

POEM FOREST

Write
a poem

Plant
a tree

Nature Poetry Prize
Learning Resource



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Acknowledgement of Country

'A living growing being
Holding stories and messages
As the original lead the way'
~ Arika Waulu from 'Paleep'

Red Room Poetry and The Australian Botanic Garden Mount Annan acknowledge the Dharawal Elders, Custodians and emerging leaders of the lands, waters, sky where the *POEM FOREST* grows. We also respect and acknowledge First Nations people across the many lands where we live, work and write. We are grateful to collaborate with First Nations communities who have cared for Country for millennia.



Do you know what First Nations land you live on? How do you and your school acknowledge and care for Country?



Welcome to POEM FOREST



'I feel different; one with nature,
Up here in the wind, all wild and free,
As if I am connected to the universe,
Me, a small leaf, hanging from my tree.'
~ Jack, Year 6, from 'My Tree'

Created by **Red Room Poetry**, in collaboration with **The Australian Botanic Garden Mount Annan**, *POEM FOREST* is a free nature poetry prize that breathes life back into the world that sustains us. **For every poem received, a native tree will be planted at The Australian Botanic Garden Mount Annan.**

You're invited to write and publish nature poems to grow *POEM FOREST*. As well as helping to heal habitats, there's **over \$5,000 in prizes to win!**

Your words will literally change our world through positive climate action. We can't wait to read your poems.

The *POEM FOREST* team

More Information

w: redroompoetry.org/projects/poem-forest

e: poemforest@redroompoetry.org

t: 02 9319 5090

KEY DATES

- » *POEM FOREST* Prize opens Sunday 21 March 2021
- » Submissions close 5pm Friday 17 September 2021
- » Shortlist and poems published in October 2021
- » Winners announced in November 2021
- » *POEM FOREST* trees planted at The Australian Botanic Garden in 2021 and 2022, delivered with the Greening our City Premier's Priority, funded by the Climate Change Fund

Principal Patron

John B. Fairfax, AO

HOW TO ENTER

- 1:** Read the *POEM FOREST* resource and commissioned poems. Connect with nature for inspiration. Complete the writing prompts.
- 2:** Draft your own 20 line nature poem using [this template](#). Review and edit your poem.
- 3:** Enter your final poem [via this online form](#)

Terms and Conditions

redroompoetry.org/projects/poem-forest-terms-conditions

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About the *POEM FOREST* Nature Poetry Prize



The *POEM FOREST* Prize creates positive climate action by inviting students and teachers to write and publish poems inspired by nature.

Every poem received will become a tree planted on the traditional land of the Dharawal people, on Mount Annan at the heart of the Australian Botanic Garden, where remnants of critically endangered woodland and rainforest can be found.

As well as healing habitats for future generations, there's over \$5,000 in prizes to be won. [Explore more of *POEM FOREST*.](#)

Icon guide



Student Handout



Audio



First Nations



Online Resources



Video



Sustainability

Using this Learning Resource

This curriculum-linked Learning Resource is designed to support students and teachers to find inspiration before composing their poems.

It features a range of multi-modal Pre-Writing Prompts and Nature Case Studies to enrich curriculum outcomes across English, Science, Sustainability, First Nations Histories and Cultures, The Arts, Humanities, Social Sciences and Technology.

As *POEM FOREST* is open to students from Foundation to Year 12, activities can be adapted to suit different age groups. The order of activities is flexible, although we recommend delivery over 2-3 lessons to allow students to reflect, conceptualise and respond.

Inspiration and Activities is divided into two sections: **Poetry Prompts** and **Nature Case Studies**. These warm-up activities are designed to help students engage with nature through sensory experiences, poetic examples, creative thinking and research skills that strengthen language, literature and literacy.

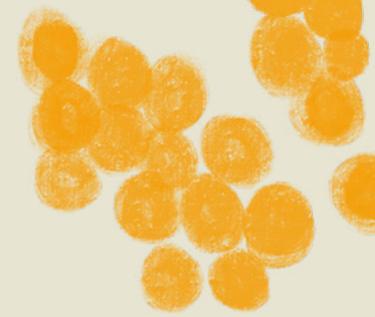
Additional guidance is provided on how students can identify and avoid clichés, develop specific imagery, as well as using prompts and strategies during their own writing process. An **Editing Checklist** gives guidance on the process of drafting, editing and **Peer Review** prior to submission to foster critical thinking, active reading and comprehension skills.

Commissioned Poems exemplify a range of poetic techniques and give students insight into different voices, styles and perspectives. The **Inspired Activities** draws on these poems and reflections, providing students with extended writing prompts to support their own creative process.

Created with The Australian Botanic Garden, **Nature Case Studies** provides information to deepen students' understanding of science, sustainability and the natural world. Students are encouraged to use the Case Studies to further inquiry skills and help inform ideas for their poems.



Curriculum Links



Australian Curriculum priorities and outcomes supported by *POEM FOREST* include English, Science, Sustainability, Aboriginal and Torres Strait Islander Histories and Cultures, The Arts, Technologies, and Humanities and Social Sciences.

English

F – (ACELA1426) (ACELA1429) (ACELA1430) (ACELA1431) (ACELA1432) (ACELA1433) (ACELA1434) (ACELA1435) (ACELA1439) (ACELT1575) (ACELT1783) (ACELY1646) (ACELY1650) (ACELY1651) (ACELY1652)

Yr 1 – (ACELA1787) (ACELA1447) (ACELA1448) (ACELA1449) (ACELA1452) (ACELT1583) (ACELT1584) (ACELT1585) (ACELY1660) (ACELY1661) (ACELY1662)

Yr 2 – (ACELA1462) (ACELA1464) (ACELT1587) (ACELT1589) (ACELT1590) (ACELT1591) (ACELT1592) (ACELY1789) (ACELY1668) (ACELY1670) (ACELY1671) (ACELY1672)

Yr 3 – (ACELA1475) (ACELT1596) (ACELT1598) (ACELT1600) (ACELT1791) (ACELY1676) (ACELY1678) (ACELY1679) (ACELY1792) (ACELY1683)

Yr 4 – (ACELT1602) (ACELT1603) (ACELT1605) (ACELT1606) (ACELT1607) (ACELT1606) (ACELY1690) (ACELY1695)

Yr 5 – (ACELA1512) (ACELT1608) (ACELT1610) (ACELT1611) (ACELY1704) (ACELY1705) (ACELT1798)

Yr 6 – (ACELA1518) (ACELA1520) (ACELA1523) (ACELA1525) (ACELT1614) (ACELT1615) (ACELT1617) (ACELT1800) (ACELT1618) (ACELY1715) (ACELY1714) (ACELY1717)

Yr 7 – (ACELT1625) (ACELT1803) (ACELT1805) (ACELY1725) (ACELY1726) (ACELY1728)

Yr 8 – (ACELA1542) (ACELA1547) (ACELT1768) (ACELT1630) (ACELY1738) (ACELY1810)

Yr 9 – (ACELA1553) (ACELA1770) (ACELA1557) (ACELT1635) (ACELT1637) (ACELT1773) (ACELY1747) (ACELY1748)

Yr 10 – (ACELT1643) (ACELT1644) (ACELY1753) (ACELT1814) (ACELT1815) (ACELY1757)

Yr 11 – Literature, Create Imaginative Texts

Yr 12 – Literature, Create Imaginative Texts

Science

F – (ACSSU002) (ACSSU004) (ACSHE013) (ACSHE021) (ACSIS014) (ACSIS233) (ACSIS012)

Yr 1 – (ACSSU211) (ACSHE022) (ACSHE035) (ACSIS024) (ACSIS029)

Yr 2 – (ACSSU030) (ACSHE034) (ACSHE035) (ACSIS037) (ACSIS042)

Yr 3 – (ACSSU044) (ACSSU073) (ACSHE050) (ACSHE051) (ACSIS053) (ACSIS060)

Yr 4 – (ACSIS064) (ACSHE062) (ACSIS071)

Yr 5 – (ACSSU043) (ACSHE083) (ACSIS231) (ACSIS093)

Yr 6 – (ACSSU094) (ACSHE100) (ACSIS232) (ACSIS110)

Yr 7 – (ACSSU111) (ACSSU116) (ACSHE223) (ACSHE120) (ACSHE121) (ACSIS124)

Yr 8 – (ACSHE226) (ACSHE135) (ACSHE136) (ACSIS139) (ACSHE226) (ACSHE135) (ACSHE121) (ACSHE136)

Yr 9 – (ACSHE158) (ACSHE228) (ACSIS164)

Yr 10 – (ACSHE158) (ACSHE192) (ACSHE230) (ACSIS198)

Introducing the POEM FOREST

1 In class, introduce the *POEM FOREST* Nature Poetry Prize by sharing the Overview.

Explore the topic of **nature** by having students brainstorm words or images associated with it. Encourage students to mention: *ecology, habitat, sustainability, and threatened species.*

Research definitions for key nature words like biodiversity and ecosystem.

See pages 41-42: A-Z of Life Forms and Their Roles in the Forest

Invite primary students to fill out the first two columns of the KWL chart. Make sure students fill in the final column after they write their poem.



Have students look at a gallery of images from nature. For each image, ask See-Think-Wonder questions: *What do you see?*

Look at the details. What do you think about when you see the image? What does it make you wonder about? Is there anything else you want to know?

2 As a group or individually, invite students to read and listen to the **Commissioned Poems** and **Reflections**.

3 Explore **Activities Inspired by** the poet. Complete the **Pre-Writing Prompts**. Consider **Extension Activities**.

4 Invite students to draft their own nature poem and reflection. Edit and peer review.

5 Enter final poem in the *POEM FOREST* Prize via the online form for publication as a digital literacy task.

Resources

- » Commissioned Poems, Reflections, Audio and Video
- » Pre-Writing Prompts and Poetic Techniques
- » Poem Template and Peer Review
- » Judging Notes and Quality Criteria
- » Local Environmental Actions
- » Nature Case Studies

Nature Excursions and Workshops

To enrich your *POEM FOREST* experience, **Red Room Poetry** and the **Australian Botanic Garden** offer curriculum aligned excursions and incursions for all stages. Students are engaged through active poetry writing workshops or immersive, hands-on learning in nature.

www.redroompoetry.org/education

www.australianbotanicgarden.com.au/learn

The Garden also offers free online Units of Work with related activities and engaging research resources for students of all ages.

www.australianbotanicgarden.com.au/Learn/Living-Learning



POEM FOREST Prize

Categories

- » Lower Primary (F-Yr 3)
- » Upper Primary (Yr 4-6)
- » Lower Secondary (Yr 7-9)
- » Upper Secondary (Yr 10-12)
- » Accredited Teacher (All ages)

Publishing Outcomes

All entries will be published on the Red Room Poetry website with a worldwide audience of 300,000+ readers.

A selection of poems and poem excerpts will also be published on botanical tags in the *POEM FOREST* at the Australian Botanic Garden.

