

Coffs Harbour Group NEWSLETTER No.150: January 2021



2021 COMMITTEE

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Treasurer: Bianca Golding
Newsletter Editor: Jan Whittle
Publicity Officer: Angela Lownie
Ordinary Member: Phil O'Shea
Liaison Member: Caroline Cox

APS Coffs Harbour Membership

We warmly welcome our new members:
John Gregory and Morag MacGregor.

APS NSW 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

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### Committee News

The Committee met on January 17 with the main agenda to develop the Programme of Meetings and Field Trips for 2021 (see attached Draft). Updates or amendments to this schedule will be sent to members as they come to hand, as well as being available on our web pages.

### Registration of Attendance at APS Meetings and Field Trips

*Registration is Required to Comply with COVID-19 regulations:* all participants must register with either **Rob Watt** ([rob8milehill@yahoo.com.au](mailto:rob8milehill@yahoo.com.au), 0266 550043) for Coffs Harbour; or **Caroline Cox** ([carocox@outlook.com](mailto:carocox@outlook.com)) for Far North Coast prior to attending any gathering to ensure safe practice and physical distancing.

### Next Coffs Meeting

February 9, 7.00pm – 10.00pm  
Gwyn Clarke, President: *APS Display Planning for Spring Festival*

### Next Coffs Field Trip

Sunday January 31, 9.30 – 11.30 am  
*NCRBG Botanists Walk* led by Rob Watt. Meet at the Main Entrance of the Botanic Garden

### Next Far North Coast Field Trip

February 20th to the **Border Ranges NP**, probably the Helmholtzia track and lunch at the Antarctic Beech and lookout. Organiser is Deb Foster.

## Rob Watt: Dr. John Hunter's Talk: *Plant Diversity on Inselbergs (rocky outcrops); and OCBILs Vs YODFELS: How Plants Persist*

Why study inselbergs? In John's case it was initially an Honours project to examine the infraspecific variations of a widespread species: *Brachyloma daphnoides*. While hunting *Brachyloma saxicola* across outcrops all over the tableland – including Torrington, Bald Rock, Cathedral Rocks, Butterfield and the Gibraltar Range – it became obvious that these rocky outcrops contained many narrow and undescribed species. Thus, it was a short jump to for him to enrol in a PhD to study the impact of the inselbergs on species development.

There are differences in plant life on the rocky outcrop (inselberg) and the surrounding sea (matrix):

**Inselbergs** are nutrient poor, and light abundant, space limited, infrequently disturbed:

- Shorter, smaller leaves, seed and fruit
- Diaspore dormancy more common
- Long-lived obligate seeding shrubs
- Shorter and earlier flowering period
- Long-lived, rare and endemic species (24% endemic), locally dispersed and persist by capturing and holding onto local space with long lived diaspores waiting from the infrequent gap for germination

**Matrix** has higher nutrients, more moisture, competition high, light more limited, biomass removal a higher risk (browsing/fire), ameliorated climate:

- Taller larger leaves, seeds and fruit
- More broadly dispersed
- Resprouting/clonality traits more common
- Common species, widely dispersed little diaspore dormancy but often resprouters, taller plants competing for light, sufficient nutrient and water to sustain underground organs and larger leaves, fruit and seeds.

### OCBILs Vs YODFELS

Old Climatically Buffered Infertile Landscape (OCBIL) floras have special features that provide for their continued existence including:

- reduced dispersability, increased local endemism and common rarity
- accentuated persistence – old lineage (Gondwanan Heritage Hypothesis)
- James effect – removal of inbreeding issues – heterozygosity
- Prolonged speciation at the margins, and
- Adaption to saline soils
- Nutritional and biological specialisation
- Special vulnerability – highly invisible after soil disturbance
- Enhance resilience (to fragmentation)
- Increased unpalatability

Compare this with the features of the Young Often Disturbed Fertile Landscape (YODFEL) floras:

- Good dispersal mechanism
- good colonisation
- common and widespread
- recently evolved rather than relictual
- nutritional and biological generalists
- tolerant to increased frequency of disturbance
- intolerant of prolonged fragmentation and rarity
- low or high population-genetic and species diversity

In summary:

- humans have mostly lived on and exploited YODFELS, and most world-wide research concentrates on YODFELS. Thus our understanding of biodiversity and conservation is biased towards these landscapes.

