



Australian National
Botanic Gardens

Lesson Plan

Module 1

Plant Life Cycles



Learning about Australian native plants





We acknowledge the Traditional Owners of Country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past, present and emerging.

Plant Science Learning Hub

Students need a space to learn that is fun and rewarding. The Australian National Botanic Gardens has developed a Plant Science Learning Hub that aims to inspire and engage students in plant science and the stories surrounding Australian flora. With clear links to the Australian Curriculum for school years four to six, the Plant Science Learning Hub will provide a valuable resource for students and educators.

- **Plant Life Cycles**
- Plant Structure
- Pollination
- Seeds

This series provides educators with authoritative plant science content that has a uniquely Australian perspective. The Gardens manages globally significant scientific collections of living plants and herbarium specimens of Australian native flora. We provide educational experiences for students from pre-primary to tertiary levels, leveraging our scientific collections, participation in national and international conservation projects and outreach programs to engage the community in valuing, conserving and appreciating Australia's diverse plant heritage.



Module learning objectives

The following learning objectives apply to the Life Cycles Module.

1. Understand the life cycle of a flowering plant.
2. Investigate and describe the life cycle of one or more native Australian plants.
3. Identify the differences and similarities between the life cycles of flowering plants and animals.
4. Recognise and describe how environmental conditions or events can trigger seed germination and affect plant life cycles.

Each lesson within the lesson plans and the field kits has individual learning intentions appropriate to the activity.

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Lesson One: Learning about Australian native plants

LEARNING INTENTIONS

Students will be able to:

- Describe what a plant is.
- Be able to name and describe several unique and iconic Australian native plants.
- Describe why plants are important.
- Explain why botanic gardens are important in helping protect and conserve Australian native plants.

CURRICULUM LINKS

This material provides opportunities for students to engage in the following Australian Curriculum content descriptions (**Version 9.0**):

Science understanding

[AC9S3U01](#) compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (Year 3)

[AC9S5U01](#) examine how particular structural features and behaviours of living things enable their survival in specific habitats (Year 5)

[AC9S6U01](#) investigate the physical conditions of a habitat and analyse how the growth and survival of living things is affected by changing physical conditions (Year 6)

Science as a human endeavour

[AC9S5H02](#) investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions (Year 5)

[AC9S6H02](#) investigate how scientific knowledge is used by individuals and communities to identify problems, consider responses and make decisions (Year 6)

Science inquiry

[AC9S3I01](#) pose questions to explore observed patterns and relationships and make predictions based on observations (Year 3)

[AC9S3I03](#) follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate (Year 3)

[AC9S3I04](#) construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns (Year 3)

[AC9S3I05](#) compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions (Year 3)

[AC9S4I01](#) pose questions to explore observed patterns and relationships and make predictions based on observations (Year 4)

[AC9S4I03](#) follow procedures to make and record observations, including making formal measurements using familiar scaled instruments and using digital tools as appropriate (Year 4)

[AC9S4I04](#) construct and use representations, including tables, simple column graphs and visual or physical models, to organise data and information, show simple relationships and identify patterns (Year 4)

AC9S4I05 compare findings with those of others, consider if investigations were fair, identify questions for further investigation and draw conclusions (Year 4)

AC9S5I01 pose investigable questions to identify patterns and test relationships and make reasoned predictions (Year 5)

AC9S5I04 construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships (Year 5)

AC9S5I05 compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions (Year 5)

AC9S6I01 pose investigable questions to identify patterns and test relationships and make reasoned predictions (Year 6)

AC9S6I04 construct and use appropriate representations, including tables, graphs and visual or physical models, to organise and process data and information and describe patterns, trends and relationships (Year 6)

AC9S6I05 compare methods and findings with those of others, recognise possible sources of error, pose questions for further investigation and select evidence to draw reasoned conclusions (Year 6)

HASS

AC9HS4K05 the importance of environments, including natural vegetation and water sources, to people and animals in Australia and on another continent (Year 4)

CONTENT INFORMATION

Introduction to plants

All living things are classified into one of the five **Kingdoms of Life**:

1. Monera
2. Protista
3. Fungi
4. Plantae
5. Animalia.

Humans are part of Kingdom Animalia and plants make up **Kingdom Plantae**. Plants are different from organisms in other Kingdoms due to their physical features and ways of living.

