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Society postal address:
P.O. Box 1205
GRAVELLY BEACH
TASMANIA 7276

Editor: Mary Slattery
eucryphiaeditor@gmail.com

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P.O. Box 1205
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TASMANIA 7276
Or margaret.killen@gmail.com

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Websites

APST Inc.
www.apstas.org.au

Northern Group
www.apstasnorth.org

ANPSA Inc.
www. anpsa.org.au

Membership

Margaret Killen, Membership Officer

Welcome to our new and returning members

We warmly welcome eighteen new members to the Australian Plants Society Tasmania Inc.

Dale Luck of Norwood; **Jennifer Kerkenezov** of West Launceston; **Jenna Ratcliffe** of Trevallyn; **Catherine Pearce** of Newstead; **Eleanor Button & Geoff Counsell** of Riverside; **Robyn Thomas** of South Hobart; **Jo Noble** of Kaoota; **Nicky Price** of Taroona; **Kirrilli Kent** of Margate**; Mary Brewer** of Kingston; **Sheila Beamish** of Kingston; **Tania & Karl Virieux** of Huntingfield; **David Waters** of Trevalyn; **Peter Anderson** of Launceston; **Margaret Armsby** of Bakers Beach and **Karen Stack** of Mount Nelson. We also welcome back **Robert Gower** of Barrington and **Ian Sale** of Opossum Bay (apologies for misspelling your name in the last edition).

New Members Application Form
Please find the form at apst.tas.org.au

Membership renewals and changes (how you will receive reminders)
Your subscription renewal date is due on the anniversary month you joined.
Renewal reminders are sent by email or hard copies posted to those without email.

Please return your completed scanned / photographed form to:
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Membership Queries
If you have any queries, updates or corrections regarding your membership, or your contact details please contact me.

Margaret Killen
Membership Officer
0409 430 665 ☉

From The President

Louise Skabo, President.

Uppermost in my mind is members' heartfelt concern for our stalwart Life Member, Sib Corbett. We are pleased to know from Keith and Christine that Sib is steadily improving. Sib is a brave and tenacious person and we wish her continued good progress. Keith agreed to let us to print his email of 25 May and a lovely photo of Sib which shows her great attitude to this recent misfortune.

Sib goes bush

Dear all,

Just passing on a picture of Sib on our outing to Mt Field on Sunday. A beautiful autumn day in the valley. We walked the Russell Falls circuit, with the 4wd walker (which she doesn't like much but does help with the walking), then went up top and had lunch sitting beside Lake Dobson. And a short walk, sans walker, down to Lake Fenton, to see the last of the fagus. A very pleasant day indeed. St Johns are very good re outings at weekends, and we take full advantage. Sib is progressing steadily, in all aspects, speech still the most frustrating. Still has ~3 weeks at St Johns.

Cheers, Keith

On behalf of our society, I would like to thank Jenny Boyer for her excellent work as our president over the last two years including the challenges of 2020. The Strategic Planning Group, chaired and convened by Margaret Killen, was started about five years ago but many of the ideas to improve and invigorate our society came to fruition over these two years. The SPG worked closely and harmoniously with Council to produce

positive outcomes' (Roy Skabo SPG report, March Eucryphia) and Jenny sensitively guided the Groups' input and oversaw the implementation of better Governance (updated constitution and corporate governance training), Membership (a streamlined and electronic process) and Technology (on-line *Eucryphia* and the development of a new APSTI website).

I welcome Leoni Read from the NW Group as our new Vice President and two new Councillors from the Northern Group, Josephine Boniface and Robert Worland, who are most enthusiastic about their new roles. Most other Councillors will continue to represent their Groups but we thank Roy Pallet who has retired after making worthwhile contributions. Dick Burns retired as VP part way through 2020 and we miss his experienced counsel.

APSTI aims for 2021 will, in part, be steered by the recently updated SPG's policies on conservation, education and marketing. Council looks forward to assisting Groups further the objectives of our society and encouraging all members to fully participate in our many attractive activities.

A memo to all the talented photographers in our membership: Please email photos by 30 June to amandawalker@iinet.net.au so APSTI calendar 2022 will be as popular as it was last year. Amanda needs lots of photos from which to choose. The calendar is a great marketing tool. ☉

ANPSA NEWS

Dr Margaret Matthews, President

The COVID pandemic continues and continues to affect the way we live. At the November ANPSA Council meeting we discussed issues around the postponement of the 2021 ANPSA Conference, and agreed that:

· After consultation, the current ANPSA Executive has agreed to carry on until 2022 (a new Executive with a President, Secretary and Treasurer would usually have been elected from the Society hosting the 2021 Conference);

· Australian Plants Awards will be presented in 2022 and deadline for nominations postponed until February 2022;

· Biennial Meeting scheduled for 2021 will be postponed until 2022; and

· Qld State Conference, scheduled for 2022, may be brought forward to 2021. Qld will advise their decision in due course.

Following the meeting we had a special presentation from Phillip Johnson 'Australian Garden' Landscape designer.

Phillip's organisation represented Australia at the Chelsea Flower Show in 2013 and won Best in Show. He is campaigning and fundraising to bring the exhibit back to Australia, specifically to a site in the Dandenong Ranges in Victoria.

The recreation of the Chelsea winning Australian Garden at Olinda has now received the final funding required from the Victorian Government to enable it to proceed (and it was reported in *The Age* that construction is planned to start in November and could be completed in May 2022).

Sue Gymer and Bill Atchison from APS Victoria have been in contact with Phillip and they advise that there is still a need for additional funding. The funding that they have covers the cost of the construction of the Garden, but there are a lot of additional components e.g. items like interpretive signage, establishing a digital platform, Aboriginal linkage and others. APS Vic and the Maroondah Group are looking at donating for particular needs, for example interpretive signage.

A video about the garden and link for donations are here -

https://peopleandparks.org/project/chelsea-best-in-show-garden/

The Age article is here -

https://www.theage.com.au/national/victoria/massive-drawcard-state-stumps-up-2-8m-for-new-australian-garden-in-dandenong-ranges-20210316-p57b17.html?fbclid=IwAR01mBBMEw8HV8dkDjfRvtIPWW0i6Q69KkBoLRUFpSGynBtnkunM0OHe1Wg

It should be looking great in time for Victoria hosting the ANPSA Conference in 2024!

In a previous President's Report, I noted several members of our Societies had received Australia Day and Queen's Birthday Honours. I am pleased to add Sheryl Backhouse, the leader of the Australian Food Plants Study Group to that illustrious list. Sheryl was awarded an OAM for service to the sub-tropical fruit growing industry and the community in the Queen's Birthday Honours. Congratulations Sheryl!

The position of Publicity Officer for ANPSA is still vacant. This important role provides an opportunity to learn more about ANPSA and its member societies and get to know more about the many interesting activities being undertaken around Australia to promote knowledge of our wonderful native plants. If anyone is interested in finding out more about this role, please contact me or our Secretary Christine Curry.

Several of the important conservation issues ANPSA is involved with through our very busy National Conservation Officer, Eddy Wajon, would also benefit from the support of a Publicity Officer. Myrtle Rust is probably the most immediate threat to our ecosystems. ANPSA and its member societies need to act, particularly through educating our members and the general public to recognise and report Myrtle Rust and to take precautions against its spread.

The immediate action we can all take is to read and sign the Statement of Concern petition: *We call upon all Australian governments to respond to the threat of Myrtle Rust through coordinated and collaborative action to implement the National Action Plan for Myrtle Rust in Australia.* https://www.apbsf.org.au/statement-of-concern/

ANPSA and several member societies made submissions to the 2019-2020 review of the EPBC Act. The Final Report of the Review has been released and reflects the view that the Act is failing to protect our natural environment and needs to be considerably strengthened. The government has attempted to pass two very inadequate bills which would not include many of the Report's recommendations.

It looks as though our lobbying in Canberra in August 2018 to prevent clearing of valuable bushland at Jandakot Airport has been successful. They have released their draft Master Plan and are no longer proposing to clear the native vegetation they are required to preserve. This success is due in large part to Eddy's tireless efforts.

I encourage all members to be involved with local conservation issues and to ask me or Eddy for help if you think the support of a national body might be useful.

