

Teacher Notes

Themes

- Australian native plants
- Adaptations
- Diversity

Key learning outcomes

- Observe the features of different plants
- Understand the close relationships some plants have with other organisms
- Learn about Indigenous uses of Australian native plants

Key curriculum areas

- **Science:** Science Understanding (Biological sciences); Science Inquiry
- **English:** Language
- **HASS:** Knowledge and Understanding
- **Cross-curriculum priority:** Aboriginal and Torres Strait Islander Histories and Cultures

Publication details

Plantabulous! More A to Z of Australian Plants

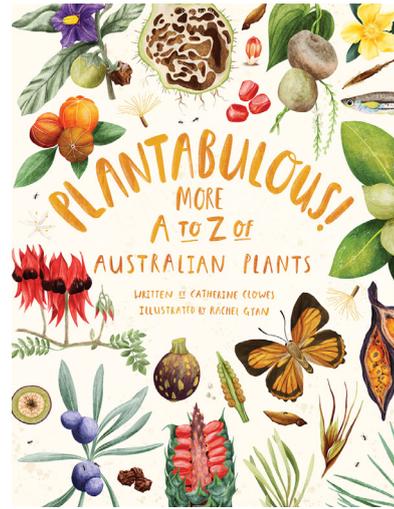
ISBN: 9781486317202

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Plantabulous! More A to Z of Australian Plants

Catherine Clowes and Rachel Gyan

About the book

Did you know that there are plants that can survive fire? Plants with seed pods that explode, shooting seeds far and wide? Plants that can help clean up pollution? Or that Australia is home to the most 'venomous' plant in the world?

Plantabulous! More A to Z of Australian Plants presents 26 iconic and unique native plants for you to discover in your local park, bushland or even your own backyard! Filled with fabulous facts, activities and illustrations, *Plantabulous!* will prove just how fabulous Australia's native plants really are!

Recommended for

Readers aged 6 to 12 (Years 1 to 6)



PUBLISHING

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About the author and illustrator

Catherine Clowes is a botanist with a passion for Australian native plants. She works as a biodiversity officer, has a PhD in systematic botany and spends a good chunk of her spare time in her very own Australian native plant garden!

Rachel Gyan is an illustrator passionate about artful storytelling. Her heart-warming characters are empowered by whimsy, texture and vibrant colour palettes. Rachel enjoys studying Australian flora and wildlife, drawing inspiration from her surroundings to capture the beautiful and sometimes quirky nature of Australia in her work.

Pre-reading questions or activities

Brainstorm all the ways in which we use plants in our lives, such as for food, landscaping, construction materials for buildings and fibres for clothing. Are many of the plants we use Australian native plants? Then think specifically about the way Indigenous Australians use plants. This line of thought might suggest additional uses, such as making canoes, weapons, musical instruments, jewellery and utensils (e.g. wooden bowls), weaving baskets, painting on bark, burning branches for cooking and using plants as medicines.

Talk with the class about the role of flowers, fruits and seeds in plant reproduction. Why do so many plants have colourful flowers? What are some examples of plants that don't have flowers? Why do plants produce tasty fruits that animals (including humans) want to eat? If a plant doesn't produce fruit, how does it spread its seed?

Discussion questions

Science

1. Some of the plants have close relationships with other organisms. Recall the meaning of 'symbiosis' (it is in the Glossary), in which both species benefit. In some relationships, only one of the pair benefits – the other pair in the relationship may be disadvantaged or may not really be affected much at all. For each of the following relationships, identify what each of the pair is gaining (or losing) in the interaction:
 - Ant Plant and ants
 - Pitcher Plant and larvae of the ant-like fly
 - Strangler Fig and its host tree.



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Ant Plants and ants have a symbiotic relationship: Ant Plants gain nutrients and the ants gain a place to live.

The larvae of the ant-like fly gain a place to live. The Pitcher Plant may not be particularly affected – it may lose some nutrients to the larvae but it gains the nutrients from the larvae's waste, which could balance out.

The Strangler Fig gains a supporting structure on which to grow while its host plant is eventually killed.

2. Just a gentle touch of a Gympie Gympie leaf can sting with an incredibly strong and long-lasting pain. That's why when scientist Dr Marina Hurley gets close to these stinging trees she wears welding gloves and a face mask.

Show the students this video of Marina getting up close to Gympie Gympie in the rainforest in northern Queensland: <https://www.youtube.com/watch?v=2VS69FXbjN8>
Discuss why the plant might have such a strong sting. In what other ways do plants protect themselves from being eaten? What other plants do you have to be careful of?

3. Desert Raisin and Burrawang both grow in colonies – lots of plants growing together in one area – but they do so in different ways. Read each section again and discuss why each species tends to grow in groups.

Desert Raisin plants can grow from the root system, so a group of Desert Raisin plants in an area may all be part of, or clones of, the same plant. Burrawang have such large seeds they can't disperse very far, so baby plants often grow right next to the parent plants.

