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Australian Native Plants Association (Australia)

Banksia Study Group Newsletter



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Ravensthorpe Silo Banksia Artworks. 2016.

The very first Silo mural artwork in Australia was in Northam, Western Australia in 2015. This was closely followed by the stunning Banksia Silo artworks in Ravensthorpe W.A. 2016.

Silo artworks are now tourist drawcards in many regions with some amazing artworks. Recent ones we visited are in a dedicated art trail in N.W. Victoria.

Mr Amok Island, an acclaimed artist from Fremantle was commissioned by C.B.H., (curated by FORM 2016), to do the six development stages of a local Banksia, *baxteri*. From flower buds to

full bloom, pollination, seedpods developing, drying out and opening. He featured the enigmatic New Holland honey eater and a Honey Possum, which both seek the sweet nectar in return for transferring pollen to enable pollination.

A very fitting town feature as Ravensthorpe holds the largest local country Wildflower Festival annually, during September in W.A. The shire contains a huge range of soil types, the nearby ranges are not only mineral wealthy but home to a vast diversity of plant species, many being endemic or rare. Ravensthorpe sits within the Fitzgerald biosphere at the border of Esperance-Goldfields and Great Southern regions and is an internationally recognised biodiversity hotspot housing around 20% of Australia's flora.

The banksia murals encircle the 3 silos infinitely and ties in with the cycles of the seasons and grain growing processes of the district. The project took 31 days, 338 l of paint and is 25m high.



***B. Baxteri* early buds.**



***B. baxteri* bud (flowers emerging).**



B. baxteri flowers opening and being visited by a honey possum & below a New Holland honeyeater.





The silos from across the wheat paddock with fruiting cones after pollination.

I would like to sincerely thank Amos for the inspirational artworks, Xander for forwarding the pictures and Bill Bewley for the use of his great photographs.

Conference delegates will get to see these works on the Barrens and Heathlands pre or post conference tour 3.

The amazing **Ravensthorpe Wildflower Festival** runs from :

9th to the 21st. of September.

For delegates visiting early or self driving this event and the

Kings Park Wildflower Festival

1st to 30th. September are must sees.

The Banksia Garden at the Australian National Botanic Gardens - an update

Since our last article for the newsletter, our Banksia Garden planning has moved along considerably.

Our weird and wonderful selection of species under propagation and cultivation in our nursery continues to expand, and we now have a number of new grafted plants growing on strongly, this propagation and sourcing of special selections effort being kindly supported by Kevin and Kathy Collins, Alex George & Phil & Catriona Trickett.



B. coccinea grafted onto *serrata*.



Grafted *B. coccinea* in flower.

Soil profiles have been designed for the garden. This has been done in partnership with our Banksia specialists and with support from Kevin Handreck, a renowned soil media guru who has worked with us previously on designing specialised mixes for gardens and container plant cultivation. As many will have experienced, a good design can be challenging to implement practically, so we have decided to implement a small scale 'trial run' by re-constructing a section along the main loop path (that has now been dedicated purely to banksia species) to test the design ahead of the final garden bed construction for the Banksia Garden itself. This has provided the opportunity for several comparative trials including:

Using two different soil profiles, one being constructed using the design and the other effectively a 'control' based solely on select grade sandstone.

Planting Banksias with and without Banksia mulch as a surface treatment

Varying the angle of repose (or steepness) of our media / garden beds, from very steep to gentle level changes to evaluate weathering and practical limits for surface shaping.



Trial garden areas.



***B. baxteri* coming into flower.**

Any significant outcomes will help inform our final choices and method when we start constructing the Banksia Garden, it also gives people visiting the Australian National Botanic Gardens an opportunity to see a sample of what's to come. We also want to highlight the 'recipes' we have used to achieve success as a guide for others to consider.

There are many more surprises in store as we continue to refine the opportunities, we will keep you posted! Below is an image of a purple leaf form of *B. robur*, growing on well following success in striking them from cuttings!



Cutting grown purple leafed *B. robur*

Down at the Banksia Garden site we have now removed all the existing vegetation in preparation for the next construction element, the installation of the drainage and the building of the soil profiles. This will

see a dramatic ‘sculpturing of the surfaces’ and the editing of the area to include new gathering and sitting spaces. This will allow many opportunities for visitors to get up close to some of the Banksias.

In parallel we are well into rock wall and courtyard construction and have completed free-form centrepiece in the courtyard using pressed Banksia leaves as stencils arranged in a way to represent the view of a Banksia flower when seen from above. This involved 489 pressed leaves, from 13 Banksia species and required careful balancing on planks over the piece to press them in as the concrete dried!



Most importantly for those planning a visit to the completed garden we now have an opening date: **THURSDAY 23rd APRIL 2020.**



For those that would like to contribute ideas and feedback or find out more about the garden.

Please contact Dave Taylor at the ANBG (david.taylor@environment.gov.au)

Member - Karlo Taliana's Garden (Sydney)

Since joining this study Group back in 2007, I've tried to grow as many species in my suburban garden in south-western Sydney, but lack of space has been a restriction. I've always been keen to learn more about the genus and trial various western species in cultivation. When I look back over the limited experience I've had with growing Banksias, it seems more likely that success in maintaining healthy western species may be achieved with grafted specimens.

My back garden (150 square metres) is about 30 years old (we bought property about 20 years ago) with well-established trees. We removed all exotics and planted native understorey-shrubs. Some beds were raised to lift the plantings away from the clay-based soils. This garden includes some semi-shaded areas, a fernery and frog pond.

The front garden (120 square metres), is 12 years old with raised beds of mostly crushed sandstone below a surface growing medium of sandy native mix (2ft deep) mulched by a 5cm thickness of river pebbles (particle size 20-40mm), north-facing, full-sun with good air circulation – this is where we try to grow most of our western species.

Weather has the opposite rain pattern to WA with high summer rainfall and higher humidity so the good drainage and airflow becomes crucial. Regardless, over the years, this has still been insufficient to promote the survival of some non-grafted western species. No fertilisers are used at all. If winters are dry, some supplementary watering is done through winter. Frosts are mild with temperatures dropping down to 2°C while summer temps may occasionally reach low to mid-40s. The front garden is more wind-exposed while the back garden is more sheltered. All shrubs are pruned from a young age to promote a bushy habit and only pruned when mature to maintain their shape. Most spent flowerheads are removed from mature plants after flowering, but just a few may be kept to add some character.

