

Bushland Newsletter

WINTER 21



On the go with Emily

It was the season for revegetation, as the cooler and wetter conditions were ideal for establishing seedlings. Following challenging climatic and pandemic conditions last year, this revegetation season was bigger than most!

Equally encouraging is the natural resilience of areas of our more intact bushland. With the added moisture of this autumn, significant regeneration has occurred where native seeds are present within the soil. These areas remain sensitive but show some very positive signs of life where little had been observed for some years – reminding us of the long view needed when determining the success of environmental restoration.

To banish the winter blues, this edition is bursting with beautiful blooms. We will investigate one of Australia's most iconic plant families – Proteaceae. What is it? How to spot one in the field Its biogeography and fascinating ecological relationship with birds. Plus, a look at what our nursery is doing to ensure the survival of one very special local Proteaceae species.

Emily Strautins
Randwick City Council
Bushland Officer



Nursery Update

Renovations at the nursery are almost complete, with the last of the work hopefully finished by the end of July.

Unfortunately, the final stage of the work – resurfacing - will also be the most disruptive. The work will be done in three stages, with the bottom half of the site to be resurfaced first. New irrigation will be installed at the same time.

At this stage the nursery will remain open throughout, however before visiting best to see the council website for updates

The good news is the new greenhouses are up and propagation will be under way again soon, setting us up for a bumper spring!

We apologise for any inconvenience and look forward to these transformative works being completed.

WHAT'S ON



5 June - World Environment Day

"This is our moment. We cannot turn back time. But we can grow trees, green our cities, rewild our gardens, change our diets and clean up rivers and coasts. We are the generation that can make peace with nature. Let's get active, not anxious. Let's be bold, not timid." UN Environmental Program.

To see what you can do download the Ecosystem Restoration Playbook at worldenvironmentday.global

Join #GenerationRestoration



1 August - National Tree Day

National Tree Day started in 1996 and has grown into Australia's largest community tree-planting and nature care event. It's a call to action for all Australians to get their hands dirty and give back to the community. While every day can be Tree Day, this promotes the importance of planting trees to the wider community - encouraging those not already involved in revegetation in programs such as Bushcare to get involved!

treeday.planetark.org

The Proteaceae Family



There has been a proliferation of designs in fashion and floristry in recent years of “native flowers”. Often, however, these native flower designs feature plants from just a single family of plants – the Proteaceae family, even though there are about a dozen families of native flowering plants in Australia.

What many people don't realise, is that some of the most popular species displayed in these “Australian Flora” arrangements and designs are not native at all... well at least not to Australia. In fact, the Proteaceae family of plants has an ancient lineage, which links plant genera across Australia, Africa and South America. Many of these species would also have once flourished across Antarctica, but are now buried deep in the fossil record below kilometres of ice. In this article, we will explore how these similar plants came to occur on continents separated by vast oceans and find out about the most popular Proteas seen around today.

How to Identify a Proteaceae

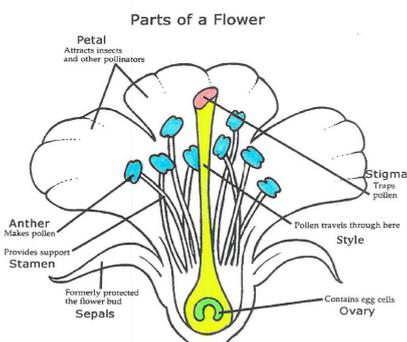
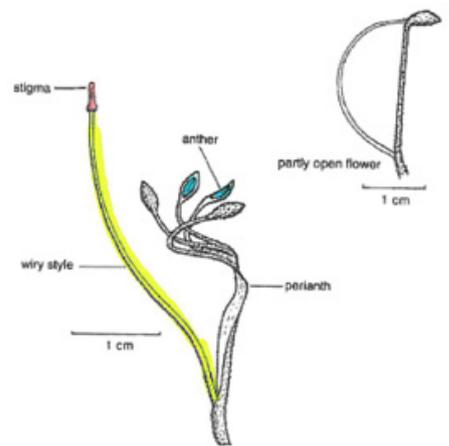
Features of *Proteaceae* plants are:

- tough leathery leaves
- seeds are protected inside hard, woody fruits
- absence of petals on the flowers, instead some have colourful tepals which protect the reproductive parts of the flower
- many species produce abundant nectar, some so plentiful it can be seen to drip from flowers. Occasionally people may even collect this copious nectar to produce a sweet drink
- most are pollinated by birds such as honeyeaters

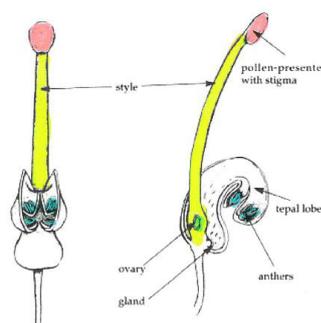
The classification of plants is based largely on the shape of flowers, as these are the reproductive parts of the plant and therefore often the slowest to change or evolve over time. The flowers of this plant family are truly unique, making it one of the more readily

identifiable families – once you know what to look for. The secret is to ensure that you are looking at a flower, and not the flowerhead - which is composed of many flowers together, interspersed with some colourful bracts.

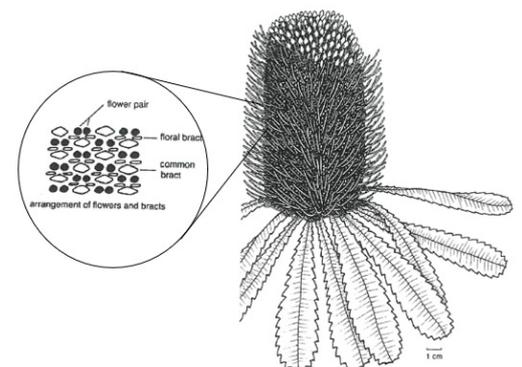
To explain this, below are a collection of colour-coded diagrams to compare the basic parts of a stylised traditional flower and two different kinds of Proteaceae flower – a grevillea and a banksia.



Archetypal flower



Grevillea flower



Banksia flower head and individual flower

Biogeography of Proteas

Many of the most popular plants commonly found in “native” bouquets originate in Western Australia or South Africa. Plants in these areas often produce larger, more colourful, and more abundant flowers than their counterparts here in NSW. This is despite the fact that many of these species occur within the same genera, and therefore are very closely related. While there are several complex ecological factors in play that influence flower morphology, the associations with pollinators are particularly relevant here. Flowers in Western Australia

The aptly named King Protea is a spectacular South African species.



The waratah – our state’s floral emblem, is a locally found and spectacular Proteaceae species.

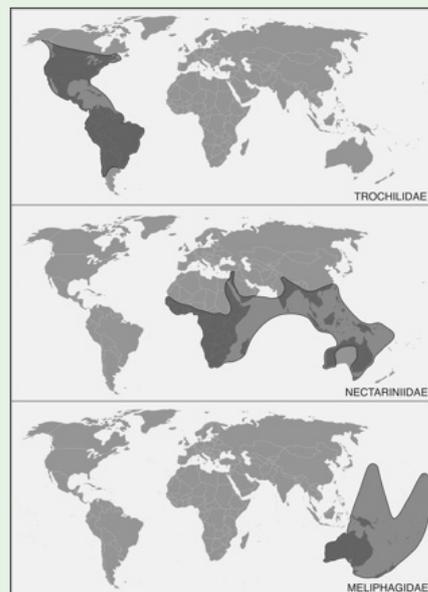
and South Africa are predominantly pollinated by birds and/or mammals. It is important to note that the primary pollinator is highly context driven and can depend on the availability of different food sources, type of habitat and abundance of different species. Despite this, the characteristics of flowers that are primarily pollinated by birds are quite specific, tending to be large, produce copious diluted nectar, have little to no scent and are often red in colour. Flowers displaying these characteristics are called “Ornithophilous flowers”. This term is derived from the Greek word “ornis” meaning bird and “philous” meaning loving in Latin.