This last point is an important part of John's work on the inselbergs of the New England plateau region. The implications of those conclusions are clear. Indeed, they were brought home in an internationally significant article published a decade ago by Dr Stephen Hopper, an Australian, who was then the Director of the Royal Botanic Gardens, Kew:

Hopper, SD (2009) "OCBIL theory: towards an integrated understanding of the evolution, ecology and conservation of biodiversity on old, climatically buffered, infertile landscapes, *Plant and Soil* 322: 49-86.

John gave an example of how this can work to the disadvantage of the flora of the OCBIL when he noted the harm that could be done to OCBIL sites by even Indigenous cooler burning which, he believes that historic records show were done in YODFEL locations and not OCBIL. Extreme care must be taken because he feels that so much of our traditionally accepted beliefs don't take the unique OCBIL flora adaptability mechanisms into account.

To demonstrate this point he noted two examples of threatened *Eucalypts*: *E. rubida* subsp. *barbigerorum* (Blackbutt Candlebark) and *E. scoparia* (Wallangara White Gum). The former is found in forests and woodlands on higher nutrient soils (or YODFEL), the later on rocky outcrops and steep rocky escarpments (or OCTBIL). How do we shape our conservation plan to save these two rare species? Indeed, in determining the matter of rarity, we need also to look at the evolutionary history and enlist its support. And that goes directly to the OCBIL vs YODFEL dicotomy. Briefly, what John showed was that traditionally we would say that a species with a high population size and also widespread is far less rare than one that is restricted and in low numbers. But that is to overlook how plants grow in various habitats.

Thus the *E. rubida* subsp. *barbigerorum* grows across low hills and valleys, that is, over a broad geographical range. It has a large population size. While the *E. scoparia* grows in a narrow geographical range, with a very restricted (small) habitat specificity.

It could well be argued that factors like hybridization play a far greater role in the evolution of *E. rubida* and thus likely to be a far greater factor in species extinction than in the case of *E. scoparia*, where it is far less likely to hybridize; far less likely to colonize; deliberately increasing genetic diversity may be detrimental; no competition in its favourite habitat except with its own species (holding onto its spot is most important) and happy to grow in low populations with low genetic diversity.

The conclusion, when looking at the differences between the plants in an inselberg when compared to the matrix thus give the *E. scoparia* a better (less scarce) on the scarcity scale and thus saving limited resources when allocations are made between species.

John Hunter's talk was challenging for me while I listened. But to take the time later to understand the implications that arise from his extraordinary work done on inselbergs and question some of the standard environmental dogma is a sobering exercise. It shows once again how important that we utilise our professional horticulturalists and academics periodically in our speakers to take us to a new level of understanding of Australian flora.

*Editor Note:* Members who wish to read Dr Hunter's full presentation should contact Rob for a copy.

## **Jan Whittle: Kangaroo Island, South Australia**

I have visited Kangaroo Island (KI) many times throughout my life, being drawn to its natural beauty, rich flora and fauna, and especially the 500 km of rugged coastline and white sand beaches. There is a great deal to explore on Australia's third largest island. Total area is 4405 square km, 32% of which is protected by 23 Conservation Reserves; the first, Flinders Chase National Park, being declared in 1919.

On my early camping visits there were very few sealed roads and no tourist operations: just a quiet community of farmers, fishers, and three small townships providing postal and banking services, basic shopping, fuel and agricultural supplies. Indeed the Island did not have mains power until 1965 when a submarine cable brought it from the mainland. Even today, the majority of rural properties still rely on generators and solar for power, and rainwater collection for house use. In recent years tourism, creative arts, and specialist enterprises like wineries, eucalyptus and lavender oils, and Ligurian bee honey production have developed and yet, it still feels like stepping into the 1950s – residents rarely lock their houses or vehicles, life proceeds at a leisurely pace and there is always time for a chat.

My paternal ancestors were early settlers and generations of these pioneers now rest in the Kingscote Cemetery. The gravestones reveal stories of lives cut short by hardship, isolation, farm and fishing accidents, and lack of medical aid. It was common for women to bear children for 20 to 25 years; many

infants were lost at birth or in the first two years. My great granduncle Albert Whittle settled at Emu Bay on the north coast and his descendents continue working the farm he established. The original stone cottage he built stands today not far from Whittle Street on the foreshore. One of his sons, Harold (1861 - 1947) and wife Maud (1885 -1964) had 15 children, with the first three dying in 1906, 1907 and 1908. Their last child, Phyllis was born in 1929 and it was great to meet her several years ago to hear about her memories of growing up on her parents' farm.



