

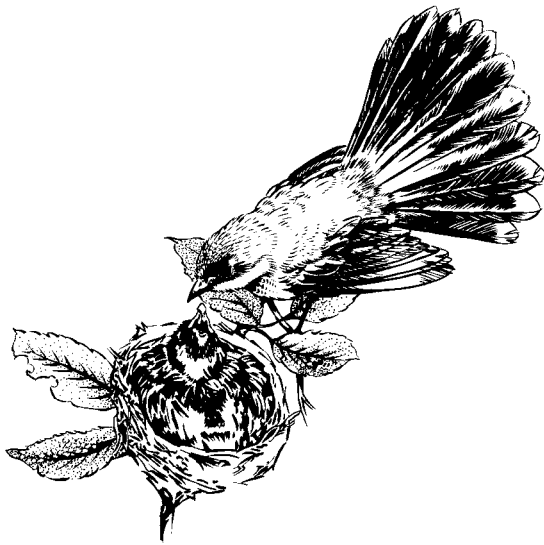
## 4. Forests views

### Aim

This activity localises the Ecological Communities activity in Section 1 to the Dandenong Ranges National Park environment. It introduces students to the similarities and differences between two types of forest communities.

### Materials

- Resource sheet 24: Forest ecosystems in Section 1.
- Resource sheet 4a: Plants of Dandenong Ranges National Park.
- Resource sheet 4b: Animals of Dandenong Ranges National Park.
- Resource sheet 4c: Seasons at Dandenong Ranges National Park.
- Resource sheet 4d: Climate of Dandenong Ranges National Park.
- Resource sheet 4e: Soils at Dandenong Ranges National Park.



### Activities

1. Dandenong Ranges National Park contains several different forest communities. Use the information provided in the resource sheets to compile a summary of the main forest communities found in the park, including:

- Mountain Ash Forest (wet sclerophyll forest).
- Cool Temperate Rainforest.
- Stringybark Forest (dry sclerophyll forest).

This research will help you know which plants and animals live in the different areas of the park, and what to look for during your visit.

2. Which species are found in only one type of community in the park? Suggest reasons why.
3. Which species are able to survive in a range of ecosystems? Suggest reasons why.
4. Explain why some species may not be sighted in the park during the winter months.

#### Links to Section 2

See also Section 2 of this education resource kit, in particular:  
 Parks and Science  
 24. Ecological communities.  
 25. Animal antics.  
 26. A forest feast.

## 4a. Plants of Dandenong Ranges National Park

The Dandenong Ranges National Park contains the major remnants of the original vegetation of the Dandenong Ranges, and has been recognised as a site of botanical significance. The vegetation is rich and varied due to the wide range of environments, soil, rainfall and altitudinal range.

The vegetation of the park is in a relatively natural state, but has been modified by both natural and human factors. Initially timber getting, cultivation and grazing dramatically altered the vegetation. Although fires are part of the natural environment their impact has been much greater since urban development and this has resulted in further fragmentation of vegetation communities.

Roads, tracks, prescribed burns, fire breaks, utilities such as powerlines, gas pipelines, sewage and stormwater drainage, buildings and recreational developments have further altered some of these vegetation communities.

Five hundred and seventy five species of vascular plants have been recorded in the park, of which 402 are native plant species and 173 are introduced plant species. Some 66 species of moss and 270 species of fungi are found within the park.

### NATIVE PLANT COMMUNITIES

In terms of Broad Vegetation Types, the main vegetation in the Dandenong Ranges National Park is Forest (both Dry Foothill Forest and Wet Foothill Forest). (Refer to 23: Teacher notes on plant community descriptions, in Section 1 of this resource, for an explanation of Bioregions, Broad Vegetation Types and Ecological Vegetation Types.)

Within this broad Forest category are six main types of vegetation communities in the Dandenong Ranges National Park. The location of these plant communities in the park is linked to elevation (e.g. higher or lower altitude on the range), aspect (e.g. north or south facing slope), geology, landform and soil type.

Tall forests of Mountain Ash grow on the sheltered south-facing slopes, and pockets of remnant cool temperate rainforest occur in the deep gullies. Eucalypt woodlands of Box and Stringybark grow on the drier, more exposed, west-facing areas.

