



## Bush Foods and Biodiversity

Victorian Aboriginal Bush Food Activities

LandLearn  
Department of Primary Industries

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## A Sustainability Education program of the Department of Primary Industries.

This booklet was compiled by Lydia Fehring, Education Officer, LandLearn (2003) and updated by the LandLearn team (2008).

### LandLearn aims to:

- Engage students in active, experiential learning which can include on-going participation in community environmental management projects
- Encourage and support the incorporation of studies about sustainable agriculture and natural resources management into schools' curricula
- Provide support for teachers and school communities through professional development, current learning and teaching resources and student activities that make learning fun
- Promote partnerships between schools and community groups, such as Landcare, and between urban and rural school communities.

### Key messages

Caring for our land and its resources is a shared responsibility. Learning and action now is an investment in a future with:

- A sustainable environment
- Quality food and natural fibres produced by farmers using responsible practices
- Viable rural and regional communities
- Challenging, valued and purposeful careers and employment in agriculture-based industries.

### Support for schools

Visit the LandLearn website: [www.landlearn.net.au](http://www.landlearn.net.au)

As a provider of curriculum resources and support, LandLearn works in the context of a holistic, integrated approach to environment education. Schools can adapt the learning activities and teaching resources to suit their particular curriculum structure, pedagogical approach and learning themes. Sustainability and the environment, including sustainable agriculture as the source of food and natural fibre, can provide an integrating framework for the implementation of the Victorian Essential Learning Standards.

Principals, Curriculum and Professional Development Coordinators and teachers are invited to contact LandLearn to discuss the support LandLearn offers to schools, including professional development and fieldwork. Themes we can assist with include sustainable agriculture as the source of food and natural fibre, school gardens (especially edible ones) as learning environments, landcare, natural resource management, biodiversity in a range of landscapes, all underpinned by the principles of sustainability education.

LandLearn teaching and learning resources aim to support transformative learning that will empower students to take responsibility for their actions and for behaviour change to contribute to a sustainable future. The resources include activities to encourage students as individuals, and whole school communities to participate in local community action and projects to support relevant local and regional management plans.

Email: [landlearn.program@dpi.vic.gov.au](mailto:landlearn.program@dpi.vic.gov.au)



# Acknowledgments

## Acknowledgments

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Kulin Nation

Mike Green, Regional Heritage, Aboriginal Affairs Victoria

## Resources used

### Books

Gott, B & Zola, N 1992 *Koori Plants Koori People: Traditional Aboriginal Food, Fibre and Healing Plants of Victoria*, Koori Heritage Trust, Melbourne

Gott, B & Conran, J 1991 *Victorian Koori Plants*, Yangennanock Women's Group, Hamilton

Robins, J, 1998 *Wild Lime; Cooking from the bushfood garden* Allen and Unwin, St Leonards

Krishna-Pillay 1996 *Dictionary of Keeraywoorroong and Related Dialects* Gunditjmarra Aboriginal Cooperative, Warrnambool

### Websites

ABC Online – Message Stick

[www.abc.net.au/message](http://www.abc.net.au/message)

Australian National Botanic Gardens

<http://www.anbg.gov.au/anbg/>

Children's Health Development Foundation

<http://www.chdf.org.au/>

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# Introduction

## *Integrating Aboriginal Bushfoods and Biodiversity into the curriculum*

### **This resource**

This resource has been developed to assist teachers in bringing the topic of Bushfoods and Biodiversity into school curriculum. It is aimed at providing non-Aboriginal students (although this does not preclude Aboriginal students from doing these activities) curriculum linked, hands on activities designed to introduce them to the world of Aboriginal bush foods.

This resource is not without flaw and was developed with the best information available at the time. It was developed with the assistance of a range of people and organisations (see the Acknowledgments section) with the purpose of assisting teachers in incorporating some of this information into the curriculum. It is not supposed to be a definitive resource on Aboriginal bushfoods and biodiversity.

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### **Background**

Aboriginal people have lived in Victoria for approximately 40,000 years and many researchers suggest that time is probably longer. Evidence of aboriginal occupation has been found in many areas of the state. Things such as ancient tools, burial grounds, paintings and shell middens (sort of like Aboriginal kitchens... where shell remains of past meals have accumulated – especially found in coastal areas) have been unearthed and give us an idea about the kind of life Victorian Aboriginals lead thousands of years ago.

Life was very different in Australia before European settlement. Aboriginal people had to know the land and plants exhaustively to be able to survive on this dry and changeable continent. Records show over 700 plants have been used by Victorian Aboriginals. Some of their uses are known but many haven't been recorded. This resource only mentions a few of these plants.

Aboriginal people are known as hunters and gatherers as they collected plant foods and hunted animals to survive. In Victorian clans, it has been estimated that men supplied around 50% of the clan's food and women and children the other 50%.

The women usually gathered and prepared fruit and vegetables, shellfish, fish, medicines and caught some small animals. The men made different tools and weapons and hunted larger animals. They also fished and collected honey. These foods were collected from the area around their camp – sometimes people travelled 15km from their camp in a day to collect food.

### **Plant foods**

In Aboriginal society plants were a major resource, used mainly as a food source, but plants were also utilised for fibre (string, baskets, canoes), implements (fishing tools, body decoration), medicine and shelter.

Roots and tubers have similar food values to potatoes and carrots. Vegetables and fruit formed a staple part of Aboriginal people's diet, making up at least half of the foods eaten. Women gathered most of these meals by using a digging stick to dig up roots and tubers to feed the rest of the clan. Roots were available all year round in much of Victoria – especially the roots of aquatic plants. Roots and tubers have similar food values to potatoes and carrots.

## Aboriginal people were farmers too

It is commonly thought that Aboriginals didn't farm or alter the land. This isn't entirely correct. Aboriginals used fire to manage their land by burning small areas of vegetation to encourage growth of certain food plants. Some people call this 'Fire-stick Farming' which describes the way aboriginal people carried fire from one place to another – a smouldering or burning stick. The Aboriginals most important survival tool was fire.

### A comparison between Agriculture and Aboriginal land management

<b>Agriculture</b>	<b>Aboriginal gathering method</b>
Preparation of soil – cultivating	Digging, loosening of soil, incorporation of organic litter
Fertilising	Burning at specific times to produce ash
Thinning of perennial plants	Separating clumps of perennials, removing tubers
Sowing and planting	Some tubers are left or discarded, burning timed after seeds have formed
Care of seedlings	Open structure of vegetation – allowing light penetration, maintained by regular burning
Spreading of cultivated plants	Tubers and seeds carried to camp, traded from tribe to tribe

From *Victorian Koorie Plants* (1998) B. Gott and J. Conran

## Victorian Essential Learning Standards Curriculum Connections for Bush Foods & Biodiversity

	Strand	Physical, Personal and Social Learning				Discipline-based Learning							Inter-disciplinary Learning				
	Domain	Health & Physical Education	Interpersonal Development	Personal Learning	Civics & Citizenship	The Arts	English	Humanities - Economics	Humanities - Geography	Humanities - History	LOTE	Mathematics	Science	Communication	Design, Creativity & Technology	ICT	Thinking Processes
<b>Activity</b>	<b>1. How may grass seeds would you need?</b> Students collect, count and weigh seeds, to gain a greater understanding of the way Aboriginal people survived by gathering their food.	☆							☆	☆		3,4,5	☆		☆		
	<b>2. Vegie bingo</b> Familiarises students with bush foods eaten by Victorian aboriginal people and their similarities to the foods we eat today.	☆	☆						☆	☆			2, 3	☆	☆		
	<b>3. Bush foods in the school yard</b> Assists schools in establishing their own bush food or indigenous garden.	☆	☆		☆				☆	☆		☆	3,4,5	☆	☆		☆
	<b>4. Uncovering roots: tubers and rhizomes</b> Demonstrates the variety of root systems in plants.	☆								☆			2, 3				
	<b>5. Wattles seed recipes</b>	☆											☆		☆		
	<b>6. Traditional Aboriginal Games</b> Introduces students to traditional Aboriginal games using modern equipment and to demonstrate the link between sport, culture and identity.	1,2,3	☆							☆				☆			
	<b>7. Indig-quiz</b>	☆							☆	3,5			☆				

**The most applicable domains for each activity are indicated by the levels.  
Other relevant domains, dependant on use of extension activities, are indicated with ☆.**



# Activity 1: How many grass seeds would you need?



## Curriculum connections

Use of this learning and teaching activity may contribute to achievement of elements of the Standards. Indications of relevant Domains and Levels in the *Victorian Essential Learning Standards* are provided to assist teachers to make decisions about the appropriateness of the activity for their students.

### **Victorian Essential Learning Standards Domains and (Levels):**

Mathematics (3,4,5)

**Duration:** 50 minutes.

**Setting:** The classroom.

## Summary

By collecting, counting and weighing seeds, students will gain a greater understanding of the way Aboriginal people survived by gathering their food.