The pollinator of this South African Protea is a Sunbird.

Bird pollinator distribution matches that of beautiful Proteaceae plants

There are three families of birds which have evolved as major flower specialists – the hummingbirds (*Trochilidae*), the sunbirds (*Nectariniidae*), and the honeyeaters (*Meliphagidae*). The distribution of these types of birds explains why these plants thrive where they do. Both plants and birds have co-evolved over tens of thousands of years, each supporting and relying on the other for survival. What makes this symbiotic relationship even more special is its limited distribution. Bird pollination is almost entirely absent from Asia north of the Himalayas and across Europe as it relies on ecosystems which can provide bountiful nectar year-round. Therefore, any place which is cold enough to cause a period of dormancy won’t support such an ecosystem. Perhaps this is why flowers such as our native waratah, banksia and the South African protea flowers are just so intriguing.



From the Nursery

Rescue Mission

Last year the nursery, in conjunction with Council's Bushland department, embarked on a special type of rescue mission, aimed at ensuring the survival of a rare stand of Woody Pear (*Xylomelum pyriforme*) in the local area.

The Woody Pear, a member of the *Proteaceae* family indigenous to the area, is not endangered but it's unusual to find such a stand in a built-up urban area like Randwick. So, when contamination demanded a major clean-up of a local park, potentially threatening the trees, the nursery and Bushland stepped in to ensure a backup population could be established if our worst fears were realised. Think of it as an insurance policy.



Uniquely shaped fruit are left in trays in the sun to crack open.

The stand comprises approximately 18 mature specimens up to 8m high. The trees are widely believed to be remnant but may also have been planted during the early days of the nursery.

One look at the Woody Pear and you can tell which family it comes from, combining characteristics from banksia, grevillea, telopea and even hakea species. The young leaves are leathery and serrated, but develop a smooth edge as they age, and the creamy-white flower is like one of the larger grevillea flowers. The one feature unique to the Woody Pear is the woody pear, the iconic pear-like fruit.

The contamination was discovered in 2012, triggering a detailed investigation and the creation of a remediation action plan based on advice from expert environmental hygienists. The remediation work included the capping of existing soil, installation of membrane fabric, infill of fresh soil and new turf. While every step was taken to protect the Woody Pear trees, including the establishment of quarantine zones and fencing, there was still a risk that the stand might not survive the work.

Despite the efforts of nurseries and botanic gardens over the years, the Woody Pear has proved to be incredibly difficult to grow through to maturity. While the fresh seed germinates with relative ease it is prone to 'damping off', while cuttings have a relatively low strike rate.

Not to be deterred, in July, nursery propagator Dave Bateman, horticulturist Sienna Lawrence and Bushland officer Daniel Hall went to



New Woody Pear buds are brightly coloured and velvety soft, similar to the new growth of many others in the *Proteaceae* family.

the park to take cuttings and collect hundreds of the large fruit, which surprisingly only contain two seeds each. The fruit were placed in trays, where they slowly dried and released the winged seeds.



Propagator Dave Bateman seed cleaning. It only takes a small tug and the seeds come out easily.



The large seed wings are trimmed before sowing.

Unfortunately, it was probably not the best time to take cuttings; the material was marginal and also suffered damping off. This fungal problem claimed some of the seedlings too, but with improved housing, in our new greenhouses, they have stabilised and are growing well. The nursery has learnt some valuable lessons from the exercise, and we are hoping to have

follow-up batches of Woody Pear underway soon. Only around 40 per cent of the seed collected has been sown so far, with the remainder safely stored in our seed refrigerator at 4 degrees.



Seedlings were pricked out, tubed up and hardened off in the sun.