Prizes

The following prizes will be awarded to the best poem in each category:

- » **\$500 cash***
- » **\$150 book pack from Copyright Agency, Magabala Books and Wonderground**
- » **Plant or seeds from the Australian Botanic Garden Mount Annan**
- » **Judging notes and winner's certificate**

Highly Commended prizes in each category will also be awarded a \$20 book voucher

* Excludes The Australian Botanic Garden Mount Annan Local Prize

Special Prize Categories

Threatened Species Prize

(F-12) will be awarded to the best poem written in response to Australia's threatened species. See the list of threatened flora, fauna and ecological communities

The Australian Botanic Garden Mount Annan Local Prize (F-12)

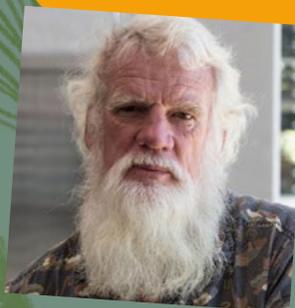
will be awarded to the best poem by a student attending school or living on Dharawal country (Macarthur region)

- » Free school excursion/ incursion with the Australian Botanic Garden for one class — up to 30 students
- » Individual prize — Choose a private tour for you and your family: Sunset Spotlight Tour through Cumberland Plain Woodland, private First Nations Cultural Tour, or behind-the-scenes PlantBank and Nursery Tour
- » Plants and seeds from the Australian Botanic Garden



Judges

In 2021, we're elated to welcome Bruce Pascoe, Holly Ringland, Dr Cathy Offord and Solli Raphael as Judges of the *POEM FOREST* prize.



Bruce Pascoe

Bruce Pascoe has published widely in both adult and young adult literature. He has won numerous awards, including the Children's Book Council of Australia Eve Pownall Award for *Young Dark Emu* (Magabala Books 2019), New South Wales Premier's Book of the Year Award in 2016 for *Dark Emu* (Magabala Books 2014) and the Prime Minister's Literature Award for Young Adult fiction for *Fog a Dox* (Magabala Books 2012) in 2013. In 2018 Bruce was awarded the Australia Council Award for Lifetime Achievement in Literature. He has worked as a teacher, farmer, fisherman, barman, fencing contractor, lecturer, Aboriginal language researcher, archaeological site worker and editor. Bruce is a Yui, Bunurong and Tasmanian man, and currently lives on his farm in Gippsland, Victoria.

Solli Raphael



Award-winning author, poet, and keynote speaker at corporate and community events, Solli Raphael, 16, has appeared with his powerful poetry on many TV shows, including *The Project* and the first-ever *Behind the News Q&A kids'* panel which focused on fake news and climate change. The youngest winner of Australia's Poetry Slam at only 12, Solli is a youth ambassador for several charities. His interests are in youth empowerment, social equality, media literacy, the environment and animal protection.



Holly Ringland

Holly Ringland is the author of the internationally bestselling and award-winning 2018 debut novel, *The Lost Flowers of Alice Hart*. In 2020, Holly travelled around Australia to film *Back to Nature*, a visually stunning factual series she co-hosted with Aaron Pedersen, airing on the ABC in 2021. Holly's second novel, *The Seven Skins of Esther Wilding*, will be published by HarperCollins in 2022. Prior to the pandemic, Holly divided her time between Australia and the UK, where she had Australian native flowers growing in both places. In 2020, Holly bought a 1968 Olympic Riviera caravan, named 'Frenchie', her Plan B writing office based on Yugambah land, southeast Queensland, in which Holly is currently spending most days writing Esther Wilding's story.



Cathy Offord

Dr Cathy Offord is a plant scientist working on the conservation of some of the world's rarest and most precious species including the Wollemi Pine. She has published over 80 peer-reviewed scientific papers and has been instrumental in the development of national and international guidelines for plant conservation in the wild, in botanic gardens and in seed banks. She helped create the world's most technologically advanced conservation facility — The Australian PlantBank — an ark containing the seeds and tissues of a huge proportion of Australia's 20,000 plant species. She loves working with educators, artists and writers to create an appreciation of the fragility of our flora and the increasing imperative to preserve it.



Judging Notes

I'm looking for poems that capture how being in nature connects us to our own lives. I encourage young writers to explore through language how the natural world reflects us back to ourselves and each other. Does a river remind you of a memory? What is that memory, and how is it like the river? Is there a tree you sit under to remember, or to forget? Why that tree, in particular? Is there a beach that holds emotions for you, that you can leave or return to every time you visit? How do these places comfort you? How do they allow you to feel whatever you feel, even if it's uncomfortable? What would you like someone to know about you and a special place in nature that you love, in one hundred years from now? Why does it matter to you?

~ Holly Ringland

See the full Quality Criteria pages 26-27





INSPIRATION AND ACTIVITIES POETRY PROMPTS



Arika Waulu

COMMISSIONED POEM



I am a Koolyn language holder of the Djap Wurrung, Peek Wurrung, Dhauwurd Wurrung of so called western districts, Victoria.

I have been a community activator for the past 15 years, organising with the Black GST for 8 years and 7 years with Warriors of the Aboriginal Resistance. I utilise a decolonial lens to creatively produce events and curate exhibitions that are

grassroots focused, such as *Landback Fest* Atherton Gardens Fitzroy 2021, *'We Are Our Grandmothers — Bloodties'* presented at Schoolhouse Studios 2019, *'Because of her we can'* presented at Melbourne Museum 2018, *'The Blak Matriarchy'* presented at Koorie Heritage Trust Federation Square 2017, and *'Unnaturalized'* presented at Signal, as part of YIRRAMBOI 2017. I am currently working on my Landback initiative *Wuurn Of Kanak* and studying filmmaking and photography at LCI Art and Design Academy.

Arika Waulu's Reflection

Preparing to take the long road back to our country, packing clothes for both warm, cold and wet weather, boots, runners and thongs are all necessary items, wondering which birds will greet us first, trying to remember the sweet scent of tea tree and mallee bark.

[Read Arika's full Reflection here](#)

See page 15 for Activities Inspired by Arika

Paleep

~ Arika Waulu

Paleep means tree
Landback! the cockatoos screech
Climbing, swinging
Special to me
Firewood, chainsaws
Development they preach
Paleep means tree

Landback! the wallabies scream
More than a source of warmth for me
Original beings here
Wardrobes, water ponds and snack cupboards
Paleep have been
Since colonisation
Weatherboards, paper
Refined, disposable
Evolution they say
The original beings still here
Paleep means tree

Landback! the orchids chant
Birthing hospitals, fishermen's smokehouse and tiny homes
More than planks could mean
Since invasion twisted beings
Attempting to reshape
Violent scenes, direction trees seen

Breatheback! the paleep leaves sway
A living growing being
Holding stories and messages
As the original lead the way



Solli Raphael

COMMISSIONED POEM



Award-winning author, poet, and keynote speaker at corporate and community events, Solli Raphael, 16, has appeared with his powerful poetry on many TV shows, including *The Project* and the first-ever *Behind the News Q&A* kids' panel which focused on fake news and climate change. The youngest winner of Australia's Poetry Slam

at only 12, Solli is a youth ambassador for several charities. His interests are in youth empowerment, social equality, media literacy, the environment and animal protection.

Solli's Reflection

I recently hiked a track on the mid-north coast of NSW, where I grew up. It's a beautiful track that climbs through a forest of majestic white box, some of which are 400 years old. I used to hike this particular track when I was younger, but it had been ten years since I last visited.

As I hiked through memories, I reflected on all that had happened in the decade that past; the bustling city streets, big crowds, the many places my career as an author and poet had taken me thus far, coming back to the present moment of complete silence.

[Read Solli's full Reflection here](#)

See page 15 for Activities Inspired by Solli

White Box Rise

As I walk among the trees, on this
White Box rise, I realise, that with all the
days I have lived in my life, these trees have spent
the same amount of days, passing time as if it were no more
than a butterfly landing on a leaf, or that same leaf detaching
and drifting with the occasional breeze. To these trees, our calendar means
nothing. There is no 'too early', no 'too late', no winning, no losing, no
expectations, no comparisons. If we rose as White Box rise,
purely from our motives and sheer desire for
love, and peace, and happiness, would we then
reach the canopy of enlightenment? Because
beyond time, this moment is forever,
forever is now. And now, as I
continue walking, I can feel
my soul rise like a
White Box, to a
place where
the illusion
is lost, and I am
Present. Whole. Timeless.



Jane Gleeson-White



Jane Gleeson-White is a writer and author of four books, including the internationally acclaimed history of accounting, *Double Entry*, and its sequel, *Six Capitals* (2020), about capitalism and climate change.

Her writing on economics, sustainability and literature has been widely published, including by the *Wall Street Journal*, *The*

Guardian, *Bloomberg*, *Wired*, *Griffith Review*, *Sydney Review of Books*, *The Age*, *Sydney Morning Herald*, *The Australian*, *Meanjin* and *Overland*. She is a visiting fellow at UNSW Canberra.

Jane's Reflection

Being asked to write a poem about a tree for POEM FOREST was an honour and a gift. It's allowed me to acknowledge the poets and trees who've fed my soul during my ten years' writing about accounting for nature, which attempts to value living trees with numbers and money so they have economic worth (they're currently valued at zero). This is harrowing, soul destroying work. It's taught me, irrevocably, that 'saving the planet' must start with each of us remembering our heart connection to nature. This is the stuff of poetry.

[Read Jane's full Reflection here](#)

See page 16 for Activities Inspired by Jane

COMMISSIONED POEM

To the olive tree in Duntroon gardens, Canberra

Words come too dense
to say simply: olive tree
already cast by Linnaean binomial taxonomy
Olea europaea, dead tongue shrouding Europa's majesty

But last autumn after tripping down a
laneway of firebirds, hearts broken
I crossed Calculus Lane, again, its binary
abstractions inclosures and fractions,
to return to that garden
of trees named in English and Latin
and Sophia, hurled from her window, ghosting again

I greeted the guardian. A southern nettle.
Some blood at the gateway, just a prick

then I flew through air as I walked to
the olive I loved in the spring
birdsong swelled, green soaring, shining in
soft late sun, pale leafed and young
not ancient and gnarled as she is. I circled her
I lay along her, hands wrapped round boughs
feet pressed into holds sheltering mushrooms

birds swoop low over me as if I am tree now
tears gutter
Are you sad? I ask Athena's tree. Or am I?
Do you grieve being so far from home, on your own?

But we are not alone. We're one, simply



Dakota Feirer



Dakota Feirer is a Bundjalung-Gumbayngirr man based in Dharawal and Yuin country on the south coast. Since graduating from an honours degree at the University of Wollongong, Dakota has consulted for NITV, the Art Gallery of New South Wales and AIATSIS. He is carving a path as an independent researcher, educator and advocate for cultural sovereignty and progressive warriorhood.

Dakota's Reflection

My name is Dakota and I only tell true stories.

My people are connected to the Clarence River region, that freshwater area encompassing part of south-western Bundjalung country and part of Gumbayngirr country. However, I have spent the majority of my life in Yuin country on the far south coast of NSW. Although I have strong ties to Yuin country, I still yearn for the place where my ancestors held custodial responsibility, as they still yearn for my return. She-oaked shores tells the story of the emotions and battles some of us may experience when spending prolonged amounts of time off-country.

[Read Dakota's full Reflection here](#)

See page 16 for Activities Inspired by Dakota

COMMISSIONED POEM

She-oaked shores

Somewhere in between beginning and end,
are shaded beds on sacred bends
Made in layers of leaves, resembling
strands, or ancient, sacred ladies
Where sweet waters ebb, and soft northern winds blow
Faceless Maidens Bellow, my arms and Nawi follow
As their rhythms, sing me home, upriver.

Here, Spirits creep amongst echoes
Keep dry eyes on sweet water's tides,
watch them rise, before I fall
For saltier waters dissolve river boarders,
for once, stay on course.
In branches, old lore women call, guiding my oars
Toward she-oaked shores.

Wrinkled bark mimics brown skin, carved
marks reveal maps of kinship
Names, voices and stories all told in sacred song
And Grandmothers of she-oak hold sacred bends strong
Singing recedes from the tips of her scale leaves
Down to a humming heartbeat in the earth beneath my feet

Grandest mother, I'm sorry we never had a chance to meet
I'm sorry your roots are far deeper than mine
For now, I hope this bed of tears will suffice
So swallow me, at the end of every apology
And embrace my body, in the roots of casuarina.