## Objectives

Students will be able to make comparisons between:

- a gathering society that relies solely on a family group and the immediate environment for their food and fibre needs
- and our society today with the conveniences of mass production and distribution.

## Student connections

Students will gain an understanding of the way Aboriginal people used to collect native seed to make flour. This activity will enable students to see how much seed is needed to make everyday meals such as bread and damper, and the way it was processed and prepared. Students can make comparisons between traditional Aboriginal society and modern society with the conveniences of farm machinery, factories and supermarkets.

Students will be able to:

- Investigate how the number of seeds in a kilogram of tussock grass seed compares to other seed or grain eg. wheat or rice.
- Compare methods of preparation ie. how did Aboriginal people prepare the seed for flour as compared to modern methods?
- Compare methods of collection of seed or grain. Aboriginal people collected seed by hand, how is seed or grain collected today?

## Materials

- Digital scales if available or small kitchen scales .
- A collection of Native grass seed such as tussock grass seed or other native grass seed (wallaby grass, kangaroo grass, stipa, etc). If collecting seed yourself you will need a permit to collect some native seed on public land. To obtain a **FREE** permit call Department of Sustainability and Environment Customer Service centre on 136 186.
- **Poppy Seeds** could be used as a substitute for tussock grass seed (they are around the same weight and size even if they look nothing alike).
- Pestle and mortar or something similar to use for grinding.



## The Activity

1. Using the worksheet provided, place a seed onto the 10cm square (grid).
2. Complete the table of results on the worksheet:
  - a. **Estimate** how many seeds will fit flat into the 10cm square and write your answer in the table provided
  - b. **Count** how many grains will fit flat into the 10cm square by:  
Method A: covering the 10cm with seeds and count how many cover the grid.  
OR  
Method B: counting the number of seeds that cover one small square (1cm x 1cm). Count the number of 1cm squares in the 10cm square. Multiply these two numbers together.
3. Using the digital scales or kitchen scales, determine the weight of seeds that fit into the 10cm square.
4. Using the information in the table, **estimate** how many seeds would be in one kilogram of wheat.
5. Determine whether these are likely to be over-estimates or under-estimates and justify your answer.
6. Grind the seeds to make it into flour – this is what Aboriginal people used as their flour and made types of bread, damper and other foods.
7. Time how long it takes you to grind a few seeds. Estimate how long you think it would take to grind enough seed to make a kilogram of flour.

## Extension

- Investigate contributions different cultures have made to the diversity of Australian food. Construct a timeline showing the arrival of different groups of people in Australia and their relation to food.
- Compare how the environment was used by different groups of people (Aboriginal and European) – choose an area familiar to you such as the Mallee, Gippsland or the Port Phillip region.
- How is the use of the environment by Aboriginal people, ie. hunting and gathering, similar/different to the way the Australian environment is used today?
- Land is very important to the Aboriginal culture. Investigate the meaning of land to Aboriginal people. How is this similar/different to your view of the land?
- Extended families are a central part of Aboriginal culture. Research the role of the extended family in Aboriginal and other cultures.
- Explore a local habitat and investigate the plant and animal interactions.
- Investigate where your breakfast foods originated and draw a flow chart depicting one food from its growth to its consumption.
- Are indigenous plants better suited to the Australian environment?
- Investigate the differences between indigenous and introduced plants.

## Worksheet Seed and Measurement

Name: \_\_\_\_\_


<b>Estimate of seeds in 10cm square</b>	<b>Actual number of seeds in 10cm square</b>	<b>Weight of seeds in 10cm square (in grams)</b>



# Activity 2: Vegie Bingo

## Curriculum connections

Use of this learning and teaching activity may contribute to achievement of elements of the Standards. Indications of relevant Domains and Levels in the *Victorian Essential Learning Standards* are provided to assist teachers to make decisions about the appropriateness of the activity for their students.

### **Victorian Essential Learning Standards Domains and (Levels):**

Science (2,3)

**Duration:** 50 minutes.

**Setting:** The classroom.

## Summary

To familiarise students with bush foods eaten by Victorian Aboriginal people and their similarities to the foods we eat today.

## Objectives

Students will learn to make comparisons between Aboriginal bush foods and our everyday foods and are able to classify foods into plant parts.

## Student Connections

Students will be able to classify a range of foods into groups and learn a little bit more about everyday foods. This activity will give students the opportunity to compare the foods we eat on a daily basis to traditional Aboriginal foods.

- Do we eat flowers, Do we eat roots, Do we eat seeds? – Discuss.
- Describe the shapes, colours and textures of the foods.
- Describe the different plant parts that we eat.
- Discuss the main features of a plant (seeds, flowers, roots, stems, leaves). Are these features different from plant to plant?

## Background

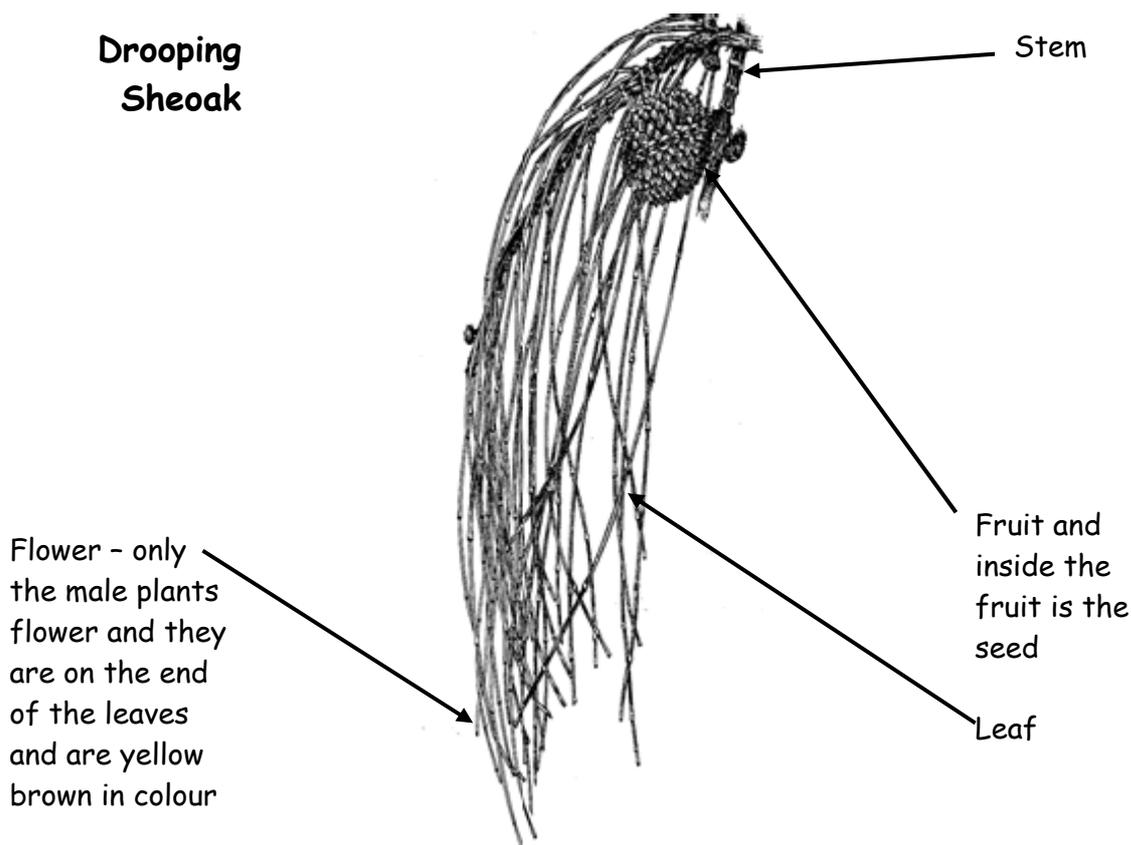
Plants grow by taking light from the sun, carbon dioxide from the air that we breathe out and water and minerals from the earth. Plants provide us with oxygen, food, medicine, fibre products, habitat and homes for animals and insects and minerals and protection for our soil.

### Plant Parts

**Roots:** Usually the underground part of the plant, it plays the role of anchoring the plant. It can also act as a storage area for food (eg. tubers such as potatoes).

**Stems:** The part of the plant that usually bears the leaves, reproductive parts and buds. The stem carries the water and nutrients from the roots to the other parts of the plant.