(L) Whittle Street, Emu Bay; (M) original cottage, plus additions; (R) Albert Whittle

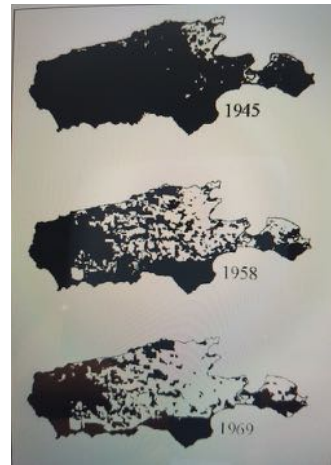
Dense mallee woodlands (*E. diversifolia*, *E. remota*, *E. cosmophylla*, *E. cneorifolia*) dominate the landscape, together with *Melaleuca* sp., *Callistemon rugulosus*, *Allocasuarina* sp. and *Xanthorrhoea* sp. Land clearing for settlers was a slow process with mallee lignotubers extremely difficult to eradicate without modern equipment. The *Kangaroo Island Courier* (1910) reports:

“It was not a matter of chopping it down once, nor yet a second or third time, that did away with this stubborn foe, which, however had eventually to succumb to the attacks of more stubborn men ... in summer they fired the grass, finding this the best and cheapest way of killing the foe out ... After killing the scrub they initiated a set programme of grubbing portions of the land every year until eventually they had a cleared paddock to go into.”



Land clearing for agriculture accelerated with a post war soldier settlement scheme.

The maps of 1945, 1958, and 1969 show uncleared natural vegetation in black.



A Government biological survey conducted in 1999 reported that the Island's diverse flora contained 1179 vascular plant taxa of which 56 are endemic. One of these, *Eucalyptus cneorifolia* (Kangaroo Island narrow-leaved mallee), used to distil eucalyptus oil, is the focus of an intensive regeneration effort through Landcare. *E. cneorifolia* occurs on the eastern end of KI and is the main species in the KI Mallee Woodland ecological community. This unique mallee woodland, which provides habitat for 250+ plant species, as well as birds, reptiles and mammals, was listed as 'critically endangered' in 2014.



*Eucalyptus  
cneorifolia*



(L) *Callistemon rugulosus* (scarlet bottlebrush); (M) *Templetonia retusa* (cockies tongues); (R) *Correa backhouseana* var. *orbicularis* (round-leaf correa) an endemic species

Between December 2019 and January 2020, over 50% of Kangaroo Island was subjected to ferocious bushfires. The KI fire damage was most marked on the western end, including Flinders Chase National Park. Even the sparse vegetation on the rocky ocean cliffs was burnt. One year on, ash still lines the high tide mark on beaches. The majority of plantation timber is located in this region and the fires destroyed 95% of mature hardwood (*Eucalyptus nitens*, shining gum and *E. globulus*, Tasmanian blue gum) and softwood (*Pinus radiata*, Monterey pine) reserves.



Natural vegetation Playford Highway, SW KI: (L) Before (M) After (R) Regrowth

In late spring 2020, I spent five weeks on the Island keen to see how the community and landscape were recovering. An *Inaugural Open Gardens for Spring* event was held in 2020 and I visited two properties on the north coast that had suffered extensive damage 12 months ago. The KI community spirit and support extended to those impacted by the bushfires was clearly evident with each of the gardens receiving over 200 visitors on the open day. Members of the KI Garden Club provided home-baked cakes, slices and scones with tea and coffee, and visitors' donations raised funds for local causes. The work that had gone into restoring the gardens was amazing: attractive mixed beds of water-wise species, such as salvias, succulents, native grasses, herbs and small shrubs; the clever use of dry stone and gabion walls and open spaces of lawn. Wicking beds are used for produce gardens and orchards are netted against cockatoos.



Farm gardens 12 months post bushfires at: (L) Middle River, (R) Western River Cove



(L) *Aloe* sp ;(R) *Buddleja* with cottage plants

I also went to Stokes Bay Bush Garden as I had read about the devastation through this unique collection of native plants that John and Carol Stanton had established over many decades. Nothing could have prepared me for the total annihilation of this property – a blackened ground of burnt shrubs with emerging patches of wildflowers. The Stantons also lost their home but with typical KI spirit are staying to rebuild and restore their garden.

Bushfires are not the only threat to vegetation on KI. Koalas (*Phascolarctos cinereus*) are not native to the Island, but were introduced in 1923 with 18 individuals. In favourable conditions, koala populations double every four years, and on KI this has led to serious defoliation of native vegetation and other associated ecological impacts such as erosion. Although koalas can eat several *Eucalypt* species, they tend to focus on favourites, which on KI is *Eucalyptus viminalis* (manna gum). By the mid 1990s, 50% of this species had been lost through defoliation.