Melodic medicinal symphony of timeless ancestress
My name has been sung her for eternity
She-oak, she-knows, what is done and yet to come.

Earthen maternal sounds of her soft wind song,
Sing me into the ground,
Upriver, where my bones belong.



Aunty Verna Barker

COMMISSIONED POEM



1956 is when my journey begins. I was born in Bourke NSW not knowing my Mother as she passed away giving me birth. She was 25 years old and was the eldest daughter of 16 children. My Mother was born at Yantabulla Station, 90 miles out of Bourke. I was the youngest of 3 children. I don't have many memories of growing up in Bourke. I do remember a bit of childhood playing in the red dirt of Enngona when

I was about 4 years old in my Mother's Country Kunja where my beautiful mother is at rest. My Dad is a Murriwarri man. His Country is Brewarrina. Now I am a Mother, Grandmother and Great Grandmother. Life is different now and to reflect on how far I have come and writing these Cubby House poems reminds me of my younger years when I was home in my Mother and Father's Country. That's why trees are so awesome and special in my life.

Aunty Verna's Reflection

Poem writing about my Cubby House Tree is my connection with part of my childhood as I lost my Mother's love through child birth. With all my emotions and sadness I found comfort making Cubby House Trees. In the the Cubby House Tree I felt safe and secure, clinging to the only piece of a Mother's love, to feel and touch her presence as she was always with me.

[Read Aunty Verna's full Reflection here](#)

See page 17 for Activities Inspired by Aunty Verna

Cubby House Tree

Growing up running free
Playing alone in my Cubby House Tree
Sunny days, trees of shade
Dirt floor cool
Light breeze pass me gently
Touch my face

Sitting alone with only my thoughts
All is calm
All at peace
My childhood days come flashing back
O where did all the years go by
Thoughts and memories stand still in time
As I sit alone in my Cubby House Tree

All is calm
Morning dew on spider webs
I wish I could live forever
In my Cubby House Tree

Autumn winds blow throughout the leaves
Finding myself weeping
With the birds and the breeze

Now that I'm grown up and all alone
I still want to go back
To where calm and peace I once found



Activities Inspired by...

Arika Waulu



1 Listen to the poem. Personification gives inanimate objects human qualities: 'Landback! the orchids chant'. Listen to nature's

voice. What does it say? Write a poem where something in nature (*animal, river, glacier, habitat, tree*)

is given a voice. What message does it want to share?

2 What do trees provide? (*shelter, food, homes, medicines, cultural connections*) Choose an animal and write a poem about how you would feel if this animal's home was destroyed, or this species was lost. Why do you think you would feel this way?

See pages 31-32 for Types of Forests

3 Research someone who has made a positive impact on the environment. What impact did they make and how did they do it? Are there any groups you could join or local actions you could make?

See pages 48: Local Actions



Solli Raphael

1 Concrete poetry, also known as picture or shape poetry, is when the visual appearance of the poem matches the subject. What shape is 'White Box Rise'? How do the shapes of the poem relate to the subject?

Think of different shapes in nature (*flowers, shells, leaves, mountains, rivers, birds, fire*).

Choose one of these as the subject of your poem. Draw a simple outline of your subject on a blank sheet of paper. Write about how this object makes you feel, fitting the words to your drawing.



2 Watch the video of Solli perform 'White box Rise'. What do you feel when you hear this sentence? How is a simile used? Read your shape poem and identify a way to use a simile to describe a connection between two seemingly different things. Does it improve your poem?

3 White Box is a type of eucalyptus tree. Research the history of a native tree in your local area. Include information about its appearance, medicinal properties, and habitat.

See pages 33-35: Meet the Poem Forest Trees



Activities Inspired by...

Jane Gleeson-White



1 Listen to the poem. What do you learn about the olive tree? What do you think this special place means to the poet? Now, choose a place in nature that is special to you. What does it remember? Write a poem about the memories held by this place.

2 Write a short reflection piece on why you decided to choose this place to inspire your nature poem. How does this place connect you to other people and places? What has this place given you? What have you given it?

3 Find a tree in a local garden and research it. How would you give thanks to this tree? What would you say? Write an ode to a tree that exists in a real place. Speak directly to it. Use vivid adjectives to describe it and verbs to bring it to life.

See pages 33-35: Meet the Poem Forest Trees

Dakota Feirer



1 Listen to the poem. Identify all the places where alliteration is used. What effect does it have? How do the different sounds change the mood of the poem? Choose three life-forms from the A-Z list and write about each one using alliteration.

See pages 40-44 for A-Z of Life-Forms

2 How is the concept of matriarchy used in this poem? What might 'Grandmother' / 'Grandest mother' / 'She-oak' represent in this poem? Now reflect on why nature might be referred to as 'Mother Nature'?

3 If your family were a tree what would it be? You might describe the roots, leaves, limbs or interconnection of creatures that find shelter, or are sustained by it.

See page 30: Trees and Me





Activities Inspired by...

Aunty Verna Barker



1 What special places have you shared in nature? What insects and animals live there? Write a poem about finding a home in a tree.

2 What is the poet's attitude towards the cubby house? Nature? Memory? Read your poem in three different tones (*playful, sorrowful, serious, angry, amused*). Which tone best suits your poem and why?

3 Memory is an important theme in 'Cubby House Tree'. Choose an element in nature (*a river, tree, animal, rock, flower*) and write a poem from its perspective. What does it remember? What does it forget?

See pages 40-44 for A-Z of Life-Forms

Extension



1 Make art with and inspired by nature. Research artists who use natural materials or nature as their muse. Go for a nature walk and observe. What symbols can you see? What images stand out? What textures can you touch and feel? Create a piece of art of your choice (*painting, sculpture, watercolour, collage*) using elements from nature. You might like to include leaf rubbings, nature prints, photography, or shadow tracing.

2 Choose a commissioned poem and watch the video / listen to the audio. Does hearing the poem read aloud change the way you experience it?

3 Research the impact of colonisation on native trees and biodiversity. Write a list poem about what actions can be done to restore ecosystems.



Pre-writing Prompts

Connecting with Nature

Observing, walking, listening to nature is not only good for us, it helps to create the most vivid writing. These activities will warm-up your creative writing skills, developing drafts and descriptions to compose your final *POEM FOREST* piece.



Listening

Step outside. Breathe. Sit with a tree. Listen to its secrets. Meditate.

Ngarayamūrah – Listening to Country meditation by Nicole Smede (5 min)

- » *How did the meditation and being in nature make you feel?*
- » *What secrets did the tree share with you?*

Reading and Watching

Read, watch and share nature poems and songs. They could be poems in this resource or ones you find elsewhere.

- » *What is your favourite nature poem and why?*
- » *What did it teach you about nature?*

Writing and responding

Think about a place, tree, or animal in nature that is special to you.

- » *How would you describe this to somebody who has never seen it?*
- » *What makes it special? List at least three reasons.*

‘Walk into a Forest and within five minutes your body and brain begin to change.’

~ Florence Williams from *The Nature Fix*

Researching

Research a threatened Australian species (flora, fauna or ecosystem).

- » *Why is this species important and what role does it play in the ecosystem?*
- » *What can we do to help protect it?*

See pages 31-32: **Types of Forests**

Exploring

Have you heard of ecotherapy or Forest Bathing?

Plan a visit to a forest, national park, local bush or Botanic Garden to research your poem. Make a checklist of what to pack — hat, water, snacks, sunscreen, first aid kit, something to write or draw with, a camera.

- » *What did you observe or discover?*
- » *How did being in nature make you feel?*



Pre-writing Prompts

Connecting with Nature

Drawing

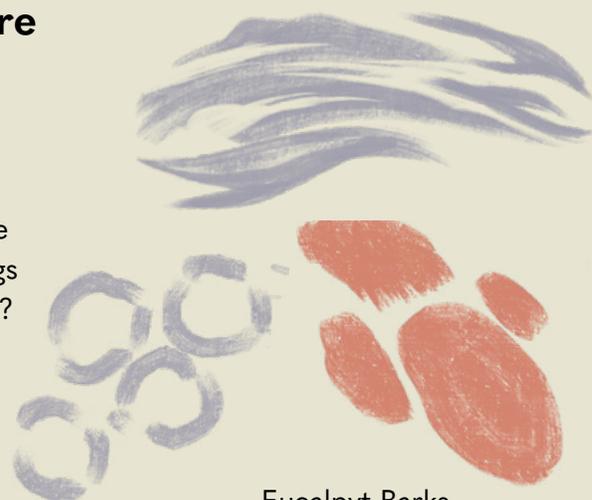
Explore your natural environment, look to the ground, look to the trees — can you see things that would make a good brush, pen or stamp? This activity explores using nature to draw plants. Dipped in Sumi ink, a leaf can make a great pen, or bark can create interesting marks or flowers can be a pattern stamp.

Don't have any Sumi ink? Try adding water to acrylic paint. There are lots of fun ways to create with our environment.

Would you like to save paper?
[Download the pre-drawn plants pack](#)
and create your own collage

POEM FOREST Art

The artwork for *POEM FOREST* was inspired by plants found in the ecological community of the Cumberland Plain Woodland. Using plants to draw was an immersive experience and a way to get closer to nature.



Eucalypt Barks



Eucalypt Trunks



Florals & Pods

Grasses & Leaves



Pre-writing Prompts

Poetic Techniques

Collaborating

A group poem can be a great way to start writing poetry without the pressure of having to deliver a complete individual poem.

As a class, or in groups of 3-5, choose a special place in nature or a threatened species.

Invite each person to write one line about what makes this place or species so special. Use as many vivid and sensory descriptors and details as possible.

Arrange the lines in the best order and read aloud.

Haiku

A haiku is a form of Japanese poetry consisting of three short lines that do not rhyme. Haiku is more than a type of poem with specific syllables (5,7,5); it is a deeper way of seeing world. Haiku create vivid imagery and often relate to nature. Read these examples from Matsuo Basho (1644-1694).

‘An old silent pond...
A frog jumps into the pond,
splash! Silence again.’

‘Autumn moonlight-
a worm digs silently
into the chestnut.’

Kuhi are carvings of haiku on natural stone to make poetic monuments. Create your own haiku and write it on a stone to leave in nature.



Haiku Kuhi Stone Template

Place

.....
.....

Memory

.....
.....

Fragrance
or scent

.....
.....



Pre-writing Prompts Poetic Techniques

Think about a place, tree or animal in nature that is special to you. Describe it with a list of **vivid adjectives**.

Create a list of **sensory similes** that describe how nature smells, feels, tastes, sounds and looks like? (A simile compares two different things using 'like' or 'as')

- » e.g. *Rain looks like starlight dripping from the leaves.*
- » *Birds sound as loud as chimes in the canopy.*

Use a **metaphor** to describe nature. (A metaphor is a direct comparison where one thing is said to be another.)

- » e.g. *The tree is a time machine holding stories.*

What music or sounds can you hear in nature? Write a sentence in which you use **onomatopoeia** to describe what you hear.

- » e.g. *Squuuuaark screeches the cockatoo diving through the clouds.*

Write a line that uses **alliteration** to describe nature.

- » e.g. *Ripples in the rockpools, crabs clambering sideways to safety.*

If you were a tree, animal or place what would you be?

Use **personification** to write three first-person 'I' sentences from the perspective of nature.

Research the history of your special place, tree or animal.

Create a **myth** about its creation. You may use real facts or weave a fictional tale. You can use these ideas to write an **ode** inspired by nature.

- » Use different tones and **styles of voice** to evoke particular emotional responses in your reader. Experiment with writing in the voice of someone who is (a) awed or amazed (b) excited (c) angry.