- They are **non-motile**, meaning that they cannot move to another place. Plants usually have roots that keep them firmly attached to one place (often the ground).
- They are **autotrophs**, meaning that they make their own food. Most plants contain a green substance called **chlorophyll** used to make sugar through the process of **photosynthesis**, combining energy from the sun, carbon dioxide and water and releasing oxygen as a by-product.
- They can reproduce **sexually** through seeds or spores or reproduce **asexually** by creating genetic clones of themselves.
- Their cells have a **cell membrane** and rigid **cell wall** whereas animal cells have only a **cell membrane**.
- In flowering plants, flowers can have both male and female parts, and when the female flowers are **fertilised** they develop into a fruit containing seeds. The seeds are then spread by animals, wind, water, gravity or exploding from the fruit. This gives seeds the opportunity to germinate and grow into.

- They have structures for anchorage, support, reproduction and photosynthesis: roots anchor plants into the ground, stems provide structural support to hold up the leaves, flowers allow for sexual reproduction and leaves capture sunlight for photosynthesis.

Plants are sorted into species groups and named according to their features.

This **classification** is based on whether they:

- have a 'body' comprising roots, stems and leaves,
- have a vascular system to transport water,
- produce flowers and seeds,
- produce seeds contained within a fruit or have 'naked seeds'.

Flowering and non-flowering plants

Flowering plants, scientifically named angiosperms, are plants that produce flowers and bear their seeds in fruits. There are almost 300,000 species of flowering plants known worldwide and almost 22,500 species native to Australia. Native angiosperms growing in the Gardens' living collection include gum trees, daisies and waratahs.



Individual waratah flowers. Waratahs are a type of flowering plant, also known as angiosperms.

Image: Anon©ANBG

Non-flowering plants, scientifically named gymnosperms, produce 'naked seeds' where the seed is not protected by a fruit, instead being held in a cone or on the surface of a leaf. There are over 1,000 species of gymnosperm known worldwide and 128 species of gymnosperm native to Australia. Native gymnosperms growing in the Gardens' living collection include Hoop Pines and Bunya Pines.



The Bunya Pine is a non-flowering plant, also known as a gymnosperm.
Image: ©M.Fagg, 2016

Pteridophytes (ferns and fern allies) are different from angiosperms and gymnosperms because they do not produce seeds and instead reproduce by spores. There are almost 12,000 known species of pteridophytes in the world and almost 500 species native to Australia, including Tree Ferns and Bird's Nest Ferns.



The Bird's Nest Fern is a pteridophyte.
Image: ©M.Fagg, 2005

INQUIRY QUESTIONS (ENGAGE)



Explain the learning intentions for the lesson and introduce the topic to the students.

The Australian National Botanic Gardens supports a living collection of around 77,000 individual plants arranged in 40 hectares of themed sections. This collection features over 4,600 species which represent around a fifth of Australia's native plants. It is the largest scientific collection of Australian native plants in which most of the collection originates from plants sourced from the wild, accompanied by herbarium specimens for taxonomic study.

Ask the students a series of questions such as:

What is a plant? What makes it a plant?

How many plants can I name?

What does the term 'Australian native plant' mean?

How many Australian native plants can I name?

Why do we need plants? What would happen if we had no plants?

What is a botanic gardens? What do they do? Have I been to a botanic gardens before?

Where could we go to learn more about growing Australian native plants?

STRATEGIES TO FACILITATE QUESTIONING AND DISCUSSION:

- Talk with a partner (turn and talk).
- ¹[Think, Pair, Share. \(Project Zero Thinking Routine\)](#)
- KWL Chart to track what a student knows (K), wants to know (W) and has learned (L) about a topic, can be used before during and after research projects.
- Write in journal and share with others.
- Individual student writing.
- Drawing.

Record students' answers and wonderings on the board or a flipchart.

¹ The Think, Pair Share thinking routine was developed by Project Zero, a research center at the Harvard Graduate School of Education. Project Zero adapted this routine from Frank Lyman: Lyman, F. T. (1981). The Responsive Classroom Discussion: The Inclusion of All Students. In A. Anderson (Ed.), *Mainstreaming Digest* (pp. 109-113). College Park: University of Maryland Press.

