

Coffs Harbour Group NEWSLETTER No.148: August 2020



2020 COMMITTEE

President: Gwyn Clarke
gcl.38500@bigpond.com

Vice President: Morrie Duggan
morris@guarana.org

Secretary: Rob Watt
rob8milehill@yahoo.com.au

Treasurer: Janice Fitzpatrick
jfitzpatrick9@bigpond.com
0418350937

Newsletter Editor: Jan Whittle
jan64garden@gmail.com

Publicity Officer: Angela Lownie
angela_lownie@hotmail.com

Ordinary Member: Lindy Hills

APS Coffs Harbour Membership

We warmly welcome our new members: Roma Harris, Liana Joseph, Keren McClelland, Lucy McClymont, Michael Reede, Patrick Regnault, Ruth Rudge, Ashleigh Rustin, Naomi Rynne, Kimberlea Watts, and Kathryn Wiesener.

APS Website

www.austplants.com.au

Keep up-to-date with news, program of outings and meetings via our pages:

www.austplants.com.au/Coffs-Harbour

Committee News

Planning has commenced for the 2021 APS AGM, which our District Group is hosting. The Theme, *Rainforest Recovery*, will focus on rainforest in our region that was impacted by the 2019-2020 bushfires. The Field Trip on August 23 to Mt Hyland Nature Reserve will provide an opportunity for us to witness recovery progress in that area.



August Events

Evening Meeting

August 11, 7pm – 10pm

John Ross

Family Rutaceae

The Family Rutaceae is a significant element in many Australian ecosystems, from our rainforests to the healthy vegetation on poor coastal sands and poor soils of inland areas. This talk will focus on some of our local our species, their ecological and horticultural values.

Rescheduled Field Trip

Field Trip to Mount Hyland Nature Reserve (35km west from Dorrigo)

Sunday August 23, 8.30-9.30am start

Leader: John Ross

Mount Hyland is a unique Gondwanan, World Heritage Rainforest with a number of rare rainforest tree species. This Cool Temperate rainforest is also a wonder for fern, fungi, lichen and moss enthusiasts. The circuit walk is not arduous or long, allowing time to amble and study any fascinating specimens we encounter. It will also be of interest to see how the surrounding sclerophyll forests we pass through are regenerating after the horrendous summer fires.

Arrangements

Registration: all participants must register with Rob Watt by Saturday 22 (rob8milehill@yahoo.com.au or 02 6655 0043)

Meeting place: Bellingen, Yellow Shed at 8.30am OR Dorrigo, main street Pub to IGA area at 9.30am

Extras: BYO warm clothes, hot thermos, hand sanitiser and face masks (if car pooling is required)!



(R) Mark Graham photo

Rescheduled September Meeting

Morning Meeting

September 9, 10am – 1.00pm (NB this is a Wednesday!)

Fiona Duggan

Fiona's Fabulous Fungi

The Fungi Kingdom is estimated to comprise 2 – 3 million species, of which only 120,000 have been described. Fungi are the principal decomposers in ecological systems, and thus play a vital role on our planet.

Sue McEntyre: The Unique Albany Old World Pitcher Plant

Pitcher plants are divided into two groups: 'old world' and 'new world'. Old World pitcher plants are members of the family Nepenthaceae (order Caryophyllales). In this family the pitcher forms at the tendrils that extend from the midrib of the leaves. They are mostly vines, but some are ground dwellers and epiphytes. The most striking pitcher plants grow in Southeast Asia with four species found in Australia, (*Nepenthes mirabilis*, *Nepenthes rowaniana*, *Nepenthes tenax*). New World pitcher plants belong to the family Sarraceniaceae (order Ericales). They are ground dwelling plants where the

pitchers arise from a horizontal rhizome. These species are found in North America and South America.

The Albany Pitcher Plant (*Cephalotus follicularis*) is the only species of the family Cephalotaceae (order Oxalidales). It is an advanced rosid. A relic of Gondwanan period, its nearest relatives are the rainforest trees of tropical South America. With its toothed mouth and lid it looks like Nepenthaceae or Sarraceniaceae, but it has a closer relationship with apples, cabbages, roses and oaks than these tropical and North American pitcher plants.

Botanical specimens of the Albany Pitcher Plant were first collected during the *HMS Investigator* to King George Sound in December 1801- January 1802, and is native to damp sandy soil in southwestern Australia. It reaches a height of 20 cm and is a small perennial herb. Unlike other pitcher plants it bears traditional leaves that grow from underground rhizomes, in addition to those modified into a pitfall trap.