Mountain Ash Forest, Cool Temperate Rainforest and Box-Stringybark woodland communities are considered to be of particular botanical significance.

### Summary of Indigenous and Introduced Plant Species

	Native	Introduced	Total
Angiosperms-Monocotyledons	139	42	181
Angiosperms-Dicotyledons	218	128	346
Pteridophytes (Ferns)	45	0	45
Gymnosperms (Pines)		3	3

### Mountain Ash Forest

Tall open forests of Mountain Ash are found on the sheltered south to east facing slopes of the Dandenong Ranges, generally on deep loamy soils.

Most of these forests in the Dandenongs grew after the severe bushfires of the 1920s.

Beneath the Mountain Ash canopy is a dense understorey tree layer which may consist of Blackwood (*Acacia melanoxylon*), Blanket Leaf (*Bedfordia salicina*), Austral Mulberry (*Hedycarya angustifolia*) and Silver Wattle (*Acacia dealbata*).

Small shrubs include Dogwood (*Cassinia aculeata*) and Prickly Current Bush (*Coproma quadrifida*). Small herbs, ferns and wire grass dominate the ground cover.



Hazel Pomaderris © MT

### Cool Temperate Rainforest

This community is located in sheltered southerly or south-easterly creek gullies on high rainfall, sedimentary slopes, at mid to low altitudes.

Forming a low closed forest, the characteristic trees of this community are Southern Sassafras (*Atherosperma moschatum*) and Blackwood (*Acacia melanoxylon*) with scattered Mountain Ash (*Eucalyptus regnans*). The fairly dense understorey is made up of tall shrubs, particularly the Musk Daisy Bush (*Olearia argophylla*). Below the shrubs is a layer of Rough Treefern (*Cyathea australis*) and Soft Treefern (*Dicksonia antarctica*). Both

these treeferns impart a special characteristic to the creek gullies. The Soft Treefern often supports filmy ferns and other epiphytes such as Kangaroo Fern (*Microsorium diversifolium*). The ground cover generally consists of a few species, mainly of ferns including Mother Spleenwort (*Asplenium bulbiferum*).

### Riparian Forest

This forest community has been reduced due to clearing of forest vegetation along creeks and rivers within the area. It is now largely limited to low altitude protected creeks and rivers within the Doongalla and Olinda areas. Often this vegetation community varies in its composition from wet to dry sclerophyll forest species.

Messmate Stringybark (*Eucalyptus obliqua*), Manna Gum (*Eucalyptus viminalis*), Blackwood (*Acacia melanoxylon*) and Silver Wattle (*Acacia dealbata*) often dominate the forest canopy. Victorian Christmas Bush (*Prostanthera lasianthes*), Tall Sword Sedge (*Lepidosperma elatius*) create a thick understorey with Rough Treefern (*Cyathea australis*), Tasman Flax Lily (*Dianella tasmanica*), Ivy Leaf Violet (*Viola hederacea*), Wire Grass (*Tetrarrhena juncea*) and Tussock Grass (*Poa australis*) being some of the species present as groundcover depending upon the moisture available. In the wetter gullies the understorey may include Soft Treefern (*Dicksonia antarctica*) and Fishbone Water Fern (*Blechnum nudum*).

### Mountain Grey Gum - Messmate Forest

This forest woodland is found in low altitudes, sheltered and exposed gullies and slopes. This community is quite common and widespread. Along the ridges the dominant tree is Messmate Stringybark (*Eucalyptus obliqua*) either in pure stands or in a mixture with Mountain Grey Gum (*Eucalyptus cypellocarpa*). Blackwood (*Acacia melanoxylon*) can be present within this vegetation group.

These stands of trees do not have a dense understorey but usually have a dense groundcover of Forest Wire Grass (*Tetrarrhena juncea*) and Austral Bracken (*Pteridium esculentum*). Other species that are common include Prickly Moses (*Acacia verticillata*), Australian Clematis (*Clematis aristata*), Common Groundfern (*Culcita dubia*) and Rough Treefern (*Cyathea australis*).

### Sclerophyll Woodland

Sclerophyll Woodland exists on the low altitude exposed slopes and ridges of the park. Messmate Stringybark (*Eucalyptus obliqua*) dominates the canopy. Tree Everlasting (*Helichrysum dendroideum*) and Cherry Ballart (*Exocarpos cupressiformis*) occur in the understorey. Tussock grass (*Poa labillardieri*), Forest Wire Grass (*Tetrarrhena juncea*), Ivy Leaf Violet (*Viola hederacea*) and Common Ground Fern (*Culcita dubia*) are species found at ground level.