LESSON SEQUENCE (EXPLORE)

There are three activities in this lesson:

In Activity 1, students will look at the role that botanic gardens play in conservation, specifically the Australian National Botanic Gardens.

In Activity 2, students will explore Australian native plants by looking at and sorting plant cards.

All units of inquiry in the Plant Science Learning Hub are focussed on angiosperms (flowering plants).

ACTIVITY 1 – THE ROLE OF A BOTANIC GARDEN



In this activity, students will explore the role of botanic gardens and learn why they are important in helping to protect and conserve Australian native plants.

To do this, you will need:

- Access to the Australian National Botanic Gardens Conservation Videos (link below)
- A word wall in your preferred format

Instructions:

1. Show the students one of the following two videos. These provide an overview of the Australian National Botanic Gardens and its role in conservation of Australian native plants (the second video is the summarised version of the first).

[Conservation at the Australian National Botanic Gardens \(7 minutes\)](#)

[Conservation at the Australian National Botanic Gardens Short Version \(2 minutes\)](#)

2. Encourage students to write down any new words or concepts as they watch the video as these can be added to the word wall now or during the following activities.

Discussion Points:

What is a botanic gardens?

What is the role of the Australian National Botanic Garden?

What is the meaning of conservation?

Why is it important to conserve plants?

The following definitions will help students to understand the term 'conservation'.

Conservation is the act of protecting Earth's natural resources for current and future generations.
National Geographic

A careful preservation and protection of something especially: planned management of a natural resource to prevent exploitation, destruction, or neglect.

Merriam-Webster. (n.d.). Conservation. In Merriam-Webster.com dictionary.
<https://www.merriam-webster.com/dictionary/conservation>

ACTIVITY 2 – EXPLORING AUSTRALIAN NATIVE PLANTS

In this activity, students will explore what native, endemic and introduced plants are through guided discussion, and recognise some of the common Australian native plants as shown on plant cards.

To do this, you will need:

- Plant cards (found in the Resource section of this document)
- A word wall in your preferred format

Instructions:

1. Ask students: What is a *plant*?

Guide the discussion to include the following.

Plants are living organisms that cover much of planet Earth. You see them everywhere.

They include grasses, trees, flowers, shrubs, ferns, mosses and more. Plants are members of the Kingdom Plantae which includes all plants from tiny mosses to enormous trees.

Some characteristics of plants include:

- Plants have different parts including roots, the stem and leaves.
- Plants usually have roots that keep them in one place. They can't travel to a new place even if they want to!
- Many plants, especially green plants, make their own food through the process of photosynthesis.
- The cell structure of plants is different from that of animals. Plant cells are surrounded by a soft cell membrane and a rigid cell wall while animal cells have only a soft cell membrane.
- Plants reproduce either through using their flowers and fruit (sexual reproduction) or by cloning themselves (asexual or vegetative reproduction).

2. Ask students: What is a *native plant*?

Guide the discussion to include the following.

- A native plant is one that occurs naturally in the place where it evolved. They have not been introduced to an area.
- Australian native plants may occur in some parts of Australia but not others.
- They can be related to plants in other countries because Australia was once part of Gondwana – a super-continent that existed millions of years ago before it and broke up to form the landforms we know as Antarctica, Australia, South America, Madagascar, Africa, India and the Arabian Peninsula.

Knowing which plants are native to Australia is important because we can conserve and plant species in our gardens that have already adapted to the Australian climate and conditions and have a better chance of survival.

Ask students why it is important to plant native plants, answers may include:

- Native plants provide habitat, shelter and food for local wildlife.
- Local natives may need less water after they are established.
- Native plants can improve biodiversity.
- Native plants often need less fertiliser than exotic plants as they are more suited to the environment. This means less fertiliser runoff into waterways, which means healthier waterways.
- Native plants are often low maintenance and therefore make low maintenance gardens.

3. Ask students: What is an **endemic plant**?

Guide the discussion to include the following.

- An endemic plant has a naturally limited distribution. A plant that is endemic to Australia grows in no other country in the world. Plants can also be endemic to a particular region, such as the Sydney Basin or the central Australian desert, meaning they don't grow outside of this region.
- Native Australian plants are endemic to Australia, but plants that are native to a region are not necessarily endemic there. Kangaroo Grass is very common in grasslands and woodlands across Australia. It is native to Canberra but it is not endemic there, as it is also native to other areas, including Melbourne and Perth.
- Understanding which plants are native and endemic to an area ensures that we choose to plant the right plants to support local biodiversity.