Below is a list of Banksia species that I am currently growing that have grown to some level of maturity or for at least two flowering seasons (*denotes grafted plant):-

BACK GARDEN – **Banksia media* yellow (4m round), *Banksia plagiocarpa* pink (4mH x 2-5mW), *Banksia integrifolia ssp integrifolia* (5mH x 3mW), *Banksia* 'Giant Candles' (4m round), **Banksia praemorsa* - wine red (3mH x 2.5mW), *Banksia oblongifolia* (2m round), **Banksia grandis* dwarf (1.5mH x 2mW)

FRONT GARDEN – **Dryandra praemorsa ssp praemorsa* (2.5mH x 3mW, kept pruned), *Banksia gardneri var brevidentata*, **Banksia speciosa* (5mH x 4mW) – this 25 year old graft is the main feature shrub in the highest point of the garden, *Banksia petiolaris* (3m spread), *Banksia oblongifolia* prostrate form (0.4mH x 1.5mW), **Banksia pulchella* (1m round) ..and some eastern cultivars which include *Banksia ericifolia* 'Bronzed Aussie', *Banksia* 'Honey Pots', *Banksia ericifolia* 'Red Rover', *Banksia* 'Yellow Wing', *Banksia ericifolia* 'Orange Glow', *Banksia spinulosa* 'Golden Candles', *Banksia* 'Cherry Candles', *Banksia* 'Birthday Candles' and *Banksia* 'Coastal Cushion'

In previous years, I have also grown to flower the following species however these have since 'gone to heaven'.

Banksia marginata 'Coastal Spread' (lived for only 4 years, 30+ flowerheads before dying), *Banksia ashbyi* var *boreoscaia* (survived 7 years, best flowering year had about 12 flowerheads), *Banksia blechnifolia* (> 7yrs with about 10 flowerheads at its peak season), *Banksia dryandroides* and *Dryandras praemorsa* ssp *splendens* and *Dryandra fraseri* var *ashbyi*.

Western Banksias grown to flower (in pots) include: - *Banksia caleyi*, *Banksia elderiana*, *Banksia prionotes* dwarf, *Banksia tricuspis*, *Banksia burdettii* and *Dryandra formosa*.

I'm also now trialling the following western Banksias (all of which appear healthy at this stage): *Banksia gardneri* var *gardneri*, *Banksia chamaephyton*, **Banksia lanata*, **Banksia laevigata* ssp *fuscolutea*

I don't graft Banksias (although, I did attempt once, a complete failure!) but I propagate from seed with reasonable success.

Other interests outside cultivation, I have a sizeable Banksia fruiting body collection with over 80 species or subspecies/variants (about 15 species left to go in a collection that may never be complete). I'm also the founding Administrator of the 'Banksia Lovers Group' Facebook page which currently has about 1400 members and continues to grow steadily on a daily basis. It has become a valuable source of information to many Banksia enthusiasts. I have an extensive collection of books on Banksias (at least a dozen various publications/texts) and I collect any Banksia art/craft items made from fruiting cones I can find. In other words, I qualify well for being a real 'Banksia Nut'.



B. "Cherry Candles"



B. ericifolia "Bronzed Aussie"



Multi-headed "Bronze Aussie" inflorescence.



B. media (grafted).



B. plagiocarpa – pink form.



B.oblongifolia -low form.



B.petiolearis.



B.speciosa



B.ashbyi subsp *borescaia*



Dryandra praemorsa var. *praemorsa*.

Member: Matt Goodwin's Garden. (Sydney).

Location

My garden is located in Western Sydney in the Blacktown Local Government Area which is approximately 35km from the Sydney coastline. Blacktown sits just inside the transition between Hawkesbury sandstone country and the alluvial flood plains of Western Sydney and my garden happens to sit on the alluvial light to heavy clay soils. We typically experience moderate to hot summers with high humidity with mild to moderate cold winters with the occasional heavy frost. We experience an annual average rainfall of 825mm.



Figure 1 – *B. media* (grafted) flower

Size, Set Up & Installation

My garden forms an L-shape following our property boundary. It is split into front and back gardens and in total measures 30m x 1.2m wide which makes it long but not very wide. I installed my back garden in October 2017 and the front garden in August 2018 making them approximately 1.5 and 1 years old respectively. The back garden is predominately western facing whilst the front garden is predominately north facing. I find that in winter the far northern end of the back garden gets minimal sun during the day due to the shadow from our house. So far this hasn't seemed to affect the plants at all. Both gardens get full sun for most of the day during the summer period.



Figure 2 – Front garden during installation, *B. rosserae* in 40lt bag



Figure 3 – Back garden with *B. robur* in the foreground, *B. praemorsa* directly behind, *B. serrata* in the corner and *B. ericifolia*, far right.

As our base soil is clay, I dug at least 1 meter below ground level across the entirety of the garden and deeper in some portions where I could. This was to maximise the amount of free draining material present around the root systems. To aid in breaking down the clay remaining at the base of the trench I liberally applied gypsum and soaked it in over a couple of days. Once my plants were ready to go in, I used a native soil mix mounded approximately 300mm above ground level effectively giving me 1.3 meters of free draining soil above the clay base. Once all plants were installed, I applied an approximate 100mm layer mulch in the form of a wood chip commercially known as "Forest Fines". In my opinion mulch is one of the most important aspects of my garden because it not only helps keep moisture in but also contributes to the

structure of the soil whilst it is breaking down. I also had to erect a dog proof fence in my back garden to prevent my two bulldozer dogs from accessing it, although they occasionally break in from time to time.



Figure 4 – Evolution of *B. rosserae* flower in my garden

Banksia's

I've had a fixation for Banksia's since I was a little kid growing up with a very large "old man" *B. serrata* in my front yard. I was always fascinated at how they act like wildlife beacons bringing in all the nectar eating birds, yellow-tailed black-cockatoos, sugar gliders, flying foxes and many different insects and invertebrates. I also had a native bush reserve at the end of my road which contained plentiful *B. spinulosa* and *B. ericifolia*.

When the opportunity arose two years ago after purchasing a new property with viable garden space, I wanted to create a Banksia haven mixed in with local provenance native plants. To date I have planted the following:

East Coast Varieties

- *B. ericifolia* (Bronzed Aussie)
- *B. ericifolia* (Little Eric)
- *B. spinulosa*
- *B. marginata*
- *B. robur*
- *B. integrifolia* (Coastal Beacons)
- *B. serrata*
- *B. plagiocarpa*

Western Australia Varieties

- *B. baueri*
- *B. praemorsa*
- *B. petiolaris*
- *B. blechnifolia*
- *B. repens*
- *B. media* (graft)
- *B. rosserae* (graft)
- *B. grandis*

With the exception of the grafted species many of my Banksia's were installed as either tube stock or were approximately 2 years old in 150mm pots. Other local province plants in my garden include Hakea, Fabaceae, Grevillea, Flannel flower, Scaevola, Hibbertia, Isopogon, Petrophile, Persoonia, Epacris, Dianella, Acacia, Patersonia, Kunzea, Xanthorrhoea and a grafted Sturt's Desert Pea.

