



Society for Growing Australian Plants Cairns Branch

Newsletter 156

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THE BOTANICAL FIND OF THE CENTURY?

Stuart Worboys

Late last year a report appeared in the Queensland Herbarium's scientific journal, *Austrobaileya*, of a major botanical discovery, perhaps the most significant discovery in Australia this century. Whilst working on vegetation mapping on the rocky islands of Torres Strait in 2007, David Fell and David Stanton discovered wild populations of the inelegantly named, *Gnetum gnemon*¹, a species not previously known from Australia².

Gnetum gnemon is a rainforest tree found throughout southeast Asia, where it is widely utilised for food, timber and fibre. In Papua New Guinea, where its Tok Pisin name is *tulip* (literally “two leaf”, in recognition of its opposite pairs of leaves), it is widely cultivated in village gardens. Its young leaves are added to soups as leafy greens and for flavouring, while the fibres of its bark are spun into a soft pale string and knotted into the intricately patterned string bags for which PNG is famous. Further west, in Indonesia, the tree is known as *melinjo*. Its seeds are pounded flat and deep fried into quite uninteresting crackers, and its “flowers” can be purchased at vegetable market stalls.

The significance of Fell and Stanton's discovery lies not in a new and tasty addition to the Australian flora, but in the unique place the species holds in the evolutionary tree.

1 Photo by gbohne from Berlin, Germany (Melinjo (*Gnetum gnemon*)) [CC BY-SA 2.0 (<http://creativecommons.org/licenses/by-sa/2.0/>)], via Wikimedia Commons

2 Fell D.G., Stanton, D.J., Williams, D., Loban, F., Nona, F., Stow, T., Wigness, J., Manas, E. and Uiduldam, G. (2015) First record of the Gnetales in Australia: *Gnetum gnemon* L. (Gnetaceae) on Badu and Mua Islands, Torres Strait, Queensland. *Austrobaileya* 9(3): 421-430.

A quick glance at the photograph on the first page suggests *Gnetum gnemon* is a typical rainforest tree, with broad glossy leaves and brightly coloured berries. But this is far from the truth. *Gnetum gnemon* is a conifer – a cone bearing plant – more closely related to cypresses and kauris than to flowering plants like apples and lilies.

Somewhere deep in evolutionary history, *Gnetum* and its relatives branched from the line of conifers, and became adapted to tropical rainforest environments, developing broad leaves and brightly coloured fruit-like seeds that are dispersed by birds and mammals. There is no doubt that *Gnetum* is a conifer: it is defined by the presence of cones and seeds that sit unprotected on the cone scales, rather than all wrapped up in a protective carpel (fruit) like flowering plants.

But even amongst conifers, *Gnetum* and its relatives are unusual. Their wood is surprisingly like a flowering plant, their leaves are broad with net-like veins, and

the way its seeds are fertilised and develop is quite different to the other conifers. So different in fact

known as the Gnetales. The other subclasses are the Ginkgoideae (the ginkgos, found only in China), the Pinidae (the familiar typical conifers such as pines, kauris and cypresses), and Cycadidae).

It is this difference, this vast separation from its closest conifer relatives, this genetic uniqueness that makes David Fell and David Stanton's discovery so exciting. All the world's land plants fall into just 13 subclasses. With their 2007 discovery they have added a new, previously unrecorded subclass to the Australian flora.

The utility of *Gnetum* raises an obvious question. Surely the populations of *Gnetum* trees found on Badu and Mua Islands are garden escapes? Possibly not: Fell and Stanton state “no uses are documented or known for *Gnetum gnemon* in the Torres Strait. Specimens were shown to Land and Sea Rangers during our visits to [the islands]... They did not recognise the plant, and stated that they had no name or use for it...[However] the fact that local people do not have a local name or use for the plant does not mean that it was not used in the past.” The contribution of the Rangers is recognised in their co-authorship of the paper.