4. Ask students: What is an **introduced plant**?

Guide the discussion to include the following.

- An introduced plant is one that is not native to Australia and has been introduced via human activity, either deliberately or by accident. This isn't always a bad thing, unless they become invasive.
- Plants can be introduced to an environment for many good reasons. Wheat was introduced as a source of food and the Radiata Pine was introduced to use as a building material.
- Some introduced plants can become weeds and cause problems in local ecosystems, for example by using too much water or taking over important habitat and excluding plants used by native animals for food.
- Sometimes native plants grown outside their endemic area can also become problems – e.g. Cootamundra Wattle (*Acacia baileyana*). Some eucalypts are considered a woody weed in countries where they have been introduced.

If you were to look at bunches of flowers like the ones in the picture below, you might be able to identify which bunch consists of Australian native plants. Of course you might think it is the most beautiful bunch! But if you didn't know, how could you tell native plants from non-native plants?



Image of Australian native flowers from the Australian National Botanic Gardens. Image: ©J.Baines, 2022



A bunch of non-native flowers. Image: ©S.Ingham, 2022

It can be difficult to tell native plants from non-natives. Scientists can identify Australian native plants by using taxonomic keys that describe physical features of the plant. A taxonomic key is a series of questions about a plant's features that, when answered accurately, allow it to be identified.

We are going to learn to recognise and name some common Australian plants by looking at them and sorting them into categories.

5. Divide the class into groups of 4-6 and hand each group a deck of plant cards. Students should compare the cards and think about how they are similar and how they are different. Have students sort the cards into categories that the students feel are most appropriate. Allow 5-10 minutes.
6. Have each group share one or two similarities and differences between their categories. Students may be sorting based on flower colour, leaf shape or something else. Whatever the basis of their categories, students should be able to describe why they have sorted the cards in this way. Explain that sorting and naming plants is a scientific process that originally relied on visual appearance alone. Scientists now have tools such as DNA analysis that assist them in this process.

Share that classification helps scientists to:

- Remember and organise different plants.
- Discover new species. Scientists compare characteristics with what we already know to discover if they are a species new to science.

7. Explain that there are flowering plants and non-flowering plants.

The activities we will be working on in the Plant Science Learning Hub are focused on flowering plants, however non-flowering plants are just as important to global ecosystems and environments.

8. Add new words to the word wall.
9. Record new learnings in your journal.

Discussion Points:

What do you like/not like about the Australian native plants that you know?

What are some of the interesting common names you have on your cards? Why do you think scientists use scientific names for plants while most people use common names? Did you know that many scientific names are descriptions of the plant? For example, Eucalyptus means 'well covered' referring to the cap that covers the flower.

What are some of the ways the other groups classified the plants?

What things do you think Australian native plants could be used for?

What are some things that could happen in an environment if we start planting plants that are not endemic to the area?

Of more than 20,000 plant species in Australia, more than 1,300 are listed as threatened. Why do you think that is? Why is this important? Why should we care about this?

What role do botanic gardens, including the Australian National Botanic Gardens, play in plant conservation?

CONCEPTS EXPLAINED AND VOCABULARY DEFINED (EXPLAIN)

The following resources are provided to assist teachers to facilitate a class session to explain concepts and terms that have been introduced to students through the activities.

- Plant Life Cycles Teachers' Notes (these can be found by searching in the Plant Science Learning Hub).
- If you have not already shown the videos produced by the Gardens in a previous lesson, you could use one or both of these to engage students. The life cycle story starts in Video 1 at the National Seed Bank, which collects and provides long-term storage for the seeds of Australian plant species. We look at germination cues in the seed bank laboratory. Video 2 continues the life cycle story in the nursery where seedlings are grown into mature plants which then flower and bear fruit. The videos explore the life cycle stages of a plant through seed, seedling, plant, flowering plant and fruiting plant. The videos also discuss the processes that allow the life cycle to move between stages, these are germination, growth, maturation, pollination and seed dispersal.