4. *Juncus*, *Zostera* and other wetland plants are used in many places to clean up contaminated waterways – an example of 'phytoremediation'. Show the students this Gardening Australia clip in which Costa visits a garden in Newcastle where scientists are researching how plants can clean up contaminated soil: <https://www.abc.net.au/gardening/how-to/plants-to-the-rescue/102076168>

What are the most serious contaminants in the soil? *Heavy metals such as lead.*

What are the advantages of phytoremediation? *Soil is treated on the spot rather than dumping toxins elsewhere.*

What are the limitations of phytoremediation? *Solutions still need to be found to deal with the remaining toxic waste that has been removed from the soil.*

Teacher Notes

English

1. *Plantabulous! More A to Z of Australian Plants* is a non-fiction illustrated book. It has both words and pictures. Does it have a narrative or story? What features does the book have that help readers understand the information it contains?

HASS

1. Some plants are named after people. *Hibbertia* is named after the English businessman George Hibbert who was a keen botanist but also a slave trader – perhaps not such a great person to be honoured in this way!
Today, many species of plants and animals are named after celebrities – often in the second part of the scientific name (which is not capitalised). Can you work out who these species are named after?

- the spider *Castianeira swiftay* and the millipede *Nannaria swiftae* [hint: a musician]
- the wolverine wolf spider *Tasmanicosa hughjackmani* [hint: an actor]
- the snail *Craspedotropis gretathunbergae* [hint: a climate activist]
- the snail *Travunijana djokovici* [hint: a sportsman].

Who would you choose to name a species after? Why do you think they deserve the honour?

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Activities

Science

Plantabulous! adaptations

Ask students to complete the worksheet on page 7 by referring back to the information in the book.

For each characteristic, describe the benefit it gives the plant and name a plant with the characteristic.

Answers:

Characteristic	Benefit	Plant
Aerial roots (pneumatophores)	<i>Can grow in water and waterlogged soil</i>	<i>Mangrove</i>
Produces nectar	<i>Attracts insects for pollination (or consumption)</i>	<i>Thismia or Pitcher Plant</i>
Ability to dry out and stop photosynthesis	<i>Survive long dry periods</i>	<i>Resurrection Plant</i>
Lignotuber	<i>Survive fire</i>	<i>Waratah</i>
Seeds with wings or hairs (pappus)	<i>Wind dispersal of seeds</i>	<i>Waratah (wings) or Xerochrysum (pappus)</i>
Swollen trunk filled with water (caudex)	<i>Survive dry periods</i>	<i>Upside-Down Tree</i>
Smells like rotten flesh	<i>Attracts flies for pollination</i>	<i>Cheeky Yam or one species of Thismia</i>
Leaves are sclerophyllous (hard and leathery)	<i>Helps plant save water and live in hot dry places</i>	<i>Epacris</i>

Botany excursion

Take the students on an excursion to a local park, or just around the school yard. Observe the plants you can see – from tall trees to tiny grasses. Identify features such as flowers, leaves, bark and seeds. If permitted, allow the students to collect a branch or flower to bring back into the classroom and draw (alternatively, take photographs of the plants to refer to). For species that you can identify, decide (or research) whether they are native to Australia or introduced. Can you think of any ways you could use the plant, for example, to make fibre or as a utensil?

English

Plantabulous! word search

Give students the word search on page 8 and ask them to find and circle all the plant-related words listed.

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Aboriginal and Torres Strait Islander Histories and Cultures

Using native plants

Ask the students to read through the book and record the many different ways Indigenous people use Australian native plants. Students could create a table with two columns. List the plant or plant part in the first column and describe how it is used in the second column.

For example:

Plant or plant part	How it is used
Sandpaper Fig leaf	To polish wood

Alternatively, younger students could choose a particular example and draw the plant in use.

Learning from Indigenous knowledge

Note: The article used in this activity discusses a crocodile attack and pain medications; adult guidance is recommended.

Western science can learn from Indigenous uses for Australian native plants. Read this article on a collaboration that is bringing Indigenous knowledge to Western medicine: 'Indigenous medicine used to soothe a crocodile bite could gel in time to help Brisbane Olympics athletes' (<https://www.abc.net.au/news/2023-11-02/traditional-medicine-after-crocodile-bite-use-olympic-athletes/103057744>). Why is it important that the project has been a collaboration between Indigenous people and the scientists from Griffith University?

Teacher Notes

Plantabulous! adaptations

For each characteristic, describe the benefit it provides and name a plant with that characteristic. Answers are on page 5 of the teacher notes.