Fell, Stanton and their co-authors report for the first time not just a new species in the Australian flora, but a whole new subclass. It seems like the textbooks will have to be rewritten.



A well-made natural fibre string bag (bilum) from Papua New Guinea, showing patterns from the Sepik region. The bottom picture shows the soft, fine string produced from tulip bark.

that they are placed in their own subclass within the broader conifer group, the Gnetidae³, formerly

³ For more information on how Australian Plants are classified at the class and subclass level, see en.wikipedia.org/wiki/Gnetidae. As a comparison, all 25 000 or so of Australia's native flowering plants belong to the subclass Magnoliidae.

BEAUTIFUL TREES OF THE WET TROPICS

Fagraea *cambagei* – Porcelain fruit



Porcelain fruit (*Fagraea cambagei*).

Also called Pink Jitta or Yellowheart, the Porcelain Fruit is an attractive small tree endemic to the rainforests of the Wet Tropics. Its natural distribution extends from Bloomfield to the Palmerston Highway, and from sea level to 800 m.



The glossy leaves and unusual bud of *Fagraea cambagei*.

Formerly recognised as part of the family Loganiaceae, the genus *Fagraea* has been placed in the Gentianaceae, a cosmopolitan family which includes herbs, vines and small trees.

It's large, dark green glossy leaves are opposite. Rather than having stipules, the base of the petioles are shaped to protect the developing bud, looking something like a little mouth that opens up to spit out the new shoot. The flowers are large, pale cream and strongly fragrant.

However, it is the fruit of this plant that are its the most striking feature. The fruit ripen to white or dazzling hot pink, with a gloss like freshly cleaned porcelain. Despite their visual appeal, the fruit seem rarely eaten by animals, although I have frequently seen fruit opened and the seeds consumed.

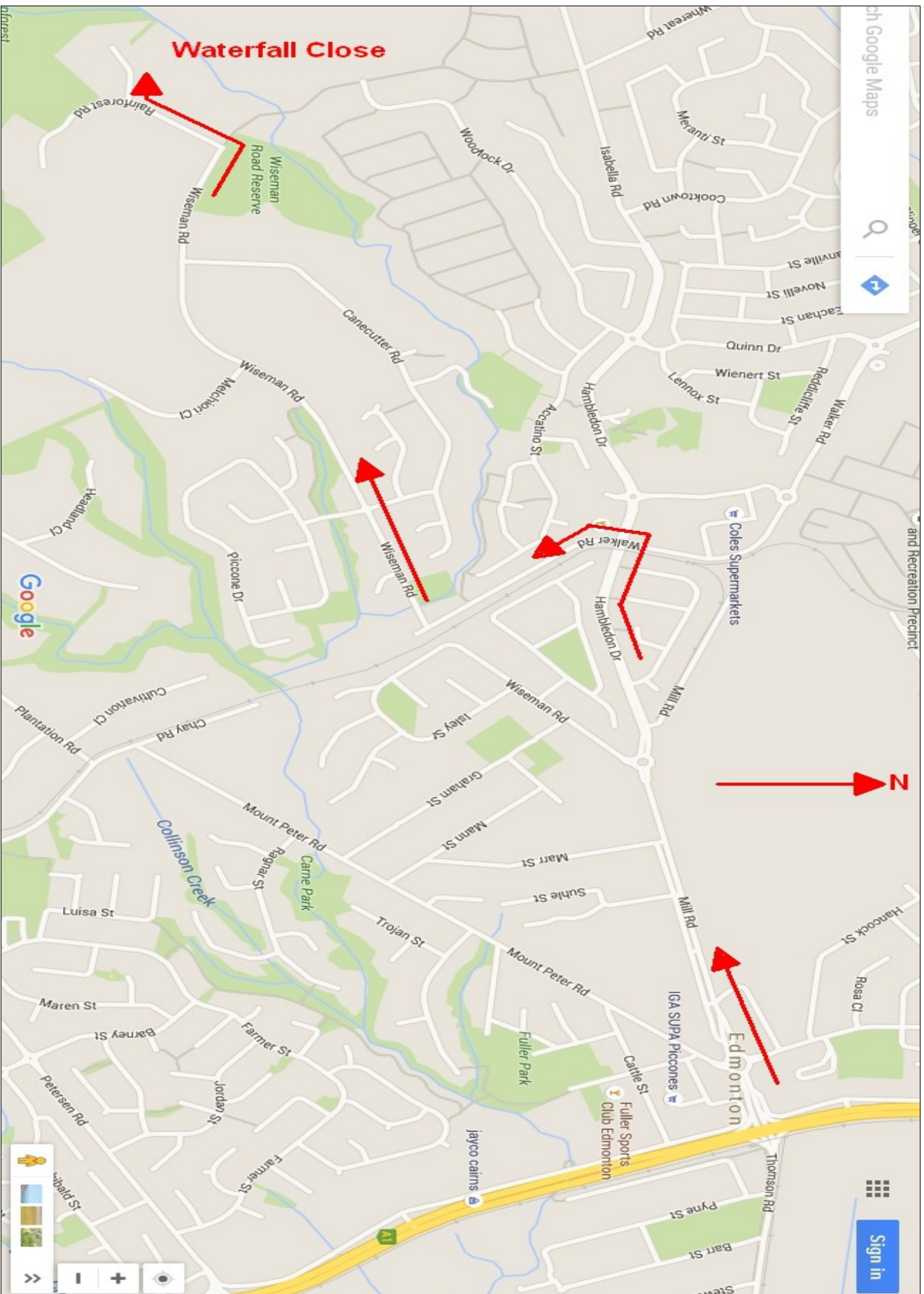
Porcelain fruit seems to grow easily from seed. I have mine growing in full sun in a well-mulched clay soil, where it is left to fend for itself. It's growing slowly, sometimes looks a little thirsty and suffers the occasional sunburnt leaf, but doesn't seem to unhappy with its location.