Extension

What does nature **symbolise** to you?

Holly Ringland uses the language of Australian native flowers to say things that are too hard to speak. Each flower is a **symbol** to express a unique and deep meaning. Research three Australian native wildflowers. Use these flowers as symbols to express what they represent to you.

- » e.g. *The desert flame is my compass guiding me home.*





Avoid Clichés

A cliché is a phrase or simile that is very common and has lost any originality or impact having been used so many times. Clichés make for weak writing.

Example cliché:

Trees as tall as giants.

Specific imagery: *Tree canopies full of light like stained glass towers.*

Complete the cliché then create your own specific image.

TIP Read Mauree Applegate's poem 'Be Specific' before you begin.

Extension

Cut out each line and collage it together in a different way.



Cliché: *As green as*

Specific: *As green as*

Cliché: *As wet as*

Specific: *As wet as*

Cliché: *A sparkling blue*

Specific: *A sparkling blue*

Write a long list of obvious adjectives to describe nature.

Can you find more interesting synonym for these words? Try not to use any obvious words or clichés in your poem.

Using Pre-writing Prompts

Once you have completed the prompts you can use the writing you have produced to help compose your poem.

- Read over your writing and circle or highlight any words, images, descriptions, senses or ideas that stand out to you or feel poetic.
- Circle or highlight any phrases or words, that help explain why nature is important to you.
- Circle any words or phrases that you feel might make a good title for your poem.
- Once you have done this, copy out everything circled or highlighted onto a new sheet of paper. Use this material as the starting point or stimulus for your poem.





Editing Checklist

Congratulations on the first draft of your nature poem! Before submitting it to the *POEM FOREST* Prize, be sure to edit and refine your work.

Editing is a vital part of the writing process. Follow these tips to strengthen your poem and tick off the Editing Checklist as you check your work!

Peer Review Extension



Workshop your ideas and ask for feedback. Other readers will have fresh eyes as they approach your poem. Listen to their suggestions and revise your work. Use this [Peer Review](#) guide for the best results!

- Read your poem aloud.** Do some words or phrases sound like they don't belong in your poem? Remove these and find alternative ways of expressing your ideas. How else could you say it?
- Find the **most important line or idea** in your poem. Do the surrounding lines support this? If not, cut or rewrite them.
- Review any adverbs** you may have used in your piece. Instead of using these adverbs, opt instead for a more evocative verb to convey your idea (use 'sprint' or 'dash' instead of 'run quickly').
- If you use rhyme, **try a near rhyme** or moving your rhyming word to the middle of the line for more unexpected expression. Some of the best poems don't use rhyme at all. Forcing rhyme into a poem can detract from the message or tone.
- Opening and closing lines** set the tone of the poem. In poetry, the tone is the emotion or attitude of the speaker or narrator. Does the tone remain consistent?
- Sometimes our **final lines can be susceptible to cliché**. What would happen if you cut out your final line or two? Have you discovered a more authentic poem ending?
- How have you formatted your poem?** How have you arranged your lines and stanzas? Have you experimented with layout and punctuation? Review the design of your poem and make sure that you are happy with the layout.



Peer Review

Reflecting and Responding

Peer work encourages greater confidence and independent learning. By analysing one another's work, you gain a deeper understanding of the subject at hand.

Post-feedback Questions for Author

Was the feedback useful? Why? How has it led you to change or revise your draft?

Poem Title:.....

Author:.....

Reviewer:.....

Tick when completed:

- I have read through the poem at least twice
- The poet has read their work aloud to me
- I have checked / corrected the poem for spelling
- I have checked / corrected the poem for grammar
- I have checked / corrected the poem for punctuation

Comment on the title of the poem. Does it reflect the poem? How does it make you feel?

What are the main ideas of the poem?

What are the strengths of the poem?
What did you like about it?

Comment on a particular image in the poem. Explain your reaction to this image.

If you could ask the poet one question about their poem, what would it be? Often questions help us see where things could be improved. Try to offer solutions, not just criticism.



Poem Template

To enter the *POEM FOREST* Prize, compose an original poem about nature.

Your poem could be inspired by a place, plant, ecosystem or species that is special to you. It should be no more than 20 lines and include some of the poetic techniques explored in this resource.

Remember to review and edit your poem for any final changes before submitting to the *POEM FOREST* Prize via [this online form](#).

Extension



Write a reflection about what inspired your poem.

*Where did your idea come from?
How would you describe your writing process? What did you learn about nature and yourself?*

See pages 10-14 for poetic reflections

More Information

w: redroompoetry.org/projects/poem-forest

e: poemforest@redroompoetry.org

t: 02 9319 5090

Student Name:

Student Year:

Poem Title:

1.

2.

3.

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20.

Quality Criteria

This Quality Criteria has been established by Red Room Poetry and judging panels in consultation with NSW Public Schools. The purpose of the Quality Criteria is to encourage students and teachers to explore, and experiment with, a range of poetic techniques as well as to ensure poems meet publication standards. The Quality Criteria aims to enrich the creation of excellent poems and acts as an evaluative framework that enables judges to award poems based on artistic merit.

QUALITY CRITERIA	BELOW STANDARD	BENCHMARK	OUTSTANDING
PERSPECTIVE (AKA POV, WRITER'S VOICE)			
<p>The degree to which the poet establishes:</p> <ul style="list-style-type: none"> » a distinctive voice, persona, or speaker » clear or purposefully ambiguous tone » extraordinary perception of nature » insight into nature or the student's experience or world » attitude towards their choice of subject matter 	<ul style="list-style-type: none"> » The focus of the poem is difficult to identify and student seems unsure of their attitude towards nature » Limited personal voice or clichéd perspective » Limited description makes it difficult to recognise or identify nature in the poem » Does not explore the significance of nature 	<ul style="list-style-type: none"> » Intentional perspective (there is a focus on an idea, feeling or experience) » Evidence of the poet's individual voice » Provides insight into the natural world or their experience, even if unsophisticated » Effective description or evocation of the natural world » Intentional exploration of the significance of nature 	<ul style="list-style-type: none"> » Controlled perspective » Distinctive voice » Perceptive insights about themselves or their natural world » Sophisticated or highly effective description or evocation of nature » Meaningful/affective insight into the significance of nature
COMPLEXITY OF THE POEM			
<p>The degree to which the poet achieves:</p> <p>a) Tension in words and ideas through:</p> <ul style="list-style-type: none"> » an engaging challenge, or paradox » effective ambiguity, multiple meanings » suggestion of connotations beyond the literal » defiance of predictable syntax » use of balance, parallelism, contrast <p>b) Compression to create an intense poetic experience through:</p> <ul style="list-style-type: none"> » avoiding unnecessary words » economy of meaning » distillation, condensation of ideas or feelings <p>c) Surprise through:</p> <ul style="list-style-type: none"> » challenging assumptions » providing a new way of looking at nature 	<ul style="list-style-type: none"> » Demonstrates little understanding of the compressed nature of poetic expression » Unnecessary and/or unimaginative details or vital detail is missing » Poetic style is appropriate and effective 	<ul style="list-style-type: none"> » Demonstrates understanding of the compressed nature of poetic expression » Some tension » A sense of wonder and discovery » Writes with honesty and authenticity 	<ul style="list-style-type: none"> » Achieves complexity and textual integrity through the use of tension, compression and surprise which creates an intense and challenging poetic experience » Demonstrates an exceptional poetic style

Quality Criteria

QUALITY CRITERIA	BELOW STANDARD	BENCHMARK	OUTSTANDING
VOCABULARY, SOUND AND SYNTAX			
<p>The degree to which the poet effectively uses:</p> <ul style="list-style-type: none"> » fresh and effective vocabulary » unconventional syntax » syntax that generates the use of sound devices, which includes rhythm and may include alliteration, assonance, onomatopoeia, repetition, refrain and rhyme » awareness of the oral-aural connection 	<ul style="list-style-type: none"> » Mundane, unimaginative, imprecise and/or ineffective use of vocabulary » No poetic metre or rhythm evident » Clichéd and ineffective use of sound devices » Constrained by rhyme scheme 	<ul style="list-style-type: none"> » Imaginative, thoughtful, fresh use of vocabulary » Rhythm is mostly consistent with the sense of the poem » Syntax that generates sound qualities 	<ul style="list-style-type: none"> » Precise and/or evocative use of vocabulary » Rhythm complements and enhances the mood of the poem » Creative, evocative, musical syntax, which includes disharmony if appropriate
IMAGERY AND FIGURATIVE DEVICES			
<p>The degree to which the poet effectively:</p> <ul style="list-style-type: none"> » includes similes, metaphor, personification and other figurative language » selects and arranges concrete sensory detail » employs images to represent abstract feelings, ideas » suggests uncommon connections between images and figurative meaning » demonstrates 'metaphoric thought' through implied analogy 	<ul style="list-style-type: none"> » Simplistic and/or unimaginative figurative structures » Lack of imagery or a clichéd or confusing use of imagery » Abstract statements separate from concrete imagery 	<ul style="list-style-type: none"> » Figurative structures (which are mostly original) show the relationship of the concrete to the abstract » Clear images are used to portray ideas 	<ul style="list-style-type: none"> » Well crafted, effective and original figurative structures which may illustrate metaphoric or symbolic thought » Vivid, detailed images that create impact » May be experimental in use of imagery
SPACIAL DESIGN			
<p>The degree to which the poet demonstrates a visual concept through:</p> <ul style="list-style-type: none"> » the spatial arrangement of words, phrases, lines and white space » choices of spacing, enjambment, punctuation, caesura » indentation, upper/lower case letters, typography » stanzaic pattern » experimentation with punctuation 	<ul style="list-style-type: none"> » Unintentional or random design » Visual layout inconsistent with the content of the poem » Visual layout distracts the reader 	<ul style="list-style-type: none"> » Intentional design » Use of visual layout to assist the reader to access meaning in the poem 	<ul style="list-style-type: none"> » Careful and/or subtle design » Deliberate crafting of visual layout to enhance the reader's response to the poem



INSPIRATION AND ACTIVITIES NATURE CASE STUDIES



Growing the POEM FOREST

The *POEM FOREST* will be planted on traditional land of the Dharawal people, on Mount Annan, in the heart of the Australian Botanic Garden. This site includes remnants of critically endangered Cumberland Plain Woodland and Western Sydney Dry Rainforest. These ecosystems are a regionally important haven for native wildlife. By removing invasive weeds and planting new trees, *POEM FOREST* helps restore biodiversity, making creative and cultural connections for communities near and far.

Seedlings planted to create the *POEM FOREST* will be a mix of native plants: Eucalypts, acacias (wattles) and angophoras, as well as Prickly Paperbark (*Melaleuca styphelloides*) and White Cedar (*Melia azedarah*). Many of these trees are found locally, so are adapted to the site conditions and are already an integral part of the complex web of relationships between animals, insects, fungi, soil bacteria and other plants.

All *POEM FOREST* seedlings have been propagated from seeds and raised in the Australian Botanic Garden nursery. The Australian Botanic Garden scientific

and horticultural staff collected seeds over many years – many within the Garden or nearby, although some come from western New South Wales. The oldest seeds are from the Ironbark (*Eucalyptus crebra*) These seeds were collected from Garden in 1985 and have been in cold-storage since then in the Australian PlantBank seed vaults. PlantBank holds millions of seeds of Australian plant species, to be used in ecological restoration projects like the *POEM FOREST*. Many seeds can last for hundreds of years once they are frozen.