The videos are appropriate for use through any of the Plant Life Cycle Module and can be used to engage students at the beginning of a lesson, or to summarise key information and show some real-world applications at the end of a lesson.

These videos can be found in the plant life cycles resources section of the Plant Science Learning Hub.

Life Cycles Video 1 - Seed to seedling

Life Cycles Video 2 - Seedling to seed dispersal

APPLYING AND EXTENDING THE LEARNING (ELABORATE)



Applying the learning

Research facts about different Australian native plants. Using your research resources (books or the internet), look up interesting facts about wattles (*Acacia* species), gum trees (*Eucalyptus* species), kangaroo paws (*Anigozanthos* species), paperbarks (*Melaleuca* species), tea trees (from the family *Myrtaceae*, including *Leptospermum* and *Kunzea* species), emu bushes (*Eremophila* species) or any others that interest you. Present and share your facts with your class.

Nature walk to map native and non-native plants. Using your school environment or a local nature area, draw a map and identify where the native and non-native plants are. Create a legend (key).

Visit the Atlas of Living Australia. Explore the lists of iconic species of plants and animals here in Australia by visiting <https://lists.ala.org.au/iconic-species>. Explore your local area by entering an address or location to find the species that have been recorded nearby. You can set the size of the search area and download the results. <https://www.ala.org.au/explore-by-location/>

Research the role of botanic gardens around the world. What do they do? How important are they and why are they important? How do they help conserve plants? What is a living collection?

Visit your local botanic gardens. Take a guided walk. Explore the living collection.

Explore the Knowing Plants site at the National Museum of Australia. *"Discover Indigenous perspectives and facts about native plants collected during Endeavour's 1770 voyage. Australia's First Peoples have a much older knowledge of these plants, many of which were previously unknown in Europe. Learn about plants through creation stories, how they mark the seasons and provide food, medicine and materials for making everyday items. See videos, hear plant names spoken in Indigenous languages and more."*

<https://www.nma.gov.au/explore/features/knowning-australian-plants>

Floral Emblems of Australia. Floral emblems are used as a symbol of national identity. Many countries have national floral emblems such as the Golden Wattle in Australia, the maple leaf in Canada and the Silver Fern in New Zealand. Some countries, such as Australia also have state floral emblems. Use the Australian National Botanic Gardens resource Floral Emblems of Australia to explore the flowers, the story behind why they were chosen, and the habitats in which they are found.

[Floral Emblems of Australia \(parksaustralia.gov.au\)](https://parksaustralia.gov.au)

[Poster - Floral Emblems of Australia \(parksaustralia.gov.au\)](https://parksaustralia.gov.au)

What are some common Australian plant families? Access the Australian National Botanic Gardens Resource Australian Plant Families". This activity uses group work to research and source examples from the common Australian plant families: Asteraceae, Lamiaceae, Mimosaceae, Myrtaceae, Proteaceae, Rutaceae.

Learn about Bush Blitz! Bush Blitz is Australia's largest species discovery program which documents plants and animals across Australia. Bush Blitz works with Australia's top taxonomic experts through land and sea expeditions across Australia. You can read more here

<https://bushblitz.org.au/introducing-an-expedition-for-everyone/>

Did you know March 17 is World Taxonomist Appreciation Day? What is taxonomy?

What does a taxonomist do? What is botany? What does a botanist do? Research this amazing field of science and create a poster, book or paper on a taxonomist.

Using plants for dyeing. In 2016 Canberra visual artist, Sally Blake, studied eucalyptus species at the Australian National Botanic Gardens for their potential to dye materials. Her website dye database gives published recipes and results. <https://sallyblake.com/eucalyptus-dyes-1>

QUESTIONS AND ACTIVITIES FOR REFLECTION (EVALUATE)

Students review and reflect on their learning journey by:

Revisiting the learning intentions:

Describe what a plant is.

Be able to name and describe several unique and iconic Australian native plants.

Describe why plants are important.

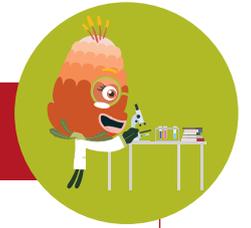
Explain why botanic gardens are important in helping protect and conserve Australian native plants.

- Identifying further questions.

What questions haven't I answered yet?

- Identifying what they learned from others and their own research.

