Far North Coast Bromeliad Study Group N.S.W.

Study Group meets the third Thursday of each month

Next meeting March 16th 2017 at 11 a.m.

Venue: PineGrove Bromeliad Nursery

114 Pine Street Wardell 2477

Phone (02) 6683 4188

Discussion: February 2017

General Discussion

Editorial Team:
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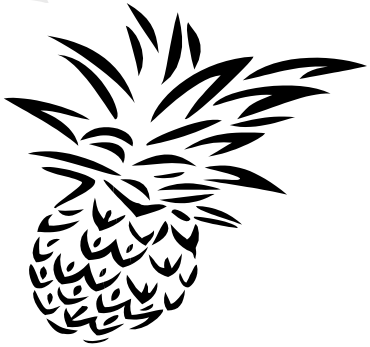


Meeting 19th January 2017

The meeting was opened at approximately 11.00 am
The 17 members and one visitor present were welcomed.
A total of two apologies were received.

General Business

Ross distributed two FNCBSG NSW Newsletters this month - December and January, the first being his catch-up after his holidays. Also there were two Bromeletters to go into the library for members to borrow.

Ross drew our attention to page 4 of FNCBSG NSW January Newsletter — **'Where do I find the dates?'** to encourage us to use the site.
The Council of Australasian Bromeliad Societies was formed with the aim of sharing show dates, Newsletters and other relevant information. The link is — **www.bromeliad.org.au** then click "Diary". Hopefully we'll see more people use the site and realise the need to be involved to make the Council useful.

The upcoming Bromeliad Conference in March/April 2017 is being held on the Sunshine Coast, Queensland with the following Conference in 2019 being held on the Gold Coast, Queensland. For those who may be interested in attending the 2019 Conference we'll publish relevant information in the near future so you may start planning for that event. Interest is sought from Societies and Groups who would be interested in hosting the 2021 Conference. The general consensus from the FNCBSG NSW members is that we are too small and spread over too wide an area to make it feasible. We would also need to have gardens to visit and other sites of interest relatively close by, many of our members live in all directions an hour or longer drive from our central meeting venue.

This year is the Bromeliad Society International's (BSI) 66th anniversary and is having its first ever 'fund raising effort' to enable it to achieve its goals. "While membership has dropped over the past 3 years from over 1300 to just 716" these goals are still aiming to be achieved. They are seeking to raise $66,000 from members. The BSI Board has been offered $25,000 if the Society can raise $25,000 by June 2017, therefore they are asking for donations from Groups, Societies and private members. The aim is to improve the BSI website, enhance and maintain production of the BSI Journal, continue to provide World Bromeliad Conferences, maintain the BSI Cultivar Register (BCR) and more.

Mention was made of writing names and plant names in the Popular Vote book - please print both your name and the plant name in full, do not use initials.

Show, Tell and Ask!

Ross made comment indicating the need to read the Paul Turvey articles in the FNCBSG NSW Newsletters regards the water being used on your Bromeliads and perhaps we need to check the ph value. Les Higgins has offered to test any water samples brought along to our next monthly meeting. As our Members use water from various sources e.g. rain water tanks, creeks, bore water and town water supplies it will be interesting to see the results. It will be up to Members to decide what action they need to take to improve fertilizer uptake, leaf-tip burning and die-back. As this is all trial and error over a long period of time hopefully we will get some feed back of your own results / observations in the future.

Gloria asked about a plant labelled *Aechmea leptantha* she had growing in her garden which recently raised eyebrows on the internet site 'Planet Bromeliad' as Gloria's plant has white petals. According to Smith and Downs monograph *Aechmea leptantha* has yellow / orange petals. The plant was acquired from Nigel Thomson who was asked for further details, Nigel advised the plant was seed grown. With the possibility of an unknown pollen parent Gloria was advised to put *Aechmea leptantha* hybrid on her label. Perhaps in the future this plant may get a cultivar name giving it its own identity. This discussion raised the Groups interest in the topics of seed raising and responsible hybridising, these will be discussed / demonstrated in the next couple of months. Gloria's plant was formerly described as *Portea leptantha* - articles / discussion p.4 and 5.

Ross showed two *Catopsis subulata* which is a dioecious species, meaning male (staminate) and female (pistillate) flowers on different, individual plants. A noticeable difference in size of the flowers was evident also. (photo p.8)

Doug discussed the problems identifying plants based on herbarium specimens as early descriptions were based on dried specimens with no mention of flower colour. He showed *Orthophytum burle-marxii* which has grey leaves and red bracts. In nature it has broader leaves and pink rather than a red inflorescence. It has a restricted distribution of 50 kms and grows well in a tropical climate with full sun. It is sensitive to overwatering in cold weather but enjoys lots of water in Summer. Definitely one to add to a collection. (photo p.7)

John showed a *Guzmania* 'Tricolour' which had two pups one striped and one plain, a difficult plant to regularly maintain variegation and build ones collection up. He also showed a unusual *Vriesea* 'Phillip' with a multi-flowered head, a flowering *Guzvriesea* 'Happa' was on show and a *Aechmea penduliflora* with two inflorescences. Thanks also go to John for the donation of books to the library and there are apparently more to come as he is downsizing. (photos p.7 and 8)

Aechmea leptantha formerly ***Portea leptantha***

(Harms) Leme & J. A. Siqueira, comb. nov. Frag. Atl. NE Brazil. 213-6. 2007
Basionym: *Portea leptantha* Harms, Notizbl. Bot. Gart. Berlin-Dahlem 70:786. 1929.