Dr Margaret Matthews
President
0402 105 649 ☉

Study Group Highlights

Riitta Boevink, Study Group Liaison

Some of the Study Groups are proposing to hold Zoom meetings. As members are spread across the country , using Zoom would facilitate contacts and exchange of ideas among the members.

Garden Design Study Group Newsletter No 115, May 2021

Leader: Lawrie Smith

The theme of this issue is: 'What's down under?' The focus is on the importance of soil conditions for plant growth. There is a description of the new Australian garden in the Dandenong ranges. This is being developed by landscape designer Philip Johnson. The estimated cost is $2.8 million. This has been provided by donations and Victorian government.

There is a book review by Lawrie on an old out of print book 'Living on the Coast'.. Why review an old out of print book? This is in honour of late Barbara Henderson. She was the founder and leader of the Wallum SG. Wallum heathland extends from northern NSW to Central Queensland. The entire newsletter can be found on the ANPSA website.

Wallum and Coastal Heathland Study Group

Allan Carr, the newsletter editor has been appointed the new SG leader.

The newsletter includes an obituary to Barbara Henderson, who was the leader for 26 years.

Feature plant is *Dillwynnia floribunda*, ' Showy parrot pea' from the Fabaceae family.

Australian Plants for Containers Study Group No 37, March 2021

Leaders: Ros and Ben Walcott

The newsletter is free and available for anyone to see on the ANPSA website. It is best viewed on the website because of the good selection of photos sent by members.

Isopogon and Petrophile Study Group No 28 April 2021

Leaders Catriona Bate and Phil Trickett

This is a very extensive newsletter with a wealth of information . It promotes exchange of seed and cuttings between members. All states except WA allow cuttings to be mailed from NSW. Please note, however, that Tasmania needs a special permit.

Contents include reports from members of their gardening successes or challenges during the wet summer in many parts. An interesting article on ants as pollinators. 'Isopets' are insect pollinated. The flowers do not have scent and do not produce nectar. The pollen is a source of protein for insect visitors.

The leaders encourage 'Isopet' growers to keep an eye on visiting insects and photograph them for identification as gathering the information will help establish a record of pollinators.

The newsletter includes a detailed description of *Isopogon baxteri* and *Petrophile ericifolia.*

Some of us who took part in a bus tour after the Albany conference will remember a visit to the HiVallee farm in Belgingarra. Don Williams, who runs the farm, has written a hilarious article named 'Corona in the wildflowers'.

Grevillea Study Group No 118, Feb 2021

Leader : Peter Olde

Lot of emphasis and detailed information on grafting Grevilleas. New showy varieties are coming along all the time. A number of rare species are being threatened by development. At the same time new populations of G. *Victoriae ssp.nivalis* and *G. polychroma* have been located in Victoria. ⊙

Book Review

Dick Burns

Cover of Banks

BANKS by Grantlee Kieza

The book *Banks* was released in 2020 by ABC Books and written by Grantlee Kieza, who is the author or co-author of biographies of eminent Australians and books on aspects of boxing and cricket. It is, for the first part, well researched; at the back of the book are a five-page bibliography that lists books (some are original source material), journals and internet sources, 53 pages of endnotes and a useful index. However there is no 'contents' page with a list of chapters: each chapter is titled, so a contents page would have been advantageous.

The Early Years of Joseph Banks would better describe the book's scope. When I saw an illustration of the front dust-cover, I was wary – it proclaims 'Lust, science, adventure . . ' On the back is 'The extraordinary life of one of the world's most famous and notorious adventurers' – more apt for Errol Flynn than for Sir Joseph Banks. The blurb does apply to some aspects of the early life of Banks who lived from 1743 to 1820. But it doesn't match the latter half of his life (actually the majority of his life), spent in permanent residence at 32 Soho Square, London, and presiding over the Royal Society of London, the last decade confined to a wheelchair due to most painful gout. It was during this second phase when Banks made his major contributions to science, and British (consequently the British Empire's) history. Of the 400 pages of text, the first 260 take us through to when Joseph Banks was aged thirty, having by then completed the *Endeavour* voyage, failed to join the (now) Captain James Cook on his second voyage (see *Pathfinders in Tasmanian Botany* pp. 23-28) and been on his only other overseas trip, to Iceland. He lived another 47 years.

Banks herbarium, 32 Soho Place

The author Kieza devotes the rest of the book to how Banks influenced Australian history but focusses too much on non-Banks stories. Two chapters describe the two mutinies involving William Bligh, as Captain on the *Bounty* and as Governor of New South Wales (the first covered by so many history books and four commercial films, the latter by school history classes). There is a chapter with the title implying that it will be about the Soho Square residence, but most of the text is given over to the events leading up to the decision to set up a penal colony at Botany Bay, moved within a week to Sydney Cove – that settlement is given two subsequent chapters.

Sir Joseph Banks in later life

Those first 260 pages are very well researched: Kieza does explain Banks' incredible wealth – he traces it back through four generations. Joseph Banks spent about £10,000

financing his side of the *Endeavour* voyage, paying the salaries of eight staff (scientists, painters and servants plus two dogs), alterations to the ship and the necessary equipment. The voyage lasted three years, longer than some of the staff and crew. It was apparently the first ever science-based exploration. The British Admiralty wanted to measure the transit of Venus and Banks organised the search for new plants and other life forms. (France followed with the D'Entrecasteaux/La Billardiére voyage etc., and Britain included scientists such as Joseph Hooker and Charles Darwin on long expeditions.) Banks encouraged scientists to come to Soho Square; for instance the first meetings of the Linnean Society were held there. Sir Joseph personally financed collectors sent out to the 'new' continents, such as Allan Cunningham in NSW.

After the first 260 pages, Kieza runs out of steam, or simply loses interest in his subject and much of the Bligh and Sydney stories (plus bits of the Flinders expedition to Australia) is a rehash from other books and sources.

Joseph Banks had high intelligence and great wealth. He must have realised that an academic life was not for him when he dropped out of his degree course at Oxford University. And he liked his creature comforts, made obvious with his modifications to the *Endeavour*, taking along servants and dogs plus the attempt at modifying the ship for the second Cook voyage. Banks realised that he would achieve more as an advisor and patron.

In the century before, British science stepped away from alchemy and an Earth-centred concept of the universe through the thoughts and experimenting of men such as Isaac Newton and Robert Hooke and the formation of the Royal Society of London. Safe travel by sea was made possible by the invention of John Harrison's chronometer. Banks' major contribution was to encourage others to take this wave of curiosity and thinking in diverse paths as well as botany. In Banks' time others explored different fields; William Hershel and his sister Caroline searched the heavens, Michael Faraday worked with electricity, Mary Anning gathered and sold 'sea shells by the seashore' plus fossils of sea-going reptiles that aided others to understand the process of evolution. (It is interesting that, while Banks' contributions are so overlooked, Mary Anning not only inspired a tongue twister/nursery rhyme but at least two books or films, 'The French Lieutenant's Woman' and the recent 'Ammonite'.) One line of theory at the turn of the nineteenth century was that there was a link between being alive and electricity. Mary Shelley took this line of reasoning to create Frankenstein's monster in possibly the first science-fiction novel. Joseph Banks championed many young British scientists and lobbied their becoming a Fellow of the Royal Society; Kieza does not mention any, apart from William Bligh.

In dwelling on the lust and adventure aspects of the Banks story, Kieza misses the point. Granted, Joseph Banks was a randy young man, and he may have been egoistical. But this book neglects his major contributions to science and society.

Perhaps Kieza is making amends with his last lines in almost a postscript, what he calls an epilogue, when he writes:

But for his time Banks was an enlightened thinker who peered into worlds and mysteries in a way few had done before. He encouraged scientific endeavour and with his adventures and collections he laid a foundation that inspired others to follow him for two and a half centuries.

He left the world a wiser place.

Unlike this biography. ☉

References:

Banks, Grantlee Kieza, ABC Harper Collins Publishers, 2020.
The Age of Wonder, Richard Holmes, Harper Press, 2008.
Pathfinders in Tasmanian Botany, Dick Burns,, Tasmanian Arboretum Inc., 2012.

Native Bees in the Pollen: Part 1

Phil Watson

Nature's super star pollinator

Across the vast spectrum of plant pollinators be it an insect, bird or small marsupial, native bees emerge proudly as the most efficient of all pollinators. The reasons are simple! Native bees are born as pollen and nectar addicts, with the females genetically driven to collect pollen and often nectar, not only for sustaining herself but more importantly for provisioning her brood cells. This is achieved during the flowering season by visiting hundreds of flowers often of the same species on each individual foray. By visiting a single species this markedly increases the likelihood of cross pollination.