- Leaves:** Photosynthesis is a chemical reaction where light from the sun is used to produce food for the plant and is performed in the leaves of a plant. A leaf is made up of photosynthetic cells surrounded by the epidermis (like the plants skin) which is covered by stomata (like the pores of the plant) allowing exchange of gases between the internal parts or tissues and the atmosphere.
- Fruit:** The structure that develops to enclose seeds.
- Flowers:** The reproductive part of the plant. The female parts of the flower remain to form the fruit which produce seeds to grow into plants the following year. Most flowers need to be pollinated to produce seed. Some flowers have special relationships with insects to make sure they are pollinated. Some flowers look like a female moth, some smell exactly like female wasps just before their mating season, some insects have exactly the right length tongue to drink nectar. The list goes on. Plants and some animals have very special relationships.
- Seed:** Once the flower is pollinated it produces seed. The seed contains an embryo and a food supply and is surrounded by a protective coat. Sometimes the protective coat needs to be treated before the seed can germinate. For example wattle seed needs to have their seed coat broken. Ants can chew the seed coat off or pouring boiling water over the seeds will break the seed coat.



## Materials

- A range of fruit, vegetables, seeds and nuts (if available).
- A copy of the bingo cards (page 19) for students to guess which part of a plant each food is.
- At least 5 counters for each student.
- If available, some of the plants on the Aboriginal food list.

## The Activity

### Food Bingo

1. The aim is to guess which part of a plant each food is from and fill your bingo card with a straight-line, either horizontal, diagonal or vertical.
2. The teacher calls out each of the fruits and vegetables below one at a time.
3. Each student places a counter on the part of the plant they think the fruit/vegetable is, ie. a carrot is a root so the student would place a counter on a square with the word 'root' written on it.
4. Once students have counters in a straight-line on their card they call out **Veggie Bingo**. If all of their counters are correct then that student wins (maybe he/she can be given a piece of fruit to recognise the win).

### Alternative activity –

- Think about the foods you have eaten over the past week. Can you identify what part of plants they were?
- Ask students to identify which part of the plant the list of fruits and vegetables below are (or the plants that they have eaten) and write them in the table below.
- Where are the plants that you eat or that are in the table below grown. Are they grown in Victoria – if so where?
- Refer to the table entitled Aboriginal plant food and work out how the plants we eat today compare to Aboriginal foods. How are they similar/different (think about fruits, seeds, roots etc?)

**What part of a plant is a:**

carrot	cauliflower	peppercorn	potato
sweet potato	walnut	broccoli	olives
celery	lettuce	asparagus	pea
tomato	peach	coffee beans	brussels sprout
bok choy	chilli	bamboo	lemongrass
water chestnut	corn	chick pea	onion
fig	artichoke		

Leaf & stem	Seed	Flower	Fruit	Root

**Answers:**

Leaf & stem	Seed	Flower	Fruit	Root
celery	walnut	cauliflower	tomato	carrot
lettuce	peppercorn	broccoli	peach	potato
asparagus	coffee bean	fig	olive	onion
brussel sprout	pea	artichoke	chilli	sweet potato
bamboo	corn			water chestnut
lemongrass	chick pea			
bok choy				

## Aboriginal plant foods

Leaf & Stem	Seed	Fruits & flowers	Root
The leaves of pigface were eaten as a salad or cooked to be eaten with meat <i>Similar to lettuce leaves or bok choy</i>	Grass seeds for flour – tussock grass and wallaby grass were ground into a type of flour to make bread and damper <i>Similar to wheat</i>	Native raspberry – red berries are sweet and were eaten as a treat (like lollies!). The plant has been displaced by blackberry (an introduced weed) <i>Similar to raspberries</i>	Yam Daisy –. The radish like tubers eaten raw or roasted. This herb looks a lot like a dandelion <i>Similar to carrots</i>
Tree fern – the starchy pith in the stem was scooped out for food <i>Similar to the pith in citrus fruit but tastes like peas or beans (but the fern pith is much harder)</i>	Coast Wattle seeds used for tea & in damper, also some were eaten green like green peas – not all species are palatable <i>Similar to peas and coffee beans</i>	Kangaroo Apple – fruit eaten when soft and ripe (when they are orange) they are poisonous when green. Also classified as a women’s food to be used as a contraceptive	Hakea roots - drained of water for rehydration – very useful in dry and arid areas
Bower spinach – the leaves are chewed for rehydration (they are very succulent). It was sometimes cooked and eaten <i>Similar to spinach</i>		Muntries - a sweet fruit, picked straight from the bush and eaten raw, they grow mainly in coastal or limestone areas <i>Similar to apple or cranberry</i>	Water ribbon – the roots of this water plant were dug up and are eaten raw or cooked - <i>Similar to water chestnuts</i>
Grass Trees – the soft bases of the young leaves were eaten – they have a sweet nutty taste. These plants only grow 1cm a year. <i>Similar to soft nuts</i>		Quandong – This sweet fruit was eaten when red and soft. It is a high source of vitamin C and was essential in preventing diseases like scurvy <i>Similar to a peach</i>	Chocolate Lily - The root tubers were cooked and eaten. The flower of this plant smells like chocolate. <i>Similar to carrots</i>
		Pigface – a sweet fruit which is eaten raw, straight from the runner after flowering <i>Similar to salty strawberries</i>	Cumbungi – the rhizomes of this plant were dug up and the starch was chewed off (leaving string behind) <i>Similar to potato.</i>

Aboriginal people ate different parts of plants too. Look at the Aboriginal plant food list and see if you can guess how they might have been prepared. Aboriginal plant foods aren't too different to what we eat today.

How do Aboriginal plant foods compare to what we eat today. Try to compare some of the foods we eat with some Aboriginal foods. For example Cumbungi has a rhizome which is similar to our potato. If you were going on a picnic try and see if you can find out what kinds of plants Aboriginal people might have eaten. What parts of plants do they eat and what else could these plants be used for. Do they grow in your area?

Do you have any indigenous foods in your diet?

What about Macadamia nuts – they are an Aboriginal Australian food!

**Bingo Cards** – cut out and photocopy enough for each student

Flower	Root	Stem/Leaf	Seed
Fruit	Flower	Seed	Stem/Leaf
Seed	Root	Fruit	Flower
Fruit	Flower	Stem/Leaf	Fruit

Root	Flower	Seed	Stem/Leaf
Flower	Fruit	Root	Root
Flower	Fruit	Stem/Leaf	Seed
Root	Seed	Flower	Fruit

Stem/Leaf	Seed	Flower	Fruit
Root	Flower	Seed	Stem/Leaf
Seed	Root	Stem/Leaf	Seed
Flower	Fruit	Root	Stem/Leaf

Seed	Seed	flower	Root
Root	Flower	Fruit	Stem/Leaf
Flower	Root	Stem/Leaf	Seed
Fruit	Stem/Leaf	Seed	Stem/Leaf

Seed	Root	Seed	Stem/Leaf
Stem/Leaf	Stem/Leaf	Fruit	Flower
Flower	Seed	Root	Fruit
Fruit	Flower	Stem/Leaf	Seed

Seed	Stem/Leaf	Seed	Root
Stem/Leaf	Fruit	Flower	Stem/Leaf
Flower	Root	Fruit	Seed
Root	Seed	Root	Flower

## Extension

- Compare how the environment was used by different groups of people over time (Aboriginal and European). Choose an area familiar to you such as the Mallee, Gippsland or the Port Phillip region for the comparison.
- Investigate how different foods are grown eg. underground, on trees, along the ground.
- Explore the main features of plants.
- What do plants need to grow? What happens when you alter the amount of water, light, heat getting to the plant? Do some experiments with bean seeds.
- Investigate the bush food industry. How could the profile of the industry be raised?
- Explore a range of jobs in the food industry. What are their similarities and differences? What skills and qualifications would you need for each job? Jobs could include: Dairy farmer, Plant scientist, Food technology, Agronomist, Wine maker, Cropping farmer, etc.
- “Aboriginal people are farmers too”. Discuss this statement.
- Investigate how your region has changed since European settlement. What has changed and why. What have the impacts been?
- Explore the diversity of Aboriginal Bush foods. Can you grow any in your school yard?
- Research significant areas in your region such as Aboriginal sites, food production areas, areas of natural significance. Why are they important to your region?
- Research the sustainability of traditional Aboriginal methods of farming and compare them to today’s methods of farming. Can you suggest any improvements for either method?
- Investigate the process of photosynthesis.
- Explore the concept of plants as ground water pumps.
- Research the use and transport of nutrients in plants. Do different plants work differently?
- Do plants have different salt tolerances? Do experiments with a range of plants with different salty solutions.

# Activity 3: Bush Foods in the School Yard

## or butterflies or birds



### Curriculum connections

Use of this learning and teaching activity may contribute to achievement of elements of the Standards. Indications of relevant Domains and Levels in the *Victorian Essential Learning Standards* are provided to assist teachers to make decisions about the appropriateness of the activity for their students.

#### **Victorian Essential Learning Standards Domains and (Levels):**

Science (3,4,5)

**Duration:** Ongoing over the school year.

**Setting:** The schoolyard.

### Summary

To assist schools in establishing their own bush food or indigenous garden.

### Objectives

Students will be able to gain an understanding of the planning, planting and aftercare, not to mention enjoying the fruits of planting a bush food garden.

### Student connections

Students are able to plan and implement a hands-on project that provides a fantastic resource for the school to continue into the future.