Both my grafted Banksia's were obtained from a local grafting hobbyist that I met at the annual Plant Collectors Fair which is held in the Hawkesbury region of Sydney during April. He had been developing a suitable *B. integrifolia*



Figure 5 – View of *B. rosserae* graft

root stock for over 10 years which had good compatibility for a number of Western species. To date he had been having great success grafting *B. media* and *B. rosserae* in particular. I immediately jumped at the opportunity to add these plants to my collection both of which have been growing strongly, flowering and setting seed since their installation.

As I live in a very 'suburban' area where much of the original bushland has been cleared, I wanted to create a garden that would be beneficial to all remaining local wildlife and attempt to replicate what I grew up with as a kid. Slowly but surely as my garden matures it is becoming a haven for insects, birds and the occasional blue tongue lizard.



Figure 6 – *B. robur*

Hardest and favourite species

So-far the hardest species is a three-way tie *between B. serrata, B. ericifolia and B. robur* with all three growing fast and strong and are unphased by all Sydney weather extremes. I find that *B. ericifolia* sometimes suffers yellowing of new growth which I correct with iron chelate. The surprising performer for me however is *B. praemorsa* (un-grafted). It has reached approximately 2.5 meters since it was installed and although it is yet to flower it hasn't been phased one bit by the Sydney climate apart from some new growth succumbing to frost. This is the plant which has amazed me the most as I had low expectations. *B. serrata* still remains my favourite and I am taking some inspiration from Bonsai techniques to shape it into an "old man" at an early age.

Failures

As most would know, gardening is not all sunshine and rainbows and I have had some failures. This is to be expected when you run the gauntlet of planting WA species on the east coast. Some of these failures include *B. grandis* which was growing really well and pushing out new growth until Sydney began to experience significant humidity after which it died within the space of 1 week. I recently lost *B. blechnifolia* for reasons I still haven't worked out. My dogs managed to break into my garden and dig up *B. repens* and I lost my original *B. marginata* (small-leaved dwarf variety) in the tail end of summer. I have since replaced it with a local provenance *B. marginata* which I germinated myself.

My *B. baueri* is hanging in there and seems to be limping along season to season. It has suffered some browning of leaves during summer however, it has also commenced to push out new growth.



Figure 7 – Bronzed Aussie



Figure 8 – *B. plagiocarpa*

Care Apart from diligent care during the establishment phase of my garden I tend not fuss too much over feeding or watering regime and adopt the less is more approach. Summer is where I have to keep an eye on watering, and I will tend to give a soaking water at least once a week during dry spells.

I apply slow release fertiliser across the garden beds approximately every six months and also apply the liquid fertiliser in between. During the budding phase I may increase fertilising slightly and introduce Pot Ash as I have been told this may assist in more vigorous and colourful flowers. In terms of pruning I tend to lightly prune after flowering as I want to keep growth dense whilst maximising my potential flower return. Depending on the results of my pruning over the next few years I may adjust this strategy.



Figure 9 – *B. aemula* germinating using the wet paper towel method

Growing my own plants

Buying plants can be an expensive adventure so since installing my garden I have taken up germinating my own plants including some successful cuttings with a focus on Banksia's and other Proteaceae members. I consider myself a novice at seed germination, but I have had great success using a modified wet paper towel method. All seeds are germinated indoors then immediately transferred outside eliminating any significant 'hardening off' which I have struggled with in the past. Using this method, I feel like I have more control and I can see the germination process taking place. I have had success using this technique at all times of the year.

I currently have a number of Banksia's as tube stock and in 150mm pots many of which I have germinated myself and are waiting to be installed into the garden where space permits. These species include *B. oblongifolia*, *B. caleyi*, *B. robur*, *B. paludosa*, *B. spinulosa* var. *cunninghamii*, *B. aemula* and *B. tricuspis*. I am excited and nervous about the *B. tricuspis* which I picked up at this year's Plant Collectors Fair. It is currently doing really well through winter and pushing out lots of growth, but I am really worried about how it will take the summer humidity. Fingers crossed. I regularly update my garden photos on instagram if anyone is interested, search [@ausnative](#).

Matt. Goodwin.



Figure 10 – Recently germinated *B. caleyi*, *B. robur*, *B. aemula*, *B. paludosa* & others

Editors Note: See Fig.14 on next page.

Interesting to see globules of nectar on the plagiocarpa inflorescence prior to anthesis. We have witnessed this previously on *B. grossa* and *B. sphaerocarpa*.

K & K Collins.



Figure 11 – *B. petiolaris* in bud

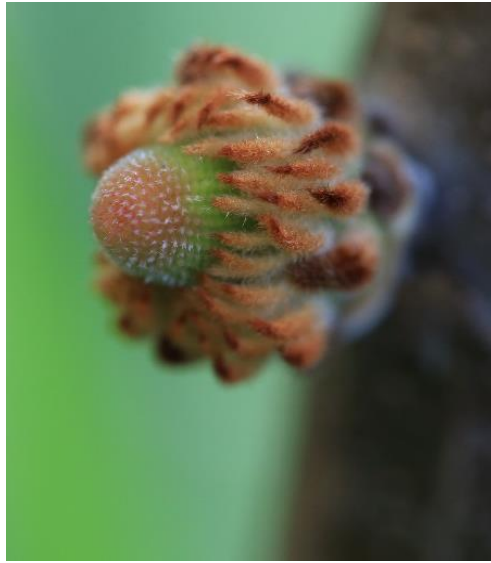


Figure 12 – *B. robur* budding off the trunk



Figure 13 – *B. media* in the front garden



Figure 14 – *B. plagiocarpa* dripping with nectar

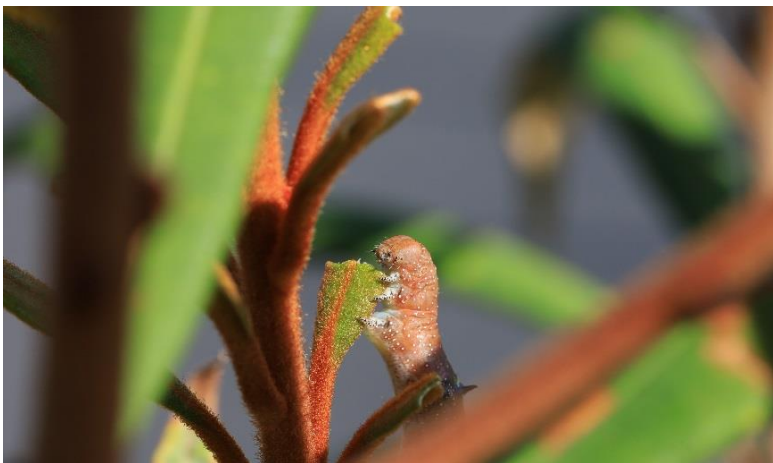


Figure 15 – Caterpillar enjoying new growth on *B. plagiocarpa*

A practical & novel propagation of *B.seminuda*.