From a native bee's perspective, it is easy to understand why they are inextricably linked to pollen and nectar. The oldest fossils of bees have been in amber (around 100 million years old). Fascinatingly this era coincided with the rise of flowering plants (angiosperms) enabling bees to gain floral rewards for pollination services necessary for the ancestral angiosperms to flourish.

Of the world's 2500 native bee species, Australia's native bee fauna is notably large and distinct from other continental bee fauna, consisting of up to 2000 species (1600 named) that occupy almost all terrestrial habitats but mostly in semi-arid regions.

Correcting the native bee myths:
Stings or no stings?

Two mythical features commonly come to mind when native bees are mentioned, namely that they mostly live gregariously in hives just like honeybees (*Apis mellifera*) where they store a honey and secondly they do not sting. Both these features are surprisingly very rare amongst our native bee fauna. Of all the native bee species there are only a couple of small groups of bees that do not sting. Stings are exclusive to females. As opposed to wasps, (from which native bees evolved) which sting to paralyse prey, female native bees only sting for defence and can do so repeatedly, never leaving the sting in the victim. Their hollow sting shaft (evolved from ovipositors) secretes venom with pain levels proportional to the size of the bee.

Social or solitary?

The other myth about their gregarious nature only applies to just eleven species commonly referred to as 'sugarbag bees' (mainly *Tetragonia sp.,* and *Tetragonula sp.*). These species actually store honey differently from the honeybee. They construct and fill hundreds of small pot-like vessels (size of grapes) with regurgitated nectar and pollen before capping with propolis, which is a mix of wax from their wax glands and plant resins. Their fairly runny honey is sharp and tangy with infused floral flavours derived from the propolis, distinguishing it very clearly from the sweet more concentrated honey we happily consume!

The immense majority of solitary native bees nest by themselves and primarily collect pollen which they mix with nectar to provision their brood. Their brood (eggs and larva) develop in individual closed cells located in narrow tubular holes dug or drilled by mum into the ground or pithy wood etc. As these solitary mums need to work hard to collect enough floral pollen and nectar to feed their young they do not have time to store it nor allow their rather watery supplies of honey and nectar to ferment and go bad.

Ways to win the mating game battle!

Although male native bees' noble objective is to guarantee females are fertilized, they could otherwise be considered as lazy! Males do not construct nests, collect pollen to provision the brood nor care for the brood. [i]

Males are constantly competing against other males to attract females. Once mated the female stores their sperm in readiness to fertilise eggs laid on a porridge of pollen and nectar in each cell. The female determines the sex of the egg in each cell by simply either fertiliaing the egg (females) or not (males).

Figure 1: Male Banksia Bee guarding his Banksia flower territory: Courtesy of Aussiebee.com

Simple techniques

The simplest techniques for mating involve patrolling over preferred flowers or perching on fresh unopened flowers preferred by young females, days before they arrive. Others patrol over long-term nesting sites particularly where there are clusters of nests awaiting young virgins to emerge. There is a marked range in the male sizes resulting in larger males monopolising nesting burrow holes by vigorously defending their burrow holes from rival males. This forces the smaller males to patrol forage flowers or stay on freshly opened flowers likely to be visited, such as the easily accessible flowers from the mallow family *Malvaceae* including *Hibiscus* sps., native cottons, *Gossypium* sps. and the many species of mallow *Malva.* [ii]

Specialised techniques including brute force, floral oils, and pheromones

Individual bee species have evolved various techniques to gain advantages, such as the blue banksia bees which perch on banksia flowers and fan their wings to disperse pheromones, often engaging in violent skirmishes with rival males. Another captivating example is the orchid bee which busily collects strongly scented oils from local flowers and accumulates the scented oils on specialised hairs located on their legs. Since each male bee has a different collection of scented oils, they emit their own individual concoction of floral perfumed pheromones. They then perch at the edge of the rainforest and fan their legs with their wings to spread the scent towards where the young ladies emerge from their nests in the hope that their unique scent is the one that at least one lady prefers! Additionally, some of the bees that rely heavily on pheromone attraction have longer antennae with expanded tips to enhance the dispersion of pheromones as well as providing improved warning of rival males. [iii]

Solitary males struggle for survival

Male brood cells tend to be smaller and closest to the entrance of their mother's brood

nesting hole, ensuring males emerge early in the flight season ahead of any females. Once males have left their nests, they do not return, preferring to roost in dead twigs or leaves as well as inside flowers that close up at night akin to sleeping bags. These flowers include native blue bells, native pigface, and noon-flowers (*Wahlenbergia* sp., *Carprobotus rossii* and *Lampranthus glauca*) returning to the same roost each night. Some males do not like sleeping outdoors, instead sheltering in old nest holes or short burrows in soil. Observant bush walkers may have noticed the largest solitary male aggregations (thousands) as a black mass clinging to the fronds of one single grass tree (*Xanthorrhoea* sp) dispersing during the day (unless bad weather) before returning at night. [iv]

Curious ways to gain floral rewards

All bees visit flowers primarily for pollen to collect precious proteins and fats for their brood. The pollen is gathered on specialised hairy legs or hairy abdomens. Nectar on the other hand is sucked up with their proboscis and stored in their crop or 'honey stomach'. As this nectar is initially just a watery solution of sugars it is converted into honey using evaporation. This is achieved by repeatedly regurgitating for a few seconds nectar drops onto their tongue, to allow for evaporation and then re-swallowing. [v]

Figure 2: Smooth Masked bee collecting nectar from Gum flower *Courtesy of Aussiebee.com*

The competitive challenges of open nectaries

The largest and most noticed native bees are the sparsely hairy **short tongued species** that have evolved in parallel with the *Myrtaceae* family; gums *Eucalyptus* spp., tea trees, *Leptospermum* spp., paperbarks, *Melaleuca* spp., and heath myrtles *Baeckea* sp. *etc*. These flowers have shallow cup-like nectaries ideally suited for short tongues. Other prolific nectar producers with easily accessible nectaries (like the magnolia's flowers) include the mallows, *Malva* spp. evening primroses, *Oenothera* spp., canola, rape, turnip, swedes etc *Brassicaceae* waxflowers, *Cheiranthus* spp., as well as the floriferous native box *Bursaria spinosa.* [vi]

Unfortunately for the native bees, these also attract strong insect competition for pollen and nectar. To survive this cutthroat world, short tongued native bees have evolved coping strategies. These include foraging very early or, in the case of the geebungs *Persoonia* which have four rigid, fleshy sepals, they prise open their flower buds. Persoonia bees, *Leioproctus (Cladocerapis)*, are specialist pollinators of the *Persoonia* or

geebung flower. These bees have shiny smooth faces that help them reach deep into the flowers' nectary and are aided by dense bristles on their forelegs used to rake out the pollen from special grooves in the flowers.

Figure 3 Persoonia Bee raking pollen from a Geebung flower using coarse bristles on front legs *Courtesy of Aussiebee.com*

Others nibble at flower buds to gain access to pollen on their stamens. Intriguingly some of the more robust bees such as the blue banded bees, even lever off the cap of gum flower to get to the highly prized pollen.

As pollen ranges in size some bees specialise in fine grained pollen whilst others have adapted the hairs on their legs (setae) to be wider apart and more robust to collect and carry the coarse-grained pollen. For example, the hibiscus family *Malvaceae* has very coarse-grained pollen.

Special adaptations to access concealed nectaries

Many native bees inadvertently gather pollen of the peas (*Fabaceae*) and milkwort (*Polygalaceae sp.*) because of being lured by colourful bee guides to their nectaries. The bees land onto the keeled petals. The weight of a small native bee is sufficient to press down on the keel releasing stamen which are cocked up between the two petals allowing pollen to be trapped on the belly of the nectar seeking bees.