While the parent plants have come through the remediation work with flying colours, plans are underway to

integrate their progeny into suitable park and Bushland sites to ensure their survival locally into the future. Slow growing, the Woody Pear typically reaches a height of 5m. It requires well-drained soil in either full sun or part shade. The attractive creamy white flowers appear in late spring, followed by the fruit.

As a side note, we saved the fruit from the seed collection and gave these away at Christmas. These were a great hit with customers, who loved the velvety fruit, taking them for table decorations, curiosities and potential toys for kids and grandkids.

This has been a great opportunity for the nursery and Bushland to collaborate, with the outcome hopefully an increase in the biodiversity of the Eastern Suburbs.



Pear-shaped and velvety soft, it's hard to believe they are solid wood. Two winged seeds sit inside and wait for the fruit to crack open. Their large wings help them spin out of the fruit and to their new home.



Regular Bushcarers Kevin and Liz remove an almighty African Lovegrass which is a 'Key Threat' to ESBS.

Randwick Bushcare visit Kamay Botany Bay National Park

On Tuesday 20 April we had our first Bushcare field trip since the lockdowns in March last year. The day was a great success, incorporating weeding, plant identification and a walk around the Jennifer Street Reserve. The trip was an excellent chance for many of our regular Bushcare volunteers to meet others who work within different Bushcare groups, as well as those who volunteer or work within the national park.

Working alongside the regular group at Kamay Botany Bay National Park gave many in our team a rare opportunity to view the beneficial impact of ecological burning in remnant Eastern Suburbs

Banksia Scrub (ESBS). This vegetation community is a Critically Endangered Ecological Community, found in scattered locations throughout our local area.

If you enjoyed the experience and you'd like to do more – you can! There are groups who work in the park:

- Every Tuesday (excluding December and January), 9am–12pm
- Every 4th Saturday of the month (excluding December and January), 8am–11am

To find out more visit: nationalparks.nsw.gov.au/things-to-do/volunteer-activities/bush-regeneration-at-kamay-botany-bay



Randwick Council and National Park Bushcarers mingle during a well-earned morning tea.



Flowers after the fire. Brightly coloured Callistemons were a popular sight.

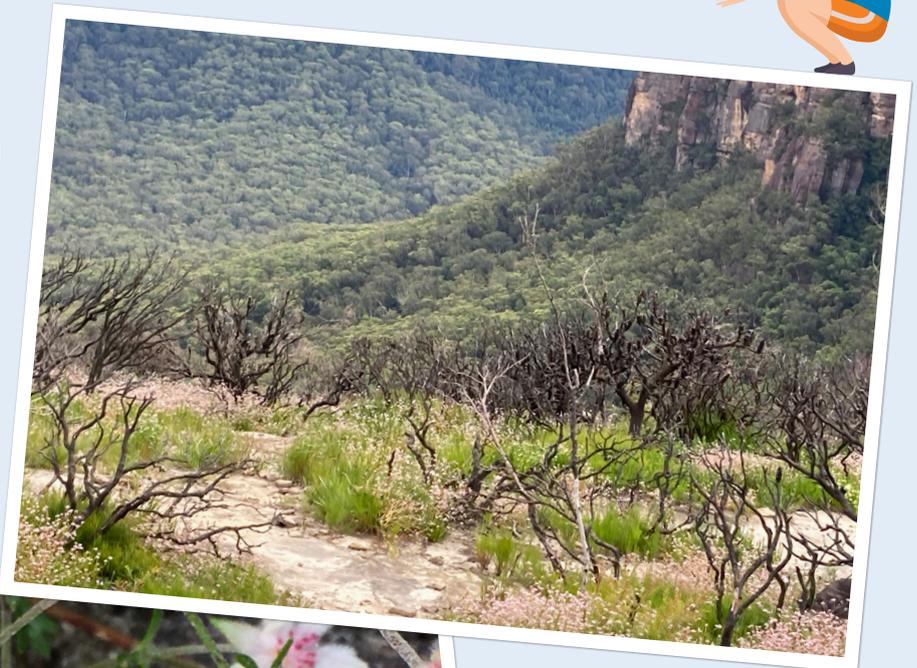


Got a snap to share? We'd love to share your recent photos of native plants, animals, or you getting out into nature. Please send your photos to bushcare@randwick.nsw.gov.au.