Cherree Densley from Killarney in Victoria writes: **“Let nature take it’s own course”**

How many folk have struggled to extract *B.seminuda* seed. Heating, cooling, soaking , drying, extracting with pliers or tweezers hurting your fingers.

My huge *B.seminuda* does it for me. Babies pop up everywhere in spring in pots of compost strategically placed under the tree. (yes it is hit and miss but often more than one lands in a pot).

The cones mature over summer and open awaiting rain events. They require several rainfalls and the seperator magically rises to release the seeds onto appropriately wet ground and the seeds germinate.

In my case in the natural ground mulch or in my pots with dormant bulbs or potted succulents. These need only be beneath the tree from Autumn throught to late Spring.

Take care not to leave the seedlings in the pots for too long as I have done as roots quickly grow into the ground and damaging them can lead to plant death. Seed drop varies with seasons and I recall being under the tree after a big thunderstorm and being showered with soft falling seeds.

My mother tree is around 25 years old and 1.5m in trunk diameter and has deep orange flowers. I have had seeds germinate up to 25m away. Yes the winged seed can disperse a long way.

Strong winds have broken and damaged some upper braches which provide lookouts for honey eaters and wattle birds who swoop on insects on the wing. The tree is in full bloom mid-May and is alive with bees, wasps, beetles, squabbling honey eaters and wattle birds repaying the gift of nectar and pollen for fertilization.

I have observed several large *seminuda* trees matching mine in the Portlands Botanic Gardens in SW Victoria.

Cherree Densley.



Cherree Densley beneath her massive red flowered *B.seminuda* tree.

***B. seminuda* history at Banksia Farm, Mount Barker W.A.**

Banksias seminuda and *integrifolia* are the two species that have most readily self seeded in our 33 year old arboretum. They both shed old florets and open on maturity in summer. The Autumn & Winter rains expand and contract the separator with hygroscopic action loosening the separator which eventually lifts out of the cone to release the winged seed.

Seminuda is found on the majority of rivers and creeks in southern Western Australia from Collie in the north to Albany in the south. They require a lot of underground water and generally don't venture far from water courses. The only exemptions are at Nuyts Point south of Walpole where they grow as smaller stature trees with smaller leaves and flower amongst granite rocks as well as a small population of shrubby plants on coastal dunes nearby. The smaller stature trees were classified by Stephen Hopper as *B. seminuda var remanens* but due to grading this variety was not retained by Alex George. All three forms have grown true to type at Banksia Farm. The shrubby one has great horticulture potential.

The majority of populations are golden yellow flowered and look similar to a corn cob prior to anthesis. There are odd populations eg. on the upper Tone River which are all yellow with pinkish orange red pistils. I have seen red flowered forms in other populations amongst yellow flowered ones. Fernhook Falls on the Deep River (Walpole-Nornalup National Park), on the Bibleman Track on the Donnelly River, Tone River cottages on lower Tone River and Murray River at Dwellingup. The shades of red vary from almost orange through to pale, dark and burgundy. My estimate would be that 80% of plants in the wild are the yellow flowered variety with gold pistils.



***B. seminuda* (yellow)**

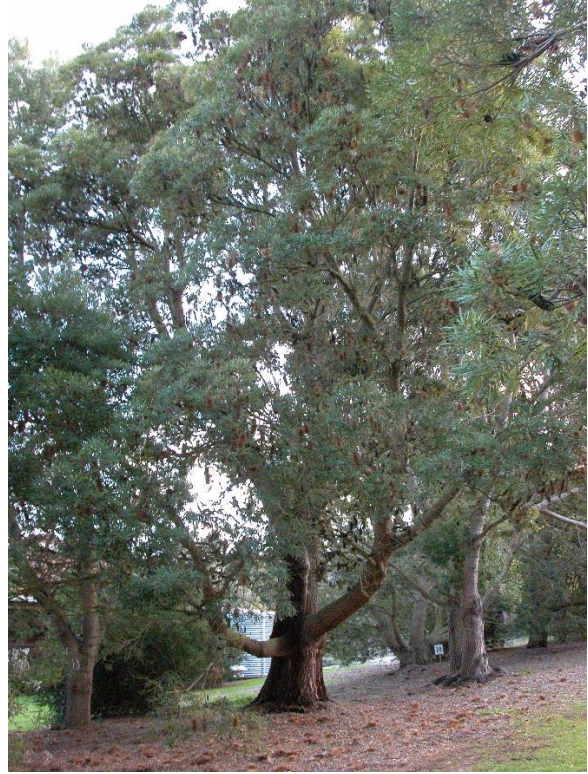


***B. seminuda* (red)**

B. seminuda is closely contested with *B. integrifolia* as the largest species of banksia. It grew in our arboretum to 20m tall with a trunk diameter of 1.8m, equivalent to almost 3m circumference in 20 years. They have been recorded on river banks competing with *E. diversicolor* (Karri) on the Warren River as 25m+ in height.



B. seminuda low coastal shrub form.



B. seminuda large tree form.



Massive deceased *B. seminuda* (25 years old grown from seed).



***B. seminuda var. remanens* (huge lignotuberous base).**

The *seminuda var. remanens*, (picture above), fifteen years old, cultivated at Centenary Park Mount Barker, developed a huge lignotuber base. I have not witnessed this feature anywhere in the wild.

Competition for a small underground water source, at Banksia Farm, Mount Barker saw the biggest tree survive with two 0.5m trunk neighbours succumbing. On dying the leaves fell making a beautiful mulch and opened the area up allowing more light in. The dying tree shed many more seeds and a small forest grew in the near vicinity of the now fallen and rotting tree trunk. It decomposed to fibre within ten years eaten away by fungi and can be crumbled in your hands.



**15 year old rotted tree trunk
& self seeded forest behind.**



**8 year dead *seminuda* trunk
with regeneration nearby.**



**Bracket fungi eating away
a massive dead *seminuda* trunk.**

A few years later, following below average rainfall, a further three huge trees died in succession. Each followed the example of the first with seedlings growing and thriving in the leaf litter/mulch. The large stumps are left to break down hosting bracket & ghost fungi. The self seeded trees flower at age four or five so we have a wonderful self replacement cycle.

The other notable fact is that where a large tree died of drought a forest of trees have survived in its place. It appears the wonderful leaf mulch acts as a water saving mechanism and non of the many replacement trees have succumbed to ongoing lower than average rainfall.

See the wind upended *B.seminuda* tree below and you'll observe the shallow root system despite the massive trunks. Banksias unlike eucalypts only have a small tap root and rely on a network of large shallow roots radiating out in all directions for anchorage, so if not grown in a wind protected site, they can blow over. Our tree had very few of the roots break and continues to grow upright from the branches. We have affectionately named it.....*B. leanover*.



A ten year old self seeded *B.seminuda* blown over in a wind storm 3 years ago.

Banksia integrifolia, below, has been observed to likewise fall and remain growing, even when half the tree trunk was cut off a walking path in the botanic garden where it grew.