### Box Stringybark Woodland

This vegetation community is largely confined to the western edge of the Dandenong Ranges National Park and is rare due to the fire and controlled burning regime. It is mostly found on medium to low exposed slopes of the ranges.

Red Stringybark (*Eucalyptus macrorhyncha*) and Long Leaf Box (*Eucalyptus goniocalyx*) are the dominant trees within this forest type. Cherry Ballart (*Exocarpos cupressiformis*), Hop Wattle (*Acacia stricta*), and Myrtle Wattle (*Acacia myrtifolia*) form the understorey. The groundcover layer can include Ivy Leaf Violet (*Viola hederacea*), Common Rice Flower (*Pimelea humilis*), Kangaroo Grass (*Themeda australis*), Tussock Grass (*Poa labillardieri*), and Grass Trigger Plant (*Stylidium graminifolium*).

An additional 36 vascular plant species are restricted in distribution within the park. The survival of any one of these species could be adversely affected by developments outside the park and inappropriate management practices within the park.

### Significant native plant species found in Dandenong Ranges National Park

Fifteen vascular plants in the park are considered to be of Botanical Significance. This is because of their limited distribution in Victoria.

Scientific Name	Common Name
<i>Acacia leprosa</i>	Cinnamon Wattle
<i>Calotis scabiosifolia</i>	Rough Burr- Daisy
<i>Cyathea cunninghamii</i>	Slender Tree Fern
<i>Cyathea marescens</i>	Skirted Tree Fern
<i>Deyeuxia contracta</i>	Bent Grass
<i>Festuca asperula</i>	Graceful Fescue
<i>Glycine latrobeana</i>	Clover Glycine
<i>Grammitis meridionalis</i>	Finger Fern
<i>Leptospermum glabrescens</i>	Smooth Tea-Tree
<i>Oreomyrrhis eriopoda</i>	Australian Carraway
<i>Pteris comans</i>	Netted Brake
<i>Pterostylis grandiflora</i>	Cobra Greenhood
<i>Pyrrosia rupestris</i>	Rock Felt-Fern
<i>Sarcophilus australis</i>	Gunn's Orchid
<i>Solanum vescum</i>	Kangaroo Apple
<i>Solanum opacum</i>	Nightshade
<i>Thismia rodwayi</i>	Fairy Lanterns

## Plant profiles

### Treeferns

Treeferns are the giant ferns found in the wet gullies and moist forest slopes of the park. Their massive trunks consist of a central core surrounded by varying thickness of matted rootlets while towards the top there are numerous butts of old fronds. At the summit of the trunk is a rosette of fronds each several metres long and somewhat oblong in shape.

Two species of tree fern occur in the park.

#### **Soft Treefern** *Dicksonia antarctica*

The Soft Treefern is found in high rainfall forests and moist gullies of eastern Australia. Within the park it forms extensive stands within Cool Temperate Rainforest areas and is an excellent host for a variety of epiphytes. Sassafras and Blackwood trees may have their beginnings in the fibrous trunk of a treefern.

The crown of the treefern is a favourite campsite for possums, and Indigenous people once ate the soft pith from the treefern trunk.

#### **Rough Treefern** *Cyathea australis*

The Rough Treefern is the most common treefern found on the east coast of Australia. Its common name comes from the rasp-like frond butts which persist on the uppermost portion of the trunk. These treeferns are normally found bordering the slopes of creek gullies.

The chief vegetative difference between the two treeferns is the rasp-like frond bases of the Rough Treefern as compared with the soft hairy frond bases of the Soft Treefern.

#### **Mountain Ash** *Eucalyptus regnans*

Large areas of the Dandenong Ranges were once covered by extensive forests of Mountain Ash. Today the largest stand of Mountain Ash in the ranges is in the Sherbrooke Forest section of the park.

Mountain Ash is the world's tallest flowering plant. It can grow to 100 metres and live for 500 years.

It requires moist but well drained sheltered slopes and deep soils. Mountain Ash usually has a very long straight trunk with a small open crown. It flowers during summer and autumn.

