



All About Trees

LESSON PLAN

What Can Be Learned?

The characteristics of trees and other vegetation vary according to climate and location. Areas in Tasmania with high rainfall are often home to some extremely tall eucalypt trees such as *Eucalyptus regnans*. In contrast, drier coastal areas often have shorter trees that are able to cope with less water.

The role of trees in Tasmania's forests is essential - apart from providing wildlife habitats, they are responsible for providing us all with oxygen and water.

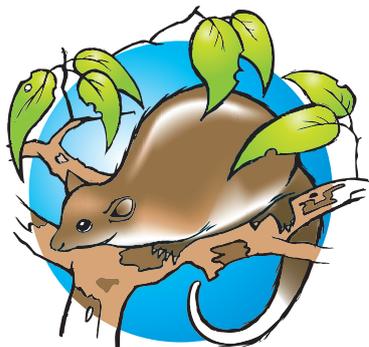
The measuring part of this activity is particularly relevant for an excursion. Students can compare the forest and varied under-storey trees.

Materials Required

- Chalk, metre rulers or metre-wheels.
- Reference books (see the More Information pages)
- Tree stumps or logs
- Clear plastic bags and twist ties
- Stethoscope

The Activity

- Walk around your school grounds -
- How many different types of tree can be seen?
- Which animals might need these trees?



Find the tallest native trees in the school grounds. From the ground take a sample of some leaves, twigs, fruit (e.g. gum nuts). Try to identify the type of tree in class (for resources on tree identification see the More Information pages at the end of this unit).

Find out about the types of trees found in the park you are going to visit. Make a list of the trees. Record how tall they usually grow, what forest type* they are usually found in, and any other interesting information about them. A sample table for board work is included below.

Tree Name	Height	Forest type	Other Information



Precious Parks E-Set suited to lower secondary students.

* Forest types can be referred to as: alpine, temperate rainforest, mixed forest, wet eucalypt forest, dry eucalypt forest, coastal heathland. For further information on forest types refer to the More Information page as part of this E-Set unit.



Tree Height Comparison

Outside in the playground

Work in teams of 2 or 3. Choose a native tree and measure out the length of the tree on the ground - mark this out with chalk and write the name of the tree next to the line.

If the teams work from the same base line it gives a very good visual representation of the actual heights of the various trees and the differences between them.

Steps to measure the height of trees:

1. One student extends his/her arm out straight so that the top of his/her fist is at eye level. Carefully using a ruler, another student measures the distance from the fist to the student's eye.

2. Student 1 directly faces the tree to be measured holding the ruler vertically in his/her extended fist so that the distance from the top of his/her fist to the top of the ruler is the same eye-to-fist distance measured in the previous step.

The arm is straight out, fist at eye level with the ruler straight up and down.

3. Student 1 slowly (and carefully) walks backward away from the tree until he/she can see the base of the tree by looking over the top of the fist and the top of the tree by looking over the top of the ruler.

4. Student 2 then measures the distance from Student 1 to the tree. This distance is the height of the tree.

The Water Cycle

Trees, air and the water cycle. How do trees help provide the earth's water?

Trees absorb thousands of litres of water (which also contain essential minerals) into their roots from deep under the ground. This water is carried up through the trunk into the branches and leaves. Excess water can then be released into the air through the leaves, adding moisture to the atmosphere. When enough water is released into the air from forests this contributes to rain.... and the water cycle begins all over again. This process is called transpiration.

The Transpiration Process

1. Listen to a tree drinking water

On a warm sunny day you can use a stethoscope to listen to the water moving within the tree! Pick a young tree with smooth bark for best results.

2. Collecting water

Wrap a plastic bag around some leaves on a tree in the school grounds. Close the bag with a twist tie. Note the weather conditions (i.e. sunny, cloudy, cold, warm)

Leave for 2 hours.

Return to see what has happened. The bag should have water in it. This is the water released by the tree in the transpiration process.



Estimate how much water the entire tree you used for your experiment transpires in 2 hours. If this is the amount of water a few leaves released in 2 hours, imagine the amount of water an entire forest contributes to rainfall.

Try the experiment in different weather conditions, what do you notice?

3. Draw a diagram - which shows transpiration process and how trees contribute to the water cycle.

Tree Growth Rings

A growing tree adds a new ring of wood to its trunk every year. Counting the growth rings tells the tree's age. Some eucalyptus trees live for hundreds of years, some of Tasmania's trees (e.g. pencil or King Billy pines) can live for thousands.

Each tree ring is made up of a light ring, then a darker ring. Together this represents one year in the life of the tree.

The light layer is early wood, formed when the tree is growing rapidly because of higher temperatures and/or rainfall and more sunlight.

The dark layer is late wood and is grown more slowly, when there is less rain, light or lower temperatures - such as in winter. The growth occurs at the outside of the trunk, just under the bark.

Not only can you tell the age of a tree from its rings, but you can tell the conditions under which it grew from year to year.

The growth patterns can be studied to determine the conditions a tree lived through such as drought, forest fires, insect attack, or floods.

The wider the ring, the better the growing conditions for that year. A narrow ring indicates poorer conditions such as drought.

Students can do their own research into the age of a tree and climate change. Find a tree stump or a log or a sawn off section of tree and have a look at the rings.

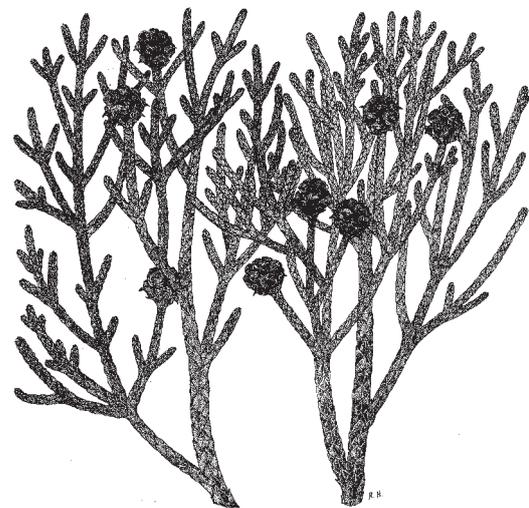
How old is the tree?

Construct a timeline for the tree. On the timeline mark:

The thickest rings - what might the conditions have been like? How old was the tree when this occurred?

The narrowest rings - what might the conditions have been like? How old was the tree when this occurred?

If the tree died/was felled recently - what was happening in Tasmanian or world history during the lifetime of the tree?



Pencil pine

Precious Parks E-Set - Unit Overview

E-Sets are an Electronic Environmental and Educational set of notes for teachers

FURTHER INFORMATION

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