A conspicuous challenge comes when the nectaries are deeply located at the base of tubular flowers such as the native heaths (*Epacridaceae*). Evolution has enabled some bees to be small enough to scramble inside the corolla whilst other bees have evolved long tongues for the task. For example, many of the net bushes *Calothamnus* and emu bushes *Eremophilas* (recently transferred to the figwort family *Scropulariaceae*), have a tight constriction near the base of their tubular corollas. Although long tongued bees can access the nectary it stymies short tongue bees, except for a few highly adapted emubush specialist bees. A good example is the male banksia bee which possesses elongated mouth parts (technically known as labial palpi) which are additional to their short tongues (proboscis). These labial palpi enable the sucking up of the nectar by a particular species of banksia bee.

As an aside, this male banksia bee also has a curious way of attracting females. He perches on top of flower heads that are likely to be visited by females where he vigorously fans out his pheromones made of floral oils. Unfortunately, he must struggle to hold his advantageous position often resulting in territorial combats.

Sophisticated ways of gathering pollen:

Buzz pollination is the bee's favourite

Buzz pollination particularly favours bees when the flowers have specialised characteristics such as no nectaries, fine grained pollen and flowers that have large exposed anthers with terminal pores or slits that open to expose the pollen.

Figure 4 Blue banded Bee buzz pollinating *Courtesy Aussiebee.com*

Unfortunately, the technical word called '*sonification*' needs to be applied to the simple name 'buzz pollination' to fully comprehend the process. This is purely a native bee thing, where the native bees such as the blue banded bee, the carpenter bee and many members of the large short tongued *megachilids* group, hunch over the tips of the anthers and vibrate or shiver their flight muscles. This catapults the pollen from the pores or slits onto bee's belly. Inadvertently this shivering also causes the bees folded wings to resonate and emit a noticeable buzzing sound. Hence the term *sonification* which describes this sound.

Interestingly honeybees and bumble bees do not cause sonification when buzz pollinating. However, surprisingly, a vast number of commercially important plants do benefit from *sonification* including tomatoes, capsicums, chili, potatoes etc from the *Solanaceae*. This introduces the vexed question of the need for bumble bees given that they displace native bees and even small honeyeaters that also provide the same pollination services.

There is also a very large number of native plants which possess what are known as **vibratile** anthers that enable them to be buzz pollinated. These include fringed lilies *Thysanotus* spp, pink bells *Tetratheca* spp, flax lilies *Dianella* spp., native primroses *Hibbertia* spp and kurrajong family *Sterculiaceae* just to name just a few. [vii]

Proteas deliver pollen from the ends of their styles

Proteas not only attract birds and small marsupials but also cater for native bees using a unique form of pollen presentation known as 'style end presentation'. Many native *Proteaceae* such as *Banksia* sp., kangaroo paws *Anigganthus* sp. *Grevillea* sp, needle bushes *Hakea*

sp. geebungs *Persoonias sp*. guitar plants *Lomatia* sp. etc, benefit from this technique where the anthers burst open whilst still in the flower bud. As the style begins to unfurl in bud it collects pollen as it brushes past the open anthers and once fully unfurled the style grows longer presenting the pollen-laden apex to both small honey-eating birds and the bees. Several female native bees specialise in *Proteaceae,* having evolved an ability to clean the pollen from the style ends.

Figure 5 Black Kangaroo Paw showing pollen presenters: *Courtesy: daves garden.com*

Native primroses have their own form of secondary pollen presentation

Native primroses such as *Velleia* sp., *Lechenaultia* sp., *Scaevola* sp., *Goodenia sp.,* and *Dampiera s*p. have a fascinating and unique way of presenting their pollen to native bees in exchange for their pollination services. In a similar way to the style-end presentation of the Proteas, the native primroses release the pollen from their anthers whilst still in bud. However, this is scooped up by the cup-shaped end of the style known as an 'indusium'. When the flower finally opens the style-end bends down allowing it to dab pollen on the backs of nectar feeding bees. Curiously, native primrose specialist bees have evolved stiff, erect hairs with hooked ends on the backs of their heads that collect the pollen in readiness for the bee to groom it off once back at their nests. Other native bees such as the *halictid* species rake pollen from the indusium using their bristles on the lower sections of their back legs (tarsi). [vii]

The trigger plant relies on the strangest of all pollination techniques.

Anyone who has interest in native plants would know of the trigger plants' *Stylidium* sp. tricky way that the cocked column (fused male and female organs of the flower) located on one side of the flower snaps across and dongs pollen on the native bee when it alights on the open flower. Interestingly the column slowly resets several times, to allow it to revert to capturing pollen from backs of bees that were donged by another trigger plant flower.

Conclusion

As discussed in this article, native bees possess unique abilities and adaptations to meet the challenges associated with pollination of Australia's unique native flora. It is for this reason that they deserve to be recognised as the pollination superstars. A significant

percentage of indigenous plants are totally reliant on the various pollination methods employed by our rich diversity of native bee. Hence Australia's flora would be decimated by any significant demise of our native bee population. The understanding of pollination ecology which focuses on the special relationships between pollinators and native flora is essential to safeguarding the health and well-being of our native bee population.

In parallel with this, maintaining floral diversity within our extensive native forests, woodlands and grasslands and the habitat it sustains is the essence to protecting and enhancing Australia's native bee population.

For many of us who live in suburbia, our nearby remnant urban and peri urban bushland patches provide wonderful opportunities to protect and boost our local native bee richness and their homes. This can be achieved not only by protecting from development pressure and taking care of these remnant patches, but also by re-planting indigenous and endemic floral species that may have disappeared or are likely to disappear from their landscape. ⊙

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[vii]Houston Terry, *A Guide to Native Bees of Australia, CSIRO Publishing*

Website and Strategic Planning

M. Killen

The new website has been a while coming but is within reach. A small team of dedicated members are tidying the last of the of material from our previous website and moving that to the new one with the help of KingThing. Congratulations to Karen Waldon (Northern) who is the new APST Website Liaison Officer.

After five years of implementation the current strategic plan has run its course. The Strategic Planning Group met at Ross ion May to review progress and start preparing for the next plan. Whereas the first plan had an internal focus the next plan will turn to its attention to looking outward.

Credit must go to Roy Skabo, not myself, for the excellent Strategic Planning Report Progress Report which was the March edition.⊙

MORE ON JOSEPH BANKS and *BANKSIA* GENUS

Dick Burns

The latest two issues of *Friends* (numbers 95 & 96), the journal/newsletter of the Friends of the Australian National Botanic Gardens has just arrived: I was put on the mailing list around the time of the opening of the Tasmanian Garden, but that petered out after a few years but I'm back on the list. The Friends of ANBG has really gathered strength, now with over 2500 members. The journal is now a quality full-colour magazine of some 30 pages (I guess with that number of members, they can afford to not go digital), with contributed articles and reports on new developments in the gardens that include assistance from the Friends group, both financial and manual.

The lead article in no. 96 is 'The Banksian Herbarium at the Natural History Museum London' by Dr Mark Carine, one of the principal curators at that Natural History Museum (NHM). As mentioned in *Pathfinders in Tasmanian Botany* (p. 64), the herbarium of Sir Joseph Banks went to the British Museum in 1827. It is now curated by the NHM. The herbarium includes specimens collected by Banks himself plus the collectors that Banks organised to visit other countries such as Allan Cunningham, and other herbaria purchased by Banks. Dr Carine writes about the difficulties of collecting while travelling overseas in the eighteenth century. Paper was scarce and expensive, but necessary in the drying and pressing of plant specimens. NHM has kept a hefty pile of some of the paper used on the *Endeavour* voyage, cut from *Notes upon the twelve books of Paradise Lost*. When the ship moored for a time, the botanists would organise that papers be spread on a sail to dry in the sun.

The Banksian Herbarium contains many type specimens, including those that were used by Carl Linnaeus the Younger to describe the first four species of the genus *Banksia*. Taxonomy is still the most frequent use of herbarium specimens but Dr Carine mentioned another. On the underside of leaves are openings called stomates (or stomata) that the plant uses to control the loss of water and the uptake of carbon dioxide, necessary for photosynthesis. Comparison of the count of stomates on leaves from 250 years ago with those on leaves from present day can be used as more evidence of climate change.