Out of PlantBank and in the Garden's nursery, the seeds germinate in trays sitting on heated benches in a glasshouse. Once the seedlings reach a good size they moved into a second, cooler glasshouse to harden and grow. After a couple of months they are potted up and moved into the outdoor shade house to continue their growth.

Finally, they are ready to be planted at the *POEM FOREST* site at the heart of Mount Annan! A ceremony with local Elders and community will help to celebrate the first plantings and the birth of the *POEM FOREST*

Meet the *POEM FOREST* Trees

Learn more about the trees growing in the *POEM FOREST* including Forest Red Gums, Ironbarks and Golden Wattles.

Endangered Ecological Communities

Explore the Cumberland Plain Woodlands and the Western Sydney Dry Rainforest and the weeds that threaten them.

Extension

Saving seeds, which ones would you save and why?

Write a poem to the person who will plant it in the future.





Trees and Me

Earth is home to more than 8,700,000 species. This huge diversity of life-forms is astounding, but most have one thing in common – DNA (*deoxyribonucleic acid*). DNA contains just four ‘base’ chemicals: adenine, guanine, cytosine and thymine. In a strand of DNA, the four bases appear in pairs, and these pairs can be arranged in an infinite number of combinations. They are the building blocks of life for a human being, a bacterium, a fern, an elephant, a starfish – and most other life-forms on earth.

All life-forms on this planet have evolved from a single ancestor that existed 4,000,000,000 years ago. This means plants are our family – we share DNA!

The truth of this deep connection is obvious: Time spent in nature lowers our blood-pressure and anxiety levels, boosts our immune system and improves our mood.

Just like people, every plant is different. Diversity and individuality are the wonders of life on this planet. Australian plants have evolved in a harsh and dynamic landscape and their diversity has helped them adapt and survive. Today, the key threats to Australia’s unique plant-life include invasive species, habitat destruction and climate change. We have no time to lose – we need to secure a sustainable future for plants and humanity by safeguarding biodiversity.

Working Together

The ability to adapt and change is a human strength. You can make a difference – no matter how small, every poem and action adds to the swelling tide of change. We invite you to take part in collaborative positive action via *POEM FOREST*, join bush regeneration days, take part in ClimateWatch and other Citizen Science projects, or plant a tree in your neighbourhood! Working together, we have the power to keep our planet in balance ... and ensure a healthy future for all life.

Extension

 Students can plant their own ‘Poem Tree’ at school. 

 **1** Connect with local First Nations people to learn what native trees are best suited to the local area. Research to find out what plants are needed for habitat. Explore what soil and water conditions are needed to help trees thrive.

2 Organise a tree planting event or ceremony, invite a local Elder and community. Write and perform nature poems at the event.

3 Arrange a student roster of caring for the tree, documenting its progress through observation, drawing and writing.



Types of Forests



RAINFORESTS

60 million years ago, Australia was part of Gondwanaland — a huge landmass covered by lush vegetation. Many of Australia’s rainforests are relics from this time; they are ancient ecosystems, home to a vast diversity of life-forms.

Globally, rainforests are a valuable resource for food, medicines, raw materials and cultivated plants. They play a vital role in maintaining the balance of oxygen and carbon in the atmosphere, helping regulate the climate.

Across Australia, rainforests are found in the tropics, and along the mountains and lowlands of the east coast. They range from the lush tropical forests of the north east, to dry vine thickets in semi-arid areas. Within these rainforests, a huge variety of plants and animals can be found, more than in any other vegetation type.

Since the late 1700s, much of Australia’s rainforests have been cleared for agricultural, industrial and urban development. Many rainforest species are under threat of extinction.

‘A forest is a place where adventure awaits under the cool, dark canopy of trees and leaves that have shared secrets with the earth for eons.’

~ Mel Slarp, Education and Engagement Leader,
The Australian Botanic Garden Mount Annan

WET SCLEROPHYLL FORESTS

Wet sclerophyll forests are found along the eastern escarpment and in coastal regions and lowlands of New South Wales, Queensland, Victoria, and in the far south-west of Western Australia. Within these forests, eucalypts can grow to 70 metres tall, with broad-leaved shrubby or ferny understoreys. Occasionally, wildfire is part of these forests’ cycle of renewal.



DRY SCLEROPHYLL FORESTS

Some of the most scenic parts of New South Wales and the far south-west of Western Australia are covered with dry sclerophyll forests with shrubby understoreys. Many of the understorey plants, which in New South Wales include Waratahs, grow very slowly. Some have associations with fungi or bacteria, allowing them to better absorb nutrients from the poor soils on which they grow.



FORESTED WETLANDS

'Flooded forests' are dominated by trees that grow in swampy land along rivers and on floodplains across tropical, temperate and semi-arid areas. These wetlands support a rich diversity of wildlife; standing trees, such as River Red Gums, sometimes have hollows that provide habitats for many animal species.

SEMI-ARID WOODLANDS

Much of Australia's inland is arid or semi-arid, that is with less than 500 millimetres of annual rainfall. Semi-arid woodlands are dominated by trees including box eucalypts, she-oaks, wattles and cypress pines, while a variety of grasses and herbs make up the understorey. Many of the plant species in semi-arid woodlands are drought-resistant.



GRASSY WOODLANDS

Grassy woodlands are dominated by Box Eucalypts and other gums. The ground-cover consists of a range of distinctive grasses and herbs which give these woodlands their pastoral value.

Grassy woodlands are widespread across southern and eastern Australia, including the wheat-belt and sheep-belt.

UNDERWATER FORESTS

Take a breath... and another. You can thank algae for one of those lungfuls! In the deep past, algae paved the way for animals by transforming Earth's toxic atmosphere to sweet, life-sustaining air. To this day, algae produces half the world's oxygen.

From the high-tide mark to the bottom of the deep blue sea, the sunlit shallows hold a world of diversity that many of us never see. To depths of 200 metres, marine forests of red, green and brown seaweeds — macroalgae — can be found growing, and countless microalgae species drift on the currents.

Chances are, you have seaweed in your home! Seaweed is present in many foods. You'd surely recognise it in sushi, but may not realise that molecules extracted from seaweed are used in food products such as chocolate milk, chewing gum, jams and sausages. In the bathroom, you may find components of seaweed in facial masks, body creams, shampoos, and even toothpaste! Your garden loves a healthy dose of seaweed to add nutrients to the soil. In the medical field, seaweed has become a bit of a superstar. Algin is a seaweed extract that makes a fantastic binder and used in creating molds — heavily used in both pharmaceutical and dental industries. Science advances would not have come as far without the help of humble agar, which is derived from red algae.

We all depend on algae. They produce oxygen and store carbon, playing a vital role in stabilising Earth's climate. But the range and richness of algae is under threat ... many Australian species have moved south as the oceans warm, and some cold-water species are on the brink of extinction.

Climate change is a complex challenge, but algae may hold one answer: Ocean Afforestation. This is a process where seaweed is cultivated in large underwater forests. The seaweed absorbs carbon dioxide from the atmosphere, which is then separated and stored after harvesting.



Meet the **POEM FOREST** Trees

Eucalypts and acacias

The main trees chosen for the **POEM FOREST** are eucalypts and acacias:

EUCALYPTUS

Eucalypts — gum trees — are Australia's most iconic plants; even the scent of their oil evokes the bushland. Eucalyptus oil has anti-inflammatory, antibacterial and analgesic properties, and stimulates the immune system. First Nations people across Australia have ceremonial and medicinal uses for various parts of the eucalyptus tree, crushing and inhaling leaves to clear the sinus, and mixing eucalyptus gum with water to wash wounds and relieve pain.

There are around 950 species of eucalypt, growing in varied habitats right across the continent. The diversity of eucalypts is reflected in the shapes and sizes of their fruits — from the large gumnuts of Mottlecah (*Eucalyptus macrocarpa*), a Western Australian Mallee Gum, to the tiny capsules of forest giants on the east coast such as the Mountain Ash (*Eucalyptus regnans*).



MOTTLECAH

Eucalyptus macrocarpa grows in south-west Western Australia. It is a sprawling shrub, reaching only five metres in height, but it bears the largest flowers and fruits of any eucalypt.

AUSTRALIAN MOUNTAIN ASH

Eucalyptus regnans grows in New South Wales, Victoria and Tasmania. It is a massively tall forest tree growing to 100 metres in height, with tiny bell-shaped fruits.

POEM FOREST will include all three of the Cumberland Plain Woodland's grand eucalypts. These species of grand eucalypt are important habitat trees. They flower at different times, providing sweet nectar to native gliders, possums, butterflies and birds all year round. They also offer habitat hollows that form when branches drop, leaving small holes in the trunk that become prime nesting sites for possums and birds. Hollows can take 100 years or more to form and are not common. (Keep a lookout for tree hollows and you might spy birds tending their nests within.)



FOREST RED GUM

Eucalyptus tereticornis is Buringoa in Dharawal language. It is a magnificent tree, growing up to 50 metres tall with a wide stocky trunk. The tree tends to be branch-free in the bottom half with the bark shedding in long ribbons and sheets to expose a smooth whitish-grey trunk sporting patches of grey, pink and even blue. This species is widespread and abundant, in grassy or sclerophyll woodland or forest, along the east coast of mainland Australia.



ANGOPHORA

Angophora are closely related to eucalypts — they are both in the Myrtaceae family. The angophora species that will grow in the POEM FOREST are Rough-barked Apple (*Angophora floribunda*) and Broad-leaved Apple (*Angophora subvelutina*).

Corymbia and Melaleuca

Two other species in the Myrtaceae family will grow in the POEM FOREST:

GREY BOX

Eucalyptus moluccana is Terriyergro in Dharawal language. It is a beautiful, slim tree that grows up to 25 metres tall. It has a 'sock' of bark around the trunk — rising to smooth white branches. The grey bark is fibrous with a flaky tessellated texture, and it sheds in ribbons. It grows in grassy forests on loamy soils in New South Wales and Queensland.



PRICKLY-LEAFED TEA-TREE

Melaleuca styphelioides — a shrub or tree up to 20 metres high with thick, white papery bark. Like other tea-trees, it has antiviral, antibacterial, antifungal and antiseptic qualities.



NARROW-LEAVED IRONBARK

Eucalyptus crebra is Muggago in Dharawal language. It is a distinctive tall tree with a greyish, deeply furrowed bark often matted with red sap. This thick, fibrous layer of bark does not shed, but assists in protecting the tree from fire and heat. It is widespread and abundant in grassy or sclerophyll woodland or forests on shallow and sandy soils in New South Wales and Queensland.



SPOTTED GUM

Corymbia maculata — a beautiful slender tree growing up to 45 metres tall, with flaking white, grey and pink spotted bark. This tree is also part of the Cumberland Plain Woodland ecological community.





The acacias (wattles), numbering more than 960 species, are the largest group of plants in Australia. There is an enormous range of leaf-shapes and types within the *Acacia* genus. Some species have very tiny leaflets or no leaves at all; instead having phyllodes – flat leaf-stalks that perform the same functions as leaves.

THE GOLDEN WATTLE

Acacia pycnantha is Australia's national floral emblem. Like our State floral emblems, the Golden Wattle celebrates our identity and our connection to the plants that grow here. Found in much of south-east Australia and Western Australia, the fluffy, fragrant yellow flowers occur from late winter through spring.



Many species of acacia are culturally significant to First Nations peoples. Various parts of the plant, including foliage, bark, gum, roots, pods and seeds can be prepared as treatment for a range of ailments including coughs, colds, rheumatism, toothache, sore eyes and skin conditions. Recent research supports this cultural knowledge; the seed pods of Bardi bush (*Acacia victoriae*), contain avicins – chemicals that have anti-inflammatory, anti-mutagenic and anti-tumour properties.

