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Banksia Study Group Newsletter

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Well, I'm back from the Fred Rogers Seminar, which was a wonderful opportunity to meet fellow banksia enthusiasts and share knowledge. Several stories in this newsletter come from circulating and chatting with people between lectures. As for the seminar proper, Brendon Stahl still has copies of the seminar notes available for \$10 plus \$2.45 postage – give him a call on (03) 5236 3325, email brendonstahl@bigpond.com or postal: 9 Parkers Road
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I must apologise for the lateness of this newsletter as I had meant to get it out in September right after the conference, but have been waylaid by a number of events (sorry everyone!). This year I will try and get out two large rather than 3 medium sized newsletters. Please help by sending in interesting banksia stories, which could be anything from garden updates to weird plants in the field...

Seed Variation in *Banksia menziesii*



For years seed collectors found pale seeds in *B. menziesii* cones and thought they were non viable (as did I initially!), however we now know that the pigment of the adult plant corresponds to the colour of the seeds. Left are seeds of yellow-, bronze- and red-flowered forms, with yellow the pale seed at the top, and red the darkest seed at bottom right and the bronze the intermediate coloured seed at bottom left.

***Banksia tricuspis* – evidence for placement in Abietinae (?)**



Banksia tricuspis was initially held by Alex George to be in the series *Spicigeræ* on the basis of the similarity of its inflorescences to other members of the series.

However, Kevin Thiele transferred it to the series *Abietinae* on the basis of a number of characters – inflorescence insertion, floral development, floral and fruit morphology and entire seedling leaves. Within this, he determined it formed a monophyletic group with *Banksia incana* (its sister species, on the basis of relatively robust flowers and leaves) and *B. laricina* on the basis of perianth claws that cohere in a ligule after anthesis, as well as having rugose inner margins near the limbs.

In Flora of Australia, Alex agreed that this then precluded its placement in *Spicigeræ* and proposed a series of its own, *Tricuspidae*.

In Austin Mast's molecular study – *B. tricuspis* is nested in the series Abietinae.

While at the Colac seminar, I took this photo of an older spike – to me, with its long styles relative to the denser 'body' of the inflorescence and the curvature of the styles remind me of a '*Banksia pulchella* on steroids' type appearance. I had only seen *Banksia tricuspis* in photos prior to this and these were always of inflorescences in late bud; it is only at this stage (to me) that similarities become evident.

Species Weed Alert: *Banksia seminuda*

The River Banksia (*Banksia seminuda*) has been increasingly cultivated in recent years and has proven to be a vigorous fast growing plant, which can grow very large indeed. Of concern, there are a few reports emerging of weed potential. Seedlings have been found popping up near established plants in gardens in Warrnambool and Colac, as well as the Cranbourne Annexe of the Melbourne Royal Botanic Gardens.

Anyone else noticed this? I would be grateful for any other reports of this (or any other) banksia setting seedlings

Landcare and lone Silver banksias

Neil Marriott reports the Black Range Landcare Group, situated south of Stawell near the Grampians, has come up with a way of assisting lone trees of *Banksia marginata* in their district; they had noted that these trees were not producing seed after flowering and suspected this was due to a lack of outcrossing opportunity as the trees were so isolated. They obtained some local provenance seed and planted seedlings near existing trees. Once these new plants began flowering, the existing trees began producing follicles and seed again.

Geoff Beilby reports that in the case of a lone tree at Warrion, just west of Beac, (north of Colac) the local LandCare group came up with a more radical solution. A small branch with inflorescences was removed from the nearest known specimen, (another single remnant tree at Darlington 52 km to the north-west) and placed in a bucket of

water near the tree. The reverse process was also carried out at the same time. Both trees, which had not been known to produce seed, suddenly began to do so! The seed was collected for use in revegetation projects in the both districts.