Issue 95 has articles from the Friends group. The first is concerned with George Caley and his Aboriginal assistant, Daniel Moowattin. Caley was the first collector of plant specimens in New South Wales supported by Sir Joseph Banks. He arrived in Sydney in 1800 and spent nine years in the colony, sometimes travelling further afield; he did have trips to Norfolk Island and Van Diemen's Land. Caley assisted Robert Brown in 1802 when the latter arrived in Sydney as botanist with the Matthew Flinders expedition. In his time in the colony, George Caley gathered thousands of herbarium specimens for Kew Gardens as well as the herbaria of Banks and Brown. He was succeeded in Banks-supported NSW collecting by Allan Cunningham (*Pathfinders*, pp. 120-128). One possible reason for Banks ceasing to support Caley was that Caley complained a lot.

George Caley is commemorated in the names such as *Banksia caleyi*, and the orchid genus *Caleana*.

Other articles in issue 95 are concerned with Sydney Parkinson, the artist employed by Joseph Banks on the *Endeavour* voyage and with the rare eucalypt, *Eucalyptus recurva* that grows from a few lignotubers estimated currently to be 13,000 years old. The author, Halina Steele, is a botanical artist and she includes her painting of the species. Her article also describes the various attempts to propagate *E. recurva*. Both issues of *Friends* also have articles on the newest development at the gardens, the Banksia Garden. The article describes the efforts made to provide the correct growing conditions for the banksia plants

from Western Australia, including removing the original soil and replacing it with hills formed from layers of varied growing media. The special mix includes ash from a coal-fired power station. Banksias from the eastern States not requiring such stringent conditions will be placed in the original Gardens soil, only modified to improve drainage. Australian National Botanic Gardens is established on the slopes of one of the hills that encircle Canberra and the Banksia Garden has been built on the same lower level as the main entrance, further along from the Tasmanian Garden.

Both issues have book reviews. One review concerns the biography *Banks* by Australian and retired newspaper journalist, Grantlee Kieza. This book, published in 2020, is the latest in a series of biographies written by Kieza of eminent Australians. The front cover proclaims the book to be a tale of 'lust, science and adventure' – not something to raise one's confidence about the quality of the book but the reviewer does mention that there are 73 pages of bibliography, endnotes and index. (I have done a review in the previous article). Other biographies of Banks are from Britain, by Patrick O'Brian, better known as the author of the *Master and Commander* series of novels and by Edward Smith, published in facsimile in 2011, actually written in 1911.

The summer issue (vol. 30, no. 245) of *Australian Plants* continues the story, started in the winter issue, of the 1770 voyage of the *Endeavour* up the east coast of this continent beyond Botany Bay. Lieutenant Cook (promoted to Captain after the voyage) made twelve more landings, mainly searching for fresh water, but once, at Endeavour River to haul the ship ashore to repair the hull, damaged by the encounter with a coral outcrop. The town of Cooktown was established adjacent to the site of the beaching. Joseph Banks and Daniel Solander collected at each stop but had 48 days to gather herbarium material while the *Endeavour* was repaired. This issue has photos and descriptions of some of the plants gathered by the botanists plus some specimens they might have seen if the voyage had made more stops.

Both issues of *Australian Plants* have discussions of why neither Cook nor Banks mentioned the more favourable and nearby Port Jackson (Sydney Harbour) in their formal reports (France was an enemy of Great Britain and a rival colony builder at the time).☉

These two plant photos are of species collected by Banks and Solander, the *Clerodendrum floribundum* from the Palm Islands and the *Nymphaea gigantica* while stranded at the Endeavour River.

Clerodendron floribundum

Nymphea gigantica

Bare Rock

Roy Skabo

I have been through Fingal several hundred times and never given it much thought, although since I became interested in native flora I have often wondered if it would be possible to get up onto the hills above the huge cliff to the south of the town.

The opportunity to do just that arose in April this year. The St Helens Hub4Health group, with which I have walked on occasions, arranged a trip there in April, led by one of its members who lives at the foot of the cliff which is known as Bare Rock.

Never having strayed from the highway as I travelled through Fingal, I was amazed at the country between it and Bare Rock. Our guide Alanna and her husband live in perhaps the most spectacularly situated site in the state, with the vertical dolerite cliff face of Bare Rock behind them and views towards Stacks Bluff over the Esk Valley to the north. They are both rock climbers and apparently Bare Rock is a climbers' mecca. We didn't meet Alanna's husband but we did see him as a tiny figure half way up the cliff.

Our walk was flat for the first few hundred meters but then rose very steeply via a fairly rough track. On this steep section we found huge numbers of *Teucreum corymbosum*, a member of the mint family which is listed as rare in Tasmania. Most of it had finished flowering but near the top we found some still in flower. Also near the top we started to find a beautiful white daisy, *Helichrysum leucopsideum*, which I had never seen before. We found thousands of these plants as the walk continued, a spectacular sight. The top, behind Bare Rock, was a delightful open grassy area with spectacular views over the Esk Valley and Stacks Bluff to the north of the valley. This area was host to a multitude of herbaceous plants and numerous shrubby species. One of the small prostrate shrubs, *Opercularia varia,* was detectable by its smell alone; it occurred in profusion along the whole walk.

After lunch we headed east toward the ridge which would complete our circuit. The ground was rocky and fairly rough but the fires of a couple years ago had made scrub-bashing unnecessary and had encouraged the germination of numerous attractive species, including *Stackhousia monogyna* (still in flower!).

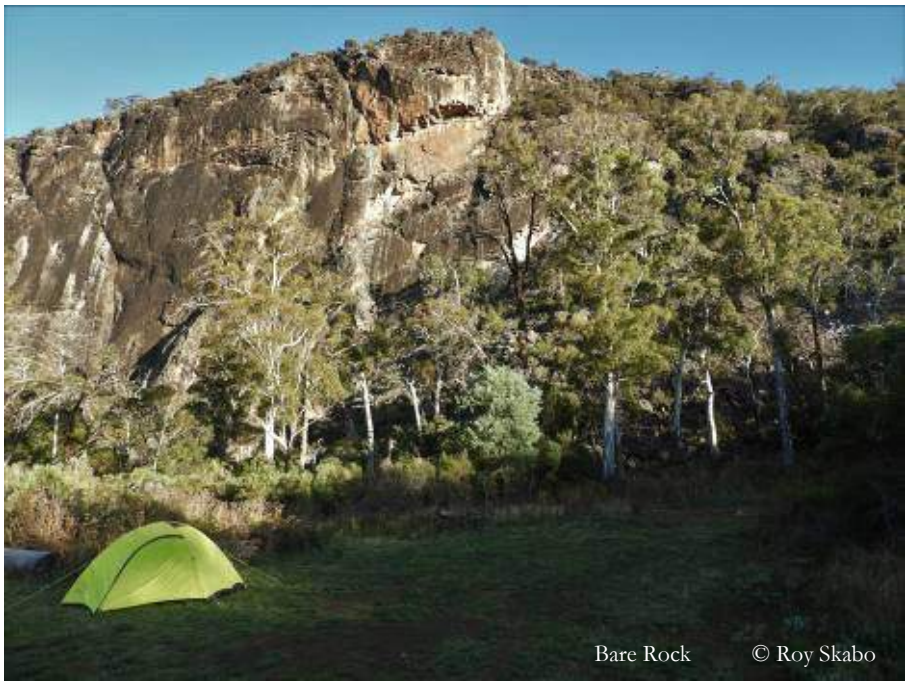
In the few grassy open areas we traversed we found huge numbers of the helichrysum mentioned above, growing in brilliant white patches and in these same areas I noted an unusual *Senecio*, which seems to be (according to Mark Wapstra) *S. hispidissima*, a rarely-sighted species in Tasmania.

The final couple of hours was spectacular but quite arduous. Here the track followed an ever-narrowing ridge with the Fingal Rivulet visible below us to our right and great views of the Esk Valley (and our tiny cars!) to our left.

It was at this stage that we came upon thousands of young plants with a very distinctive appearance. Alex identified them as *Cyphanthera tasmanica*, listed as rare. This member of the Solanaceae family is endemic to Tasmania and appears (often in huge numbers, as here) after fire, but then disappears again over the next ten or so years. I had seen it once before in the Bluff River Gorge, where it may or may not still be present.

Its short lifespan makes it difficult to keep track of over time, so finding a new population is quite useful and is of interest e.g. to James Wood of the RTBG's seedbank.

