

## Two 'local' Casuarinas

Following the second note in the series about three species of *Casuarina* this weeks offering is two 'local' species which are well known to us all. The comments made in the introduction to the last note apply here namely that I have not included references as it is a quickly written piece for the times. There are no photographs as they are easily obtained by the reader on the net using your favourite search engine. Something you are encouraged to do if you are looking for something to do at this rather frustrating time.

They are the well known *Casuarina cunninghamiana* found on local rivers and the somewhat less well known *Casuarina glauca*

### ***Casuarina cunninghamiana***

*Casuarina cunninghamiana* was named by *Friedrich Anton Wilhelm Miquel* in 1848. *Miquel* (1811-1871) was a Dutch botanist who studied the flora of the Dutch East Indies and a large collection of Australian plants by correspondence having never visited the countries. Indeed he never went anywhere much at all. *Cunninghamiana* acknowledges the work of *Allan Cunningham* (1791-1839) whom *Miquel* claimed collected the material. *L.A.S. Johnson* in the *Flora of Australia* v3 states the this is doubtful as the script is not *Cunningham's* writing style and it could not have been collected on the shores of Morton Bay and Glasshouse Bay as the species only grows near freshwater.

We need to remember that they were all working from dried material many years after the collection had been made.

*Johnson* and *Wilson* split the species into two.

***C. cunninghamiana*** which grows from Bermagui to Cooktown in Queensland. It is generally confined to the coastal regions but in some places it's found on waterways inland such as the ACT. for example on the Cotter river.

***C. cunninghamiana* subsp. *miodon***. Greek meion few Latinised to mio and odontis tooth Latinised to odon. So fewer broader teeth compared to *cunninghamiana*. It occurs from Daly River in N.T. to the Gulf of Carpentaria in north-western Queensland and intermediate at Burketown with *C. cunninghamiana*. *K.L. Wilson* collected the Type specimen from 23km NNE of Borroloola on Bing Bong Road in 1983.

It is a smaller tree to 10m with poor form compared to the much taller better formed *C. cunninghamiana*

This split is now accepted as the two have been found to be distinct genetically as well as morphologically.

*C. cunninghamiana* has been protected in NSW for a very long time because, as a riparian species with a strong root mat it has an ability to protect riverbanks. Maiden (1907) wrote in *The Forest Flora of New South Wales Vol.II* that:-

*“the banks had in the course of ages acquired an equilibrium which has largely been destroyed by the white man. He ruthlessly cut down the River Oaks to obtain more ready access to the river frontage, and to enlarge the area of cultivated land, but the latter aim has been defeated through the consequent falling in of the banks.”*

The NSW Water Act of 1926 ended the removal of she oak from riverbanks and all other natural grown trees of the species. The most recent NSW legislation specifically mentions the species as being protected.

The large medullary rays and light brown to reddish colour makes the wood attractive particularly when quarter-sawn. It is this feature that led the early europeans to call it she-oak as *Quercus* species exhibit the same feature. Unfortunately the wood is difficult to season and the recovery rate is prohibitively low due to these difficulties and fluting of the bole. These features have rendered the species non-commercial in Australia. The scientific literature reflects the fact that there has been little work done on the species such as detailed scientific measurements eg. growth rates, calorific values, provenance differences or other characteristics required for plantation decision-making. However small scale agroforestry proponent *Rowan Reid* is more enthusiastic claiming with careful selection it has some potential. The wood is a very good firewood and is well known historically as being favoured for bread making as it burns hot, without strong smells and importantly for mum (then) is fissile. In the past the wood was used for parts of wagons and other farm and forestry equipment now

replaced by metal. It has not found a niche in any of the specialised markets as other species are more favoured.

In some parts of southern Australia it is planted in urban areas such as Canberra where it is able to survive in quite dry sites at high stocking rates. However, in such situations it grows well for a time but eventually stops growing and without appropriate and timely thinning of the stems starts to decline. It would be helpful to have some indication of the basal area for optimum growth and health but such work is unlikely to be carried out at the present time.

The species is dioecious therefore in any planting some individuals will have the small cones present while others, being males will not. As with many trees where they have very heavy seed crops it is often indicative of extreme stress. It's roots have the common association with Frankia which symbiotically fix N.

As demonstrated by the 2003 fires in the ACT the species is killed by fire and many large trees on the Murrumbidgee River eventually succumbed and a new vigorous generation is replacing them. It is planted overseas for windbreaks, and shelter-belts but its ability to become invasive is of concern in many countries. It will form suckers but it is generally not a problem.

### ***C. glauca***

*C. glauca* was named by *Franz Wilhelm Sieber* (1789-1844) in 1826. He was born in Prague and collected in Europe and the Middle East before coming to Sydney in 1823 for six months. Unlike *Miguel* he must have collected his material himself. He spent the last 14 years of his life in a Prague asylum. He gives his name to *Eucalyptus sieberi* a local species found on the coastal side of the ranges.

*Glauca* refers to the colour of the small leaves being bluish-grey or green not the colour of a waxy coating more commonly the case in other species referred to as *glauca*. The cones are much larger than *C. cunninghamiana* but for us non-experts the usual identifier is the thicker branchlets and the site.

It grows along the coast from Bermagui to Gladstone and on Frazer Island on flat swampy sites with brackish or salty water. The soils tend to be alluvial with a high organic content and low pH. It can grow to

14m and on very good sites up to 30m. The bole is often fluted and straight. Like most species in the genus it is dioecious.