The LandCare co-coordinator Andrew 'Jock' McLennan, a Burnley graduate had earlier raised cuttings of both trees for planting out in LandCare projects as insurance against loss of these two survivors. The next step was his idea of using the bees rather than hand pollination to swap a few genes, hopefully to gain a bit of hybrid vigour, as well as overcome the self sterility problem. (They had considered the removal of individual flowers and using the pumpkin pollination method, but how to prevent bird predation of a limited no of cones , and OH&S settled the issue). Some cones were in fact lost to Yellow-tailed Black Cockatoos at Darlington, but about 300 seeds were harvested from fertile cones resulting from of the first year's pollination. Jock informed us that despite the 5 years of drought, most of the seedlings planted out have shown good survival and growth. Even better news is that another remnant tree has been located at Pomborneit, about 30 km south-west of the Warrion tree and 45 km south-east of the Darlington tree. This remnant will provide more diversity for the recovery project.

Some Observations of *Banksia marginata* in the Colac District

There appeared to be remarkable variation in the area; reports of scattered large trees to 10m as well as the low suckering shrubs, which set little seed, to about 1.5m high and very sprawling open habit. Occasionally, such as around Bambra, there appeared intermediates reaching 3 or occasionally 4m in height. Brendon Stahl adds that the Bambra plants do set a fair amount of seed. Of these plants, all had similar leaf parts – up to 5cm long and less than 0.5cm wide, and inflorescences of around 8-9cm height. Most had finished or nearly finished flowering.

Notably, on the Water board blue metal Pipeline road northwest of Forrest, Kevin and I noted that there appeared to be a distinct population of small suckering shrubby forms that were late (September) flowering with tiny inflorescences of around 2cm height and width (*pictured right*).

Leaf and other plant parts appeared identical to the other plants we found.



Geoff Beilby took Kevin Collins and me out to see the big *B. marginata* at Warrion, which was growing in a rocky outcrop in a paddock – the soil seemingly made up of shot-put to bowling ball sized blocks of basalt. The tree was around 10m high and had a broad trunk of just over 1m in diameter (unfortunately we didn't have a tape measure!)

(Kevin hugging trunk - right)

(Tree silhouette – below)



Really Big Banksias

After encountering this big *Banksia marginata*, I started pondering where our biggest banksia might be....

Alex Floyd of the Coffs Harbour Group reports of two areas where large specimens of the White Mountain Banksia (*Banksia integrifolia monticola*) occur. One has been measured at 30m tall with a trunk diameter of 119cm at chest height (but has had some recent wind damage so may have 'lost a bit' on top!). This tree may be found in the Mt Hyland Nature Reserve on Dorrigo Plateau, beside the loop walk near the picnic area. Tony Prior of the Dorrigo Rainforest Centre reports that its inflorescences are yellowish in bud and the trees have a northeast facing aspect at an altitude of 1200-1400m in a semisubalpine ecotone. Trees of similar size can be found in Washpool National Park, near the Camping Area at the bottom of Coombadjha Creek. In these places, White Mountain Banksia occurs as an emergent tree in Warm Temperate Rainforest. Peter Croft, a ranger at Washpool National Park, measured one recently with a height of 35m and DBH of 102cm. Barry Kemp adds that they only realised the trunks they were looking at were banksias when the group noted banksia leaves and cones at the bases of the trees! Alex added they had dark grey lightly fissured to platy bark, which came off in patches.

Peter Radke of Yuruga Nursery reports specimens of *Banksia aquilonia* reaching 25m and 60cm trunk diameter in the Herberton Range going up towards Mt Wallum (behind Rifle Range Rd in Atherton) near the headwaters of the Walsh River.

Kevin Collins reports a *Banksia seminuda* at Broke Inlet in WA had a trunk around 1.25m diameter. Taller but slimmer trees occur in the Warren River National Park near Pemberton. The Banksia Atlas reports trees reach 30-35m along riverbanks in Karri forests.