It is possible to reach the top of Bare Rock by 4W-drive vehicle, apparently, but I do not know how difficult the driving is. I will do a recce later in the year in the hope that our northern group members can have a somewhat easier access during an excursion to this delightful place. As usual, members of other groups will be welcome to join us. ⊙



Bare Rock © Roy Skabo

Below: Above Bare Rock

The Tarkine – Well Worth A Trip

Dick Burns

The widespread Tarkine image is of green cathedrals of rainforest. These tall forests are of major importance, but the Tarkine contains many other significant treasures.

The Tarkine is generally regarded as that part of Tasmania bounded to the north by the Arthur River, and to the south by the Pieman River. Its eastern boundary is the Murchison Highway and the western limit is of course the Southern Ocean. The proposals for national park status are more specific, making allowance for settlements, etc. Within this small part of Tasmania are numerous cultural and natural features with significant heritage value, each one important in the understanding of Tasmania. Archaeological, historical, geological, landscape, botanical, zoological and ecological values all have contributed to a large part of it being recognised by the Australian Heritage Commission as part of Australia's National Estate.

Some of the best undisturbed and unburnt cool temperate rainforest is reserved in the 17,980 ha Savage River National Park (4% of the Tarkine).

Botanically, the Tarkine contains many distinctively Tasmanian plants, growing in several plant communities that typify Tasmania. The Tarkine has only been partially surveyed for its vascular flora. More primitive plants such as mosses and liverworts are integral to the health and the experience of the Tarkine.

The name 'Tarkine' was chosen to recognise the original human inhabitants of the area, the Tarkiner tribe of the Aborigines. The Wikipedia entry is worth checking out – it is kept reasonably current.

The plant communities

A plant community is an association of a number of species of plants, growing in an area where conditions are appropriate for all those plants to succeed. The area with its particular conditions is a habitat. Altitude, temperature range, amount of sunshine, amount and type of water and steepness of slope are influences.

The Tarkine experience is greatly affected by its distinctive plant communities with only major ones being described here. More detailed books also refer to subdivisions within communities, such as 'gallery rainforest', 'thamnic rainforest', etc. A community is not always composed of the same collection of plants. For instance, open forests may be dominated by swamp gum, or brown-topped stringybark, etc., or mixtures thereof.

Cool temperate rainforest

The Tarkine contains the largest contiguous area of any kind of rainforest in Australia. Unlike tropical rainforests with its large number of tree species, cool temperate rainforest is a community dominated by one or two kinds of trees: in the Tarkine, myrtle beech is the dominant species. Upper branches of the dominant trees interweave, preventing most light from penetrating to the plants below. As a result, these understorey plants tend to have large soft leaves. Moisture-loving ferns, mosses and liverworts are common.

Bushfires generally destroy rainforests. If left undisturbed, large tracts of Tasmania will eventually become cool temperate rainforest.

Tarkine *continued*

Wet sclerophyll forest

In areas with a rich soil and reliable available water, wet sclerophyll forest can develop. Plants are close-set with dense growth. Because drying out is not as great a problem, plants tend to have larger softer leaves.

The understorey is typically a tall dense shrubbery that often contains rainforest species. The shrubbery hinders further light penetration; damp- and dark-tolerant species such as ferns succeed. Some species in wet sclerophyll forest are adapted to tolerate fire, many are not.

Dry sclerophyll forest

This community will develop in areas with low-nutrient soil and reduced water availability. Fire frequency is generally high and most species are fire-adapted. The spreading branches of the trees do not interweave, allowing up to 30% of sunlight to reach the understorey. This may be composed of medium to low shrubs, generally with sclerophyll leaves. Understoreys of sedges or grasses also occur.

Woodland

Where the spacing between trees increases so that tree branches interrupt less than 30% of the sky, this is referred to as woodland. The understorey is similar to that of dry sclerophyll forest.

Heathland

Heathland is a treeless community growing in areas with little water availability, on low-nutrient soils that are subject to fires. It is composed of a rich mix of low-growing sclerophyll shrubs.

Community heathland near Couta Rocks

Tarkine *continued*

Buttongrass moorland

This community is a major landscape feature of Tasmania, the 'buttongrass plains' of many bushwalkers' tales. Excellent examples are frequent in the Tarkine. Moorlands form on wet boggy country, mostly flat with a peat-rich soil called podsol. The community is sometimes composed solely of buttongrass, but may also contain other low-growing, damp-tolerant species. Buttongrass, *Gymnoschoenus sphaerocephalus*, will recover from fires.

Grassland/sedgeland

These are extensive treeless areas dominated by grasses (family Poaceae) or sedges (families Cyperaceae and Restionaceae). Perennials or low heathland plants can be found among the grasses or sedges. These communities tend to form on poorer soils. Grassland prefers drier conditions, sedgeland is often wet.

Dry coastal zones

Plants growing in sand dunes or among rocks close to the breaking waves not only have to tolerate sun and strong wind. The sand of beaches and dunes contains a high proportion of shell fragments, making this growing medium alkaline. Spray from breaking waves will bring salt to the soil and the plants. Offshore winds drive sand and salt fragments against plant surfaces, causing abrasion and the nipping off of soft new

Couta Rocks

Tarkine *continued*

Obvious effects of these adverse factors lead to both wind-pruned and low-growing plants. Leaves will be small and hard, thick or fleshy. Many plants have a greyish colour due to waxy coatings or a matting of hairs: both control water loss and abrasion.

Exploitation since European settlement

Sealers were taking seal fur in the north west corner of Tasmania, particularly from Bass Strait islands before 1803. The first official report of Huon pine, *Lagarostrobos franklinii*, on the Pieman River was made in 1824, but the Parks and Wildlife Service (PWS) suggest exploitation started before this. There are reports of squatters along the coast prior to 1825.

More official land exploration by Europeans started in 1826/7. Surveyors for the Van Diemen's Land Company (VDL Co) searched for land suitable for settlement and grazing. They surveyed the course of the Arthur and Pieman Rivers, eventually selecting land north and east of the Tarkine.

By 1840, Temma was recognised as the least dangerous landing place for boats in the general area. Later, grazing leases were granted around Temma. Cattle were driven along the coastal strip through the Arthur-Pieman area to Zeehan, with overnight rests at Montagu, Marrawah, Temma and Lagoon River. These cattle drives ceased in the 1920s.

For a time, blackberries were harvested from Temma for the Hobart IXL jam factory. By the early 1900s, grazing leases had been granted from Marrawah south to Thornton River. From 1968, Circular Head farmers were allowed to agist cattle in the Arthur-Pieman area. The 2002 PWS management plan recommended that stock be managed to ensure that the agistment be managed sustainably, and water levels and other values be protected. Several shack areas arose for fishermen or as weekenders at coastal streams. These are gradually coming under government control.

Timber became important economically in the 1850s with the growth of Melbourne, because of the Victorian gold-rush. The main exports were blackwood, *Acacia melanoxylon*, and 'Tasmanian oak', mostly the timber of stringybarks, *Eucalyptus obliqua* and *E. delegatensis* subsp. *tasmaniensis,* selectively logged. The trees were felled, pit-sawn or split into weatherboards and shipped from river timbermen's camps. The first large sawmill was built near Smithton in 1885. In 1969 and 1973 respectively, the Tasmanian Forestry Commission (name changed at least twice since) built the Tayatea and Kanunna Bridges across the Arthur River, allowing more intensive harvesting of timber in the Tarkine. A severe flood washed the concrete Tayatea Bridge away in the 2000s but it has been rebuilt to 'set up a tourist circuit'. Much of the Huon pine in the Pieman catchment was harvested prior to the construction of the Reece Dam as part of the hydro-electric constructions on the river.

In 1871, tin was discovered at Mt Bischoff, behind Waratah. This very rich mine led to more intensive prospecting. Between 1902 and 1912, copper was mined from Balfour. A small town arose, with a tram line for the ore being built to Temma. A rich silver-lead deposit at Magnet was worked for a time, as was tin at Cleveland. Small quantities of alluvial gold and wolfram (an ore of the metal tungsten) have been considered for exploitation, but abandoned. Work on the Savage River iron ore deposit started in 1965.

Driving north-south in ordinary vehicles was only possible after the Murchison Highway was built in the early 1960s. In the1990s, the Western Explorer road was cut through the Tarkine to link two older roads and provide a circuit drive for tourists.

Recent bushfires, such as those in 2016, affected some spots in the Tarkine but recovery is happening.

