

**ASGAP BRACHYCHITON & ALLIED GENERA STUDY GROUP**

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**Newsletter No. 31. May 2008.**

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**Why my weather obsession this newsletter :** Because weather seems to explain the unprecedented flowering behaviour (or lack thereof) of many plants this year. Details later. The effects seem to be mainly due to the rapid alternation between warm & cool weather, rather than the drought conditions, as large trees were as often affected as small plants of the same genotype. The overall lack of normal hot summer conditions must also have been important. Any effect of the cool autumn conditions will show up next spring & summer, no doubt, but will be hard (impossible ?) to disentangle from effects of the preceding cool spring & summer, & whatever occurs this coming winter. Most unusually for S-E Qld, many *Boronia* plants were flowering through January & February this year, presumably due to the absence of scorchingly hot days.

**Weather conditions & flowering behaviour :** 2007-08 should have been a uniformly hot year, if one believes the more simplistic forecasts of the global-warming commentariat. In real life the globe cooled by half a degree or so, & nothing seems to have heated much since 2000. Here in S-E Qld we had a cool winter, turning to record cold levels in mid-July. On July the 19<sup>th</sup> there were temperatures below zero from the mid-north coast of NSW to at least Cairns. I have no friends right on the coast further north, & heard no ABC radio reports. Most of these areas had never recorded frosts before, & cold air from out at sea froze the coastal strip on this day & the next. The width of the frigid strip varied with topography & the (warmer) urban footprint. Some of my friends on the Sunshine Coast less than 10 km from the sea had no frost, while nearby sea coast areas like Beachmere & Bribie Island were down to -5 degrees C. Most of Qld was 11 degrees C. colder than the July average, but particularly the coast. Usually inland areas are coldest. Brisbane & major cities stayed mainly above zero, due to the 'urban-heat' phenomenon. A few temperatures include -6.5 here at Greenbank, -11 at Harrisville, -5 at Gympie, -1 or colder all along the Gold & Sunshine Coasts, -4 at Mackay & at Rainbow Beach, & -2 to -12 on the Atherton Tableland. Many tropical fruit tree & tropical hardwood (for cabinet timbers) plantations were wiped out, including many stands of trees like blue Quandong (*Elaeocarpus grandis*) & *Athertonia* & Davidson's Plum. Occasional hillocks were warmer, & left pockets of live trees. I don't know what happened to the coffee & tea plantations; maybe they were on sloping sites, as in Asia, & the cold air slid by. Or maybe not. Sugarcane crops on low-lying areas between the Qld border & Mackay were killed, including almost all those on the Gold Coast (closest to me). The burst canes lose their sugar, & hence are useless to crush, as well as being too abrasive for the mill machinery, but the farmers told me the mills penalised them for not supplying their agreed minimum cane quotas, despite the mills being shut because the cane was useless.

A friend with an orchid nursery 70 m from the sea at Beachmere lost most of his orchids on the 19<sup>th</sup>. Many of his neighbours grow succulents, African violets, geraniums & so on for southern markets, & most turned their water sprays on for the second cold night on the 20<sup>th</sup>. The result was plants encased in solid cones of ice, & total losses. Nearby areas of *Melaleuca quinquenervia* suckers about 4 feet high from recent clearing were killed stone dead; adult paperbarks were defoliated on the coast & nearby islands.

Curiously, I have seen no reports in horticultural or forestry magazines, & I regularly see several, or on TV, of the devastation caused by the July cold. Everyone seems to have thought their local damage was just a local quirk. Only ABC radio carried a few reports. Mainly I gleaned news from my friends with nurseries here & there. The Tablelands branch of SGAP has been asked by the SGAP-Qld Council to report on the winter casualties in general, but has yet to give details.

To return to global warming. I don't doubt it exists, or did until recently, but believe it could quite easily reverse tomorrow, as the evidence for human causation is very shaky. CO<sub>2</sub>, in the past, has risen after temperature rises, & hence is unlikely to be the prime cause, although the physics of gases makes it undeniably a cause. Natural variability in past eras has dwarfed any recent changes, & the causes are still largely unknown ----- solar radiation variation, volcanoes, etc., etc. In the relatively recent past, the years-long '1902' drought lasted as long as the current one, & was probably more severe, but affected