This huge 30 year old, 0.8m trunk diameter, *B. integrifolia* below, in Jardin de Roscoff on the west coast of France is an example. It fell over their walk path and they cut the top half leaving the base with its roots still mainly attached to terra firma. Despite being almost leafless, branches shot up from nodes along the trunk.



B.integrifolia, wind fallen & shooting from trunk. Jardin de Roscoff, France.

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Member- Hans Griesser's Garden (Gumeracha S.A.)

Hans has kindly forwarded information on his gardens, past & present.

He lives in Gumeracha in South Australia and is a long time APS member. He contributes greatly to promotion of Australian plants and is editor and printer of the Hakea newsletters for leader, Paul Kennedy. He has recently taken on the Seed Bank co-ordination for APS S.A.

Hans previously had a garden on the back slopes of the Dandenong's in Victoria. He successfully grew 40 Sps of banksia on deep, well drained, volcanic soils, in which even fence posts, jokingly he reported, took root.

With his move to S.A. he found the going much harder. He currently has 50 banksia and (some dryandras) in his garden of which well over half are W.A. species.

He has experienced trials and tribulations at this site. Not only is his soil fairly heavy requiring great effort to make it suitable for West Aussie Banksias, the summers can get very hot. Last summer temperatures reached 46.5 degrees and in winter, frosts to -6 degrees were experienced.

Just when Hans had the garden shaping up nicely, in January 2015 the Sampson Flat bushfire went through burning most of his native plantations. Fortunately, his house and shed were spared.



Garden after 2015 bush fires.

Of 35 banksias in his collection at this stage only *B. grossa* re-sprouted from its lignotuber, *B. caleyi* and *B. elderiana* were heat scorched losing their leaves but reshot and one *B. blechnifolia* popped up from a seed. Apart from these four, only one of each of *baxteri*, *media*, *pilostylis* and *seminuda* (these outside the burn area) remained. Hence the balance of his collection is new, being 2-4 years old. More recently, hot summers & the drought of last year, took out *B. brownii*. He had failed to observe that it was under stress. Hans hopes he doesn't sound like he is whingeing with the spate of losses but finds those remaining very rewarding. His *B. baxteri* have performed wonderfully for several years and are a show for visitors over the Festive Season and he is excited with two *B. baueri* flowering for the first time this season.



Pictures above P24. *B. serrata* (LHS)

B. blechnifolia self seeded to right of *Isopogon latifolius*.(RHS)



B. baxteri budding up.



B. baueri flowering.

Much of Hans garden is on a slope and the soil is acidic loam with varying amounts of clay soil mixed in. Even though the soil is on the heavy side, addition of gypsum, sand, ash and a fair bit of elbow grease to dig it all in, he has managed to grow a range of banksias. Northern WA species such as *B. ashbyi* struggle, are slow growing and often lose tips from frost damage. He states the key factor is a good root system-plants grown from seeds do a lot better during the long hot summers than commercial cutting grown species which often succumb. Hans now grows his own from seed. Local *B. marginata* does well and a 3m tall *B. seminuda* survives with only an occasional summer watering.

His oldest plant is *B. pilostylis* (14 years) which flowers reliably each year but sets limited seed and was one in a small sector that didn't burn thanks to a 1m wide cleared path. Although the fire did not go into the canopies the intense heat scorched *grandis*, *leptophylla*, *media* and *grossa*, only the latter survived shooting from its lignotuber.

Much of Hans current 40-odd collection are young plants and most are showing pleasing progress. He states his garden is too large to tend and only waters in the first year, for establishment, then leaves them to their own resources.

Hans has not tried grafting or doing cuttings but thinks as he has successfully grafted many Eremophilas in the past that he may consider giving banksias a go. He considers marginata might be the best rootstock for his area requiring less water than integrifolia.

On a recent overseas trip Hans spotted some Banksias doing well in a botanical garden on the larger of the two Brissago Islands. www.isolebrissago.ch to see Isole di Brissago - Botanical Gardens.

Alternatively <https://en.wikipedia.org> and click on Wikipedia Brissago for details of the island. These islands sit off the coast south of the Swiss Italian border where it is warmer. Along with a few Eastern Banksia species he saw *B. praemorsa*, *B. grandis* and *Callistachys lanceolata* doing well. Name tags indicated Nindethana Seed service. Eremophilas weren't doing so well.

I wish to thank Hans for his informative article and wish him all the best for his new plantings.

His courage and persistence are to be admired.

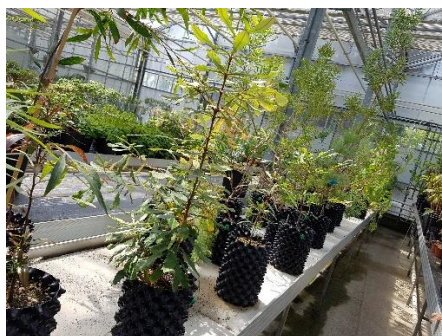
K.Collins

Botanic gardens visited in Wales & Western Europe on our mega garden tour 2018.

No.I. Kew Gardens.

We were met by Robbie Blackhall-Miles IOam at the Victoria Entrance gate. Robbie, leader of the Australian/N.Z. Native Plants Society kindly offered to be our guide. He entertained us all day with guided commentary with his great knowledge of history of the garden and many genera was a bonus.

He made arrangement with Lara, Nursery Manager, to see the inner sanctums (the temperature/humidity controlled) huge propagation house containing more than 20 separate areas. We were shown the proteaceae & other sections by some of the staff and saw methods employed to grow the plants. They grow seed sourced from the Millennium Seedbank. They were using rocket or (air)-pots and a composted bark, sphagnum, sand and perlite potting mix. Some of the banksias we saw were, integrifolia, media, ornata, serrata “superman” & croajingolensis. The latter three donated by Robbie.



Banksias in air-pots.

Kew is a vast botanic garden and almost impossible to get to all sectors in one day. We enjoyed the Waterlily house, the Mediterranean garden, and the refurbished & newly planted Temperate house. This massive, ornamental, ventilated, heated Victorian glasshouse has conditions set to mimic temperate weather conditions. It contained an Australasian quadrant where we found eastern banksias: *ericifolia*, *integrifolia* var. *integrifolia*, *integrifolia* var. *monticola* (incorrectly labelled *B. montana*), *B. spinulosa* var. *spinulosa* and *B. serrata*.

Western species represented were *blechnifolia*, *brownii*, *coccinea*, *lullfitzii*, *media*, *meisneri*, *menziesii* and *petiolaris*. These are grown in “Evolution house”, formerly Australian House built in 1952, a gift from the Australian government.



***B. integrifolia* var. *monticola*.**



***B. spinulosa* var. *collina*.**



Temperate glass house.



Victorian style temperate glass house.