Our last contender is *Banksia marginata*. Certainly, in terms of girth this one from near Colac was over 1 metre wide! Neil Marriott adds that some old Silver Banksia stumps in the Black Ranges are well over 1m in diameter. The Banksia Atlas alludes to tall trees of up to 30-35m occurring in the west of Tasmania.

The Atlas itself does not refer to any locality, however I have spoken with several people in Tasmania – the tallest specimens being encountered by Mick Brown on Australia Day 1988 at the Cutting Camp at the base of Moss Ridge on the way to Federation Peak in Tasmania's South West National Park world heritage area. There were Silver Banksia trees 85-90 feet (25-27 metres) tall in *Eucalyptus nitida* mixed forest (i.e. eucalypts over rainforest understorey) over *Leptospermum lanigerum*, *Nothofagus cunninghamii*, *Eucryphia milliganii* & *Trochocarpa cunninghamii*. Mick was unsure of their girth but estimated their age at 92 years by node count. The soil was most likely peaty as they found tall *Dracophyllum milliganii* and *Gleichenia abscida* there.

Richard Barnes reports seeing a huge senescent specimen near Interlaken in the Central Highlands back in 1995, which was 25-30m tall and had a trunk around 2-2.5m in diameter. It was covered in lichen and growing in *E. delegatensis* woodland - with an open understorey and copses of *B. marginata*. There were stems of much larger eucalypts with the current trees being regrowth. One can only wonder what the area looked like before being logged the first time.

Richard adds there are also large specimens 15-20m high intermittently on the South Coast Track in SSW Tasmania, generally occurring on the leeward side of sand dunes where fire frequency has been quite low.

Alan Gray reports there are large trees of *Banksia marginata* reaching 12-15m with a trunk girth of around 75cm near Lake Leake near the Campbelltown-Swansea Road. They are growing in wet sclerophyll forest dominated by *Eucalyptus delegatensis* with an understorey of *Pomaderris apetala* and *Cyathodes* species. The soil is derived from dolerite and so provides a nutritious clay base.

Jamie Kirkpatrick noted senescing *Banksia marginata* around 15-20 metres tall with a trunk diameter just under 1 metre in North Bay, north of Port Arthur in an area, which had not been burnt for over 100 years and was being invaded by dry rainforest species.

Further Notes on *Banksia rosserae* (Olde & Marriott)

In his article on *Banksia rosserae* in newsletter 3 (volume 4) in June 2003 Kevin Collins discussed this amazing new *Banksia* species. However there was no discussion of the significance of this new find. *Banksia rosserae* was formally described and named by Peter Olde and myself in '**One new *Banksia* and two new *Grevillea* species (Proteaceae: Grevilleoideae) from Western Australia**' in *Nuytsia* 15 (1) 85-99 (2002). The story of its discovery and formal description is almost as amazing as the species itself and I am sure will be of interest to readers.

The finding of a new *Banksia*: Peter Olde and I have been carrying out systematic research into the genus *Grevillea* for the last 20 or more years. As part of that research, we have been assisting the Perth Herbarium with the identification of their extensive collections of *Grevillea*. Whilst in the process of doing this in 2000 we came upon a

specimen of what was clearly a new species of *Grevillea* collected by a CALM officer while carrying out an inspection of a large area of crown land adjoining Kirkalocka Station south of Mt Magnet.

As a result we organised to head up to Kirkalocka Station the following spring. With us on this trip was Keith Alcock, former leader and expert on the genus *Dryandra*. We had contacted the station owners Ann and Geoff Pilkington and obtained permission to search and collect on their property. On arriving at the station we obtained directions from Geoff and headed off, wondering where in this region we would find the sandy soils recorded for the new *Grevillea*.