What new knowledge do I have about plants that I didn't know before?



RESOURCE – WORD BANK

native plant	endemic plant	introduced plant	taxonomic key
angiosperm	gymnosperm	classification	taxonomic study
living collection	flora	seed bank	herbarium
biodiversity	conservation	specimen	plant
Kingdom Plantae			

RESOURCE – PLANT CARDS

Common name: Wallum Banksia

Scientific name: *Banksia aemula*



Image: ©M.Fagg, 2008

Plant facts

Grows in swampy coastal heath (Wallum), southern Queensland to central New South Wales.

Height: to about 3 metres.

Flowers: Yes - hundreds on a vertical flower spike.

Common name: Waratah

Scientific name: *Telopea speciosissima*



Image: ©M.Fagg, 2007

Plant facts

Floral emblem of New South Wales.

One of five waratah species that grow from NSW to Tasmania.

Grows in deep sandy soils.

Height: To about 4 metres.

Flowers: Yes - each inflorescence has up to 250 separate flowers.

Common name: Tropical Banksia

Scientific name: *Banksia dentata*



Image: J.W.Wrigley ©ANBG, 1980

Plant facts

Grows in tropical savannah grassland.

Only banksia to grow outside Australia (Eastern Indonesia and New Guinea).

Height: To about 7 metres.

Flowers: Yes.

Resprouts after fire from woody stems (lignotubers).

Common name: Golden Wattle

Scientific name: *Acacia pycnantha*



Image: ©M.Fagg, 1986

Plant facts

Floral emblem of Australia. One of more than 1,000 wattle species in Australia.

Grows naturally in southeast Australia.

Height: Shrub 3-8 metres.

Flowers: Yes - 40-80 bright yellow ball-shaped inflorescences, each one containing 40-100 tiny flowers.

Common name: Red & Green Kangaroo Paw

Scientific name: *Anigozanthos manglesii*



Image: ©M.Fagg, 2009

Plant facts

Floral emblem of Western Australia.

Grows only in Western Australia, on sand plains from Perth to Shark Bay.

Height: A single stalk up to 120 cm.

Flowers: Yes - red and green velvet textured. The flower brushes pollen on to the heads of long-billed birds like Honeyeaters.

Common name: Omeo or Rock Grevillea

Scientific name: *Grevillea willisii*



Image: ©M.Fagg, 1981

Plant facts

One of more than 350 Grevilleas across Australia.

Grows in a restricted sub-alpine ecosystem near Omeo in Victoria.

Height: To about 2 metres.

Flowers: Yes - white and resembling a toothbrush.

Common name: GyMEA Lilley

Scientific name: *Doryanthes excelsa*



Image: ©M.Fagg, 1980

Plant facts

Grows in woodlands in the Sydney region of New South Wales, in soils derived from sandstone.

Height: Large sword shaped leaves and an enormous flower spike up to 6 metres tall.

Flowers: Yes - a bright red globular head of nectar-rich flowers.

Common name: Alpine Bottlebrush

Scientific name: *Callistemon pityoides*



Image: A.Lyne ©ANBG, 1992

Plant facts

Grows from about 900 metres up to the Snowy Mts, around bogs and swamps and along rivers in Queensland, New South Wales and Victoria.

Height: Grows in thickets to about 2 metres tall.

Flowers: Yes - creamy-yellow on a dense flower spike.

Common name: Royal Bluebell
Scientific name: *Wahlenbergia gloriosa*



Image: ©M.Fagg, 1995

Plant facts

Floral emblem of the Australian Capital Territory.

Grows in herbfields and grasslands in rocky alpine ecosystems in the Australian Capital Territory, New South Wales and Victoria.

Height: Up to 30 cm tall.

Flowers: Yes - five petals on each flower.

Common name: Sturt's Desert Rose
Scientific name: *Gossypium sturtianum*



Image: ©M.Fagg, 2016

Plant facts

Floral emblem of the Northern Territory.

Related to cotton. Grows as a shrub in arid areas of inland Australia.

Very deep roots to reach deep underground water.

Flowers: Yes - purple, hibiscus-like.

Common name: Cooktown Orchid
Scientific name: *Dendrobium bigibbum*



Image: ©M.Fagg, 1977

Plant facts

Floral emblem of Queensland.