This Victorian glasshouse is the largest of its kind, stands up to 19m tall at the highest point & is heated by boilers and radiators.

Temperatures are maintained above 10 degrees. It has a massive 15,000 panels of glass. Vents open in summer if the temperatures exceed 12 degrees.

It was built in 1863 and with ongoing work for 36 years. A five year, \$57m pound, refurbishment, completed 2018 added more vents to increase wind as many plants miss the evolutionary development for wind “siesmomorphogenicism” and grow spindly. We later observed this in other glass houses where banksias were growing spindly not able to support flowers and needed radical pruning to strengthen the trunks.

The Temperate house is 4,800 sq. m in area, & in the past had 1,000 plant Sps and now houses 1500 Sps. A mammoth 10,000 individual plants. Some of which are extremely rare and grown for preservation. The plants are sourced from 5 temperate countries and 16 islands. **The highlight of our visit.**

In the afternoon we took in the Princes of Wales conservatory & loved the ferns, orchids & carnivorous plants. Then to the stunning Marianne North botanic art gallery. Alongside we popped into the Shirley Sherwood gallery who was hosting a florilegium exhibition. What an honour to see a beautiful *B. praemorsa* painted by Margaret Pieroni of Denmark W.A. from one of our garden specimens. (Our near neighbour and leader of the Dryandra Study Group). Several exquisite banksia artworks where featured in the exhibition.



Picture P27. SHIRLEY SHERWOOD GALLERY.

Florilegium artworks with Margaret Pieroni's beautiful
B.praemorsa front and centre.

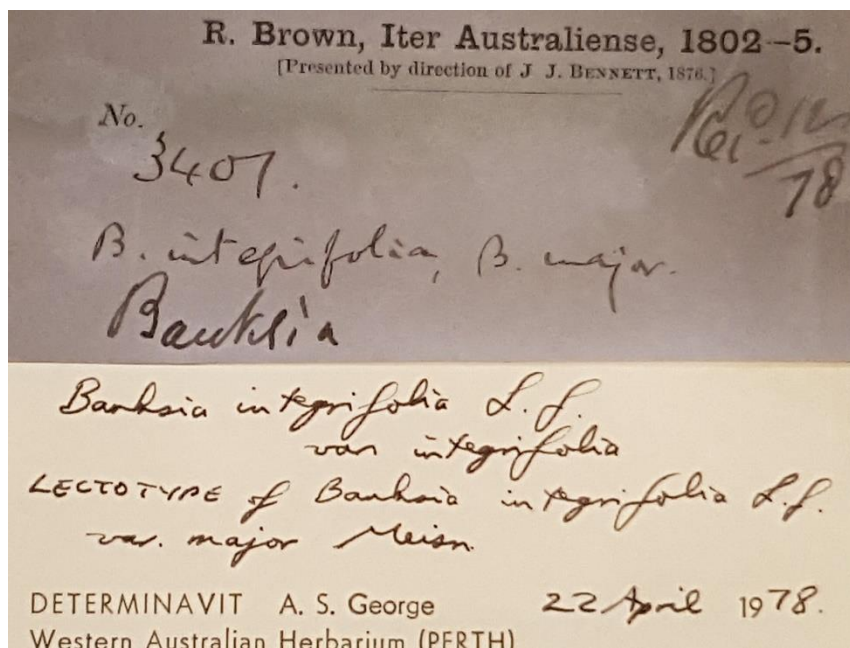
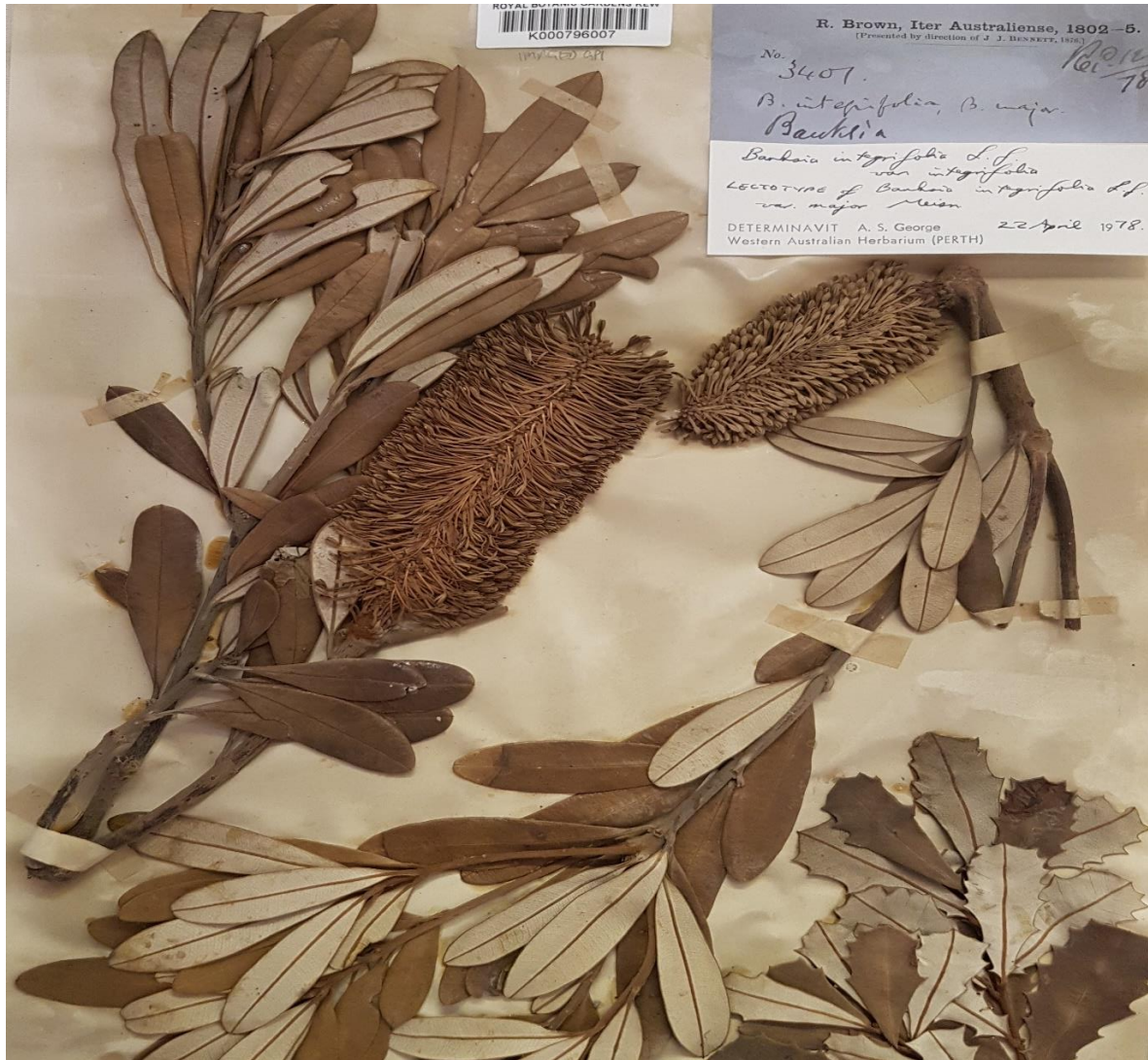
Finding a new nature

Australian flora has captivated botanists since Europeans first set foot on antipodean soil. The richness of the plants that botanists Sir Joseph Banks and Dr Daniel Solander documented in 1770 when Lieutenant (later Captain) James Cook charted eastern 'New Holland,' which he called New South Wales, influenced the decision to establish a colony there. The trees and shrubs, known intimately by the Aboriginal inhabitants, were for the people of the First Fleet of 1788 strange and new; barely a leaf of the dense forests resembled the nature they had left behind.