This ability to grow in salty soils makes it an attractive option for ameliorating salt problems in areas where little frost occurs. It has the *Frankia* association found on all *Casuarina* species.

It strongly suckers which makes for dense stands. This fact makes it a problem where it is planted overseas. In parts of Florida and Hawaii it is regarded as noxious. It is also regarded as an environmental weed in WA and SA particularly the Mount Lofty Ranges. Clearly care would be needed if used in urban areas.

The wood is hard heavy 980kg/m<sup>3</sup> and fissile it is used for small items and general farm uses. but the species is not commercial to any extent.

[Yes I know the title is two local species but read on.](#)

### ***C. obesa***

*C. obesa* is often identified as a synonym for *C. glauca* but is given species status in the *Flora of Australia* v3 although it has not been universally accepted. It is stated there that it closely resembles *C. glauca* but is separated on a number of morphological features. The species is said to be the western and inland variant of *C. glauca*.

*C. obesa* Miq. 1845 grows in south-western WA. with occurrences in Victoria and a now lost outlier in south-western N.S.W. The type specimen was collected for him; you will remember he never came to Australia; on the Swan River on the 27th June 1839.

It is used for agroforestry and encouraged by organisations such as Greening Australia for small scale projects with information sheets based on general observation rather than scientific data. This is indicative of the general point that the species is commercially marginal but has a role to play in environmental plantings primarily in W. A.

*C. Cunninghamiana* will readily hybridise with *C. glauca* and some work has been undertaken in that direction but there is not a great deal of hard data available in Australia.

A small number of trees in an un-replicated sewage effluent project in Wodonga gave a basal area of 12.4m<sup>2</sup>/ha at age 4 years and a mean

height of 8.8m with 1690 stems/ha. There is some work being carried out overseas which may or may not be relevant in Australia.

These species seem destined to be of some interest but apart from the protection of riverbanks, undoubted bioenergy potential and urban plantings they seem unlikely to gain in importance in this country.

I have not been able to find a reference as to why Miguel named the species *obesa*. So the challenge for the week is to get back to me with an indication from the original publication which I have included here.

4. **Casuarina obesa** *Miq.* ramulis teretibus striolatis glabris, vaginarum dentibus 15 et pluribus lanceolatis appressis sensim sphacelatis et deliquescentibus, strobilis femineis breviter pedunculatis, maturis subglobosis utrinque truncatis, multifoveatis cristato-tuberculatis, bracteis lanceolatis fusce rostratis, marginibus extenuatis lacero-ciliolatis.

In depressis turfosis humidis ad fluvium Cygnorum supra oppidulum Perth, 27. Jun. 1839, et in solo calcareo ad aestuarium portus Leschenault, 30. Dec. 1839. Herb. Preiss. No. 2002.

*Casuarinae equisetifoliae* Forst. cognata, sed glabritie et vaginarum dentibus statim dignoscenda.

„Arbor 25-35-pedalis“. *Rami* vetustiores sordide fusci subannulati, vaginarum dentibus hic illic persistentibus. *Ramuli* strictiusculi erecti, in sicco cinereo-virides, glaberrimi, laeves, cylindrici, subtiliter striati, internodiis 1-1½ cent. longis. Vaginarum *dentes* erecti, lanceolati, fusci, versus apicem albi, floccoso-lacero vel subciliati, apicibus sensim deliquescentibus. *Strobili feminei nascentes* obovato-globosi *pedunculos* dense bracteatos fere aequantes, *maturi* effoeti breviter pedunculati, subglobosi, utrinque truncati, hinc fere brevi-cylindrici 1-1½ cent. longi, *bracteolarum* marginibus acutatis prominentibus extus puberulis cristati. *Bracteae* lanceolatae fusciscentes, marginibus albicantibus lacero-ciliatae.

To start you off my Smith's dictionary seems to indicate that *obesa* is Latin for fat or plump, alternatively, coarse or gross and possibly swollen and my Stern that *ramulis* = twig; *teretibus* = circular; *striolatis* = striated; *glabris* = grey-green. Where did he get *obesa* from? What is it that is plump? Or what else is *obesa*?

Answers acknowledged in the next note.

And a letter to the Editor What next!

Letter to the Editor,

Steve, I have really enjoyed your contributions on the Casuarinaceae but I was moved to make a contribution on *Casuarina glauca*.

As you point out there are many potential positives for the species. A classic example would be Brisbane airport where, in the 1980s, a large planting of vegetatively propagated male ramets were planted on saline areas surrounding the airport. The aim of the project was to use the dioecious nature of the species to create an environmentally unfriendly environment for birds in this area; thus minimising the threat of birds being sucked into the intake of jet engines. This monoculture project proved highly successful.

The negative side of *C. glauca* has, in my view, not been stressed sufficiently. The examples of the species being regarded as weeds in South Australia, Western Australia and parts of the US should be a warning. I can give also give an example from the Tilba area on the South Coast of NSW. *C. glauca* was initially planted in saline soils along the lake edge and performed well. But, when planted on soils well away from the lake, new plants soon began to appear with root suckers creating an almost impenetrable barrier. Attempting to remove plants by cutting off simply caused even more shoots to sprout from the roots. The only technique we have to release our most valuable species from heavy *C. glauca* competition has been to cut and paint the stumps with straight glyphosate 360. Although very successful at stimulating a growth response to our crop trees, it is daunting to think that we had created the problem by planting this invasive species in the first instance. I urge all your readers to think twice before accepting any recommendation to plant this species.

Chris Borough

Steve Thomas  
16/4/2020