The garden will help students learn about:

- Observing the growth and change of plants over time.
- Exploring factors that affect survival of living things (there are always going to be casualties).
- Investigating the classification of plants and plant parts and the role that they play in different systems (some wetland plants filter water, plants provide oxygen through photosynthesis, plants provide homes for an array of fauna etc).
- Investigating local habitats and how they function – look at concepts of ecosystems and biodiversity. What part does culture play in these systems?
- Researching plant and animal interactions in an ecosystem – you will find this happening in your garden not long after planting (ie. look for the little things such as insects). Count them, graph them make predictions about growth rates, height, water use etc.
- Mapping and graphing skills through mapping the area and graphing plant growth, number of insects, types of insects etc.
- Determining the types of jobs available in this field. What skills would be required?
- Observing change over time. What has happened to the native vegetation in your area since European settlement?
- Investigating the benefits of diversity in an ecosystem. What happens if we have a monoculture or just a few different plants in a system?

## Materials

### Before the planting

- Research the plants that grew in your region, or get an indigenous plant list for your area - available from your local indigenous nursery, Catchment Management Authorities (CMA's), Greening Australia or councils (Phone numbers and some bushfood plant suggestions are listed below).
- Decide on an area of the school yard you will dedicate to planting. Get a map of the school grounds and ask students to mark in where they would like the garden and what they would like to create (habitat for butterflies, a frog pond, a bush food garden etc).

### For the planting day

Obtain:

- Guards and stakes for the plants if you have a rabbit or hare problem (milk cartons and bamboo stakes are good).
- Plant labels – plant names can be written on icy-pole sticks or make some longer lasting ones out of ice-cream container lids.
- Hand trowels or Hamilton Tree Planters (some CMA's, Greening Australia offices and councils have these available to borrow or hire).
- Buckets of water to water the plants.
- Mulch – newspaper can be used and covered with mulch, bark chips or straw. This will hold moisture in especially over the summer holidays.
- A camera to record the day's activities.
- A dedicated area – a whiteboard or a class diary - to record the animals and insects using the garden.

## The Activity

### Background

When you feel hungry imagine going outside to the garden to find a snack. Aboriginal people have been doing this for thousands of years by picking seeds, digging roots, hunting animals and reptiles and finding water. Australia's rivers, seas and bushland areas were like a great big supermarket to Aboriginal people.

Planting a bushfood or indigenous garden in your schoolyard will give you an idea of what it is like to have to gather your food. This will probably be an entirely new experience, very different from going to the supermarket.

Indigenous plants are plants that are native to a particular part of Victoria or Australia – they are locally native! These plants have adapted to suit the physical conditions (soil type, rainfall, temperature etc) of a particular area.

## Planning

Work out what kind of area you live in. Was it traditionally grasslands, dry or moist woodlands, coastal, or wetlands? Contact your local Department of Sustainability and Environment –DSE, or Department of Primary Industries - DPI or Catchment Management Authority – CMA office to find out.

Choose the area you would like to plant out.

Decide what you want to achieve from the garden. Do you want to learn more about bushfoods or indigenous plants, or do you want to create habitat for birds or butterflies in your schoolyard? Do you want to cover an ugly fence or do you just want to bring back a little bit of biodiversity to your area? Once you know this you can start to plan.

First you will need to prepare the site for planting by controlling the weeds on the site. You can do this by mulching the site well to smother any weeds in your planting site.

Depending on the aim of your garden you could contact a local Aboriginal person to come and speak with your class about traditional uses of plants and animals in your area to start the ball rolling. They might even be able to tell you some of the Aboriginal Dreamtime stories related to your area. Or you could invite a local Landcare person or a DSE/DPI or CMA employee to come along and tell you about the vegetation that would have been found in your area before it changed.

## Plant Selection

The Bush Food Plants lists provided in the following pages show what plants occur in most parts of Victoria, although sometimes there is regional diversity. It is best to check with your local indigenous plant nursery for specific distribution and what is the best thing to plant in your area.

A list of native plant nurseries is available from the Greening Australia Website at <http://www.greeningaustralia.org.au/GA/VIC/OngroundAction/SustainableLandscapes/Seed/Nurseries/> or by calling Greening Australia on 9450 5300.

Once you know which plants you want in your garden you need to order them from a nursery. You will need to order your plants *at least six months in advance* so that the nursery can collect seed and propagate the correct plants.

If you have a greenhouse at your school and would like to propagate them yourself you will need to collect seed for your plants before you can grow them.

## Planting on the day

On the day make sure you have enough people to get all of the jobs done. You will need people to:

- Dig the hole for the plant – this is a precise job as the hole shouldn't be too big for the plant. If it is too big, the plant's roots can be exposed to the air and it can die.
- Plant the plant. This is a really important job as the person has to handle the plant carefully and gently put it in the hole and press soil around the top of the plant so that no potting mix can be seen.
- Guard the plant (if you have decided to guard). This is a special job which needs great accuracy. The guard needs to be made (the 2 stakes have to be inserted into the milk carton) and then placed over the plant. Make sure the guard is a square shape and not a diamond shape – we want as much light to get to the plant as possible. Push the stakes into the ground making sure they don't pierce the plant or the roots.
- Water the plant. This job is probably the most important as the plant needs that first essential nourishment to ensure that it has every chance of survival. Give each plant around half a litre of water. Remember water was considered to be a precious resource in Aboriginal communities – one of the worst things you could do (especially in Australia) was to spill or waste water.
  - The work is not over yet – you still have to maintain your garden. Make sure that you pull out any weeds that you see and if you think that your plants are struggling in hot weather, give them a drink.
  - Write a letter to a local natural resources organisation to seek funding to go towards your indigenous garden.
  - Your Local Catchment Management Authority



Port Phillip / Western Port	(03) 8781 7900
Corangamite	(03) 5232 9100
Glenelg Hopkins	(03) 5571 2526
Wimmera	(03) 5382 1544
Mallee	(03) 5051 4377
North Central	(03) 5448 7124
North East	(02) 6043 7600
Goulburn Broken	(03) 5820 1100
West Gippsland	(03) 5175 7800
East Gippsland	(03) 5152 0600
Your local shire or city council	

- Contact your local Water Authority.
- Landcare Australia Limited have Junior Landcare grants available (03) 9662 9977.

## Extension

- Investigate which plants attract birds, butterflies and insects.
- Explore how people's lifestyles and activities threaten biodiversity and culture.
- Explore biodiversity in a range of habitats.
- Investigate the use and transport of nutrients in plants and animals.
- Explain how natural processes and human activities have changed environments – look at biodiversity and culture.
- Explore how people's use of environments and resources have changed over time.
- Investigate water regulation in Australian native plants. How do they survive droughts, fire and floods?

## Bush Food Plant Lists

This section is broken into 5 ecosystem areas – **Coastal Food Plants, Dry Woodland Plants, Wet Woodland Plants, Grassland Plants and Wetland Plants**. This is to help you decide which type of ecosystem you are going to revegetate. This section also has information on whether a particular plant attracts birds and butterflies (a picture of a bird or a butterfly signifies that it attracts that animal).

The lists below are by no means exhaustive. We have provided just a selection of plants and some may not be indigenous or suitable to your area. Check with your local indigenous nursery for further information on indigenous plants in your area.

The Aboriginal name of each plant is shown if it is known. The dialect is identified if known but it is often not known because only partial records of Aboriginal language exist. For some of the plants only the tribe where the Aboriginal name came from was available at the time of writing.

Thank you to Aintoinette Smith and Toby Heydon, Victorian Aboriginal Corporation of Languages for their assistance in identifying some of the traditional plant names and the dialects. Much of the other language information has come from Beth Gott and John Conran's Publication *Victorian Koorie Plants* (see references).

## Coastal Food Plants

Coastal plants occur in coastal areas, mainly in sandy soil and are tolerant to windy and salty conditions.

Common name and part of the plant used	Scientific name	Aboriginal name (origin of word or dialect – if known)	Use
<b>Bower spinach</b> <i>Leaf</i>	<i>Tetragonia implexicoma</i>		This herb was considered a salad plant. Its soft leaves were chewed for rehydration as they contain a great deal of water.
<b>Coast Wattle</b> <i>Seed</i>	<i>Acacia sophore</i>	Nalawort (Bunganditj)	When the seeds were almost ripe they were picked and laid on the fire to cook and eaten like peas in a pod.
<b>Coast banksia</b> <i>Nectar</i>	<i>Banksia integrifolia</i>	Warrak (Woi wurrung)	The cones of this tree were soaked in water to extract the nectar which made a sweet drink.
<b>Tussock grass</b> <i>Seed</i>	<i>Poa</i> species	Buath (Woi wurrung)	This seed is tiny and much of the seed is collected by gathering seed heads or flowers and then they are beaten with a stick. A much easier way is to collect seeds from around ants nests - some ants collect seed and then eat the casing of the seed and discard the seed at the entrance of their underground nest. The seed is then ground before eating into a substance like flour. This is then made into a kind of a damper and eaten.
<b>Pigface</b> <i>Fruit</i>	<i>Carprobrotus rossii</i>	Pooyoopkeel (Peekwooroon g wurrung)	This ground cover plant likes full sun and produces a sweet fruit in summer, when the flower has died away which tastes a bit like <b>salty strawberries</b> . Pick the part of the plant where the flower has died and peel it like a banana and suck out the fruit.