Mountain Ash trees are killed by severe fire. However fire is essential for germination of their seeds. The ash from the fire forms an ideal seed bed for Mountain Ash to regenerate. By contrast, in the dark wet conditions that usually prevail on the floor of a mature Mountain Ash Forest, Mountain Ash seedlings are not able to survive.

As a result of these environmental conditions Mountain Ash trees dominate the regrowth and are usually found in pure stands of the same age.

#### **Potato Orchid** *Gastrodia sesamoides*

On the forest floor a strange plant rises from the leaf litter at the height of summer. This plant is known as the Potato Orchid or Cinnamon Bells.

This orchid is at its best in cool gullies where large colonies may grow. Smaller colonies occur under drier conditions.

The Potato Orchid is widespread throughout the park. It develops from an underground tuber and its tall stems are entirely leafless. The brownish-white tubular flowers are produced in January and February and emit a delightful spicy cinnamon scent.

The orchid has no chlorophyll and is consequently saprophytic, that is, entirely dependent upon decaying vegetable matter to supply its growing needs.

**Grass Trigger Plant** *Stylidium graminifolium*

The Grass Trigger Plant is found in the drier sclerophyll forests of the park. This plant is common throughout the coastal regions and Great Dividing Range of the eastern states of Australia. It is widespread throughout Victoria from sea level to the alps.

Its tufted blunt grass like leaves can reach 15cm in length and it produces numerous pink to magenta flowers. Its flowering period may vary from late spring to summer.

The Trigger Plant is so named because of its unique pollination method. A small 'trigger' is released when an insect lands on the flower. The trigger column taps insect visitors, usually small native bees, on the back either to receive or deposit pollen.

The response of the trigger is due to a mechanism situated in certain cells in the innermost tissue of the trigger column. Triggers respond more quickly in hot weather than in cool. Once set, the trigger will normally take less than five minutes to reset and sensitivity will not return for a further twenty minutes. Individual plants can show great variation in this time resetting process. Even in the cover of darkness an insect will set the trigger in motion.

**Southern Sassafras** *Atherosperma moschatum*

This small conical shaped tree is found in the wet moist gullies of the park. It is endemic to Australia and often associated with mountain gullies. Its presence within a gully often indicates cool temperate rainforest.

It has a slender grey mottled trunk and shiny serrated leaves which are whitish underneath.

Both the bark and foliage give off a powerful fragrance similar to nutmeg. The bark contains an essential oil atherospermin, and resin and tannin. The brewed leaves provide a tonic tea that can also act as an aperitif.

Scented velvety cream flowers hang underneath the tree branchlets in winter. A delightful spicy fragrance is often the first indication that the plant is in flower or the scattering of dainty fallen flowers on the ground underneath these trees.

Germination of this plant is slow. Often the seeds fall onto the fibrous trunks of treeferns where with abundant moisture seeds begin to grow; and with time develop into this graceful tree.



Toadstool © MT

## 4b. Animals of Dandenong Ranges National Park

The Dandenong Ranges National Park provides habitat for over 260 vertebrate species. These include 31 species of native mammals, over 200 bird species, 23 reptiles and 9 amphibian species.

Number of species in DRNP	Mammals 31	Birds 200	Reptiles 23	Amphibians 9
Species common in Wet Foothill Forests/ Wet Sclerophyll	Dusky Antechinus, Sugar Glider, Ringtail Possum, Brown Antechinus	Crimson Rosella, Eastern Whipbird, Golden Whistler, Grey Fantail	McCoys Skink Delicate Skink Garden Skink	Brown Tree Frog, Green and Golden Bell Frog, Common Eastern Frog
Species common in Dry Foothill Forests/ Dry Sclerophyll	Sugar Glider, Ringtail Possum, Brushtail Possum, Brown Antechinus	Golden Whistler, Brown Thornbill, Sulphur Crested Cockatoo, Honeyeaters	McCoys Skink Delicate Skink Garden Skink	Eastern Banjo Frog, Common Eastern Frog, Southern Toadlet
Species common in open country	Brushtail Possum	Willy Wagtail, Noisy Mynah, Sulphur Crested Cockatoo		Green and Golden Bell Frog, Spotted Grass Frog



Brown Antechinus © MT

## 4c. Seasons at Dandenong Ranges National Park

The seasons play a major role in the lives of the plants and animals living in the Dandenong Ranges National Park. Spring brings growth, summer lushness, autumn the smell of damp soil and winter cold temperatures and stillness. The animals and plants adjust their lives accordingly as the forest changes with the seasons.