The Mt Magnet region is in the Austin District in the Eremaean Province – this is the outback Mulga region, characterised by heavy clay soils and vast plains of relatively uniform Mulga (*Acacia aneura*) vegetation – not an area noted for its Proteaceae. However Geoff said there were areas of beautiful sand plain at the back of the property, and sure enough as soon as we began to reach these soils we came upon our first populations of the new *Grevillea*.

In our paper we named this species *Grevillea kirkalocka* in recognition of the work done to conserve the native vegetation on this beautiful property by the Pilkingtons. Before long we had found a number of populations, growing in the swales between dunes. *Grevillea kirkalocka* is an attractive small shrub to around 0.6 x 1m with divided prickly leaves and large racemes of red flowers at the ends of the strongly down-arching branches. It will make a beautiful small garden plant for hot, dry situations.

Ann had mentioned that she had found a banksia in the sandplains as well, so we were keen to find it to see what species it would be. Despite thorough searching however, we had difficulty in locating it. Finally, on checking a large high dune we heard a scream of exultation from Keith –rushing over we were absolutely enthralled with what we found – the banksia was clearly a new species unlike any other. The plants were strongly erect to around 2-3m massed with terminal flowers –unfortunately these had finished but were still most attractive, as were the fruits with their bold exposed follicles. Amazing though was the fact that the flowers and fruits were nodding and spherical –characters combined from the *Banksia caleyi* / *lemanniana* group and *Banksia laevigata*. In fact the new *Banksia* looked very much like a form of *Banksia laevigata* with terminal pendulous flowers, the foliage also being very similar.

Unlike *Banksia laevigata* however the new species had a massive, underground lignotuber from which all branches arose rather reminiscent of many of our mallee eucalypts. Even more amazing was the bark –beautifully papery just like a melaleuca. Both these characters are clearly adaptations to the desert conditions that the species grows in. It is in fact the ONLY *Banksia* that is confined entirely to the Eremaean desert region of Australia, surviving on an average rainfall of only around 8-10 inches or 30-40mm per year. In fact many years pass with little or no rain –when we visited Geoff advised us that they had had only 6mm over the last 12 months!

Due to this adaptation to desert conditions it obviously rarely reproduces –despite an abundance of seed pods which open in response to fire, there were NO young plants at all. All the plants found appeared to be quite old and of relatively uniform age. To successfully reproduce it would require a fire followed by good soaking rains –probably over several seasons to allow the young plants time to become established. If this is the

case, it may well be that this banksia has become so adapted to its harsh environment that its long-term future in the wild is in doubt. We have been advised by Ann Pilkington that there are a number of populations in the area, but all are small.

On the other hand it should have a secure future under cultivation in hot dry climates -its beautiful nodding terminal flowers should make it a popular subject for the cut flower industry. For me, seedlings germinate well with smoked water during spring, and young plants establishing here in deep granite sands and sandy loams at Stawell are growing slowly but steadily -I cannot wait for them to flower.

The naming of the new Banksia: One of Australia's, in fact the world's, greatest botanical artists is the delightful Celia Rosser, famous for her unrivalled paintings and three part monograph on the genus *Banksia*. She has in fact been rated by some as one of the greatest botanical artists of all time! Sadly, despite receiving the Order of Australia Medal for her contribution to botany, Celia has never been formally recognised by her botanical peers.

Having got to know Celia and realising the huge contribution she has made to the genus, Peter and I decided that the new Banksia should be named in her honour. Hence we named the new Banksia *Banksia rosserae*. From material that I had collected from Kirkalocka Celia had been preparing a painting of the new species for an upcoming exhibition of all her works at the State Library of Victoria. We did not let on that we were going to name it in her honour -in fact she even exhibited it as *Banksia kirkalocka ms* the name we gave to the new Grevillea!