Do they attract birds & butterflies?



## Dry Woodland Plants

Dry woodland plants occur in the drier and hotter parts of Victoria (generally above the Great Dividing Range) with the only reliable water resources being the permanent rivers.

Common name and part of the plant used	Scientific name	Aboriginal name (origin of word or dialect – if known)	Use
<b>Sheoak</b> Shoots, fruit and Wood	<i>Allocasurina verticilata</i>	Ngeerreeng (Thawoorwoorong)	This tree has different male and female trees – the female flowers are red and the male flowers are tan. The young shoots and cones were sometimes eaten to relieve thirst but sheoaks were more important because of the hard and dense wood which was made into boomerangs.
<b>Manna gum</b> Sap and wood	<i>Eucalyptus viminalis</i>	Binap (Woiwurrung)	This widespread tree has a smooth white trunk with ribboning bark. Small sugary pellets of dried sap form on the twigs of this tree where holes have been bored by insects. It tastes sweet and was like lollies to the Aboriginal people and early settlers. The wood from this trees was used to make flat shields.
<b>Small vanilla lily</b> Root	<i>Arthropodium minus</i>		Found in drier areas this lily has pale purple vanilla-scented flowers. It has multiple white tubers which are available all year. These tubers were eaten raw.
<b>Pigface</b> Fruit	<i>Carprobrotus modestus</i>	Pooyoopkeel (Peekwoorong wurrung)	This ground cover plant likes full sun and produces a sweet fruit in summer, when the flower has died away which tastes a bit like <b>salty strawberries</b> . Pick the part of the plant where the flower has died and peel it like a banana and suck out the fruit.
<b>Kangaroo apple</b> Fruit	<i>Solanum simile</i>	Parrerr (Koornekopano ot Gurngubanud)	This is a tall shrub whose leaves look like a kangaroo paw. It has vibrant purple flowers and the fruits turn yellow and then a dull orange when ripe. They contain hard stones and seeds. The fruit was eaten when dull orange and soft – they weren't eaten when green as they are poisonous. Some species were called 'women's food' and used as a contraceptive.

Do they attract birds & butterflies?



Quandong <i>Fruit</i>	<i>Santalum acuminatum</i>	Bidjigal (Wergaia, Lake Hindmarsh)	A small tree with dull green leaves produces a delicious tart fruit rich in vitamin C. The seed was high in oil and was a good source of protein. Aboriginal people ate the fruit and the seed. Sometimes known as the Native or Bush Peach.
Ruby saltbush <i>Fruit</i>	<i>Enchylaena tamentosa</i>	Gurgudj (Wemba Wemba)	This small spreading shrub has red button shaped berries, each containing a black seed. This is a very adaptable plant and can tolerate poor and dry soils and even salt. The berries taste sweet. They can be easily picked or shaken off the plant. You would need to collect a lot of these berries to feel full.
Red gum <i>Sap and wood</i>	<i>Eucalyptus camaldulensis</i>	Bial (Woi wurrung)	This is the most widely spread Eucalypt of all of 700 different gum trees. The bark was used by Aboriginal people to make canoes. You might have seen some old scar trees around the landscape – these are the scars of shields, dishes and canoes. The sap was used to glue tips to spears, and bees made hives in these trees where Aboriginal people could collect honey.



## Wet Woodland Plants

Wet woodland plants occur in moist, dark and cool conditions (like the Otways and the forests in the south east of Victoria). Rainfall is high in these areas and even in summer the forest remains relatively damp. Not many tuber plants grow in these regions.

Common name and part of the plant used	Scientific name	Aboriginal name (origin of word or dialect – if known)	Use
Lilly Pilly <i>Fruit</i>	<i>Acmena smithii</i>		Indigenous to Gippsland and Wilson’s Promontory, the pale mauve or white fruits are tart and juicy. Early settlers made them into jam. They would have been eaten as a refreshing snack – like lollies or fruit today. In some supermarkets you can find Lilly Pilly jelly.
Prickly currant bush <i>Fruit</i>	<i>Coprosma quadrifida</i>	Morr (Coranderrk)	The fruit of this prickly bush (great bird habitat) ripen from January to March. It is found in forests over much of Victoria and often grows near streams. The fruit is sweet to eat and is similar to currants.
Kangaroo apple <i>Fruit</i>	<i>Solanum laciniatum</i>	Parrerr (Koornkopano otGurngubanu d)	This is a tall shrub whose leaves look like a kangaroo paw. It has vibrant purple flowers and the fruits turn yellow and then a dull orange when ripe. They contain hard stones and seeds. The fruit was eaten when dull orange and soft – they weren’t eaten when green as they are poisonous. Some species were called “women’s food” and used as a contraceptive.
Soft tree fern <i>Stem</i>	<i>Dicksonia antarctica</i>	Kombadick (Woi wurrung)	This is the tree fern most often grown in our gardens. It is found in tall moist mountain forests. The top half-metre of the stem was split and the starchy pithy was scooped out for food and eaten raw or cooked.
Water cress	<i>Rorippa</i> species		A favourite Aboriginal salad plant, it is found along creeks and the edges of waterholes.

Do they attract birds & butterflies?





Manna gum <i>Sap and wood</i>	<i>Eucalyptus viminalis</i>	Binap (Woiwurrung)	<p>This widespread tree has a smooth white trunk with ribboning bark. Small sugary pellets of dried sap form on the twigs of this tree where holes have been bored by insects. It tastes sweet and was like lollies to the Aboriginal people and early settlers.</p> <p>The wood from this trees was used to make flat shields. Lerps are sap sucking insects and were eaten directly from the leaves of the manna gum because they contained sugar from the sap. They form a little white furry looking protective coating on the leaves.</p>
Pale vanilla lily <i>Root</i>	<i>Arthropodium milleflorum</i>		<p>This lily has pale purple vanilla-scented flowers. It grows in wetter areas. The tubers are clustered close to the base of the plant which are non-starchy crisp tubers which are cooked but could be eaten raw.</p>

## Grassland Plants

Grassland plants occur in generally treeless open plain areas. Dominated by grass species, the plain sometimes features interspersed trees such as Redgums or Sheoaks. The areas occur on the Victorian volcanic plains in western areas such as St Albans and Hamilton, and northern areas including Mitiamo. Grasslands are the most threatened of all Australian ecosystems, with less than 1% of the original area of grasslands remaining.

Common name and part of the plant used	Scientific name	Aboriginal name (origin of word or dialect – if known)	Use
Yam daisy Roots	<i>Microseris lanceolata</i>	Muurang or Keerang (Gunditjmara)	This small herb looks a lot like a dandelion with yellow flowers in spring and is dormant during summer. The underground tuber is a lot like a radish or a carrot. It is sometimes eaten raw but is usually cooked in baskets in earth ovens.
Chocolate lily Roots	<i>Arthropodium strictum</i>		A purple flowered, spring flowering lily which smells like chocolate. It produces numerous root tubers which aren't starchy and were cooked before eating.
Bulbine lily Roots	<i>Bulbine Bulbosa</i>	Pike (Woiwurrung)	This lovely yellow lily produces underground tubers which can be eaten all year round. They were probably cooked and eaten.
Milkmaids Roots	<i>Burchardia umbellata</i>	Popoto (Lake Condah people)	This spring flowering lily has a white flower with a pink circle in the centre like a bulls-eye, attracting the bees to pollinate it. Found all over Victoria except the Mallee, the starchy tubers are available all year round and were cooked before eating.
Bind weed Root	<i>Convolvulus erubescens</i>	Tarook (Peekwoorrong wurrung)	This pink flowered herb is found all over Victoria – especially in dry open places. The tough starchy roots were cooked in baskets and kneaded into dough on a small sheet of bark and eaten.
Running postman Nectar	<i>Kennedia prostrata</i>	Kabin (Coranderrk)	This plant likes full sun / partial shade. Aboriginal people sucked the sweet nectar from the flowers as a sweet treat. The stems were also used as string.
Tussock grass Seed	<i>Poa species</i>	Buath (Woiwurrung)	This seed is tiny. Much of the seed is collected by gathering seed heads or flowers then they are beaten with a stick. A much easier way is to collect seeds from around ants nests - some ants collect seed and then eat the casing of the seed and discard the seed at the entrance of their underground nest. The seed is then ground before eating into a substance like flour. This is then made into a kind of a damper and eaten.