State-wide APSTas Members' Get-together 2021
November 12, 13, 14

North West group have decided to use the **Tarkine** area as a base for the annual Get -together.
Following recent trends, there will be:

an afternoon walk on the Friday, followed by a light evening meal
a full day in the Tarkine area on Saturday, followed by the Annual Dinner in the evening
a walk on the Sunday prior to departure.
Packed lunches can be provided on Saturday and Sunday.

Full details on the walks will be provided at a later date.

Accommodation:
The Riverbend Youth Centre camp, 358 Trowutta Rd, Scotchtown, 5 minutes from Smithton, has been booked, so participants will have maximum time to mingle. The centre is 5 minutes out of Smithton, on the way to the Tarkine.
The cost for the weekend accommodation package (includes all meals) will be $110 per person

The centre has in-house accommodation:

14 rooms with bunk beds (4, 6, 8 or 10 bunks in a room - we will only need to use the lower ones) and there may be a need to share a room with a friend or two. The bathrooms are shared and are separate male and female. You will need to bring your own bedding (pillow, sheet and blanket / sleeping bag, and towel)
There are also some separate units with a double-bed and two singles in one room with ensuite.
We will try to meet your preferences where possible, so **book early.**

- sites for RVs (with/without power) and sites for tents.

The weekend will be fully catered for any centre residents:
Breakfast provided on both Saturday and Sunday
Meet and greet on Friday with a light evening meal (available to non-residents)
Annual Dinner on Saturday (but BYO Alcoholic Drinks) (available to non-residents)
Packed lunches for Saturday and Sunday.

There is a large lounge room, a hall with projection facility, a games room, and a dining room.
There is a communal make-your-own tea/coffee space in the dining room, with a refrigerator for personal items such as milk.

Please **book early** to be sure we can accommodate your preferences.
Bookings for the Riverbend venue close 31st August 2021.

If you are staying elsewhere please book in on the form overleaf for the walks and the dinner.

Booking form for State-wide Annual Get-together, Tarkine.
12th,13th,14th November 2021.

One person per form

Name: .....Membership No:.....

❶ I shall be staying at Riverbend in (circle A, B C or D

A) the accommodation provided

I would like to share with:..... and/ or .....

B) an RV requiring power
C) an RV not requiring power
D) a tent

I require a packed lunch for Saturday yrs/no
Sunday yes/no

ã I have dietary requirements yes/no
Please request a special form for this from apstnorthwest@gmail.com

Total Cost for the Riverbend weekend package (includes all meals):
$110 per person.

❷ I am saying elsewhere but would like to attend

the Friday evening Meet and Greet @ $10
the Annual Dinner @ $45

Pay by EFT if possible to
Australian Plant Society NW
BSB: 633000
Account Number: 152025870
Surname and/or membership number as reference.

Or
Send a cheque to
J. Boevink,
P.O. Box 68,
Port Sorell
Tasmania 7307

****** Email your completed form to APSTnorth-west@gmail.com
Or Mail to
M. Slattery
P.O. Box 135E
East Devonport
Tas 7310

Calendar for 2020 - 2021

This Calendar of events is compiled from best available information supplied by Groups and Council but is subject to change. To avoid clashes that may limit opportunities for all members to participate, event organisers are requested to consult this Calendar when finalising arrangements.

Subject to COVID 19 restrictions

June	2	Wednesday	Hobart	Kingborough Day Meeting
June	5	Saturday	Hobart/Northern	Propagation
June	12	Saturday	Hobart	General Meeting
June	15	Tuesday	North West/Northern	General Meeting
June	16	Wednesday	Hobart	Kingborough Day Meeting
June	18	Thursday	North West	Propagation
June	26	Saturday	Council	Zoom Meeting
July	7	Wednesday	Hobart	Kingborough Day Meeting
July	14	Wednesday	Hobart	General Meeting
July	20	Tuesday	Northern	General Meeting
July	22	Thursday	North West	Propagation
July	24	Saturday	North West	Day Meeting
July	27	Tuesday	Northern	Working Bee HFNG
August	4	Wednesday	Hobart	Kingborough Day Meeting
August	7	Saturday	Hobart/Northern	Propagation
August	11	Wednesday	Hobart	General Meeting
August	17	Tuesday	Northern	General Meeting
August	17	Tuesday	Northern	Working Bee HFNG
August	21	Saturday	North West	Day Meeting
September	1	Wednesday	Hobart	Kingborough Day Meeting
September	4	Saturday	Hobart/Northern	Propagation

September	8	Wednesday	Hobart	General Meeting
September	21	Tuesday	North West/Northern	General Meeting
September	25	Saturday	Council	Meeting, Ross
September	28	Tuesday	Northern	Working Bee HFNG
October	2	Saturday	Hobart/Northern	Propagation
October	6	Wednesday	Hobart	Kingborough Day Meeting
October	13	Wednesday	Hobart	General Meeting
October	19	Tuesday	North West/Northern	General Meeting
October	20	Wednesday	Northern	Excursion
October	26	Tuesday	Northern	Working Bee HFNG
November	3	Wednesday	Hobart	Kingborough Day Meeting
November	6	Saturday	Hobart/Northern	Propagation
November	10	Wednesday	Hobart	General Meeting
November	12 13 14	Friday Saturday Sunday	APSTI Get—together and Annual Dinner	Tarkine
November	17	Wednesday	Northern	Excursion
November	23	Tuesday	Northern	Working Bee HFNG
November	27	Saturday	Council	Council Zoom Meeting
December	1	Wednesday	Hobart	Kingborough Day Meeting
December	4	Saturday	Hobart	Propagation
December	5	Sunday	Hobart	End-of-Year Lunch
December	21	Tuesday	North West	Christmas Gathering

Note that Hobart Group propagation sessions are now held as above from 1pm till 4pm.
There may be other events not listed here, as Groups adapt to changing conditions.
Keep in contact with your Group, and be sure to read the next Eucryphia.

Northern Group News

Kay Pallett

The March meeting was a Club night with presentations from six members on ways in which plants are pollinated. Ian Thomas as opening speaker gave a broad presentation on pollens, the diversity of these and their adaptions in response to various environmental conditions. Pollens display a huge range of structure, shapes and surface features which Ian illustrated with examples of pollen from banksias, hakeas, casuarinas and acacias. Lyn Mockridge described the skilful way bees such as the *Exoneura* species land on the keel of a pea flower e.g. *Aotus ericoides* and depress it thus exposing the pollen which they collect on their legs while drinking the nectar. Roberta Blackwood-Beattie described the male wasp, *Thynnus zonatus* which is lured to *Drakea livida*, a hammer orchid which mimics the female wasp in shape and pheromones. Whilst trying to mate the male wasp gets pollen on its back and transfers it to the next plant visited.

The distinctive means by which *Vallisneria australis* uses water for pollination was explained by Roy Skabo. The male and female flowers are on separate plants but come together as they drift on the surface of the water. Prue Wright described wind pollinated plants which typically have no bright colours, special odours or nectar. Some trees have the female flowers on the outer edges or in the case of the Hazel tree, catkins emerge before the leaves so that they are better exposed to the wind. Prue ended with a question: Will the wind pollinated plants e.g. Poaceae and conifers be the survivors in a world where insects are being wiped out?

Rosemary Whish -Wilson chose a little known plant, *Thismia rodwayi,* which grows under leaf litter in rain forests. Its means of pollination remains a mystery: small flies falling into the flowers, ants or fungus gnats, even potoroos have been postulated. A most interesting and informative night. The meeting ended with a delicious supper from Daphne Longman.

In March the Tasmanian Native Garden members continued the usual weeding, pruning and mulching tasks. Suzanne Talbot was pleased to see visitors enjoying the garden and Peter Longman reported that the Council has finally mowed a 3-4m strip around the fenceline. March propagation was exceptionally well supported and the ensuing April sale of approximately 1100 plants was a success although this year there was not a complete sellout of stock. Janet Hallam thanked all the marvellous contributors both prior to the sale and on Sale Day. A great team effort!

There was a brief business meeting in April followed by a carefully detailed and colourfully illustrated Plant of the Month presentation. Louise Skabo described *Persoonia juniperina* (prickly geebung) an erect, low growing shrub which is endemic to south east Australia. It flowers between December and March and is found in relatively dry places like dry sclerophyll woodlands and coastal heaths. It has bright yellow flowers, narrow leaves ending in sharp points, red young branchlets and oval green to purple fruit. Louise suggests that it would be lovely in urban native gardens.