Shortly after our paper was published, a garden party was organised with all Celia's friends, Australian Plant Society members and botanical associates in the beautiful garden of former Banksia Study Group leader Trevor Blake (and his wonderful wife Beryl). I had the honour of presenting Celia with a copy of the Nuytsia journal which contained our paper. I spoke about how we had found the Grevillea and the Banksia and then got Celia to read out the introductory paragraph of the paper -when she got to *Banksia rosserae* she could not even get the name out she was so overwhelmed! Later she said that it was the greatest honour in her life. It was indeed a great honour for me also to be involved in the naming of this amazing new Banksia after such a wonderful and talented lady.

Celia has now moved from Melbourne to the country where, with her son Andrew is in the process of establishing an art studio. One of her first works was the completion of a small but quite beautiful drawing of the dry flowers, foliage, cones and seeds of *Banksia rosserae*. This was released as a limited edition print of 500 copies, and I had the honour of receiving number 2/500.

We have planned to go back to Kirkalocka with Celia and Andrew when the area gets some good rains and the Banksias are in flower -only then will Celia be able to complete her painting of this wonderful new Banksia. In the meantime we are all guessing as to what colour the flowers will be!

A Propagation recipe for *Banksia spinulosa* cuttings

Ian Jardine of Bungmong writes;

I had some out of date Easy Root gel (IBA/NAA) and decided to mix it 1:1 with some purple Clonex and use it on some *Banksia spinulosa* cuttings taken from material thrown in the bin on a Monday evening. I retrieved some and took cuttings on the Wednesday morning. They were put in straight perlite with bottom heat and mist and rooted after 8 weeks! The thing that got me was the mass of roots, I think the best I've ever got. Some time in the future I will try and replicate it (as this was completely unplanned) and see how it goes.'

***Banksia serrata* in Tasmania; an update**

Populations of *Banksia serrata* have been recently recorded within 30km of the Sisters Beach population, in the Dip Range to the south and Shakespeare Hills to the West. Also, another exists in the south west corner of the Wingaroo Nature Reserve in the northern part of Flinders Island. The Wingaroo NR Conservation Plan (2000) reports that the population comprises around 60 to 80 individual trees, the majority of which are believed to be quite old. It adds there is evidence of slow and continuous regeneration, which appears to be occurring in the absence of fire.

***Banksia serrata* rootrot sensitivity Quandary**

The Wingaroo population is not readily accessible to the public and there are concerns as *Phytophthora* has been recorded in the Reserve.

This brings up the question of *Banksia serrata*'s susceptibility to Pc. In a 1985 study by McCredie where populations of cultivated eastern and western banksias were inoculated with the fungus, *Banksia serrata*, along with all other eastern species, except *B. marginata* (which showed about 8% susceptibility), were 100% resistant. In 1998 Tynan, Scott & Sedgley at the Waite Institute inoculated roots of banksia species with Pc and found a degree of resistance with *B. serrata*.

B. serrata is also a reliable garden plant in Sydney (as long as the soil is well drained and relatively light) and used as a street tree in busy streets in the Eastern Suburbs such as Clovelly Road (unless asphalt is somehow *Phytophthora* retardant!).

In contrast, there is fairly clear evidence of its susceptibility in Tasmania - dieback has occurred in most populations that occur on a peaty soil. At such sites, most susceptible species including *B. serrata* have succumbed - though in sandier areas with lower nutrients and better drainage, such as around the heavily human populated Sisters Beach where Pc is rampant, *B. serrata* seems to be (relatively) healthier than the neighbouring grasstrees (*Xanthorrhoea* spp.) In those areas where Pc has affected and disappeared, there are signs of *B. serrata* recruitment (numerous seedlings and saplings)

Evidence for *Banksia integrifolia* in Tasmania

This species has been allegedly collected from King Island in the early 1800's (referred to then as 'Kings Island'). It is unclear, however, if the record (herbarium specimen at the Tasmanian Herbarium) is from King Island, or the Furneaux Group where the collector visited prior to sailing to King Island. The species is considered to be presumed extinct in Tasmania (and Tasmania's Bass Strait islands) as it has not been recorded for more than 50 years.