One of the reasons that acacias were chosen for the *POEM FOREST* is that they are pioneer species. They germinate quickly and can be seen in damaged areas following fire and other disturbances. Acacias create a healthy environment both above and below ground. Above ground, they provide shelter and create a microclimate for smaller plants and seedlings, and important habitat for animals. Below ground, they control erosion and increase soil nutrients.

The acacia species that have been chosen to grow in the *POEM FOREST* are Hickory Wattle (*Acacia falcata*), Brigalow (*Acacia harpophylla*), Weetjellan – Dharawal language (*Acacia implexa*) and Parramatta Wattle (*Acacia parramattensi*).

MELIA

The final tree species that will grow in the *POEM FOREST* is the White Cedar (*Melia azedarach*). This small tree grows in subtropical and dry rainforests in New South Wales, Queensland and Western Australia.





Endangered Ecological Communities

Cumberland Plain Woodland

Cumberland Plain Woodland (CPW) is the traditional land of the Dharawal people, who have a deep affinity and understanding of the natural landscape. For thousands of years, this land offered a physical and spiritual home, where Dharawal people held ceremonies, fashioned tools, hunted animals for food and fur, and fished in the rivers.

Woodland plants supplied many needs. Through the seasons, the Dharawal gathered vegetables, fruits, seeds, nuts and nectar for food. Medicinal plants were used to treat wounds and illness and many grasses provided fibre for baskets, mats and shelter.

The arrival of Europeans changed the land forever. From the 1820s, the Mount Annan site was transformed into farming land – cleared and sown with introduced grasses. European farming methods were a massive shift from First Nations environmental management practices. Many species of plants were lost forever, while others only survived in small pockets.

Since the 1980s the Australian Botanic Garden has been working to restore the fragmented Cumberland Plain Woodland. PlantBank research has assisted in restoring the woodland by collecting seed from almost every kind of woodland plant so we can study them, and store some in the seed vault. Using these precious native seeds, we propagate and plant seedlings, as well as dispersing seeds into new areas.

CPW Trees

The trees of CPW will also be planted in the *POEM FOREST*:

Forest Red Gum (*Eucalyptus teriticornis*); Grey Box (*Eucalyptus moluccana*); and the Narrow-leaved Ironbark (*Eucalyptus crebra*).



CPW Wetland

The CPW wetland is created by the Mount Annan Creek, which flows through the Cumberland Plain Woodland. The water here is seasonally unreliable. You might find the creek completely dry, or a muddy bog, or flowing after a good rain. By removing weeds and ensuring that run-off into the creek is clean and litter-free, the wetlands have returned to health and abundance. Grasses, sedges, reeds and many water-loving plants are prolific seed-producers, so, once they take hold, they can populate large areas without any additional work by us.

Perhaps the most striking wetland plant here is Cumbungi, also known as Bulrush, a tall hardy grass-like plant with a flowering stalk that looks like a brown sausage. Another prominent plant is the Tall Sedge with its striking lime green upright foliage and large yellow seed heads, a very useful plant for revegetating degraded landscapes.

Despite fluctuating water levels these wetlands are centres of biodiversity – supporting hundreds of species of animals, including birds, mammals, frogs, lizards and snakes. Insects include the hovering dragonflies, big to small beetles and dainty butterflies. Many insects play a vital role as plant pollinators in the woodland community.



Existing Garden resource, including the virtual CPW bushwalk: www.rbg Syd.nsw.gov.au/Learn/Living-Learning/Primary-School-Resources/Cumberland-Plain-Woodland

CPW Fauna

The woodland's native residents are all around, but they can be difficult to find!

The Wallaroos feed and recline on the grassy slopes. You have to look carefully for constantly twitching ears just above the grass-line. The elusive Swamp Wallaby can sometimes be heard thumping through the undergrowth, while the Bearded Dragon is a frequent warm weather sight, shuffling through the undergrowth, flicking its tongue and sucking up crickets and grasshoppers. In summer, cicada calls fill the air with a shrill throbbing.

Many birds live in the woodlands all year round, and there are also occasional visitors such as the Flame Robin and Yellow-tailed Black Cockatoo.

A feature resident is the endangered Cumberland Plain Land Snail. These snails spend their days sheltering under leaf litter or logs, or buried under loose soil. They like eating fungi, so where you see rotting logs, look for fungi and native snails.

At night, out come bats to feed on flying insects. Eco-locating bats are short-sighted, so to find their fast-flying food and avoid stationary objects, they send out a pulsing signal of about 15 kilohertz, which returns an echo that they analyse 'on the fly'! There are plenty of bats here, many finding permanent daytime homes tucked safely in crevices in woodland trees or roosting in nearby artificial caves, such as culverts and tunnels.



Western Sydney Dry Rainforest

The Western Sydney Dry Rainforest (WSDR) is found at higher elevation areas in the outskirts of the Sydney Basin Bioregion, where there is slightly higher rainfall, and clay soil with sandstone rocky outcrops. It is an important habitat for birds and mammals.



Larger trees that provide the protective canopy include Prickly Paperbark (*Melaleuca styphelioides*), Hickory Wattle (*Acacia implexa*) and Native Quince (*Alectryon subcinereus*). The shrub layer includes Mock Olive (*Notolaea longifolia*), Hairy Clerodendrum (*Clerodendrum tomentosum*) and Yellow Pittosporum (*Pittosporum revolutum*). There are many vines such as Gum

Vine (*Aphanopetalum resinosum*), Wonga Vine (*Pandorea pandorana*) and Slender Grape (*Cayratia clematidea*) which form thickets in sheltered locations. Many of the plants in the WSDR are rare and threatened.

African Olive Weed Control

This invasive weedy tree is wreaking havoc on the critically endangered ecological communities, growing so thick that native plants can't compete. The summit of Mount Annan is now covered in a 25-year-old African Olive forest. Like all olive trees, it produces black oval-shaped fruits. These are inedible to humans but readily devoured by birds that spread the seeds in their droppings. Seedlings are often seen growing in a halo around mature 'perch' trees.

Like all olive trees they are long lived; the African Olive can survive 100 years or more. It was first introduced to Australia in the mid 1800s as a hedging plant, but when left unchecked, the shrubs spread into the woodland and grew to 10-metre trees. One mature tree can produce a staggering 25,000 olives in a single year and the trees can re-sprout after fire, making the African Olive a major environmental weed.

The African Olive can shade out native plants and eventually dominate the woodland. Research into African Olive ecology and control over the past 10 years at the Australian Botanic Garden, has led to highly successful control measures. Research is now focused on techniques to restore the original woodland vegetation in areas that have been cleared of olive forest.

The re-establishment of a dense native grass cover is an excellent first step in ecological restoration, and high-quality seed is now provided from our seed production area at PlantBank. Establishing local native grasses is a slow and tricky process, and research is now underway to find the best way to directly sow seed and establish grass plants on these sites.

The native grass seed production area at PlantBank has been an outstanding success with over 13 million viable seeds harvested in the first summer season. After germination testing, we are now putting this valuable seed to work, and have direct seeded five kilometres of prepared strips (two metres wide) in cleared olive areas.

The Western Sydney Dry Rainforest restoration project. youtu.be/EUxHEUHVfYA

www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10834

Link to full story of managing African Olive:
www.australianbotanicgarden.com.au/stories/2019/why-is-our-rainforest-on-the-rocks





Case Studies

Cumberland Plain Woodland

A healthy forest ecosystem has an assortment of specialised plant groups, which host a variety of wildlife highly adapted to that habitat. This is what we call biodiversity. The easiest way to see this at work is to look for a vertical layering of plants.

Let's start at the very top with the CPW canopy layer. This is formed by our three distinctive woodland eucalypts: Grey Box, Red Gum and Ironbark. They can grow to more than 20 metres in height and form what we call an open canopy, which is one that allows plenty of light to reach the ground. The lower tree canopy includes regenerating eucalypts and acacias such as Hickory Wattle and Native Cherry Trees.

Next there is the understorey shrub layer, in sections dominated by a thick covering of native Blackthorn. The plant's thick mat of thorny branches creates a protective habitat for the Yellow-Rumped Thornbill, while hordes of the red-backed

Pittosporum beetle can sometimes be seen covering the branches in a moving mass.

Below these shrubs you'll find a mixture of native grasses, sedges, ferns and wildflowers that form the groundcover layer. You'll also see leaf litter and fallen logs attracting slaters, worms, roaches and other forest scavengers that feast on the fallen debris, breaking down waste into fertile soil from which the life cycle of plants begins again.

Today there is a wide range of grasses in the CPW, such as waving Blue-green Tussock Grass and Kangaroo Grass, both of which form a thick mass that helps prevent pest weeds from taking hold. You will also find climbers and creepers such as the delicate red-fruited climbing saltbush and the strongly scented variable glycine, with its purple pea-shaped flowers.

Interactions

The animals, plants, fungi and soil of the Cumberland Plain have co-evolved over millions of years. They are a tightly-knit community where all depend on each other for survival. When early explorers ventured west from Sydney Cove, they described the vast forest with its open grassy understorey and colourful flowers. Two hundred years of land clearing, cattle grazing and urban development made its mark on this landscape. Now the Australian Botanic Garden is working to conserve and restore the diversity of the woodland plant species.

A-Z of Life Forms and Their Roles in the Forest

Forests are tree-dominated landscapes, with trees usually single-stemmed, taller than two metres, and providing crown cover of 20% or more. Forests are an important ecosystem of Australia, covering 17% of our land area. They include native forests and plantations, as well as woodlands. Forests, like all balanced ecosystems, provide an efficient flow of materials and energy. Plants, animals and microorganisms interact and function together with abiotic (non-living) factors to cycle energy through the system and maintain a delicate balance.

ALGAE

Algae are a very diverse group of plant species. You might expect to find them in oceans, lakes and rivers, but they are also found in thermal springs, snow and soil, and even inside other plants, fungi and animals!

ARACHNIDS

Arachnids are arthropods that include spiders, scorpions, mites and ticks. In the forest, spiders play an important role as a predator species that keeps the invertebrate population in check. They are also a food source themselves, for some invertebrates and birds. Spiders are an all-rounder in the forest — they inhabit all layers, from the leaf litter to the canopy!

BACTERIA

Rhizobium species are bacteria that form nodules on the roots of legumes — including beans, peas and lentils. The bacteria absorb nitrogen from the air and convert it to ammonia, a usable form of nitrogen essential for the plant's growth. When the plant dies, the nitrogen in its root nodules is released into the soil, providing rich nutrients for other plants.



BIRDS

Some species of Mistletoe (*Amymea*), are spread by the Mistletoe Bird or Flowerpecker (*Dicaeum hirundinaceum*). A bird eats the fruit and then excretes the sticky seeds on to the branch of a tree. The seeds germinate and grow into new plants. Mistletoe plants can be seen growing on Paperbarks (*Melaleuca decora*), in the swampy areas of the Cumberland Plain Woodlands.





BRYOPHYTES

Mosses, hornworts and liverworts (*Bryophytes*) were the first plants to colonise the land, around 500 million years ago.

They are small and have no roots, flowers or seeds, but these soft little plants have true grit! Small but mighty, they create microclimates that are the foundations for the world's forests. Bryophytes are vital to the health of many ecosystems. They are pioneers — often the first plants to appear in new areas, between paving cracks or in other barren places after disturbance. Growing in tightly packed communities, they form protective crusts for soil, and prevent erosion. They capture nutrients and water from the air, creating rich habitats for tiny creatures and other plants. They are also a nutritious food for herbivores, so some have adapted to contain chemicals within their cells that discourage animals from eating them!