A tropical epiphytic orchid that grows on paperbark tree trunks and in vine thickets.

Height: To about 80 cm.

Flowers: Yes - bright pink, shaped like a moth.

Common name: Tasmanian Blue Gum
Scientific name: *Eucalyptus globulus*



Image: ©M.Fagg, 2009

Plant facts

Floral emblem of Tasmania.

Millions planted for timber in Africa, Asia and North and South America.

Height: 45 metres.

Flowers: Yes - large cream inflorescences. Blue Gum nectar is rich food for endangered Swift Parrots.

Common name: Common Heath

Scientific name: *Epacris impressa*



Image: ©M.Fagg, 2008

Plant facts

Floral emblem of Victoria but also grows in South Australia, Tasmania & New South Wales.

Height: Up to 1.5 metres.

Flowers: Yes - pink to bright red, tubular, trumpet-shaped.

Common name: Wee Jasper Grevillea

Scientific name: *Grevillea iaspicula*



Image: ©M.Fagg, 2011

Plant facts

One of Australia's rarest plants – about 100 survive in southern New South Wales where they can't be reached by grazing goats and sheep.

Height: 1.3 metres.

Flowers: Yes - a 'spider flower' type of grevillea – cream to green with red style (female flower part).

Common name: Mountain Ash

Scientific name: *Eucalyptus regnans*



Image: ©M.Fagg, 2001

Plant facts

Grows in Victoria & Tasmania in wet forests.

Height: Tree up to 90 metres.

Flowers: Yes – This is the world's tallest flowering plant

Common name: Bunya Pine

Scientific name: *Araucaria bidwillii*



Image: ©M.Fagg, 1997

Plant facts

Grows in Queensland

Height: Tree averaging 40 metres.

Flowers: No. The very large seeds grow in the female cones. These cones are as heavy as a pineapple.

Common name: Hyacinth Orchid
Scientific name: *Dipodium roseum*



Image: ©M.Fagg,2018

Plant facts

Grows in eastern and southeast Australia, from southern Queensland to Victoria.

Height: Up to 80 cm.

Flowers: Yes, up to 50 bright pink flowers on a long, leafless stem.

Common name: Sturt's Desert Pea
Scientific name: *Swainsona formosa*



Image: ©M.Fagg,2009

Plant facts

A desert plant from South Australia, Northern Territory and Western Australia.

Height: Up to 75 cm tall.

Flowers: Yes, big and bright red, about 9 cm long, growing from stems close to ground.

Common name: Sphagnum Moss
Scientific name: *Sphagnum cristatum*



Image: ©M.Fagg,2012

Plant facts

Grows in very wet areas like alpine bogs and rainforests in many parts of Australia.

Height: Very low, grows like a green carpet on forest floors, on rocks and on other living plants.

Flowers: No – reproduces via spores, not seeds.

Common name: Leafy Liverwort
Scientific name: *Heteroscyphus fissistipus*



Image: ©H.Lepp

Plant facts

Grows on soil, bark, leaves and rocks in wet habitats along the east coast of Australia.

Height: Very low. Leafy liverworts hug the ground. They are similar to mosses.

Flowers: No – reproduces via spores, not seeds.

Common name: Rock-shield Lichen
Scientific name: *Xanthoparmelia substrigosa*



Image: ©M.Fagg,1997

Plant facts

Not a plant at all! Lichen are in the fungal kingdom.

Lichens grow worldwide. There are 3,000 species in Australia. This species is Widespread in non-tropical Australia.

A lichen is a co-operative association between a fungus and an alga or a cyanobacterium.

Flowers: No.

Common name: Rounded Earthstar Fungus
Scientific name: *Geastrum saccatum*



Image: ©M.Fagg,2003

Plant facts

Not a plant at all! Fungi are in their own kingdom.

Grow in every Australian habitat. This species is found in eastern Australia, South Australia and Western Australia.

Fungi don't make their own food and may get nutrients by feeding on dead or living organisms or by a mutually beneficial relationship with another organism.

Flowers: No.

Common name: Bitter Cryptandra
Scientific name: *Cryptandra amara*



Image: ©M.Fagg,2021

Plant facts

Grows in eastern Australia – Queensland to Tasmania.

Height: 35 cm.