Banks maintained his interest in the botanical investigation of the colony, sending botanists to expand both his own and the Kew Gardens collections. Robert Brown and Allan Cunningham were key figures that worked under the aegis of Banks.

Brown with botanical artist Ferdinand Bauer was part of the British *Investigator* expedition (1801–1803) under Matthew Flinders, the first to circumnavigate the continent and suggest the name Australia.

Although some rainforest species adapted well to horticultural uses and were valued for their aesthetic qualities, many Australian plants perished at the hands of enthusiastic gardeners. In the 20th century there was increased appreciation and understanding of the enormous diversity of local flora and the potential for Australian native gardens. In 1988 the dedication of the Australian Botanic Garden, Mount Annan in south-western Sydney was a fitting celebration for the bicentenary of European settlement.



An early collected specimen on loan from the Kew Herbarium.

We finished our amazing day with a look at the Stone garden with some S. African proteaceae, the Bonsai and Secret gardens and made our way to the Cricketers Pub near Kew Bridge for a burger & beer. What a day!!!! We did not kick on as we had tickets organised for the Chelsea Flower Show the very next day.

Yes, it was busy, hectic & packed to the rafters, but the exhibits and trade displays were absolutely amazing. If you are a flower lover “This is a once in a lifetime MUST!!!” A massive pavilion with hundreds of exhibits. Many countries displaying but not Australia this year. The pavilion was surrounded by hundreds of more outdoor display gardens and trade exhibits and in a nearby area food & craft vendors, entertainment and artisan displays.



Chelsea Flower Show - South African display.

Kevin and Kathy Collins.

Banksia Grafting Update. (Milton N.S.W.)

By Phil Trickett

Much progress has been made on grafting WA banksia species onto eastern rootstocks over the last 10-15 years. This is due to a handful of devoted grafters defying widespread views that WA banksias are not compatible on eastern species. This view has been firmly debunked with many species successfully grafted, mainly onto *B. integrifolia*, and growing into flowering, mature, hardy plants.

I have been grafting banksias for over 15 years, with lots of trial and error in fine-tuning techniques. The oldest of my grafted banksias are mostly to be found in our garden but some can be seen at the Australian Botanic Garden Mount Annan. I am currently involved in supplying grafted banksias to the new banksia garden at the Australian National Botanic Gardens in Canberra. This showpiece garden will be opened in April 2020. My involvement in this great project has resulted in me increasing my banksia grafting to work with a wider range of scion species. A major focus in this project is on techniques to increase success rates, and the identification of the rootstocks/interstocks required to graft species yet to be successfully grafted.

Most of my successful grafts have used *B. integrifolia* as the rootstock. *B. integrifolia* is a fantastic rootstock because it is so hardy to a wide range of climate and soil types. I have also had some success using *B. serrata*, but I find this species more difficult to work with, plus it is nowhere near as hardy in cultivation as *B. integrifolia*.

Successful species so far

This list includes some eastern species which I find difficult to grow on our rich, moist volcanic soils on the NSW South Coast. All these scions have been grafted onto *B. integrifolia*.

aquilonia

blechnifolia

brownii (Stirling Range Mountain Shrub, Waychinicup and tree forms)

burdettii

canei (Talbingo, Mt Tamboritha, Moroka River and Wadbilliga forms)

croajingolensis

dryandroides

epica

grandis

incana var. incana

laevigata ssp. laevigata

lanata

lemanniana

marginata

media
 meisneri ssp. ascendens
 micrantha
 nutans (yet to flower)
 occidentalis
 paludosa ssp. paludosa
 plagiocarpa
 praemorsa
 pulchella
 rosserae
 saxicola
 scabrella (yet to flower)
 solandri
 tricuspis
 verticillata

All these species apart from those noted have successfully flowered as grafted plants and look to be long-term compatible.

I have tried many other spectacular WA species unsuccessfully and consider many of these not compatible with *B. integrifolia*. Examples include *B. hookeriana*, *B. prionotes*, *B. menziesii*, *B. elegans*, *B. baueri*, *B. baxteri*, *B. coccinea* and *B. oreophila*.



***B. solandri* graft union (9 years old.)**
on *B. integrifolia* rootstock.



***B. brownii* "Waychinicup shrub form"**
(3 years old.) on *B. integrifolia* rootstock.

Future work

Much work is needed to successfully graft species yet to be conquered, and I plan to focus on those I have tried without success. I see two possible solutions.

The first is trying *B. serrata* as a rootstock for these species. Some trials undertaken by myself and ANBG staff have resulted in some promising results. Species which have been successfully grafted onto *B. serrata* include *B. coccinea*, *B. sceptrum* and *B. hookeriana*. The resulting plants are yet to flower but are growing well at two years of age.

The second solution is the use of interstocks with *B. integrifolia*. This method involves grafting a cutting of a particular species (interstock) onto *B. integrifolia*, and then grafting the desirable scion onto this interstock. The theory behind interstock grafting is that the interstock solves the incompatibility between the *B. integrifolia* stock and the scion because the interstock species is compatible with both *B. integrifolia* and the scion.

Some success has been achieved with *B. media* as an interstock with *B. prionotes* and *B. hookeriana*. I am currently doing trials using *B. media* and *Dryandra cirsioides* as interstocks. I'll report on the results of these trials in a future newsletter.

Can DNA work help?

DNA analysis of banksia species show two distinct groupings relating to *B. integrifolia* and *B. serrata*, the two eastern species most commonly used as grafting stocks. The above list of successfully grafted species nearly all come from the *B. integrifolia* group. Exceptions are *B. blechnifolia*, *B. epica*, *B. laevigata ssp. laevigata*, *B. lemmaniana*, *B. media* and *B. burdettii* from the *B. serrata* group. The success of *B. media* as an interstock makes sense as it comes from the *B. serrata* group but is compatible with *B. integrifolia*. Maybe the other species from the *B. serrata* group which are compatible with *B. integrifolia* should also be trialled as interstocks with *B. integrifolia*.

