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ARE YOU LOST IN THE BUSH? - LET A BANKSIA HELP YOU OUT!

Kevin Collins

This is a story about a love affair with banksias!

Back in 1984, my wife Kathy and I purchased a small property near Mt Barker. It is 21 acres, with originally 11 being only partially cleared with no superphosphate history and it also contained one acre of precious remnant jarrah woodland. The property also had a range of soil types from deep acid white sand, to sand over laterite, ironstone rock over clay and some gravely peaty loam over deeper clay. A natural spring and small peaty area provided the site for an island pond feature.

In our revegetation we have managed to grow a complete arboretum of the 78 species and 24 sub-species of banksias (a world first), and the majority of the 140 taxa of dryandras. These are interspersed with a mixture of other showy natives.

We are thrilled at the success of our revegetation and the thriving eco-system we have created. Fifty-five species of birds have been recorded including emu-wrens and budgerigars (a long way south). Annually, heaps of white-tailed black cockatoos regularly feast on the banksia seeds – a real problem if you want to keep the seeds for growing on! Both pygmy and honey possums are seen occasionally as well as southern brown bandicoots, snakes, bungarras, and other reptiles. Fungi and lichens are also interesting and we enjoy the songs of four species of frogs. It truly is 'land for wildlife'!

Bags protect B. coccinea *fruits from cockatoo attack.*

As we got into our stride, we found there was a lot of public interest in our efforts, so we decided to try our hand at ecotourism. We first opened the place to visitors in 1991, and now we have over 1000 visitors per month during spring, including large bus groups. It's hard work though! You have to provide an attractive 'visitor experience', which in our case included not only a guided tour of the native plant areas, but an expansion of the plant nursery and the construction of an information centre including a fine-art gallery where local craftspersons can display and sell their work.

So what about the banksias?

We start from the known beginnings – we are very lucky that the WA Museum has given us a fossil of *B. archaeocarpa,* a 50-million year old species from the Kennedy Range. We then discuss the whole range of species in the banksia family, Proteaceae.

It is fascinating how banksias have evolved with wind and fire.

Many species that grow inland and extend to coastal provenances get progressively smaller to cope with wind. A good example is *B.grandis* which grows as a large or small tree in inland forested areas but only as a very low shrub at Windy Harbour and almost prostrate at Cape Leeuwin and Cape Howe. The lower coastal forms have evolved to survive the elements and the DNA has altered to the degree that they grow true to type from seed; subject to the transfer of pollen in the pollination process as pollinators can carry pollen great distances.

The plants have evolved to carry fire-resistant, insulating woody pods that can survive our hottest bushfires. The velvet layer beneath the outer flammable grey bracts is basically a fire-tolerant layer. Many species of banksia are killed by fire and rely on seed for regeneration. A few species re-shoot from lignotubers or epicormic buds beneath the thick bark. Dependant on the provenance, some species release seed when follicles open in summer, but only in areas of summer rainfall. Others, like *B. grandis*, open in summer and rely on autumn rains to loosen and activate the seed-holding device to release the winged seeds when the ground is sufficiently wet to ensure germination and survival. Species retaining the dead floral parts block the sun and use these flowers as fuel to burn hot enough to open the follicles. Other species such as *B. nutans* lose old flowers but don't open with sun as the flowers are within the dense foliage. The follicles of these types contain highly flammable oil which is the fuel in lieu of persistent flower parts. In summer rainfall areas, the follicles slowly open to release the seeds about eight hours after a burn and the seeds fall onto the cool ash bed. Dry inland species need fire to open, then await rain, which could be days or years away, then release the seeds. (Who says banksias don't have a brain? Look at *B.nutans* pods, certainly brain-like!)