The carnivorous leaves form short, green pitchers (that turn purple with sun) and are protected by a hairy red-and-white-striped lid that prevents rainfall from filling the trap. The coloration of the lid is also thought to attract prey and features patches of semi-transparent tissue that confuse and exhaust flying insects within the trap. The opening of the pitcher is adorned with a number of smooth, dark red rings that produce an attractive nectar and prevent climbing insects, primarily ants, from escaping. Inside, the pitcher features two types of glands that produce fluid and digestive enzymes to break down the prey and allow the nutrients to be absorbed. The plant bears small bisexual flowers on long stalks to distance potential pollinators from its traps.

The inflorescence groupings are hermaphroditic, six-parted, regular flowers, which are creamy or whitish. In the cooler months of winter (down to about 5 degrees Celsius), they have a natural dormancy period of about 3–4 months, triggered by the temperature drop and reduced light levels.

The pitcher trap structure is the same as other pitcher plants. The peristome at the entrance of the trap has a spiked arrangement that allows prey to enter but hinders leaving. The lid, operculum, over the entrance prevents rain entering and diluting the digestive enzymes inside. Insects trapped in this digestive fluid are consumed by the plant. The operculum has translucent cells, which confuse the prey as they appear to be patches of sky. One insect, the wingless stilt fly (*Badisis ambulans*) relies on the plant for survival. It lays its eggs in the pitcher fluid where the larvae develop and feed on the plants captured prey.

References:

Adam Cross, July 2019, *Beating around the Bush*; ABC Gardening Australia, *Calyx of Carnivores*



Jan Whittle: Success with Grevilleas

In mid July, we held our first meeting since March. We had a 'Covid' full house of members to hear Gwyn Clarke talk about the cultivation of grevilleas and discuss specimens she and other members contributed from their gardens. The approximately 60 different species were displayed on 3 tables, indicating the wide range of grevilleas that flower in our region during winter. Of course, these represent only a fraction of the 362 species and ~100 subspecies listed within the genus (*Flora of Australia*, 2000). Grevillea is the third largest genus of Australian flowering plants with all but seven species endemic to Australia.



Gwyn introduced her talk on Grevilleas with an interesting connection with this 250th anniversary year of Cook's arrival on the east coast of Australia by referring to the first *Grevillea* species to be collected at Botany Bay by Joseph Banks and Daniel Solander. Solander gave it the manuscript name '*Leucandrendroides*' for the genus in recognition of its connection with the South African Proteaceae. This first *Grevillea* specimen was subsequently identified as *Grevillea mucronulata* and named by Robert Brown. Other specimens collected on that initial Cook voyage included *G. pteridifolia*, *G. glauca* and *G. parallela*.



Green spider flower, *G. mucronulata* - narrow leaf form (L)

Charles Francis Greville (R)

It would not be for another 40 odd years that Joseph Knight suggested 'Grevillia' for the genus to acknowledge Charles Francis Greville (1749-1809), patron of botany, a Fellow of the Royal Society. At much the same time Robert Brown was working through the species of the genus, including those he

collected while on an expedition to Australia with Matthew Flinders (1801-1805). He used the spelling 'Grevillea', which was subsequently popularly adopted and formalised.

Many Coffs Harbour APS members have visited the Clarke's native garden, but for those who have not, I would like to provide some background to Geoff and Gwyn's expertise with grevillea species. Before moving to the north coast about 10 years ago, they had established a garden in Canberra, which included grevilleas. Both were very active members of the APS in the ACT, with Gwyn taking on the role of President several times. Their post-retirement plans were to build a new house and garden on a rugged 40-hectare 'block' that spans two ridges of exposed Kangaroo Creek Sandstone and divided by a winter creek. The endemic vegetation is dry sclerophyll forest (*Eucalyptus pyriformis*, *Corymbia gummifera*, *Angophora* sp, *Syncarpia glomulifera*), with patches of heath. Other endemic plants on the property include *Isopogon petiolaris*, *Lomandra longifolia*, hakea spp., banksia spp. and acacia spp. However, there were no grevilleas!



The extensive garden, which was established around the cleared house site in shallow, nutrient-poor sandy soils now features a range of native species including a wide variety of grevilleas. Their achievement is the result of understanding the cultivation requirements of this gorgeous species. In her presentation, Gwyn summarised these as follows: Good drainage, a sunny aspect, acidic soil (pH 6.0-6.5), gravelly loam or sandy soil, and careful positioning (e.g. away from other plants that require added phosphorus). From ground covers to small, medium and large shrubs, there will be a place for grevilleas in your garden.