Other possible interstocks may include *Dryandra* species that I have found to be compatible with *B. integrifolia*. I am currently trialling *D. cirsioides* as an interstock, but there are other possibilities such as *D. praemorsa* and *D. foliolata*.

Techniques

I am continually fine-tuning all aspects of grafting from the actual grafting to the aftercare, to ensure the graft has the best possible chance of success. It is important to adapt techniques according to each grafter's environmental conditions. Wind, humidity, rain and seasonal

temperatures vary enormously across Australia and each of these can impact on the success or failure of grafts.

Here is a summary of my current methods:

- I use the whip graft method, and leave a leaf at the top of the stock plant. Without this leaf the stock can die back to the first leaf, with the resultant failure of the graft.
- The grafted plant is then placed under misters in a glasshouse, with the misters running for 5 seconds every 20 minutes during daylight hours. The grafted plant remains under misting conditions for at least one month.
- Once the scion starts to shoot, or after two months if the scion is yet to shoot, the plant is moved to another part of the glasshouse, where the plant is watered every couple of days. This protection in glasshouse conditions is essential until the scion starts to shoot, after which the plant can be moved to open conditions.
- If you do not have glasshouse conditions, an alternative method is to place a snap lock bag over the scion, place in shaded conditions for at least a month. The bag can then be removed but the grafted plant must be protected from wind and heat until the scion starts to shoot.



Grafted *B. brownii* (Stirling's mountain form).



Grafted *B. occidentalis*.



Grafted *B. lemniiana*.

Phil Trickett.

Member, Geoff Watton, s Banksia exploits over several decades. S.A.

My membership of the Society for Growing Australian Plants in South Australia goes back to about 1962 after my first visit to an annual flower show (native plants only) that included boxes of cut flowers flown in from interstate Societies-including Western Australia. I was stunned by their beauty and was immediately obsessed.

I then joined the W A Wildflower Society and have been a member ever since.

My first visit to West. Aust. happened in 1967 for 3 months by car and caravan through the South-west as far north as Kalbarri and fell in love with the fabulous plants and especially with the Banksias. That trip set my future. Colour photography had just been introduced (only Kodak and Ferraina colour) so I set out to examine and photograph everything I saw. This led to 21 trips across the Nullarbor until the last in 2011.

In the 1960's Ivan Holliday was our leading native plant specialist with a number of books to his credit and Ken Stuckey as the expert on the Proteaceae. Ivan was looking for a partner and I had the photos, so we decided to produce a book covering all the named species of Banksias and so in 1975 local publisher Rigby Ltd. published our first book- "A Field Guide to Banksias".

This comprised 58 named species, obviously including those from the Eastern States.

South Australia had and has only 2 species. Prior to this publication there were a scattering of books each dealing with a few species.

Over the years there have been many reprints and revisions and the latest revision in 2008 has 77 named species and heaps of cultivars so that this edition deals with 108 taxa.

Locating all of these plants for photos has involved a great deal of travel not only in West Aust. but in the Eastern States, especially in 1981 after Alex George published his revision.

Apart from Banksias I have been obsessed with a huge range of native plants, mostly from West Aust. so that my home garden has specialised in W A plants. Being a standard 1/4-acre block in a suburb on the foothills of Adelaide with the typical soil of heavy alkaline clay over limestone marl, I removed truckloads of clay and introduced truckloads of acid sand back 62 years ago. I then successfully grew a lot of acid loving plants - banksia, dryandra, grevillea, hakea, verticordia, darwinia. Naturally, over that period many have come and gone but I still replace them. The Eastern banksia species have lasted longer - ericifolia, serrata, spinulosa, and integrifolia (this germinates everywhere).

You may have seen in the Wildflower Society Newsletter of May 2018 Vol.56 No.2 on page 13 a short article and photos of my front garden I sent to the Editor.

Beginning in 1969 I began planting a Banksia arboretum of West. Aust. species on a sandy 5-acre site on a local reservoir property at Happy Valley (I worked for the local water supply authority) intending to eventually grow all West. Aust. species. It progressed well until the revision of 1981 by Alex George made it too difficult. Although many still survive I have not been able to look after the collection for many years. An interesting aspect of this arboretum is that the Adelaide Waite Research Institute was studying the cross pollination of some Banksia species and asked to use the collection of specimens. The end result was the production of three cultivars with special features. They were named Banksia "Waite Crimson"; Waite Flame"; and "Waite Orange".

I guess my favourite species is *B menziesii* and its colour forms although when I think of *ashbyi*, *coccinea*, *meisneri*, *prionotes*, *sceptrum*, *blechnifolia*, I hardly know what to say.

An interesting project took place in 2016. I had so many photos that I decided to publish some books for my own and family pleasure. I downloaded a program called "blurb.com" which provided blank pages which I filled with photos and descriptive texts until I was satisfied with the result, then "sent" it to the website and within a fortnight received back the most wonderful publications in marvellous colour and hard cover. Two books were about Banksias. One on Leschenaultias and one on a big range of W. A. wildflowers.

Recently I was somewhat worried about the future of my collection of photos, so I produced a USB of some of the best and sent them to the Perth Herbarium, the National Botanic Gardens, Canberra and the Wildflower Society of Western Australia. They were kindly received.

The book, "**Banksias A Field and Garden Guide**" is a revision of the previous books and published in 2008, financed by the Australian Plants Society (S.A. Region) and printed in Adelaide. I was asked to be the Distributor for sales and I deal with orders through my email address "wattongd@yahoo.com.au". The prices set by the Society are; recommended retail price at \$29.95 per copy: members of various Native Plant Societies at \$24.95: retail dealers (like Aspects of Kings Park book shop) at \$18.00, each, plus postage and packaging.

Geoff Watton.





Geoff has taken great interest in the showy S.A. banksia, *ornata*.

Shown are some of the lovely different colour forms he has encountered.

A new 2nd edition of “Banksias” underway.

Kevin & Kathy Collins are busy working on a new second edition which will include the latest described species, *vincentia*. It will also have many enhanced pictures and updated information in the Propagation and Cultivation section. We are looking at possible grants and funding opportunities to make it possible.

We will report on it's progress at the ANPSA bi-annual Conference/Seminar at Albany **September 30th to the 4th of October.**

We look forward to catching up with many of our members and botany friends at the conference. Safe travelling....see you in Albany.

Financials and New members.

The balance of our Banksia Study group account at the end of August is: **\$1,501.67**. We welcome our new members and trust you enjoy the newsletters. Feel free to submit any queries, new discoveries in your gardens OR submit a report on your garden. We thank all members who have been submitting very comprehensive and informative articles (big & small). For anyone trying to source the many different forms, colours etc of some of our species please contact us on banksia@westnet.com.au (Note new email address) and we can forward our extensive banksia & dryandra seedlists.

K & K Collins Authors/Editors.