These stunning photos were taken by Rona and Mark, who volunteer regularly at Grant Reserve. The images were taken on a trip to the Blue Mountains to witness the Pink Flannel Flowers, which had germinated en masse following the bushfires of 2019-20.



These stunning photos were taken by Rona and Mark, who volunteer regularly at Grant Reserve.



Flannel display at Narrow Neck, Blue Mountains
Image: Rona Wade and Mark England



The images were taken on a trip to the Blue Mountains to witness the Pink Flannel Flowers, which had germinated en masse following the bushfires of 2019-20.

Working bee calendar

BUSHCARE

GROUP	LOCATION	DAY	TIME	JUN	JUL	AUG
Fred Hollows Reserve	Bligh Place entrance, Randwick	Wednesday	9am-12pm	9	14	11
Clovelly Bay	Opposite 18 Eastbourne Ave, Clovelly	Friday	9am-11am	11	9	13
Dunningham Reserve	Adjacent 5-7 Major Street, Coogee	Thursday	9am-11am	24	22	26
Gordons Bay	Access via UNSW Cliffbrook Campus Grounds, 45 Beach St, Coogee	Sunday	9am-1pm	6	4	1
Grant Reserve	Coogee Surf Life Saving Club carpark (south of the beach)	Wednesday	8am-10am	16	21	18
Ladies Pool (Ladies Only)	At the entrance to the Ladies Pool, McIver's Rock Baths, Coogee	Thursday	9am-12pm	17	15	19
Malabar Wetland	End of Manwaring Avenue, Maroubra	Wednesday	1pm-4pm	16	21	18
Malabar Foreshore	Opposite 9 Bay Parade, Malabar (near Malabar Ocean Pool)	Saturday	8am-12pm	5	3	7
Maroubra Dunes	The South Maroubra SLSC car park	Thursday	9am-1pm	3	1	5
Prince Henry	Alternate between opposite 2 Millard Dr & the corner of Jennifer & Harvey St, Little Bay	Saturday	9am-1pm	12	10	14
Randwick Environment Park	Access via corner of Dooligah Avenue and Burragulung Street, Randwick. Works take place within fenced area on the far side of the oval.	Wednesday and Sunday	9am-12pm	2 & 13	7 & 11	4 & 8
Wylies Baths	At the picnic tables above Wylie's Baths, Neptune Street, Coogee	Tuesday	9.30am-11.30am	8 & 22	13 & 27	10 & 24
Little Bay Landcare*	Access between 119 and 121 Bilga Crescent, Malabar. Contact Kerry Gordon on 0411 245 985.	Saturday	8am-12pm	5	3	7
Magic Point (Malabar Headland)*	Contact Claire Bettington on (02) 9344 8589 for the meeting place.	Thursday	9am-1pm	10, 17 & 24	8, 15 & 22	12, 19 & 26
Malabar Headland West*	Contact Therese Weiss on 0403 532 655 for the meeting place.	Sunday	9am-1pm	6,13,20 & 27	4,11,18 & 25	1,8,15,22 & 29

* Denotes non-council run groups. Please contact organisers directly.

PARKCARE

GROUP	LOCATION	DAY	TIME	MAR	APR	MAY
Alison Road	Corner of Alison Road and Beach Street, Coogee	Wednesday	8am-10am	23	28	25
Clyde Street	Clyde Street Reserve, Randwick	Saturday	1pm-3pm	5	3	7
Old Tramline	The reserve between Dudley Street and Carrington Road, Randwick	Thursday	8am-11am	10	8	12