fewer people due to the lower human population, minimal irrigation & vastly smaller cities. And then for nearly a century the Australian climate veered wetter again, while CO<sub>2</sub> rose (especially with industrialisation spurting after 1940). Thirty & 40 years ago most climatic doom-mongers writing in journals like 'New Scientist' were worried by the fact that the present warm period of some 8000 years was already longer than the average inter-glacial period, & that therefore we were probably overdue for another ice age. This is almost certainly still broadly true, just the timing is unknown (like the looming 'Big Quakes' in California & Istanbul), & would be far worse than mild global warming. Think of almost all Europe, N America & China under deep glaciers. So, at the least, any measures against global warming need to be designed to be reversible, at least in principle. Heat shields in space could be risky. Apart from them, there are at least 4 other technological 'fixes' for global warming that will all work but be horrendously expensive, but far cheaper than losing all low-lying cities & beach areas.

The general press reports give a firm impression of a scientific consensus on anthropogenic (human-caused) global warming, & apparently precise predictions of sea-level rises etc. as CO<sub>2</sub> increases. But, as a research scientist, albeit a rather inactive one these days, I know the reliability of the statistical (computer) models which yield these predictions depend totally on which factors are modelled. Leave out a vital factor, & predictions go awry. Include irrelevant factors, & you can get almost any answer you want; just pick the 'right' one. And climate is both highly variable, & known to be affected by numerous factors, many poorly understood, & quite a few unsuspected only a decade ago. These last include vast reserves of 'greenhouse' gases (CO<sub>2</sub>, methane & others) held under ice near the poles & in permafrost areas, CO<sub>2</sub> release from forests & deep-sea vents, the sheer magnitude of volcanic action at some past (& future ?) times, & the 'lubrication' effect of water under glaciers & other ice masses. This last effect can precipitate sudden major ice slides into the seas, where they melt & result in sudden sea-level rises. Distribution of the most potent common greenhouse gas, water vapour, is unknown for many scenarios. Several past & present heads of meteorological research institutions, & weather bureaus (including the Australian federal one), are on record as emphatic sceptics on anthropogenic warming. So is Nigel Calder, a long-time previous editor of 'New Scientist', who has talked sense on many topics over the years.

I have talked to many research scientist colleagues in many fields, & have yet to meet a true believer in anthropogenic global warming, for reasons similar to those listed above. The masses of believing scientists must be hiding their light under a bushel, or working for bodies that favour the current (& still new) orthodoxy. There is certainly plenty of money now available to study climate change, & a natural tendency to climb onto scientific bandwagons, & study areas which attract funding.

None of the above means we should not try to minimise pollution of all kinds, & try to perfect means of renewable energy, aim at 'clean coal' technology, & so on. Current moves to gas-fuelled power stations will hopefully be a temporary fad only, as they still release a lot of CO<sub>2</sub>, & use up a valuable resource which should be conserved for future generations, or used to power long-range vehicles instead of petrol & diesel. Natural gas is a great chemical industry feedstock, as is coal. In the medium term, 20 years or so, even the long-maligned fusion power (Always 40 years in the future, whatever the current date!) looks as if it may finally pay off, & give real clean power. Cheap electricity from any source would enable a 'hydrogen economy', with almost no pollution.

At least one model power station has been built in the US where the coal is burned to give power, the exhaust gases bubbled through 2 or more large algae-containing enclosed ponds where the genetically-engineered algae convert CO<sub>2</sub> plus sunlight & nutrients into a fat suitable for conversion to bio-diesel. Dried algae, with the fat squeezed out, can be used as fuel for the power station, as could timber wastes, etc., etc. The water is largely re-cycled, so the power station can be sited in a dry area, & fertilisers do not leach out into rivers or seas. Further improvement in the algae is possible, but the system is currently being scaled up to a commercial size. I can't see why variations on this scenario will not work. Certainly it must compare favourably to imitation petroleum products produced from maize & other grains, while millions of people around the world face starvation, & world food grain stocks are at their lowest level for decades. Hence the soaring wheat & rice prices. Future generations will surely regard this food conversion, plus the North American grain-fed meat animals, as tantamount to slow genocide of the third world. Perhaps a few million dollars should be spent to make some of these highly efficient algae & yeasts tasty, & appealing as a flour substitute. Some are already high in protein, & genetic engineering can easily modify the amino acid composition to almost any desired outcome. Nearly 30 years ago I went to a U of Qld seminar to hear a friend talk on his seal research, & someone else gave a fascinating talk on protein deficiency in certain highland New Guinea tribes that lived almost entirely on carbohydrate foods like sweet potatoes. Their young women rarely reached puberty before 25 or more as a result. One exception was a tribe apparently

subsisting on the same diet, but with normal-shaped girls (the others had figures like pretzels) entering puberty in their mid-teens. The difference was due to some nitrogen-fixing microbe in the latter tribe. I can't remember the precise details.