Flowers: Yes – small, white, fragrant and bell-shaped flowers.

Common name: Low Bush Pea
Scientific name: *Pultenaea subspicata*



Image: ©M.Fagg,2011

Plant facts

Grows in southeastern Australia – rocky dry woodlands

Height: Low to the ground, can grow up to 15 cm.

Flowers: Yes – yellow and orange pea flowers.

Common name: Yam Daisy
Scientific name: *Microseris walteri*



Image: ©M.Fagg, 2014

Plant facts

Tubers were prepared and eaten as a vegetable by First Nations people.

Grows in a range of habitats in most states.

Height: Up to 50 cm.

Flowers: Yes – yellow daisy on 40 cm stem.

Common name: Celery
Scientific name: *Apium graveolens*



Image: ©Tiia Monto, CC BY-SA 3.0, via Wikimedia Commons

Plant facts

A common cultivated vegetable.

Leaves, stalk, and root can all be eaten.

Wild celery grows in salty marshlands in Europe.

Height: Up to 60 cm.

Flowers: Yes.

Common name: Broad-leaf Parakeelya
Scientific name: *Calandrinia balonensis*



Image: ©M.Fagg, 2017

Plant facts

This is a succulent plant.

Grows in arid and semi-arid areas of Australia.

Height: Leafy flower stems grow to 30 cm.

Flowers: Yes. Vivid dark pink or purple.

Common name: Round-leaved Pigface
Scientific name: *Disphyma crassifolium*



Image: ©M.Fagg, 2019

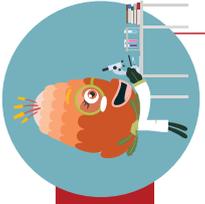
Plant facts

A succulent plant of southern Australia.

Grows by the sea in salty soil and on sandy dunes.

Height: Grows on the ground with long straggling branches.

Flowers: Yes. Deep purple.



RESOURCE: STUDENT REFLECTIONS

Consider displaying sentence starters or questions, such as below, in the classroom. Alternatively they could be turned into laminated thought bubbles that are directly passed to students. Students could choose two or three to complete in their journal then share their responses with the class.

<p>End of lesson reflections</p> <p>Today I discovered ...</p> <p>I want to know more about ...</p> <p>Something new I found out was ...</p> <p>I am excited about ...</p> <p>Something I am finding interesting is ...</p> <p>The most challenging thing was ...</p>		<p>I am most proud of ...</p> <p>I feel confident about ...</p> <p>I am enjoying ... because ...</p> <p>I am confused by ...</p> <p>Today I asked ...</p> <p>A question I have is ...</p>
<p>Reflecting on stewardship and taking action</p> <p>This information can make a difference by ...</p> <p>It is important to know about this because ...</p> <p>Something I will now do as a result of my learning is ...</p> <p>Something I want to do next is ...</p>		<p>Something I will now help others understand is ...</p> <p>I can make a difference by ...</p> <p>An action I/we can take is ...</p> <p>If we don't ... the consequences could be ...</p> <p>It is important to ... because ...</p>
<p>Guiding students to reflect on their own thinking</p> <p>I am starting to think differently about ...</p> <p>I got stuck when ... and I got back on track by ...</p> <p>I figured out that ...</p> <p>I solved a problem by ...</p> <p>I first thought ... but then I realised that ...</p>		<p>This idea is useful for ...</p> <p>Some things I didn't understand are ...</p> <p>To help me understand better I will ...</p> <p>Before I didn't know ...</p> <p>Now I realise/know ...</p>
<p>End of unit reflections – where I was and where I am now</p> <p>I used to think ...</p> <p>Now I know ...</p> <p>This causes me to (re)think/ wonder ...</p> <p>I didn't know how to ...</p> <p>Now I can ...</p> <p>In the future I will ...</p>		<p>Revisit your first journal entry. What do you understand now that you didn't back then?</p> <p>Review your work so far. What has been the biggest discovery/learning/ challenge?</p> <p>Reconsider your initial ideas. Have your ideas changed? If so how?</p>

Source: Adapted from the *Animal adaptations: year 5 Australian science curriculum focus, 2016*, by the Great Barrier Reef Marine Park Authority, licenced under Creative Commons licence CC-BY-NC-SA from: <http://hdl.handle.net/11017/2990>.



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