A KI Koala Management Project began in 1997 that used sterilisation and relocation to the mainland as methods to reduce koala numbers and protect native vegetation. In 2010, after an expenditure of \$9.2 million the project entered a maintenance phase. At that time the koala population was 14,000. However, prior to the recent bushfires in 2019, the population had exploded to about 50,000. I was not able to find current (post fire) data on either remaining koala numbers or loss of *E. viminalis* habitat. Nature has its own, often harsh, way of responding to human intervention. We need to think more carefully about possible long-term impacts of relocating native plant or animal species beyond their endemic range.



Koala and *E. viminalis* (manna gum)

In closing, I wish to mention a significant tree, planted in 1836 at Reeves Point, Kingscote. The *Morus nigra* (mulberry tree) is the only surviving tree of an orchard established by first settlers. The mulberry bears fruit annually and is thought to be the oldest fruit tree in South Australia. It is a “living testament to the tenacious spirit of early pioneers” (KI Pioneers Assoc.). Finally, three stanzas from a poem published in 1911:



The Mulberry Tree at Reeves Point, KI

### **The Old Mulberry Tree**

by Racey Schlank

In solitude it waits alone,  
The sentinel of a sea-girt strand,  
A lonely tree— forlorn to stand  
A monument upon the land.

The pioneers from other lands  
Whose axes broke the brushwood still,  
Who built their fires by stream and rill  
Their proudest dreams are with us still.

Ay ! their's the faith of heart and brain,  
That left in record by the sea,  
Still standing in tranquility,  
The staunch old mulberry tree!

### **Phil O'Shea: *Erythrina numerosa*, Bats-wing Coral Tree**



I collected the seed of this tree from near Mallanganee west of Casino. It was formerly called *Erythrina* species “Croftby” and naturally occurs from the Clarence Valley to Gympie. It has a lot of similarities with *E. vespertilio*, which occurs in northern Australia.

The parent tree was growing in a in a harsh rocky basalt site. The tree is covered in small spines and is deciduous in winter. It is growing on a rocky site in full sun and has taken 12 years to flower.

## Report on Rocky Creek Dam Outing by Julie

On Saturday 28<sup>th</sup> November, APS Far North Coast met at Rocky Creek Dam for an activity organized by Caroline. We considered doing one of many possible substantial walks but due to the need of the participants and the impending hot day, we chose to explore the shade of the plantation timber plantings. Caroline had obtained a key to the gate from Rous Water. What a good choice! We learned that the plantings were from 1991 and although an early photo indicated these had been planted in rows, the appearance now is of great regeneration since many trees and most especially the Blue Quandongs are nicely self-seeding and filling in and coming up as they wish. We were happy to hear there is no intention to harvest the plantation timber!

We saw that the plantings were not necessarily local species and there were substantial trees including Kauri Pine, which are now habitat for wildlife, and a good possum specimen was spotted in the fork of a tree. On a "Welcome to Widjabul Country" sign near where we first met up was the advice "Please be careful not to unbalance the Spiritual Harmony of this Place...." We must have been observing this because a young kookaburra flew with us from tree to tree and posed on low branches for photos from all sides as we were heading up to have our shared lunch.

The shade of two lovely trees appealed as a lunch spot (a fig and a red ash), we soon set up tables, and a lovely Christmas feast was laid out. Again, we had the approval of the kookaburra that swept down, took chicken as payment for the photo session and then brought his mother as well. We toasted with non-alcoholic champagne and made plans for future outings in the New Year.

### **New publication available**

Andrew Benwell's *Plants of Subtropical Eastern Australia* describes the rich flora of this biogeographically distinct region on the east coast of Australia, covering the north coast of New South Wales and coastal South-East Queensland. This guide presents a selection of common, threatened and ecologically significant plants found in the region's major vegetation habitats including rainforest, heathland, grassy forest, wetlands and rock outcrops. More than 500 plants are featured, with photographs and descriptive features enabling the reader to identify these species if encountered. Interesting biological, cultural and historical characteristics of each species are included, along with notes on the plant's biogeography and a map of its distribution.

**Editor: Contributions to Newsletters can be sent to  
[jan64garden@gmail.com](mailto:jan64garden@gmail.com)  
Next due date for articles is 16 April 2021**