***Banksia integrifolia* x *paludosa* hybrids at Green Cape**

While at the Banksia seminar in Colac, we visited John Benzie's garden nearby and noted a compact shrub, which had a habit and foliage similar to *B. integrifolia* "Roller Coaster", but (relatively) tall thin spikes with persisting old flowers like *Banksia paludosa*. John wasn't sure where the plant had come from (his brother had given it to him as a present), but further investigation revealed Kuranga had been propagating two forms plant which are probable *integrifolia* x *paludosa* hybrids.

Evan Clucas, of Kuranga, reported that the first, currently sold as *Banksia integrifolia* 'dwarf', is a more floriferous plant than their original plant sold under the same name. The original plant was found near a stand of erect *Banksia integrifolia* and was a bushy 2m high floriferous shrub with attractive dense foliage. The flowers were noted to be persistent on old spikes, characteristic of *Banksia paludosa*, which was widespread in the area. All cuttings of the original plant failed to strike but some seedlings were similar in appearance and have been stock for subsequent cuttings which have been sold as *Banksia integrifolia* 'dwarf'.

Even added that a form they have called *Banksia paludosa* and been propagating from has been noted more recently to shed its seed when mature and suspected this may be because it too is a hybrid with *B. integrifolia*. However, Alex George does note that *Banksia paludosa* have been recorded with spontaneously opening follicles.

Bill Molyneux has also reported a *Banksia integrifolia* influence in a previously unrecorded, small, uniform population of plants at Green Cape, which clearly shares characters of *B. integrifolia* and *B. paludosa*. Bill has specimens of this and will conduct seedling trials to determine stability or otherwise.

Rather than bore everyone with statistics at this stage, I will endeavour to ensure we get photos of all the above forms early next autumn (when they should be in bud) and that collections go to the appropriate herbaria for proper ID.

In the meantime I'd be happy to hear of anyone else's reports from the Green Cape area!

Mistaken Identity in the Gawler Ranges

Some time ago I asked members of the Eyre Peninsula Groups of the 'Society and Friends of the Arid Lands Botanic Garden (and anyone else I could think of nearby!) to keep an eye out for stands of *Banksia marginata* north in the Gawler Ranges after Mike Young saw what he thought may have been *B. marginata* while flying at low altitude there. Austen Eatts recently wrote me the following:

'Hi Cas, sorry we have been so long ,but due to several reasons we were unable to make the trip to the Gawler Ranges until a few weeks ago but unfortunately we didn't find any *Banksia marginata*! We climbed to the top where the Trig Point was but the only plants were a few Sennas, Melaleucas and a group of *Grevillea aspera* which is what I think was mistaken for banksia. We have only seen a pressed specimen of *marginata* but the leaves of *G. aspera* are similar in size & colour. We continued our trip on to the Unnamed Conservation Park in the N.W. of S.A. for the handing back of the park to the Aborigines. We belong to the Friends of Parks for the Great Victoria Desert so it was a good opportunity to get up in that area. It was a great experience! We have rung Mike Young and told him.'

Old Banksia Study Group Newsletters

The first three newsletters from my time as leader of the group are available at <http://farrer.riv.csu.edu.au/ASGAP/banksSG/index.html> on the internet, on the

national website of the 'Society. I plan to get the next 3 newsletters from the financial year just go up there too soon. Previously, Banksia Study Reports were produced and Reports 7 and 8 are still available. I plan to scan the others and make them available electronically at some stage.

Seed Bank

If you have a large excess of seeds, consider donating some to your local seed bank (or even another state!) as banksias are popular and the Regional seed banks rely on donations. Alternately, why not let me know and I can leave a memo in the next newsletter.

- Nindethana Seeds (08) 9844 3533
- Banksia Farm (08) 9851 1770 phone/fax
- Your Region seed bank will usually have a selection of species

If you are unable to find a particular species, please contact me and I may have some ideas.

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