When you look at a 'banksia flower' you can see that it is not an individual flower but an inflorescence (a head

continued on page 13

continued from page 12

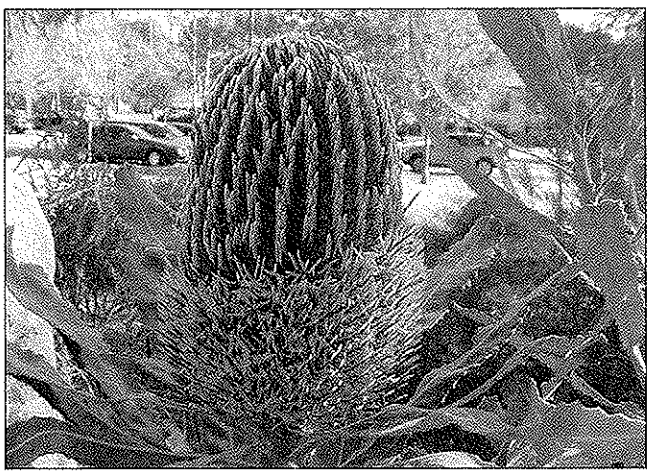
Banksias

FLORA

of hundreds of flowers, arranged in vertical rows in pairs having a perfect checker board pattern). The pollinated flowers produce follicles and non-pollinated ones appear as small dots in between. Rarely is greater than 10% pollination ever achieved due to the random visitation to flowers and the requirement to have two visitors in the correct timing sequence, with the appropriate pollen, to an individual flower to achieve pollination.

Aboriginal people used banksias in a variety of ways. They sucked nectar from individual flowers, made nectar drinks by immersion of flower heads into paperbark water containers, carried fire within non-pollinated spikes or large mature pods wrapped in paperbark and carried in kangaroo skin bags, used flower heads as hair brushes, chewed the sticky young buds and bracts of *B.attenuata* as gum and ate the tasty seeds (incidentally, lightly roasted *B.baxteri* seeds are the tastiest!). Some blooms can be picked when open and tapped onto your hand to release luscious nectar. Banksia honey was also sought by Aboriginal people and is still a treat today if you can find it.

And what about the title of this article? Yes, banksias in the bush can be used as a compass! Flowers in the inflorescence will open first on the warm sunny side, and be slowest to open on the cool south side, so you will see a sloping line on the inflorescence, where it peaks will be north. This compass effect is found on other species with inflorescences such as *Kunzea* and *Callistemon* and is very obvious on grasstrees. Pods that release seeds with the sun likewise open due north first.



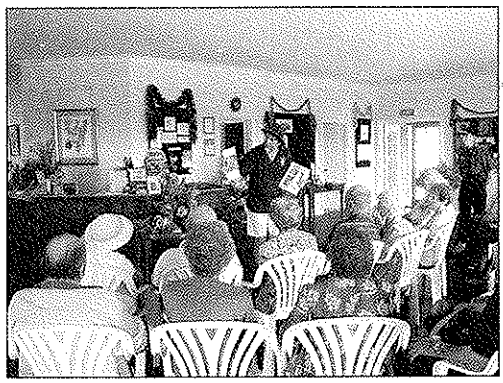
On this B. menziesii, *north is on the right-hand side of the photo, south on the left.*

Pioneer settlers used banksia tree trunks as dart boards. Banksia timber or pods were used as firewood and non-pollinated spikes dipped into kerosene were useful candles. Research even unfolded a company set up in the Swan River Settlement utilising banksia velvet for stuffing pillows!

What of the future?

At Banksia Farm we have hosted several student projects, and we hope there will be more. There are still lots of fascinating interactions to study! Kathy and I have travelled the nation looking for our favourite plants in the wild, and are delighted to have been involved in discovering new species.

For those who like books, we are working with botanist Alex George on a new edition of *The Banksia Book* which should be out soon. As recipients of a Land and Water Australia fellowship, Kathy and I are also progressing with a project to produce a small booklet entitled *Regeneration with Banksias - developing the skills and extending the interest*, the story of our love and passion about establishing Banksia Farm.



Kathy and I extend a warm welcome to all *Land for Wildlifers*. For further information, including opening times etc, email: banksia@comswest.net.au

Did you know ...?

... that native animals can cause real problems in the use of pit traps during fauna surveys? (These traps consist of a bucket set into the soil with a fly-wire fence leading towards it. Animals such as frogs, small reptiles, scorpions, centipedes and other invertebrates fall in and cannot get out until the researcher records and then releases them.) But, in the Australian Wildlife Conservancy's Karakamia Sanctuary at Gidgiegannup, pits installed in the early days are not used much now, since native fauna numbers have built up. Why? Because quendas have learnt that the buckets contain fast food! They jump in, eat the trapped animals, and hop out again! Clever little fellows!

Trish Gardner, AWC