Characteristic	Benefit	Plant
Aerial roots (pneumatophores)		
Produces nectar		
Ability to dry out and stop photosynthesis		
Lignotuber		
Seeds with wings or hairs (pappus)		
Swollen trunk filled with water (caudex)		
Smells like rotten flesh		
Leaves are sclerophyllous (hard and leathery)		

Teacher Notes

Plantabulous! word search

Find the words in the list below. They run across and down the grid.

B	N	P	H	D	U	G	O	N	D	W	A	N	A	J
A	X	Y	L	E	M	T	B	P	M	H	Q	Q	G	H
O	V	P	Z	S	Y	S	Z	G	N	C	Z	C	A	O
B	C	U	H	E	C	J	H	K	Z	K	H	H	E	Q
A	K	B	I	R	O	E	T	U	B	E	R	L	C	H
B	Q	U	L	T	R	S	X	R	A	O	X	O	A	N
N	M	R	K	Y	R	G	Z	R	K	J	M	R	R	G
Q	O	R	Y	A	H	S	W	A	I	N	S	O	N	A
B	P	A	D	M	I	R	O	J	C	E	R	P	I	D
S	E	W	C	B	Z	M	M	O	I	C	P	L	V	C
L	T	A	T	R	A	G	C	N	I	U	H	A	O	G
K	A	N	G	A	R	O	O	G	R	A	S	S	R	C
Y	L	G	D	C	F	Z	D	A	I	O	X	T	O	W
V	R	S	Z	T	M	K	S	E	K	O	V	S	U	N
F	Q	M	R	S	E	E	D	D	N	F	P	J	S	M

BAOBAB
BRACTS
BURRAWANG
CARNIVOROUS
CHLOROPLASTS

DESERT YAM
GONDWANA
KANGAROO GRASS
KURRAJONG
MYCORRHIZA

PETAL
SEED
SWAINSONA
TUBER
XYLEM

Teacher Notes

Australian Curriculum Links (Version 9.0)

Year level	Learning area: Science	Other learning areas
Years 1/2	Science Inquiry: Communicating <ul style="list-style-type: none">write and create texts to communicate observations, findings and ideas, using everyday and scientific vocabulary (AC9S1I06)	English Language: Text structure and organisation <ul style="list-style-type: none">explore how texts are organised according to their purpose, such as to recount, narrate, express opinion, inform, report and explain (AC9E1LA03) HASS Knowledge and understanding: History <ul style="list-style-type: none">a local individual, group, place or building and the reasons for their importance, including social, cultural or spiritual significance (AC9HS2K01)
Years 3/4	Science Understanding: Biological sciences <ul style="list-style-type: none">compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (AC9S3U01)	HASS Knowledge and understanding: Geography <ul style="list-style-type: none">the importance of environments, including natural vegetation and water sources, to people and animals in Australia and on another continent (AC9HS4K05)
Years 5/6	Science Understanding: Biological sciences <ul style="list-style-type: none">examine how particular structural features and behaviours of living things enable their survival in specific habitats (AC9S5U01)	English Language: Language for expressing and developing ideas <ul style="list-style-type: none">identify and explain how images, figures, tables, diagrams, maps and graphs contribute to meaning (AC9E6LA07)
All	Cross-curriculum Priority: Aboriginal and Torres Strait Islander Histories and Cultures <ul style="list-style-type: none">First Nations communities of Australia maintain a deep connection to, and responsibility for, Country/Place and have holistic values and belief systems that are connected to the land, sea, sky and waterways (A_TSICP1)	

Related books from CSIRO Publishing

By the same author and illustrator:

- Plantastic! A to Z of Australian Plants* (<https://www.publish.csiro.au/book/7956>)

For younger readers:

- Alight: A Story of Fire and Nature* (<https://www.publish.csiro.au/book/8045/>)
- Pollination: How Does My Garden Grow?* (<https://www.publish.csiro.au/book/7957/>)
- Secrets of the Saltmarsh* (<https://www.publish.csiro.au/book/8101/>)
- Wollemi: Saving a Dinosaur Tree* (<https://www.publish.csiro.au/book/8072>)

For older readers:

- AmAZed! CSIRO's A to Z of Biodiversity* (<https://www.publish.csiro.au/book/7984>)
- The Encyclopedia of STEM Words* (<https://www.publish.csiro.au/book/8084/>)
- The Great Australian Science Book* (<https://www.publish.csiro.au/book/8083/>)

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Double Helix magazine

Packed with fun, exciting and quality articles, Double Helix magazine is created to inspire young readers. It covers a range of topics across science, technology, engineering and maths.

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There is plenty of free content that can be used at school or home to support learning.

Double Helix Extra

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Other CSIRO resources

CSIRO has developed and delivered a broad range of high-quality STEM education programs and initiatives for nearly 40 years. Our programs aim to inspire the pursuit of further STEM education among students and the community, to equip the emerging workforce with tomorrow's skill sets, and to strengthen collaboration between industry and classrooms across Australia. For more information visit: <https://www.csiro.au/en/Education>



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