EPIPHYTES

Epiphytes are plants that live on other plants! Instead of sinking their roots into the ground, they cling to the branches or trunks of trees

— often high up in the canopy. They collect fallen leaves and other debris as nutrients to help them grow. Some have a whorl of leaves that form a cup-shape in their centre, where rainwater is stored. The reservoirs can be a valuable source of water, or even a home, to many animals including frogs.

FERNS

Ferns are a plant group that demonstrates amazing diversity. Around 450 fern species can be found thriving in a range of Australian habitats; from deserts to rainforests, swamps to dry woodlands. Ferns can cope with very poor soil, and some even grow clinging to tree trunks or cliffs.



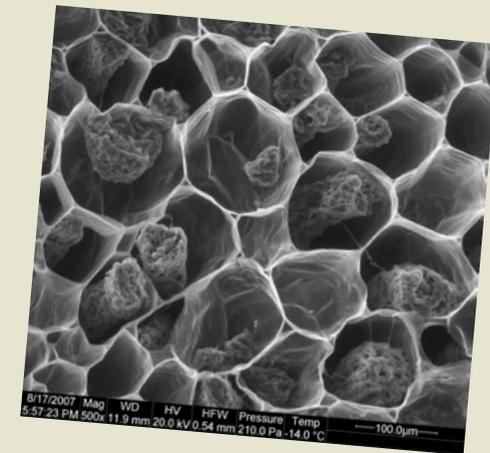
Some ferns are heavy-metal heroes! They can absorb toxic chemicals and heavy metals that contaminate groundwater and cause long-lasting environmental problems. The native Mosquito Fern (*Azolla* spp.), is a tiny, free-floating

aquatic fern. Growing in polluted waterways, it purifies the water by absorbing heavy metals including 239 mercury, cadmium, chromium, copper, nickel and zinc in a process called *phytoremediation* – and it's being used to clean toxic waste sites all over the world.

FUNGI

Many plants form relationships with mycorrhizae — fungi that live inside their roots. The fungus helps the plant to extract water and nutrients from the soil, while the plant supplies the fungus with a constant source of food (carbohydrates from photosynthesis). The fungi can also boost the plant's chemical defenses against pests and diseases. This very beneficial cooperative partnership has been found in over 92 per cent of plant families studied.

Fungi is also a vital part of a forest's communication system. If a plant is attacked by insects or disease, alarm signals travel through a network of fungi in the soil. Nearby plants respond by producing toxins to protect themselves.



GRASSES

Grasslands provide shelter and food for large local animals including

Wallaroos. In grasslands, different species thrive and decline over the course of a year. Windmill grasses are efficient at capturing carbon through photosynthesis, and grow best in midsummer. Other grasses such as Kangaroo Grass (*Themeda triandra*) flourish through the cooler months. Dense clumps of Kangaroo Grass retain soil moisture, creating habitat for tiny soil-dwelling creatures.

The Dharawal language name for Kangaroo Grass is Durawi. First Nations people gathered the grains to grind into flour for flat-bread. An ancient grinding stone found at Cuddie Springs in New South Wales dates from 28,000 BCE, providing evidence that Australia's First Nations peoples were processing seeds to make flour and bread at least 12,000 years before the Egyptians.

Australia's grasses are adapted to survive unpredictable rainfall and soils with low fertility, so they are the best choice in restoring damaged landscapes. The roots help bind soil after disturbances such as earthworks, preventing erosion.



Grasses also have more than one method of reproduction: Thousands of small, light pollen grains are produced on each grass flower. The pollen is carried by the wind to other plants — a pollination method resulting in large numbers of seeds. Tillers — side-shoots — sprout from the base, creating a dense clump of stems that are clones of the parent plant.

GROUND COVER / CLIMBER

These plants scramble and twine, covering the ground and climbing stumps and trees, reaching toward the sunlight



as it filters through the forest's canopy. Purple Coral Pea (*Hardenbergia violacea*) produces seeds with elaiosomes — small nutrient-rich outgrowths. Ants are attracted

to these, and collect the fallen seeds. The seeds lie dormant in the ant-nest until a bushfire's heat cracks open their hard seed coats, allowing germination after rain.

INSECTS

The majority of the more than six million insect species on earth play a vital role in maintaining healthy ecosystems. Many of our food crops and trees are pollinated by insects. If all the bee species were to disappear, it has been predicted that the human race would be extinct in less than a decade.

In the Cumberland Plain Woodland, many insects can be seen at work pollinating flowers, recycling nutrients such as carbon by breaking down old wood and animal matter such as scats.

Sometimes interactions between plant and insects are all one way — to the benefit of one, and the detriment of the other. Grey Box (*Eucalyptus moluccana*), the dominant eucalypt growing on the Cumberland Plain Woodland, is under attack: Over the past few years, many trees have been killed or severely defoliated and weakened by a vast infestation of sap-sucking insects called Grey Box Psyllids (*Cardiaspina* species). Native Psyllid outbreaks happen from time to time, but usually subside if the ecosystem comes back into balance, through occurrences such as changes in weather patterns.



LICHEN

Lichens are not a single life-form, but a 'partnership' species, consisting of a fungus and an alga or a cyanobacterium. The partners share food and shelter each other, giving them the ability to thrive in environments where alone, they would perish. Although small in stature, these organisms contribute mightily to the biodiversity and health of our planet — producing oxygen and recycling carbon. Like bryophytes, lichens are often the early pioneer species in damaged ecosystems. They stabilise soil, preventing erosions, and provide food and habitat for animals. In forests, lichens help create humid microclimates that protect fragile and delicate plants.

MAMMALS

The forest is home to many mammals, who play an important part in the ongoing regeneration of the plants there. Seeds get dispersed in different ways.

There are many different ways that seeds get dispersed. One strategy that has evolved in plants is to reward animals to move seeds about. Plants produce delicious and nutritious snacks that animals, mostly birds



and mammals, eat on the spot, or take away for later. The seeds are then processed in the animal's gut and they are then deposited in the animal's scat — droppings, dung, poo, faeces — well away from the mother plant, hopefully in a suitable place to germinate and grow. This type of dispersal is called *endozoochory* or 'dispersal inside and animal'. Seeds of some species, especially those with fleshy-fruits, germinate better after passing through an animal's gut.

The Swamp Wallaby (*Wallabia bicolor*) is a native herbivore. They deposit their scats in groups of four or eight. The scats are usually brown inside and include grass, herbs as well as woody plant material.

The Wallaroo (*Macropus robustus*) is a native herbivore. They eat mostly grasses. This species is often seen on the grasslands around the Australian Botanic Garden.

MOLLUSCS

The endangered Cumberland Plain Land Snail (*Meridolum cornevirens*) lives in the woodland leaf-litter, emerging to eat fungi at night. The native snail has a flatter shell than the Common Garden Snail shell, with patterns of brown and green.

PARASITES

A parasite is a living thing that gets its food from another organism, to the detriment of its host. More than half of the Earth's species are parasites!

In a forest, parasites attack both plants and animals, and can be both plants or animals! You're probably familiar with leeches, worms and wasps as parasites, but there's a plant that plays an important parasitic role in the forest. Mistletoe, a popular Christmas icon, is a parasitic plant that lives off the sap of its host. It's an interesting example, as while its classified as a parasite, recent research suggests it assists in maintaining the ecosystem.



SEDGES

Thick leaves and an extensive root system make Mat Rush (*Lomandra filiformis*) very hardy. Growing from swamps to rocky hillsides, it can cope with drought and searing summer heat, and survive temperatures down to -7° Celsius! First Nations people use the long, fibrous leaves to weave baskets, nets and mats. The sweet stem bases are eaten raw, and the seeds are gathered and dried, then pounded into flour for flatbread.



SEDGES

It's hard to feel safe when you're small. The dense clumps of stems and grassy leaves of sedges are a welcome shelter from predators' claws, teeth and talons. Sedges play a vital part in the lifecycles of many birds, mammals and other creatures. Like ferns and fungi, sedges can purify polluted water and soil by absorbing toxins; including arsenic, lead and petroleum hydrocarbons. These poisonous substances are stored in the plants' roots, stems and leaves.

SHRUBS

The Climbing Saltbush (*Einadia nutans* subsp. *linifolia*) has fleshy red fruits are attractive snacks for many animals. Birds spread large numbers of seeds in their droppings, and climbing saltbush plants are commonly seen growing in a halo around 'bird perch' trees. Most plants cannot grow in soil with high levels of salt, but saltbushes are exceptions. Trichomes — tiny balloon-like 'salt bladders' — store salt on the surface of the leaves, giving them a silvery sheen.

SMALL PLANTS

The seeds of the Yellow Burr Daisy (*Calotis lappulacea*) are carried in spiny fruits that snag

readily on the fur of passing animals. The fruits can be carried long distances from the parent plant — a very effective method of seed dispersal! This daisy has long-lasting flowers and is used for the revegetation of bare areas, as it grows rapidly when direct-seeded.



SOIL

Soil is a living thing: a single teaspoon of soil contains billions of micro-organisms. Beneath your feet is a delicate and complex structure that has formed

over thousands of years.

The tiny creatures in the soil have large appetites. Constantly converting dead plant material, they add organic material and nutrients to the soil, which acts as a spongy reservoir. Healthy soil increases the health of ecosystems, and plays a vital role in the earth's carbon and nitrogen cycles.

The typical undisturbed soil profile of the Cumberland Plain is derived from shale and, through tens of thousands of years, has weathered to form distinct layers. The top 40 cm of the profile is relatively light in texture and is slightly acidic (pH 6), allowing good plant growth. It is home to worms and

other creatures. Unfortunately, this part of the profile is often washed away or removed during excavation for new buildings.

The subsoil, which is orange in colour, is not very good for plant growth as it has a higher clay content and pH, holds water and does not supply good aeration for the roots. However, during dry times, this layer helps supply deep-rooted plants with vital moisture.

Amazingly, soil can reveal the identity of every species living nearby — including plants, animals, fungi and bacteria! The Botanic Garden's ecology team investigates the structure of forest ecological communities by testing the DNA in soil samples.

TREES

For native animals, living and dead plants provide homes, from the top of the tree canopy to the forest floor. The untidy jumble of fallen logs, leaves and bark shelters countless small creatures including lizards and insects. The three central tree species for the CPW are Ironbark, Grey Box and Forest Red Gum.

www.australianbotanicgarden.com.au/science/our-work-discoveries/natural-areas-management/ecology-of-cumberland-plain-woodland/wildlife-in-the-woodland





Seeds and Songlines

Bugam (Bundjalung language), Black Bean

Castanospermum australe

Fabaceae – Pea family

Cultural knowledge shared by Clarence Slockee

The towering rainforest tree Black Bean is known as Bugam by the Bundjalung people of northern New South Wales. Following spectacular orange-red flowers in summer, Bugam seed-pods hang amongst the glossy leaves high in the canopy – up to 40 metres from the ground. These grow to around 25cm in length, falling to the ground when they ripen in autumn. The large pods hold seeds that are highly toxic, but First Nations peoples used a complex process of pounding and soaking to render them edible.

Over tens of thousands of years, First Nations peoples planted Bugam seeds along travelling routes and gathering places. The Botanic Garden's ecology team worked with Traditional Owners to study the trees along the Nguthungulli Songline, which traverses the main ridge of the Nightcap, Order and McPherson Ranges, inland from Byron Bay in northern New South Wales. They found genetic evidence that supported cultural knowledge, highlighting how First Nations people shaped today's ecological communities by deliberately dispersing food plants.

One of the toxic chemicals found within Bugam seeds, castanospermine, has been shown in clinical trials to be effective against the viruses causing HIV, Dengue fever and Hepatitis C. Castanospermine may be developed into a medicine for treatment of these viruses.