Large, fragrant flowers of *Fagraea cambagei*
(Photo: Anne Mohun)



SGAP 2015 Christmas Breakup at the Australian Tropical Herbarium



WHAT'S HAPPENING

Cairns Branch

Meetings and excursions on the 3rd Sunday of the month.

February 2016 – Isabella Falls, Edmonton

March 2016 – Annual General Meeting. New visitors centre, Cairns Botanic Gardens.

April 2016 – Russell River / Russell Heads.

May 2016 – Daintree River

June 2016 – Stannary Hills

July 2016 – Emerald Creek Falls

August 2016 – Julatten (to be confirmed)

September 2016 – Cattana Wetlands, Smithfield

October 2016 – Jumrun Nature Walk, Kuranda.

Tablelands Branch

Meetings on the 4th Wednesday of the month, 7:30 pm at the CWA Hall, Tolga. Excursion the following Sunday. Any queries, please contact Chris Jaminon on 4091 4565 or email hjaminon@bigpond.com

Townsville Branch

Meets on the 2nd Wednesday of the month, February to November, in Annandale Community Centre at 8pm, and holds excursions the following Sunday.

See www.sgaptownsville.org.au/ for more information.

This month's excursion...

Sunday 28 February. Chillagoe. Meet at the park in Dimbulah at 9.00 for a 9.30 a.m. start.

This month's excursion...

Isabella Falls, Edmonton. Meet at 12 noon at the appropriately named Waterfall Close, Edmonton. This is a short but rocky walk with an easy grade, leading to a small waterfall surrounded by rainforest.

To get there, head to Edmonton, and turn west into Mill Rd, heading towards Sugarworld water park. Turn left into Walker Rd straight after crossing the cane line. Follow Walker Rd to a hard right turn into Wiseman Rd. Follow Wiseman Rd to its end – it becomes Rainforest Rd. Follow Rainforest Rd and turn right into Waterfall Cl. Look for the little footpath heading down the hill from the court at the end of this street.

See map on previous page.

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