### January

- The small cream flowers of the Mountain Ash provide a rich source of nectar for many Crimson Rosellas.
- The white tubular flowers of the Victorian Christmas Bush 'light' the forest gullies of the park. The foliage of this shrub has a pungent mint odour.
- The Skipper Butterfly reappears in the forest.
- The echidna wanders the drier forest in search of its favourite food, termites.
- Bullants swarm and search for unknowing prey.

### February

- The cracking of bark splitting on Mountain Ash trees can be heard in the heat of the day.
- The fluffy feather seed heads of the Australian Clematis are highly visible through the understorey of the forest.
- The shiny blue berries of the Spreading Flax Lily seem to glow from the sword-like foliage of this perennial.
- Small colonies of the Summer Greenhood carpet the canopy floor.
- Cicadas click noisily in the forest.

### March

- The mournful cries of Pied Currawongs echo throughout the park as autumn approaches.
- Bush rats and native mice make nests of dry grass and leaves in anticipation of the coming winter.

### April

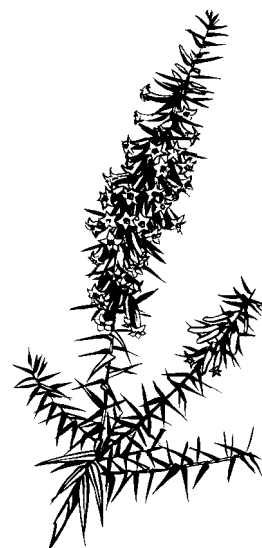
- Following autumn rains fungi in many shapes and sizes grow on the forest floor.
- Large numbers of Bogong Moths may be seen as night descends.

### May

- Common Heath, the State's floral emblem, produces flower spikes in white, pink, or red on the drier slopes of the park.
- The female Lyrebird begins her nest building which continues through to June, and the male begins to re-establish his territory, refurbishing his mounds and performing his display and song.
- Exotic trees and plants bordering the park display their colourful autumn foliage.

### June

- The Yellow-tailed Black Cockatoo searches for grubs among the bark of Mountain Ash trees.
- Winter brings the return of the Rose Breasted and Scarlet Robins, solitary figures on cold misty afternoons.
- In the depths of the forest gullies the Superb Lyrebird sings its varied songs in search of a mate.



Victorian Common Heath © MT

## July

- Grey Shrike Thrush busily searching for grubs and worms in the rotting vegetation of the forest.
- At night the haunting noise within the forest is likely to be the Brush-tailed Possum protecting his territory from others.
- Lyrebirds mate and eggs are incubating in nests.

## August

- The Superb Blue Fairy Wren and his harem of females and immature birds search the tangled scrub for nesting sites.
- The warbling of the Australian Magpie heralds the beginning of spring.

## September

- The globular yellow flower heads of Silver Wattle contrast against its grey-blue foliage.
- Crimson Rosellas hunt for nesting sites in old decaying trunks and branches of forest trees.
- Lyrebird chicks are being cared for in their nests by their mother.

## October

- The pale yellow flowers of the Blackwood appear on this densely foliated wattle tree growing in moist gullies.
- The Common Bird Orchid appears in colonies in moist shaded forest. Its flower resembles that of a small bird with a gaping mouth.
- The cream flowers of the climber, Australian Clematis, festoon small shrubs and trees within the forest.

## November

- The new fronds of the Rough and Soft Treeferns unfurl along the creeks and gullies of the park.
- The Rufus Fantail returns from New Guinea and darts amongst the understorey in search of insects.
- Gang Gang Cockatoos migrate through the forest canopy foraging for food as they make their way towards the Eastern Highlands.
- Lyrebird chicks, accompanied by their mother, begin to leave the nest. The male hides deep in the forest ready for summer moulting.

## December

- Birds of prey circle over the western escarpment of the park searching for food at dusk.
- Colonies of Ringtail Possums emerge from their nests and search for fruit, flowers and leaves as darkness descends.
- Yabbies may be sighted in the small creeks of the park. Their presence along creek banks is often indicated by small holes surrounded by mud.