Recommended resources are:

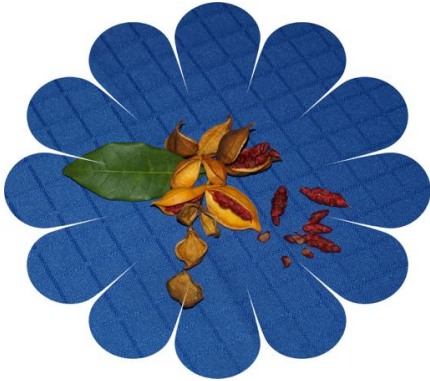
Growing Native Plants on the North Coast of NSW, (2006) Coffs Harbour Group, APS, Coastal Bookbinding

The Grevillea Book, Vols 1-3, (1995) Peter Olde & Neil Marriott, Kangaroo Press

Australian Native Plants, 6th Ed., John Wrigley & Murray Fagg, Reed New Holland.

Editor: Thanks to Rob Watt for his notes of Gwyn's presentation.

Angela Lownie: *Aponcynaceae tabernaemontana pandacaqui*
(syn. *Ervatamia angustisepala*, *Ervatmia pandacaqui* ⁵);
commonly called **Banana Bush or Windmill Plant**



| | |
|------------|-------------------------------------|
| Family: | Apocynaceae |
| Subfamily: | Rauvolfioideae |
| Tribe: | <u>Tabernaemontaneae</u> |
| Subtribe: | Tabernaemontaninae |
| Genus: | Tabernaemontana Plum. ex L. 1753 |

The article is based on the experience of the author. It is written to publicise a lesser-known local plant and stimulate interest and debate on its features.

Please address correspondence c/o the Editor of this Newsletter.

Acknowledgement is made of the contribution of the vast experience of the members of the APS Coffs Harbour Group and thanks to the interest and encouragement of all, but particularly the “senior” members such as Barry Kemp whose knowledge is so freely given.

A couple of years ago I had an interesting stroll around our 1.2 hectare bush block in Moonee Beach with APS Coffs Harbour member and author, Barry Kemp. We noticed a few shrubby bushes in an uncleared area with bright yellow fruits shaped like miniature ripe bananas. Barry identified them as *Aponcynaceae tabernaemontana pandacaqui* or Banana Bush, and thus started my quest to learn more of this lovely little shrub with a long and difficult to remember, botanical name. “Banana Bush” is much easier for me! My interest has led to reference checks in my small library as well as a quite intensive Internet search.

The family name “Apocynaceae” is also known as the “Dogbane” family, which is translated as “away from dogs.” This indicates a significant characteristic of this family, namely its toxicity if ingested. My research indicates that another family member and common in many Australian gardens, Oleander, is considered as one of the most poisonous plants on earth.

The genus found on our property is *Tabernaemontana* after the “father of German botany” Jacobus Theodorus Tabernaemontanus (1525 - 1590) (1). A translation of this word is “tavern in the mountain” (2) and is said to be a Latin translation of the name of his home town of Bergzabern. The genus is included with others as being commonly called “milkwood” after the milk-like sap exuded from the stems and flowers of the plant. (1)

It is a plant of the tropics, found in Asia, Africa, Australia, North America, South America, and many of the Pacific Islands. The Banana Bush grows naturally along the North East coast of Australia: on Cape York Peninsula, North East and Central East Queensland; south of Townsville and north of Rockhampton as well as in Northern NSW and in the Mid North Coast of NSW. It grows as an understory plant in Rainforest, Monsoon and Beach Forest; and in altitude from sea level up to about 800 metres. Our property is about 20 metres above sea level.

This plant is reported to be of variable habit, growing into a small tree up to 6 metres tall, with some authors describing it as growing to 10 to 12 metres. On our property on the west side of the Pacific Highway at Moonee Beach, there are no specimens above 1.5 metres in height. These grow as understory in the remnants of Eucalypt forest alongside *Gahnia aspera*, *Lomandra* spp., *Hibertia*

scandens, amongst others. In cultivation, it has preferred shade, whilst tolerating dry conditions and responding positively to an increased water supply.

The following features make it, in my opinion, a plant worthy of cultivation locally in our area and north of Coffs Harbour.

- Unusual and often abundant white flowers about 1.5cm in length, with petals arranged like the blades of a windmill.
- The flowers, which bloom in spring, are found in the leaf nodes; are fragrant and very attractive.
- After pollination, these develop into bright yellow fruit looking like small bunches of bananas hanging prominently from the ends of twigs and branchlets
- Several shiny, bright red seeds enclosed in jelly-like red arils develop inside the seed pod, which splits open lengthwise revealing its attractive contents. Mature seeds are brown and after separation from the enclosing, slightly sticky gel, fresh seed germinated reliably in a matter of weeks under standard conditions.
- The seedlings were tip pruned both at an early stage and regularly thereafter to encourage multiple stems and a bushy shape and increased density of foliage.
- The first batch was planted in 2017 in two locations. Results are shown below.