The speaker Keith Corbett outlined the steps by which a run down 21 hectare parcel of land was turned into the present thriving Bushland Garden at Buckland - a regional botanic garden showcasing the native flora of south east Tasmania. Keith recounted the work that was required to build roads, fences, public facilities and to stabilise the face of the old quarry. The need for an excavator and large scale movement of rocks and gravel was a monumental aspect of the work involved. Then there were the display beds hewed from a heavily compacted area that had formerly been the rock crusher site. Keith showed

the dedication of so many throughout a twenty year period, the generosity of donors and vision which culminated in an integrated development where the quarry and the native species are presented in the best possible way and even enhanced by striking sculptures.

Several members appreciated a follow-up visit to the Bushland Garden following Keith's talk. Members also visited Windsong, the Teniswood property at Little Swanpoint. This was preceded by a viewing in Triabunna of botanical art works featuring Windsong flora.

At the May meeting Peter Dowde chose as Plant of the Month, *Melaleuca nesophila*, a summer flowering shrub endemic to the south east of W.A. It is easy to grow and can be trimmed to any size or shape - a good hedge plant. It has conspicuous pink pompom shaped flowers and is recommended as a showy addition to our gardens.

May speaker, Dr Toni Furlonge, is part of a small team of four within the Biosecurity Operations Branch responsible for all invasive species in Tasmania. It covers aquatic (marine and fresh), weeds, animals, birds and reptiles. Toni mentioned many invasive species: among these were eastern long necked turtles, eastern gambusia, also didymo (rock snot), an algae that if allowed to establish in Tasmanian rivers will change the ecosystem of the river beds.

The Asian shore crab already in Port Philip Bay poses a serious threat to Tasmania's native marine life. The alpine and subalpine habitat is threatened by orange hawkweed which interestingly is detected by a sniffer dog. Toni listed cats, rabbits, rainbow lorikeets even a monitor lizard all requiring the team's attention. Sadly it seems the huge task of eradication of invasive species is not matched by huge funding, however, members can help by being alert to threats to our native environment and by reporting sightings of invasive species to Biosecurity Tasmania. It was an informative night followed by good discussion enjoyed over a tasty supper - thanks to Sharon Percy. ☉

Persoonia juniperina

Hobart Group News

Heather Clark and Bruce Champion (in lieu of Sib)

We were taken around the world by two guest speakers in March and May, with a home stay in April with member Tony Crawford who shared his photos and experiences sourcing and growing predominantly hakeas in his garden in Tinderbox over approximately twenty years. Bruce Champion took us to America in March with his talk 'Gardens of the High Line in New York', explaining his visit with Sandra to a disused elevated railway line which has been put to good use as a length of varied gardens and walkways. Helen and Mick Statham cooled us down with their 'Scottish Islands Ecology and History' in May. Following one of their children, as we often do to where they live and work, they took the opportunity to look for a sheep of long-held particular interest and joined a small guided boat tour which allowed walking on or boating around several tiny wind-swept islands on the west coast of Scotland.

Walks were enjoyed to Shipstern Bluff in March, then to Mt Field National Park in April to see the 'fagus.

A Certificate of Appreciation was awarded to Bruce Champion for his efforts with the nursery and for managing the website for nine years, with our congratulations.

The Hobart group plants sale in April was very successful with hundreds of plants sold and lots of happy customers. The team-work by our members was exceptional with tables set up, plants moved out and positioned and all the signage put out before the first customers arrived. Selling was as usual hectic for the first hour then tapering to a trickle by closing time. Then all was packed away in record time. Great work by all!

Photos are being sought from members for the 2022 Calendar, and a Tasmanian printer has been chosen for the 3rd Edition of Tasmania's Natural Flora, which will be on the shelves by spring.

Sib is doing well in St John's Hospital after her stroke, and she and Keith had a lovely visit to Mt Field recently.

Helichrysum leucopsideum as referred to in article Bare Rock, page 21

North West Group News

Group Effort

North West have had a variety of happenings in the last quarter. In March a small group from the propagating team visited (by invitation) the Redbreast Nursery in Flowerdale to collect cuttings. Max Roberts, who runs the nursery, was very generous and helpful with his time and plants, and took the group to his own garden and large shade house.. Some cuttings were taken from species that NW had not grown before. The cuttings were put in at the Arboretum nursery the same day.

John Tabor presented digital photos at two meetings, March and May. In March we were treated to a day-by-day.adventure from Melaleuca to Cockle Creek. Flowers and fungi were of interest, especially *Prionotes cerinthoides* (Climbing Heath) in the rainforest and the *Richea pandanifolia*. At the May meeting John's photos were alpine, in a little-visited area near Cradle Mountain. The many different sizes and shades of *Bellendena montana* (mountain devil) elicited much interest and conversation.

We had the most magnificent weather for our plants sale, the best weather ever. Many people stayed on at the Arboretum, allowing children to play, dogs to be walked, or just for personal exercise. We are lucky to have this beautiful venue for our plant sales. We did not sell all the plants, unlike our spring sale, but a quantity of plants were sold to a local garden club and other locals. The 'Square' had teething difficulties, but eventually performed well. We also gained a couple of new members.

Our April meeting was a small group, but it was an enjoyable and very plant-oriented meeting with brief presentations by several members. Plants chosen were *Callistemon viminalis* 'Captain Cook', *Boronia cymosa*, *Hakea drupaceae* (formerly *Hakea suaveolens*), *Xerochrysum bracteatum*, and *Hakea Burrendong Beauty*.

Our Tarkine Team has been diligent behind the scenes meeting with the accommodation personnel, inventing various forms, and most importantly organising the walks and activities of the Annual Members' Get-together. To date there are 32 members booked for the weekend, and though they have paid, a few have not returned their booking forms. Details of the activities will be in the September Eucryphia journal, and will also be emailed to participating members.

Recently we were saddened to hear about Sib's illness, but are now glad to hear of her good progress.

Anopterus glandulosus (Native Laurel) at Winterbrook Falls

APST Directory

COUNCIL

Postal address: **P. O . Box 1205, Gravelly Beach TASMANIA 7276**

Email: **apstsec@gmail.com**
Website: **www.apstas.org.au**

President	Louise Skabo	6334 6787	Hobart Councillor	Keith Corbett	0419593059
Vice-President	Leoni Read	0429 705 062	North West Councillor	Riitta Boevink	64286909
Secretary	Mary Slattery	0402784086	North West Councillor	Drew Thomas	64371802
Treasurer	Rosemary Verbeeten	63944600	Northern Councillor	Jo Boniface	
Hobart Councillor	Sib Corbett	0419593059	Northern Councillor	Rob Worland	

GROUPS

Hobart Group

President	Vacant	0419 593 059
Secretary	Christine Corbett	6239 1904
Treasurer	Anthony Salt	0412673632
Contact Officer	Bruce Champion	6294 6970

Meeting place/time:

General meetings:
Kingston Primary School Library
Second Wednesday of the month 7.30pm except January, June, July and August.
For winter meetings, www.apstas.org.au/calendar

Kingborough Day Meetings:
2pm Centacare Units Meeting Room, turn left off Balmoral Rd. Kingston.
first Wednesday of the month (not January).

Northern Group

President	Peter Dowde	63317761
Secretary	Louise Skabo	6334 6787
Treasurer	Rosemary Verbeeten	6394 4600
Eucryphia Liaison	Kay Pallett	0400097025

Postal address: 45 Osborne Avenue, Trevallyn, Tas. 7250
Email: apstasnorth@gmail.com
Meeting place /time:
Max Fry Hall, Gorge Rd, Trevallyn 7.30 pm
Third Tuesday of the month (except January).
Website: www.apstasnorth.org

North West Group

President	John Tabor	6428 6512
Vice-President	Joy McIntosh	6426 2657
Secretary	Drew Thomas	6437 1802
Treasurer	John Boevink	6428 6909
Eucryphia Liaison	Mary Slattery	0402784086

Postal address: PO Box 68, Port Sorell, Tas 7307
Email: apstnorthwest@gmail.com
Meeting place/time:
St Pauls Church Hall, Church St, East Devonport
7.30 pm, Third Tuesday of each month (except January, July and December)