Crimson Rosella © MT

## 4d. Climate of Dandenong Ranges National Park

The Dandenong Ranges experiences a temperate climate with marked seasonal patterns. Winter and early spring are cool and wet while summer and autumn are generally warm and dry.

The climate is different to that experienced by the surrounding plains of Melbourne. Being a region of high elevation, ranging from 150 metres to 622 metres above sea level, the Dandenong Ranges experience considerably higher rainfall and more moderate temperatures than other areas of Melbourne.

Within the Dandenong Ranges, the variation in topography and aspect produces various microclimates contributing to the diverse range of plant communities.

### Rainfall

The average annual rainfall of the Dandenong Ranges National Park varies from 1000mm on the lower slopes of the western face to 1400mm on the higher and more sheltered aspects such as Kallista. Overall the lower slopes receive a moderate rainfall with little variance either yearly or monthly; whilst the ridge area receives much greater rainfall with greater yearly and monthly variance.

The driest months are January and February. For the remainder of the year the monthly rainfalls are fairly uniform with peaks in May, September and October.

Along the main ridge dew is very common. Heavy and frequent dew is a distinguishing feature of this type of mountainous region.

Although snow has been recorded on the main ridge on a number of occasions it is

not a frequent occurrence. Severe frosts occur on a fairly regular basis.

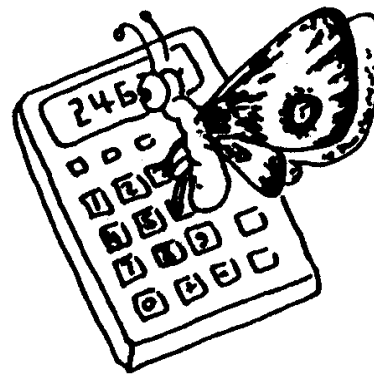
### Temperature

Temperature variation with altitude is not as marked as rainfall variation.

The warmest months are January and February with an expected range of daily maxima of 23-27°C and minima of 12-15°C. The coldest months are June and July when the expected range of daily maxima is 9-14°C and minima of 4-6°C.

### Wind

Prevailing winds during spring and summer are from the south and south-west with frequent strong northerlies. In autumn and winter the winds are predominantly from the north. The winds are generally uniform throughout the area but are affected by late-afternoon sea breezes.



## 4e. Soils of Dandenong Ranges National Park

Two strikingly different soil types have developed in the Dandenong Ranges, although all the transitional types between these two soil types also occur.

A deep red brown loam called **Kraznozen** has developed on the southern and eastern slopes of the Dandenong Ranges. This soil type consists of a light friable clay which does not change in appearance or texture for a number of metres below the surface. Being clay, the Kraznozem has moderate water holding capacity yet at the same time the friable texture allows easy penetration of water.

These red loams are deep, well structured and mildly acidic with excellent drainage. They are non sticky, with minimal shrinking, swelling and erodibility.

These soils support a lush and wide diversity of plants. Organic content of the surface horizon of these loams can be high.

The other principal soil type found is a **Podzol**, found on the south-westerly slopes. This soil is characterized by a shallow top layer of about twenty centimetres of brown, fairly well textured soil. Underneath this is a thick layer of deep yellow clay which is almost impervious to water. Because of this clay layer, the soil above has a limited water storing capacity and plants have little reserve water in the soil for use during dry spells. The Podzol soil type is poorly aerated and chemically deficient.

On the steeper parts of this side of the ranges the soil is very shallow, probably due to the action of wind and water eroding the top layers.

### Sample soils within the Dandenong Ranges National Park

#### Doongalla

- Red and brown and locally stoney gradational soils predominate (Mount Riddell Land System).
- Small areas of friable red gradational soils (Sassafras Land System).
- Small areas of yellowish brown duplex and locally brown gradational soils (Montrose Land System).

#### Fern Tree Gully

- Red and brown and locally stoney gradational soils predominate (Mount Riddell Land System).
- Small areas of deep red gradational soils (Olinda Land System).
- Small areas of friable red gradational soils (Upwey land System).

#### Sherbrooke

- Red and brown and locally stoney gradational soils predominate (Mount Riddell Land System).
- Deep red gradational soils (Olinda Land System).
- Friable red gradational soils (Upwey land System).