(6)

Over the last two years we are using these plants propagated from seed from the naturally occurring plants, as a low boundary demarcation hedge in proximity to where the parent plants are found. The seedlings were tip pruned and lightly pruned regularly to encourage bushy growth. Close to 20 seedlings were planted at 1.5 m. intervals. The attrition rate over at least one year was 3 plants with another 3 or 4 showing signs of new shoots from the base. Their progress, with little additional watering during a recent dry period, has been relatively slow. The average height of the healthy remaining ones is about 0.6 m. By comparison, another 4 -5 plants from the same group of seedlings but planted in a different location, are now about 1 metre high. This faster growth is probably due to proximity to a hose enabling regular watering. This group also had regular applications of homemade liquid Comfrey.

Local native plant nurseries showed some interest in this attractive, robust plant but are reluctant to attempt any marketing due to its relatively unknown status in the marketplace. As a 'home grown' plant enthusiast, I hope that members of our APS Coffs Harbour Group will try out the Banana Bush and provide feedback from a wider user base.

Reference to Dogbane in the first paragraph indicates that the Banana Bush can be toxic. Indeed it has received a lot of attention by authors and some researchers investigating both its scientifically demonstrated pharmacological properties and secondly its uses in folk/bush medicine, both in Australia, and elsewhere. Of the former, an example is work by a scientific group (3) at the University of Chang Mai in Thailand. They published papers in 1998 and 2003 describing an investigation into the effect of reconstituted extract of *Tabernaemontana pandacaqui* on various induced pathologies of rats. This detail of the subjects tested was not included in the title and appears to contribute to erroneous efficacy claims in several other references on the Internet. In response, I have entered into relevant email correspondence with Web site authors regarding this.

“Studies on carrageenin-induced rat paw edema, yeast-induced hyperthermia in rat and writhing response induced by acetic acid in mice showed that the alcoholic extract of stems of *Tabernaemontana pandacaqui* (*T. pandacaqui*) has significant anti-inflammatory, antipyretic and antinociceptive activities. These activities are due to alkaloidal components since they were also observed when the crude alkaloidal (CA) fraction separated from alcoholic extract was tested in the same models.”

A good example of the latter descriptive and more subjective accounts is by Donald Simpson (4) and quoted from his 18 volume series, *Some Plants of Magnetic Island*:

“The fruit is highly poisonous, and it would be sensible to remove the fruits if the plant is growing in areas where small children play. It makes an excellent container plant. In the garden, plant it in an area of part shade with rich soil and good drainage. It responds well to trimming.

The root bark has been used to treat tropical fevers, and the indigenous Australian peoples rubbed the fruits on sores to assist healing. The leaves have been used as a cataplasm on the belly to induce menstruation and to hasten parturition, and a concoction of leaves has been added to the bathwater of women after childbirth. The roots are used as an anti-diarrhoeal, and scrapings from the roots rubbed on to a sore nose. Sap from the ripe fruit is applied to skin affected by ringworm, and a poultice made from the plant is used to reduce swellings and abscesses. The leaves are sometimes used as a bleaching agent.”

In conclusion, I must reflect that the process of turning my gardening efforts into this short report has been a very productive one. I recommend this process to others as a way to share your special interests and potentially increase our knowledge of the silent friends who inhabit our gardens with such grace and beauty.

References

- (1) <https://en.wikipedia.org/wiki/Tabernaemontana>
- (2) https://www.gardensonline.com.au/gardenshed/plantfinder/show_2878.aspx
- (3) *J Ethnopharmacol* . 2003 Jan;84(1):31-5. doi: 10.1016/s0378-8741(02)00264-7.
Anti-inflammatory, antipyretic and antinociceptive activities of Tabernaemontana pandacaqui Poir, T Taesotikul, A Panthong, D Kanjanapothi, R Verpoorte, & J J C Scheffer
- (4) <https://somemagneticislandplants.com.au/banana-bush> Author Donald Simpson
- (5) *Bioorganic & Medicinal Chemistry* 13(12): 4092-5 · July 2005
- (6)
http://www.anbg.gov.au/cpbr/cdkeys/RFK7/key/RFK7/Media/Html/entities/Tabernaemontana_pandacaqui.htm

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- Coffs Harbour Group, Australian Plants Society NSW Ltd, 2006, *Growing Native Plants on the North Coast of NSW*, Australian Plants Society, Coffs Harbour
- Wrigley, John W & Fagg, Murray, 2003, *Australian Native Plants, Cultivation, Use in Landscaping and Propagation*, 5th Edition, Reed New Holland



**Editor: Contributions to Newsletters can be sent to
jan64garden@gmail.com**