**Local Rainfall :** Lest reports of record rainfalls along the Qld coast, & almost continual rain last summer in FNQ (Far North Qld for foreigners), lead you to visualise me living in a green zone of full dams & contented livestock, let me disenchant you. Oxley Creek, at the bottom of my block, has not run for almost 4 years. It used to supply all my garden & livestock water. Until 1995, it had not only run but flooded its banks at least once, & usually several times, every year since 1910. Local records are less comprehensive before that date. Conditions here now alternate between green drought & the more common brown-white variety., now setting in again as the last 40 days have been totally rainless.

The Logan River, 7 km away, flooded 3 months ago from rain which drenched northern NSW (over a metre in 24 hours) but only fell on a 20-km coastal strip in Qld. We got 4 mm. Parts of inland Qld got useful rain recently, & Emerald got 950 mm in a day a little earlier, & the local big irrigation dam (second biggest in Qld) sited in a gorge filled to 350% of capacity. Rockhampton, downstream, flooded of course. Carnarvon Gorge, a very scenic National Park that I am sure many of you have visited, had a temporary wall of debris dam the gorge over 35 m deep. When it let go it scoured the main gorge clear of its famous ferns & other vegetation. The side gorges are apparently OK. I hope the huge ancient *Macrozamia moorei* cycads have not suffered.

Most of Qld is still drought-stricken, & Brisbane & Toowoomba are still desperately short of water. I am not on reticulated water, & rely on a bore which allows me to use 1 hose for half an hour daily, plus washing-machine water. The bore water is saline, with Ca & Mg as well as Na, but most native plants don't seem to mind it too much. Roses die if on it for over a month.

My 2007 rainfall of 628.5 mm (25.1 inches in 81 falls) was higher than the previous year, but just over 1/3 of our 'average' of 1150 mm (46 inches) for many decades prior to 1995. None of the past 10 years has reached 50% of the average of the previous 85 years. To those of you in southern NSW, Victoria & SA, 15 to 25 inches may sound reasonable, but remember the evaporation level is far higher here, & our plants are used to higher rainfall spread fairly evenly over the year, unlike the south or far north of Australia. My soil here is about 18 inches of infertile sandy topsoil over an infertile clay subsoil, but add water & fertiliser & I can grow almost anything, frost permitting.

**Local weather in general ;** Late August 2007 saw record rainfalls of 750 to 850 mm overnight on the Sunshine Coast & Rainbow Beach. September-October & the first week of November was a little cooler than usual, but temperature maxima for the second week of November were below 20 degrees (35 plus is more usual), & the rest of November cool, often 25, with December & January alternating between warm days to 32, & cool down to 20, but none of the usual 35 plus (often well over 40, in bursts, in normal years). February was cool, usually below 30, & not above 33, & March was entirely below 30. For Brisbane, & S-E Qld in general, this March was the coldest & driest in record, with the first March frosts ever (in Stanthorpe). Townsville had zero March rainfall. April has also been cool, & also the coldest April on record, with the 29<sup>th</sup> the coldest individual April day on record, with a frost here more than 2 months earlier than usual. May to date (I am writing on the 28<sup>th</sup>) has also been cold, but not frosting much here ; mainly minima around 2 or 3 degrees.

**Plant flowering behaviour :** With 4 exceptions, all my *Brachychitons* flowered more poorly last spring/summer than ever before. Many did not flower at all ---- flame trees (8), Clarabelle (6, 2 being large trees), Griffith Pink (4, 2 being large trees), *populneus* (2 large trees), *discolor* (1 large tree), *grandiflorus* & its hybrids, *muellerianus* & its hybrids, *spectabilis*, *viscidulus*, *megaphyllus*, Belladonna (6, including 1 large tree), Jerilderie Red, Butts Red (1 large tree), sp. Ormeau (1 large tree), & sp. Exmoor Station.