Do they attract birds & butterflies?



## Wetland Plants

Wetland plants occur in swampy areas which are better known as wetlands. These plants do not always need to be underwater, as in a natural system they are usually only seasonally inundated or underwater for a few months of the year.

Common name and part of the plant used	Scientific name	Aboriginal name (origin of word or dialect – if known)	Use
Cumbungi Roots	<i>Typha</i> species	Bourt-deet (Woi wurrung)	This large, aquatic plant is also known as Bull Rush. Growing in the water and at the water's edge, it has male and female flowers on the one plant – male flowers are at the top and the female flowers are underneath. When the seeds are ripe the female flowers float away as fluff. The underground rhizome tastes a lot like potato when cooked in an earth oven. The outer layers are peeled off and the inner, starchy part is twisted into a knot and chewed until all of the starch has gone – the fibre that remained was made into string. Young flowering shoots were also eaten raw.
Water ribbons Roots	<i>Triglochin procera</i>	Pol-an-go (Watha wurrung)	An aquatic plant with long ribbon-like leaves lies on the water's surface. It is found all over Australia. From the underground woody rhizome descend many roots with tubers at the end. Young ones are white and older ones are brown, They are starchy-sweet and were cooked in earth ovens. They taste like water chestnuts. They are well adapted to periodic drying.
Ruby salt bush Fruit	<i>Enchylaena tamentosa</i>	Gurgudj (Wemba Wemba)	This small shrub has red button shaped berries each containing a black seed. The berries taste sweet. They can be easily picked or shaken off the plant. You would need to collect a lot of these berries to feel full.
Rushes and sedges Leaves	<i>Lomandra</i> species and <i>Carex</i> species	Garrawan (spiny headed mat rush) (Woi wurrung)	Rushes are found over most of Victoria. They are easy to identify as the flower stalk has small spiky leaves below the cream coloured flowers. The long smooth tough leaves were used for making baskets and mats and sometimes even string. They were sometimes used to make eel traps – especially in south west Victoria.

Do they attract birds & butterflies?

Marsh Club rush <i>Roots</i>	<i>Bolboschoenus medianus</i>	Belilah (lower Murray River SA people)	This waters edge plant has underground rhizomes which form walnut sized corms at the end. The corm is roasted and is firm, pale and starchy. After roasting they were pounded into thin cakes between two stones.
Red gum <i>Sap and wood</i>	<i>Eucalyptus camaldulensis</i>	Bial (Woiwurrung)	This is the most widely spread Eucalypt of all of 700 different gum trees. The bark was used by Aboriginal people to make canoes. You might have seen some old scar trees around the landscape – these are the scars of shields, dishes and canoes. The sap was used to glue tips to spears, and bees made hives in these trees where Aboriginal people could collect honey.



# Activity 4: Uncovering roots - tubers and rhizomes

## Curriculum connections

Use of this learning and teaching activity may contribute to achievement of elements of the Standards. Indications of relevant Domains and Levels in the *Victorian Essential Learning Standards* are provided to assist teachers to make decisions about the appropriateness of the activity for their students.

## Summary

To demonstrate the variety of root systems in plants.

## Objectives

Students will learn about different plant parts and the use of these parts by Aboriginal people.

## Student connections

- Explore how Aboriginal people harvest tubers and rhizomes.
- Report on the different stages of growth. Does a rhizome or a tuber appear first?
- Predict what other parts of these plants were used by Aboriginal people. Which plant parts were used and what were they used for?
- Investigate how these plants reproduce.
- Explain why some plant and animal foods eaten by Aboriginal people have become extinct.
- Investigate other plants that we eat that are tubers, rhizomes or roots. Where do they grow in Victoria? Experiment growing some of them in the school yard or at home.
- Identify areas where native plants still grow in your region. Are any of these plants Aboriginal plant foods?
- Investigate why human activities were so destructive to the environment in the settlement years. What impacts did settlement have on Aboriginal plant foods?
- Investigate why plants such as Murrnong are now rare in parts of Victoria. What industries are now operating in the areas where Murrnong used to grow profusely, particularly on the western plains.
- Describe the changes over time in your local area. Look at agricultural change, vegetation changes, population changes, changes in town etc. Draw a time line from pre-European settlement until now.
- Have these changes altered the environmental balance? Are there any land degradation problems in this area resulting from the changes in the environment?
- Investigate how European settlement affected the Aboriginal population?

### **Victorian Essential Learning Standards Domains and (Levels):**

Science (2,3)

**Duration:** Start at the beginning of the year to see results in term 3 & 4.

**Setting:** The classroom.

## Materials

- A one or two litre clear plastic drink bottle.
- Sharp knife or scissors.
- Potting mix – try and use one suitable for native plants (low phosphorus potting mix is best).
- A bushfood plant seedling – choose an array of different plants that have different forms of roots – for example: for tubers a lily is a good choice (Bulbine, Chocolate, Vanilla, Milkmaids). For rhizomes, water plants such as sedges and rushes are good (Marsh Club rush, Cumbungi, Water ribbons).

## The Activity

1. Cut the top off the bottle and make some drainage holes at the bottom.
2. Fill the bottle with potting mix.
3. Plant your plant, making sure that all of the roots are pointing down.
4. Put in a warm position – ie. lilies should be out of the direct sunlight, water plants should be kept moist. Place the bottle in an ice cream container to retain the drained water.
5. Over the next few months you will be able to see some of the different kinds of roots. Native plants can be slow growing, so plant your plants early in the year so that you can see your plants flower in the spring. A chocolate lily will take around 4-5 months to develop a reasonably sized tuber. Rhizomes will take a lot less time – around 1-2 months.
6. Keep a diary to record your observations. You may like to draw a series of sketches to show root development.
7. You can then use your plants to start your own bush food garden in the schoolyard.

## Extension

- What conclusions can you make on the effect of the amount of water fed to the plant and how it affects its root?
- What about the effect of light and heat?
- What impact does a plants root system have on the soil?
- Explore a local habitat and investigate the relationships between living things in a tree, creek, dam or bushland.
- Make a list of the foods, clothing and equipment you have used in the past 24 hours that have come from plants, and draw a flow chart from their origins to their consumption.
- Explain how people's activities and lifestyles threaten biodiversity and habitats.
- Investigate the use and transport of nutrients in plants.
- Develop a management plan with a 'Friends of' or Landcare group to enhance an area of land or your school yard.

## How do you tell what kinds of roots you are looking at?

Tubers are a fleshy underground stem which contains stored food.

Rhizomes are underground stems which run parallel to the soil surface and have aerial shoots at intervals.

### Yam Daisy

*Microseris lanceolata*



This yellow flowered herb looks a lot like a dandelion.

Quickly wiped out by cattle and sheep grazing.

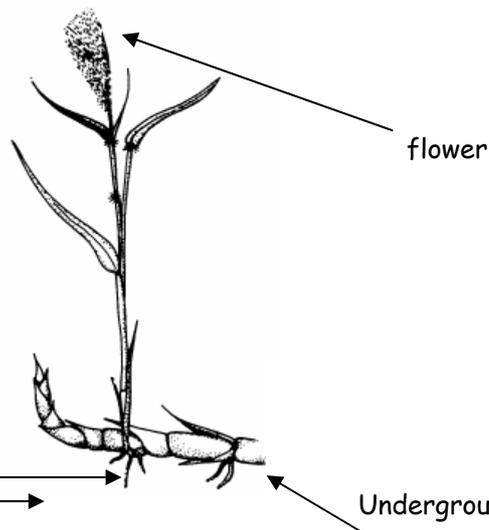
One of the most frequently mentioned plants in the Victorian Aboriginal diet.

#### Underground Tuber

Dormant during summer  
Sprouts leaves in autumn

New tuber forms in winter.

### Common reed (ie. sedges and rushes)



flower

Aerial shoots

Underground Rhizome

## Activity 5: Wattle seed recipes

When we think of wattles we automatically think of Australia. The Golden Wattle is Australia's floral emblem and in the bushfood industry wattle seed is probably the best known of all ingredients.

Wattle seed has always been widely used by Aboriginal people. They eat the seed fresh or cooked in its pod or dry roasted and ground to make damper.

Wattles have a high level of nutrients and have higher levels of protein and energy than wheat, rice and even some meats.

Wattles are legumes and have the ability to 'fix' nitrogen from the air to increase soil fertility.

Only some wattle seeds are palatable and some may even be poisonous. Aboriginal knowledge has told us that eating one particular wattle seed makes your hair fall out!

### Wattle varieties

Some wattle varieties that produce delicious seed include:

**Coast Wattle** *Acacia sophorae*. Seeds have a rich nutty flavour. The trees grow along much of Victoria's coast.

**Golden Wattle** *Acacia pycnantha*. The trees grow throughout most of Victoria.

**Wirilda wattle** *Acacia retinodes*. Grows mainly in the western districts stretching to western Melbourne.

**Bramble or Gundabluey wattle** *Acacia victoriae*. The seeds have a stronger almost coffee flavour. Trees grow in western NSW and eastern SA.

