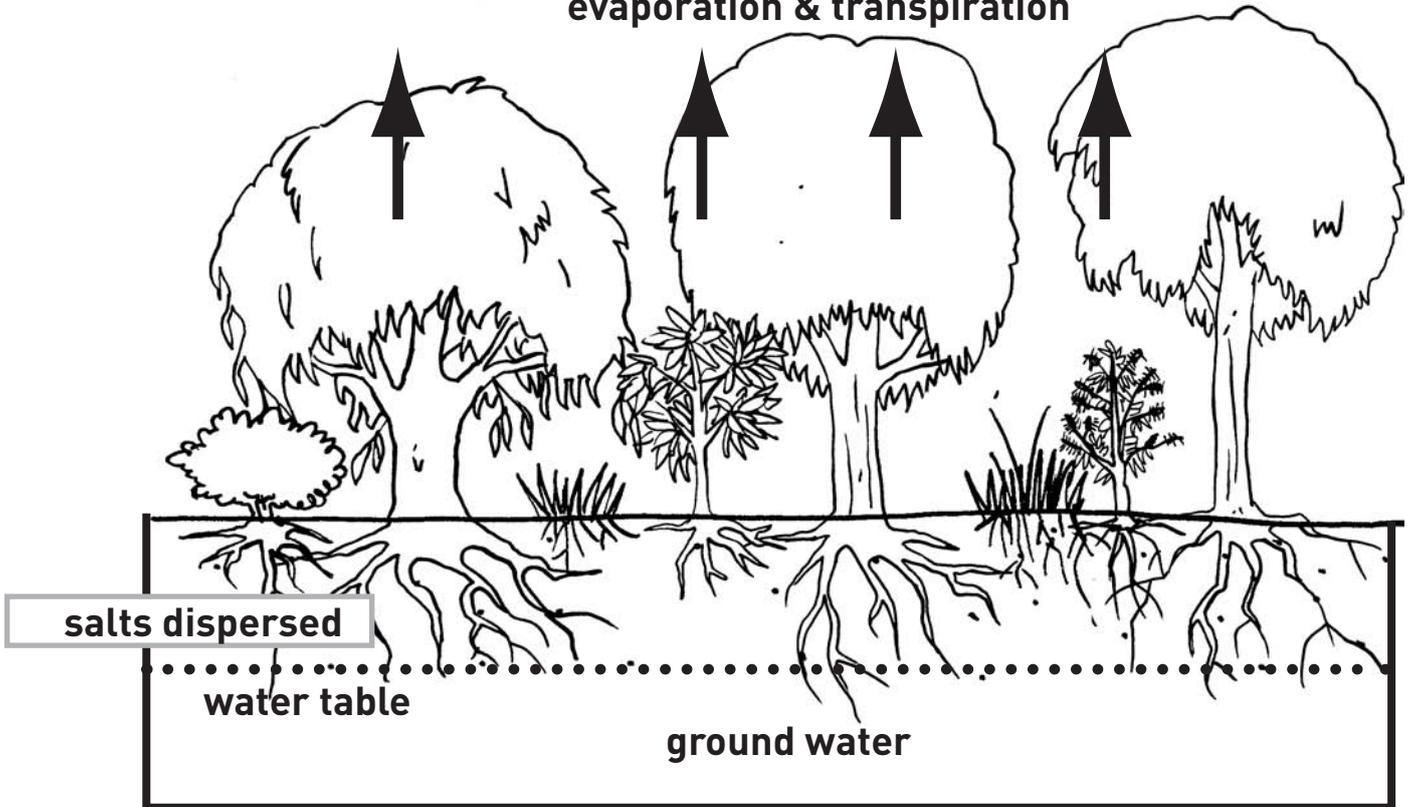
As populations grow, more land and wood resources are used.	The land is used for housing, farming, mining and roads.	The wood is used for paper, furniture, and many other things.	The more land and wood used, the more trees are cut down.
It's okay to cut trees down, if we can replace them.	This is called the sustainable use of forest resources.	When we replace them, it's best to plant native species.	This way, there will be healthy forest for everyone to enjoy!