Research Partners:

Northern Rivers

Connecting Country Alliance
Aboriginal Corporation

Firesticks Initiative, Macquarie
University, University of
Queensland, Yale University,
Australian Institute of
Botanical Science.

[www.rbgsyd.nsw.gov.au/
Science/Our-work-discoveries/
Evolutionary-Ecology/Rainforest-
dispersal-and-dynamics/Black-
bean-distribution-and-dispersal](http://www.rbgsyd.nsw.gov.au/Science/Our-work-discoveries/Evolutionary-Ecology/Rainforest-dispersal-and-dynamics/Black-bean-distribution-and-dispersal)

youtu.be/hEOAJM42MA4

[www.youtube.com/watch?v=4I3_
x4d7DwU&feature=youtu.be](https://www.youtube.com/watch?v=4I3_x4d7DwU&feature=youtu.be)





Connection to Country

Gadi (Gadigal language), Grass Tree, *Xanthorrhoea* sp.

Connection to Country has always been the heart of Australian First Nations' cultures. Embracing this, we can find a sustainable future together.

Across this great southern land, mighty trunks stand their ground. Crowned by an explosion — a shock of slender leaves, and spears of sweet flowers reaching skywards. For millennia, grass trees (*Xanthorrhoea* species) have held cultural significance for First Nations peoples. The plants give food and medicine, fire-making materials, tools and hunting weapons, but more than that, they are a powerful emblem of the First Nations philosophy of connection and custodianship between people and place.

The Gadigal clan, whose traditional harbour-side lands include the site of the Royal Botanic Garden Sydney, hold grass trees at the core of their being: Gadi is Grass Tree, and gal is people... men are Gadigal — men of the Grass Tree, and women are Gadigelleon — women of the Grass Tree. Many First Nations peoples shared their name with culturally significant plants, a demonstration of profound connection between people, plants and place.

Grass trees are embedded into Australian culture in other surprising ways. Grass tree resin is known as 'Yacca' in the Nunga language of South Australia. Harvesting Yacca is time-consuming and difficult, and the origin of the Aussie slang, 'hard yakka'!



Related Existing Garden Learning Resources:

www.australianbotanicgarden.com.au/Learn/Living-Learning/Primary-School-Resources/More-trees-Yes-please!

www.australianbotanicgarden.com.au/Learn/Living-Learning/Primary-School-Resources/The-Superpowers-of-Plants

www.australianbotanicgarden.com.au/Learn/Living-Learning/Primary-School-Resources/Bushfires-in-Australia

Research and Conservation

For almost two centuries, the Royal Botanic Gardens and Domain Trust has been collecting and studying plants from around the world. Research collections of living and preserved plants are a vital record of diversity. Our scientists use new methods and technologies to study plant biology to understand how plants grow and reproduce – this is the first step in saving species.

The Australian Botanic Garden Mount Annan is home to the Australian PlantBank, and the new National Herbarium of NSW will open in 2021. They are world-class scientific research and conservation centres, dedicated to safeguarding botanical diversity.

Ten percent of Australian species are threatened, in danger of extinction – and over 600 species of NSW flora are now considered endangered, and vulnerable. PlantBank holds millions of living seeds, gathered from wild plants in Australia and beyond. This is an insurance against extinction, and the seeds are used for conservation of wild ecological communities.

We journey into the wilds to study communities of plants, animals and fungi. We investigate natural systems: How do different elements interact, compete, protect and support each other? We exchange ideas within Australia and around the world, and work with knowledge custodians, communities and scientists.

We invest in people and technology. We develop innovative processes and methods to investigate plants in new ways. We continue to find solutions, sharing and applying our knowledge to protect and restore threatened ecological communities.

Every year we plant hundreds of trees in our Botanic Gardens and conservation bushland areas. We grow and study threatened plants to learn how we can protect them in the wild. We contribute to restoration projects, repairing damaged ecological communities. We investigate ways to help plants cope with the challenges of disease and climate change.



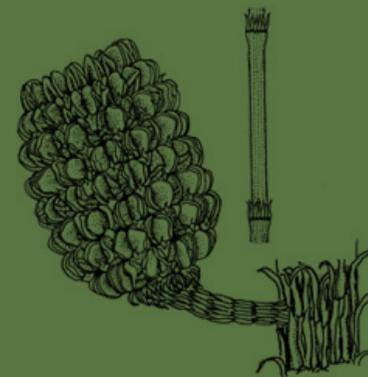


Local Actions

ClimateWatch

Singing a wind-song by the water, Swamp She-Oaks (*Casuarina glauca*), are Moombara in the Dharawal language of western Sydney. For the Dharawal people, Moombara have always been the Grandmother Trees, providing protection for lost children. Now, along with other plants and animals, they can give us clues to answer a vital question: How is climate change affecting our plants and animals?

Plants respond to many environmental factors at varying times from year to year. For millennia, First Nations peoples across Australia have looked to plants to identify seasonal changes — growth, blooming and fruiting times marking the rhythm of nature's cycles. Following in these steps, ClimateWatch is based on *phenology* — the study of plant and animal lifecycle events. Many plant species are already being affected by climate change, with dramatic shifts in flowering and fruiting times.

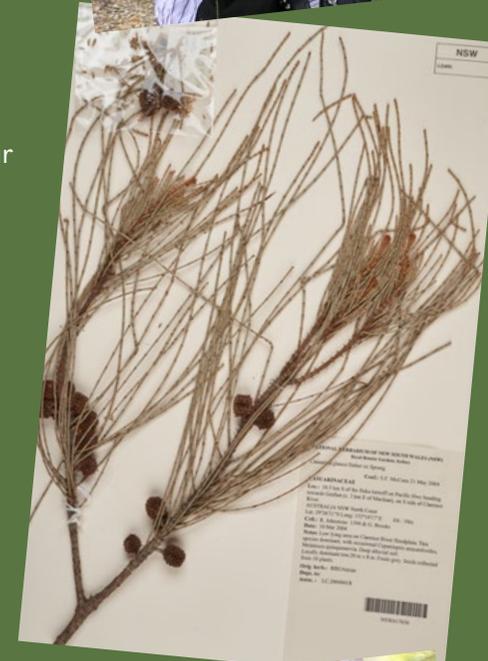


What Can You Do?

You can help grow our knowledge about how Australia's plants and animals are being affected by climate change by walking a ClimateWatch Trail and adding your observations about plants and animals to the national database. This will help shape our understanding and response to climate change.

The ClimateWatch trail through the Cumberland Plain Woodland at the Australian Botanic Garden features Moombara and other local plants and animals. It is one of nearly a hundred trails around Australia, so you should be able to find one near you. You can also work with ClimateWatch to create a new trail in a location that is important to you.

www.climatewatch.org.au/





Weed Warriors

Bizarre and beautiful, the Purple Bearded Orchid (*Calochilus robertsonii*) is one of Australia's mysterious ground-orchids; flowers appearing like magic from an underground bulb. The name 'calochilus' means 'beautiful lip' and the tiny, hairy flowers are just one centimetre wide! It is a challenge to find in the wild, not just because it is so small, but also because it is ephemeral – only visible for a short time when in flower – and sometimes lies dormant for several years.

Like many native plants, ground-orchids come under attack from weeds that compete for space, light and nutrients. Once established, weeds change the balance of ecological communities, severely affecting plants, animals and fungi.

A weed is a plant out of place. In its natural home, a plant will grow in balance with other plants, animals and fungi in an ecological community. These relationships have evolved over millennia. Separated from its natural competitors, diseases and herbivores, any plant can take the advantage and become a voracious weed. Throughout history, people have transported plants and seeds across the world. Plants introduced as crops or garden ornamentals sometimes 'jump the fence' and become environmental weeds. They invade bushland, displacing native plants and animals. A local example at the Australian Botanic Garden Mount Annan is the African Olive, (*Olea europaea* subsp. *cuspidata*). Originally introduced from South Africa as a garden plant, this weedy tree has spread rapidly throughout Western Sydney. Adult African Olive trees produce around 25,000 fruits each year.



What Can You Do?

You're the best witness of changes in your local area: If you notice new and unfamiliar plants appearing in bushland near you, please send The Australian Botanic Garden photos and location information (mount.annan@bgcp.nsw.gov.au)



Significant spread of weeds is particularly likely after fires or other disturbances, and tracking the spread is the first step in controlling invasion.

The seeds of many weeds are dispersed by animals. You can help stop the spread! Check clothing and your pet's fur before leaving infested areas and remove the fluffy or spikey seed heads. Learn how to identify weeds at NSW WeedWise.



weeds.dpi.nsw.gov.au/

weeds.org.au/

[www.environment.gov.au/
biodiversity/invasive-species/weeds](http://www.environment.gov.au/biodiversity/invasive-species/weeds)



POEM FOREST

Write
a poem

Plant
a tree

The Story

Hi, my name is Tamryn and I'm the Artistic Director at Red Room Poetry, where the dream of *POEM FOREST* first sprouted. I grew up in a plant nursery and was named after the Tamarind tree. Being in nature, listening to the leaves and songs of insects has always been a big part of my life and my writing. I'm fascinated by the way nature shapes our stories, our DNA, and how trees become our books, homes, cubby houses, bodies, medicine, pencils, our very breath ... but sometimes we still take it for granted.

By deepening our connections with nature through poetry, honouring habitats, and planting trees to care for Country, hopefully *POEM FOREST* can help us see how much nature is a part of us and we are part of it.

It takes many years and hands to make a forest. *POEM FOREST* wouldn't be possible without all of you sharing your words and the web of people who support its growth like mycelium.

With special thanks to our Patron, John B. Fairfax, AO, and those who have shared their ideas, watered the roots, turned the soil and nurtured Country across the Red Room Poetry team, the Australian Botanic Garden and our creative communities.

~ **Tamryn Bennett**
Artistic Director, Red Room Poetry

On behalf of the Australian Botanic Gardens team, thank you!

*It started with Tamryn's small seed of a thought and thanks to the Red Room Poetry team and your creativity the *POEM FOREST* will continue to grow.*

Through connecting with nature and caring for Country – a poem, a reflection or an environmental action will seed.

*We look forward to watching with wonder as the *POEM FOREST* matures and is enjoyed by future generations at the Australian Botanic Gardens Mount Annan.*

~ **Yvette Pratt**
Head of Education and Engagement,
The Australian Botanic
Garden Mount Annan

*Supporting the development of the *POEM FOREST* with Red Room Poetry and The Australian Botanic Garden Mount Annan is the pinnacle of my involvement with Red Room. It achieves several vital outcomes: it plants thousands of trees for the benefit of the local community and our environment; it encourages and introduces many people both young and old to the world of poetry; it involves the Indigenous peoples in the land that is so dear to them – and it is a wonderful project of nature and literature.*

~ **John B. Fairfax, AO**
Principal Patron of
POEM FOREST

POEM FOREST

Partners and Supporters



Red Room Poetry

Red Room Poetry's vision is to make poetry in meaningful ways. Our poetic projects are created in collaboration with a spectrum of poets, communities and partners for positive impact.

redroompoetry.org



The Australian Botanic Garden Mount Annan

The Australian Botanic Garden Mount Annan is part of Dharawal Country in south-western Sydney. It is home to remnants of ancient forests that once covered much of western Sydney, as well as over 4000 native plant species from all over Australia. The Garden belongs to everyone — a place to spend time and grow connections, curiosity and understanding of nature, culture and science.

australianbotanicgarden.com.au

We would like to thank our generous supporters and partners:

Principal Patron

John B. Fairfax, AO

Supporters



Generous Individuals

POEM FOREST Learning Resource creation:

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