Seed can be purchased from indigenous seedbanks if you require large quantities. A list of indigenous seedbanks is available on the Greening Australia website:

<http://www.greeningaustralia.org.au/GA/VIC/OngroundAction/SustainableLandscapes/Seed/Seedbanks/>

## Picking Wattle Seed

Wattles flower in spring and the seeds ripen in the following summer.

The seed is ready to be picked when the seed pod or casing is dry and crunchy and the wattle seeds are falling out (usually on a really hot summer day).

If you are picking wattle seed the best way to do it is to place a tarp underneath the tree and shake it vigorously with your hand or a pole with a hook attached to the end. Many of the seeds should fall out onto your tarp (**Note: if you are doing this on Government owned land you need a seed collection permit. They are FREE and easy to obtain from your local DSE office, call 136 186 for further details**).

Some of the seed will have an aril attached to the seed – this could be bright orange to white – leave this on as it is rich in oil.

## Cleaning wattle seed

1. Put seed in a bucket of water and skim off the floating materials  
**OR** if there are no pods and leaves in your collection, place collected material in sieve over a bucket, to remove chaff and dust.
2. Once seed has been screened 2-3 times, use a fan to gently blow away any excess matter from seed. Seeds should then be around 90% clean.
3. Place cleaned seed onto paper towel to dry.

## Preparing the seed

1. Preheat the oven to 160 degrees Celsius (325 deg F).
2. Place a layer of seeds on a baking tray and into the preheated oven.
3. Dry roast them for 30 minutes.
4. When they are almost done they will start to pop – like quiet popcorn.
5. Allow them to cool completely before grinding – a coffee grinder works well. Wattle seeds are too hard for a mortar and pestle.
6. Before using the ground wattle seed in a recipe, either toss the powder in a dry pan over medium heat (to release the flavour) or cover it in boiling water or milk (depending on recipe).



*Information adapted from  
"Wild Lime; cooking from  
the bushfood garden" by  
J.Robins*

## Student connections

- What are the environmental or physical requirements for the wattle seed you used (soil, water, temperature)?
- Draw a map of where the particular wattle tree grows.
- Investigate the planting, growing and harvesting process of wattles. How do they germinate, what needs to happen, how long do they take to grow, how is the seed collected etc. Present this information as a table, flow chart or in illustrations.
- Where and how is wattle seed marketed as a food? Is it readily available in a supermarket?
- Predict what other foods wattle seed could be added to.
- Investigate whether any Aboriginal bush foods are exported.
- Explore other plants Aboriginal people collected and used.

# Recipe - Wattle seed cheesecake

*This recipe has been adapted from the Message Stick section of the ABC Online website [www.abc.net.au](http://www.abc.net.au)*

## **Preparation time**

40 minutes (apart from gathering wattle seeds, roasting them and grinding them).

## **Degree of difficulty**

Medium

## **Cooking time**

About 40 minutes.

## **Materials**

### **Filling**

3 eggs (separate yolk and whites)  
250g sugar  
3 egg yolks  
250g cottage cheese  
375g smooth ricotta cheese  
250ml Buttermilk

3 dessert spoons of semolina  
4 desert spoons of ground wattle seed  
(available through bush food outlets) Only  
grind your own wattle seed if you know  
exactly what you are doing  
2 dessert spoons of lime or lemon rind

### **Base**

1 packet of Granada biscuits  
250g butter (at room temperature)

### **Sauce**

Half a jar of marmalade  
4 dessert spoons sugar  
1 cup of water  
1 dessert spoon of lemon rind

### **Cheesecake Method**

Place the 3 egg whites into a mixer and whip on high until you get a meringue.

While meringue is being mixed crush a packet of Grenada biscuits in a bowl and mix in 250g butter.

Once the base is mixed through pat into a 8-9 inch cake base.

Place meringue aside.

Place 250g of sugar and 3 egg yolks in bowl and mix on high for 3-4 minutes until creamy.

Add to mixture the cottage cheese, ricotta, buttermilk, semolina and wattle seed.

Turn on high speed for 2-3 minutes until mixed through. Scrape from side once mixed and fold through the meringue slowly. Add 2 dessert spoons of lemon or lime rind and fold again.

Spoon mixture into base.

Place into a preheated oven at 180 degrees and bake for 40 minutes.

### **Sauce Method**

Mix all ingredients in a pot, place on stove for 2-3 minutes or until it dissolves.

Continue stirring the sauce – make sure it doesn't stick to the pot.

Remove from heat when it becomes a consistent syrup.

Place in the fridge to cool, serve over cheesecake.

# Recipe - Wattle seed shortbread

Shortbread can be stored in an airtight container for up to 2 weeks.

## Preparation time

20 minutes

## Degree of difficulty

Low

## Cooking time

40 minutes

## Ingredients

250g butter

1/3 cup castor sugar

2 ¼ cups plain flour

¼ cup rice flour (or ground rice)

1 table spoon castor sugar, extra

2 heaped dessert spoons of wattle seed

## Method

Cream butter and sugar in a small bowl until light and fluffy.

Stir in sifted flours in 2 lots and add wattle seed.

Knead lightly until smooth on a lightly floured surface.

Press mixture over base of 20 x 30 pan and prick with a fork.

Sprinkle with extra sugar.

Bake at 150 degrees for about 40 minutes or until lightly browned.

Stand for a few minutes, cut into fingers, cool in the pan.

# Activity 6: Traditional Aboriginal Games

*This game has been adapted from a program developed at the Warrnambool Alternative School in south west Victoria.*

## Curriculum connections

Use of this learning and teaching activity may contribute to achievement of elements of the Standards. Indications of relevant Domains and Levels in the *Victorian Essential Learning Standards* are provided to assist teachers to make decisions about the appropriateness of the activity for their students.

### **Victorian Essential Learning Standards Domains and (Levels):**

Health & Physical Education (1,2,3)

**Duration:** 50 minutes each.

**Setting:** The oval.

## Summary

To introduce students to traditional Aboriginal games using modern equipment and to demonstrate the link between sport, culture and identity.

## Objectives

To develop student knowledge of Aboriginal culture.

## Student connections

- Investigate how playing these games would enhance the social structure of an Aboriginal community.
- Are these games similar to any of the games you play, if so how are they similar?
- Investigate why records of Aboriginal games would be hard to find.
- Research how Aboriginal culture has contributed to Australian sport. Investigate modern sports people such as Cathy Freeman and Evonne Goolong and other sports facts such as the origins of Aussie Rules football.
- Investigate the traditional owners of your local area. What was their name, do you know any of their stories about your area, can you see any evidence of their occupation?

Minimal records of Aboriginal games exist and this meant that lots of work had to be undertaken with Aboriginal and Torres Strait Islander communities to make sure that a truthful interpretation of the games could be made.

This activity provides a link between sport, culture and identity and gives students the opportunity to gain an insight into and knowledge of Aboriginal games.

There are 2 games listed here including:

### **Buroinjin**

A ball game played by the Kabi Kabi people of Southern Queensland

### **Gorri**

A bowl-ball/disk and spear game common to Western Australia

## How to play Buroinjin

This game was originally played with a ball made of kangaroo skin that was called a Buroinjin. The ball was smaller than a football and was sewn with animal tendons and stuffed with grass. Teams played against each other and the game was often played until sunset when the spectators would mark their applause by calling out “Ei ei”

### Equipment:

A size 2 or 3 soccer ball as the Buroinjin.

Two cricket stumps or customised poles to mark the ends of the field.



### Players:

Two teams of up to 8 players.

### Playing area:

A designated area of approximately 50 x 35m. The cricket stumps or customised pole should be placed at each end of the playing area.

### Game Play:

The aim of the game is for the player of one team to run as far as possible with the Buroinjin towards their scoring pole without the player being touched by an opponent.

The Buroinjin is thrown into the air in the middle of the playing area to start the game.

There are no positions or off-side as the Buroinjin can be thrown in any direction.

One player may pass the Buroinjin to the next on his or her team but it can't be hit or kicked.

The game is played by running and passing but does not stop if the Buroinjin is dropped.

Immediately after a player with the Buroinjin is touched, the Buroinjin has to be thrown up and away (at least 5 metres into the air) for team mates or the opposition to attempt to pick up.

The player who was touched may not regather the Buroinjin.

A team scores by touching the Buroinjin on the opposition pole.

### Variation:

Players may run towards either pole when they gain possession.

## How to play Gorri

Aboriginal boys and men in all parts of Australia played bowl, ball or disc games. In Western Australia a piece of rounded bark (disc) was rolled by one of the boys for the other boys to throw spears at. The boy who rolls the disc is about 15 metres away from the throwers and would call out “gool-gool” (going-going) as he started the disc rolling. The boy who succeeded in spearing the disc took the place of the ‘bowler.’