All the above have flowered at least once in the past, at my place. Every large plant of Clarabelle, Griffith Pink & Belladonna has flowered every previous year. Flame trees & *discolor* are variable. My plants of *collinus*, *rupestris*, *compactus*, *albidus*, *chillagoensis*, *diversifolius* & *australis* are too small to have flowered as yet. The plants which flowered well were *B. garrawayae* (I only have one plant) from Cape York, 1 of the 3 clones of 'Jasper Belle' (*spectabilis* x *bidwillii* 'Beau Belle'), all or almost all of the 45 clones of 'Robin Hood' (*acerifolius* 'Ian' x *bidwillii* 'Large Red'), & *B. x excellens* 'Rosalind' (*discolor* x *bidwillii*, 1 large tree).

One clone of Jasper Belle has not flowered for 2 years, & another only flowered briefly. These 2 clones performed better at Merv Hodge's place, which is warmer than mine, but were still far inferior to the good clone. This clone, the only one which will be propagated, flowered well here for 3 months from mid-September 2007, & lightly for another month (until mid-January 2008), was in bud again by 1-4-08, in flower by mid-April & is approaching peak flowering again in late May. Both a well-watered & 2 unwatered shrubs are in flower, although the first is more advanced. No other *Brachychiton* is even in bud at my place, although at Merv's some plants of *B. bidwillii* have a few flowers on, & 1 as-yet-unnamed seedling plant is covered in buds, several hundred. After the flowering performance of the following species & hybrids, I have listed their flowering records during the 2006-2007 season, inside square brackets. For the good clone of Jasper Belle, [flowered 5-8-06 to 30-4-07, restarted 22-6-07 to 20-7-07, then frosted]. For *B. garrawayae*, [5 weeks flowering from 9-11-06]. For Rosalind, [5 weeks from 10-11-07]. For Robin Hood, [Good flowering from early November to late December, then moderate flowering until early March].

The *bidwillii* strain from Maroochydore (unusually long flowers, very hairy & dissected leaves), & clones 'White Star' & 'Clayton' (from the coast near Bowen) all flowered briefly, about 2 weeks each, & poorly. Some *bidwillii* Beau Belle plants flowered normally, from 21-9-07 until late November, as did *bidwillii* 'Gail's Star'. Others had very few flowers, or none. At Merv's, none flowered anywhere near as long or as profusely as usual. For Beau Belle, [Flowering started 28-8-06, to early December, about 2 months earlier than usual, doubtless due to the drought. Restarted 22-6-07 to 20-7-07, then frosted.].

*B. bidwillii* 'Large Red' (= clone K10) had many plants which never flowered at all. Some flowered poorly from mid-November to the end of November. At Merv's they flowered quite well, from mid-October to mid-January 2008, with a trickle of flowers until the present. For K10, [Flowered 23-8-06 until late December, with a peak in November. At Merv's, 2 plants restarted in mid-July for a short while.].

The drought carried off all my plants of *Thomasia*, *Guichenotia* & *Lysiosepalum*. None of my plants of *Lasiopetalum*, *Keraudrenia* or *Seringia* flowered this year. The more distant Malvaceae relatives *Hibiscus*, *Alyogyne* & *Abutilon* flowered normally if watered.

**Welcome to new members :** Doug Harrison, Barellan Point, Qld 4305 ; Dean Rollison, 175 Barrs Road, Glasshouse Mountains 4518 ; Bob O'Neill, 49 Hunter Road, Wandin 3139 ; Geoff Harvey, P.O. Box 46, Buderim 4556 ( Geoff is leader of the Hibiscus Study Group) ; Carmel Spark, 'Wombat Gully', 1729 Coxs Creek Road, Rylstone 2849 ; Russell Cumming, 5 Equardo Road, Mt. Low 4818 .

**Yearly summary :** A newish SGAP requirement. New scientific descriptions of Australian Sterculiaceae have been summarised (n/l 32), as in previous years.

Horticultural details have been recorded on many new promising hybrids (see n/l no. 31), & unusual flowering durations noted on many *Brachychiton* species & hybrids. Cultivars in demand include Beau Belle, Jasper Belle, Belladonna, Clarabelle, Large Red, *B. spectabilis* & the Robin Hood clones. A Toowoomba nursery has started to multiply Griffith Pink because it is so cold-tolerant.

A list is given of new hybrid seedlings raised (n/l no. 32), plus a couple of 'new' brachy species raised. Also some speculations re global warming & related matters.

Best wishes to all for the new financial year, & may it rain heavily in all the parched dam catchments. Kerry.