Information Sheet F – Stage 3:

Salinity: A consequence of deforestation

a) BEFORE CLEARING

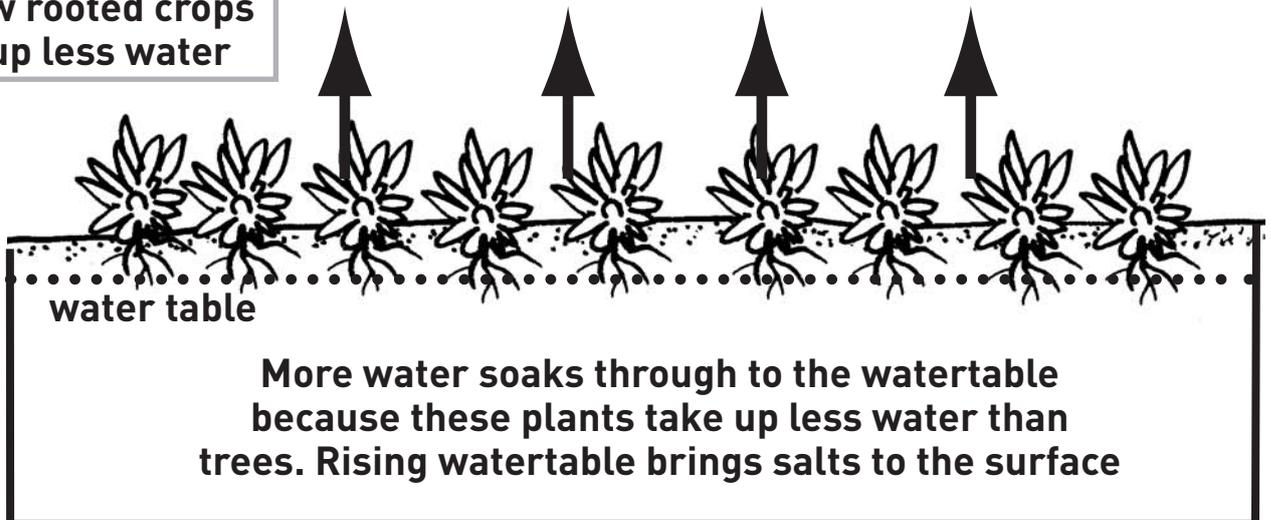
evaporation & transpiration



b) AFTER CLEARING

evaporation & transpiration

shallow rooted crops
take up less water



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Unit 2 - Feedback and Evaluation Form

This resource has been developed to help students get the most out of their National Tree Day and/or Schools Tree Day event, and to provide learning experiences that enable them to grow into environmental custodians.

In order to improve this resource in the future, we would greatly appreciate your feedback.

Once completed, please fax this form to **02 4757 8980** or post to

Planet Ark Environmental Foundation, PO Box 4, Wentworth Falls, NSW 2782

Please answer the following questions:

Teacher Name: _____

School Name: _____

Grade/Class: _____

Which state do you teach in? _____

In which Local Government Area is your school? _____

Which stage of lessons did you implement? _____

Which focus questions did you implement? _____

Did your class participate in Schools Tree Day? Yes No

If so, on what date? _____

How did you hear about this resource? _____

Please remark on the following statements on the scale provided:

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I feel the lessons were effective in teaching their stated aims	1	2	3	4	5
I feel the class was engaged by the unit content	1	2	3	4	5
I feel the lessons were appropriate for their age and level of understanding	1	2	3	4	5
I found this unit useful for incorporating environmental education into my lesson planning	1	2	3	4	5
I feel this unit helped to increase my class' knowledge about the benefits of creating healthy native plant communities	1	2	3	4	5
I feel my class is now better equipped to be environmental custodians as a result of this unit	1	2	3	4	5
(If applicable) I feel this unit gave good educational support to our Schools Tree Day event	1	2	3	4	5

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Which lesson(s) did you find were the most effective?

Which lesson(s) did you think were ineffective or inappropriate?

Was there anything about the document layout that you found frustrating?

How would you like to see this unit changed or improved for the future?

Are there any other comments, feedback or suggestions you would like to make?

Are you happy for us to contact you for further feedback? If so, please provide a contact number:

Thank you for taking the time to fill in this evaluation form.

Your feedback will ensure that we can produce the best possible resources to support the valuable work you are doing in educating our children, the future leaders of our world.

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