Accuracy of the eye and speed in casting the spear were easily learned from the disc game. A version of this game is still played in the Kimberley and the Northern Territory using flattened tin lids as targets for spears, stones and other missiles.

### Equipment:

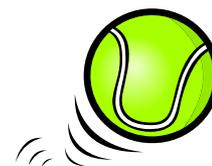
Any large object of at least 30cm in diameter that will roll and bounce to act as the disc. Tennis balls to act as spears to be thrown at the disc.

### Players:

One or two disc rollers and one or two teams of throwers.

### Playing Area:

An area large enough that the two teams are far enough apart to avoid injury.



### Game Play:

The two teams of throwers line up opposite each other at least 10 metres apart.

The disc roller then calls “gool-gool” and rolls the disc straight down the middle of the groups at a slow speed.

Once the disc has been rolled the throwers attempt to throw the balls in a spear-like action at the disc.

### Variation:

Disc is rolled at a faster speed.

Disc is bounced.

Increase speed and bounce height.

Change the distance of the throwers from the disc.

## Activity 7: Indig-quiz

1. Aboriginal people used to chew the rhizomes of Cumbungi to remove all of the starchy substance and make string. What could they have made from the string?
2. Aboriginal people used plants to make a range of foods similar to those that we eat and drink today. How do you think that Aboriginal people might have made a tea-like drink with Banksias or Bottlebrushes (Callistemons)?
3. Wattle seeds were the most widely used seed by Aboriginal people. What do you think they would have used to grind the seed into flour to use in cooking?
4. How long do you think it would have taken to collect and prepare enough seed to make damper for 1 person?
5. Strong and hard wood, such as sheoak and hakea was used to make tools and weapons. What kinds of tools and weapons do you think they were making?
6. Nardoo is a low growing aquatic plant with a leaf that looks like a four leafed clover. Nardoo was used by some Aboriginal people as a food but requires correct preparation. If nardoo is not prepared correctly you might suffer the same consequences as the Burke and Wills expedition. What happened to them?
7. Can you think of an Aboriginal food that is eaten all over the world? (Clue: It's a nut that you have probably eaten at some stage).
8. Investigate the origins of AFL football – hint: a form of this game was happening well before Captain Cook arrived in Australia.
9. Aboriginal people eat flowers, sap and seeds. Do we eat any of these?
10. Aboriginal people ate rhizomes and tubers (the roots of plants). Can you think of anything you buy in the supermarket that is a root?

### Indig-quiz Answers

1. They might have made: baskets, mats, fishing lines and nets, necklaces
2. By soaking the cones in water and the nectar seeping out
3. They used very hard grinding stones (similar to a mortar and pestle) – many of these grinding stones are found around the countryside today. Much of the stone used as grinding stones in the southern areas of the state came from Mt William near Lancefield (78 km from Melbourne). Mt William stone was a prized possession as it is very hard stone called diorite. It was more widely used as an axe head as it keeps a sharp edge once it is ground. This stone has been found as far afield as NSW and SA – up to a distance of 700km away. It was a highly traded item throughout the surrounding regions.
4. This would depend on the person – you will find a variety of answers – compare it to going into the supermarket to buy a packet of flour!!!

5. These plants grow slowly usually because of relatively low rainfall producing close grained wood, which is very hard. They would have made spear heads, fire sticks, shields and boomerangs.
6. Burke and Wills died at the Cooper Creek on their way home from making it to the northern coast of Australia in what is now known as Queensland. They had previously observed Aboriginal people eating Nardoo and thought that they would do the same. What they didn't do was prepare it adequately by grinding the seed like the Aboriginal people did and they developed what is known as *beri-beri* which is a Vitamin B deficiency.  
It is necessary to grind the seed in water to deactivate an enzyme which would otherwise break down thiamine (vitamin B).
7. The macadamia nut is indigenous to the sub tropical rainforest of the east coast of Australia. Aboriginal people of the Queensland area have been eating the nuts for thousands of years. Now they are grown all over the world.
8. There is no consensus regarding the exact origins of Football. One theory is that it was inspired by the Aboriginal game, *Marngrook* (Gunditjmara for game of the ball – people of the Warrnambool region).  
In the 1840s, Tom Wills, the founder of Australian Rules football, observed the Gunditjmara game and thought it would be a good way for Australian cricketers to keep fit during winter. In the original Aboriginal form of football, 50 players in each team kicked and chased a ball made of possum skin and kangaroo sinew and stuffed with grass. The players were naked and barefoot.

**“The men and boys joyfully assemble when this game is to be played. One makes a ball of possum skin, somewhat elastic, but firm and strong. The players of this game do not throw the ball as a white man might do, but drop it and at the same time kicks it with his foot. The tallest men have the best chances in this game. Some of them will leap as high as five feet from the ground to catch the ball. The person who secures the ball kicks it. This continues for hours and the natives never seem to tire of the exercise.”**

**Mr. Thomas, Aboriginal Protector, 1841.**

9. We do eat flowers and seed – some examples of flowers are: cauliflower, broccoli, fig, and artichoke. Some examples of seeds are walnut, peppercorn, coffee bean, pea, corn, chickpea. In North America sap is used to make maple syrup and it is also used to make rubber.
10. We eat lots of roots – such as carrot, potato, onion, sweet potato, water chestnut. Roots are a common part of our diet just as they were common in aboriginal diets – as they provided a good source of Vitamins.

# Resources

Available from a good bookshop near you.

Eidelson, Meyer, 1997, **The Melbourne Dreaming: A Guide to Aboriginal Places of Melbourne** Aboriginal Studies Press. Canberra

Flannery, T and Morgan, J 2002 **The Life and Adventures of William Buckley** The Text Publishing Company, Melbourne

Gott, B & Zola, N 1992 **Koori Plants Koori People: Traditional Aboriginal Food, Fibre and Healing Plants of Victoria**, Koori Heritage Trust, Melbourne

Gott, B & Conran, J 1991 **Victorian Koori Plants**, Yangennanock Women's Group, Hamilton

Isaacs, J 1987 **Bush Food Aboriginal food and herbal medicine** Landsdowne Publishing, The Rocks

Presland, Gary. 1994, **Aboriginal Melbourne** Penguin, Ringwood

Robins, J and Robins, I 2000 **Wild Classics: Traditional and easy recipes with a bush food difference** Allen & Unwin, St Leonards

Robins, J, 1998 **Wild Lime; Cooking from the bushfood garden** Allen and Unwin, St Leonards

**Going for Kalta – hunting for sleepy lizards at Yalta** ~ by Yvonne, Brenda and Tjitji Tjuta (all the kids) (IAD Press Alice Springs 1999)

**Warnayarra – the Rainbow Snake** ~ told by the Senior Boys Class Lajamanu School, compiled by Pamela Lofts (Scholastic 1999)

**When I was little like you** ~ by Mary Malbunka (Allen and Unwin 2003)

**How the kangaroos got their tails** ~ told by George Mung Mung Lirrmiyarri, compiled by Pamela Lofts (Scholastic 1999)

**The bat and the crocodile** ~ told by Jacko Dolumyu and Hector Sandaloo, compiled by Pamela Lofts (Scholastic 1999)

**Dunbi the owl** ~ told by Daisy Utemorrhah, compiled by Pamela Lofts (Scholastic 1999)

**How the birds got their colours** ~ told by Mary Albert, compiled by Pamela Lofts (Scholastic 1999)

**When the snake bites the sun** ~ told by David Mowaljarlai, compiled by Pamela Lofts (Scholastic 1999)

**The kangaroo and the porpoise** ~ told by Agnes Lippo, compiled by Pamela Lofts (Scholastic 1999)

**The echidna and the shade tree** ~ told by Mona Green,  
compiled by Pamela Lofts (Scholastic 2002)

**Land of the magpie goose people** ~ Percy Trezise (Angus & Robertson 2001)

**Aboriginal people in the environment** ~ Aboriginal Affairs Victoria 1996

**Papunya School Book of Country and History** ~ Anangu staff and students at Papunya School  
(Allen & Unwin 2001)

## **Websites**

ABC Online – Message Stick  
[www.abc.net.au/message](http://www.abc.net.au/message)

Australian National Botanic Gardens  
<http://www.anbg.gov.au/anbg/>

[www.dreamtime.net.au](http://www.dreamtime.net.au)

Information on the Kulin Nation around the Port Phillip area  
[www.yarrahealing.melb.catholic.edu.au](http://www.yarrahealing.melb.catholic.edu.au)

[www.loreoftheland.com.au](http://www.loreoftheland.com.au)

<http://rbg.vic.gov.au> > Education > Teacher Resources > Introduction to the Gardens or Aboriginal  
Resource Trail *Royal Botanical Gardens (Pre & post visit activities can be done on their own)*  
*Dinosaur plants, propagating herbs, rainforest foods, the Yarra, picture books, references for  
children & teachers, native plants*