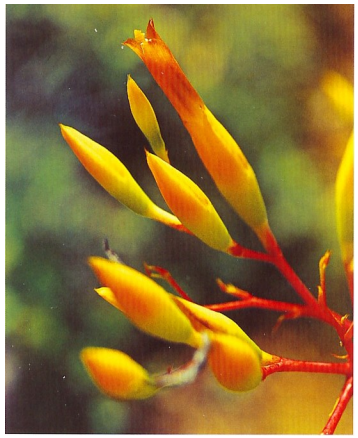
Type. *Pickel 1919* (holotype, B; photo F 11285), Tapera, Pernambuco, Brazil, Feb. 1929.

Distrib. Saxicolous or terrestrial or epiphytic in forest, Paraiba and Pernambuco, Brazil.

DISCUSSION

Wade (2004) examined the phylogeny of the genus *Portea* based on molecular data, and excluded *Portea leptantha* from the clade represented by species typical of this genus, whose type species is *Port. kermesina* hort. Paris ex K. Koch, recently portrayed by Leme & Luther (2003). This result agrees with the suite of morphologi-cal, palynological and biogeographic traits of this taxon, which is more closely related to *Aechmea werdermannii* than to taxa of the genus *Portea*. Furthermore, the fact that pedicellate flowers were more highly valued in *Port. leptantha* than other floral traits also contributed to its location far from the natural species complex to which it belongs, that is, the *Gravisia* complex of *Aechmea*. This justifies the new combination proposed here.

The closer morphological affinity of *Aechmea leptantha* to the *Gravisia* complex is due to a combination of comparatively short pedicellate flowers, sepals shortly connate at base and asymmetrical, with a narrow lateral wing 1.5 to 2 times wider than the opposite half, and apically short mucronulate, plus orange-yellow petals. In typical *Portea* species i.e. *Portea alatisepala* Philcox, *Port. fosteriana* L. B. Sm., *Port. grandiflora* Philcox, *Port. kermesina, Port. nana* Leme & H. Luther, *Port. petropolitana* (Wawra) Mez, and *Port. silveirae* Mez, the flowers are long and slender- pedicellate, the sepals half connate or nearly so, with a very large lateral wing 3 to 3.5 times wider than the opposite half, besides a long mucronate apex, and violet-blue petals. Another distinctive trait associated with typical *Portea* species is longer flowers i.e. (45-) 50-80 mm long, when compared to the 25-45 (-53) mm long flowers of the *Gravisia* complex taxa.



Aechmea leptantha
photo Elton Leme

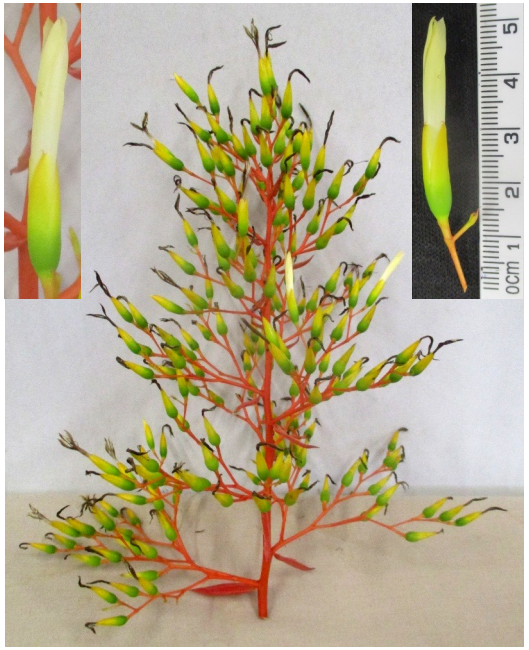
The Pleasing Porteas

Mulford B. Foster

Text taken in part from: BSI Journal - 1956, V6 (6)

Portea leptantha Harms was discovered by B. Pickel in Pernambuco in 1929. Harms describes the color of the flower as brick red.

The author collected this species in 1948 in the states of Paraiba and Pernambuco; a fine specimen of this plant has been in flower the greater part of this past summer (1956) in our Florida garden. The petals are yellow and the ovary orange-yellow. So far as we can ascertain this species has never been in cultivation before. The plant reaches a height of four feet and as shown in the accompanying photo the inflorescence is corymbose (composed of clusters) and each cluster contains many flowers on small branches. The individual plants have eight to twelve lingulate (tongue shape) stiff leaves with spiny margins and a stout terminal spine. They were growing on rocks in large clusters in full sun.



Aechmea leptantha
formerly *Portea leptantha*

section from Gloria's plant showing corymbos inflorescence structure with white petals.

Aechmea leptantha
formerly *Portea leptantha*

showing corymbos inflorescence structure with yellow / orange petals.

Neoregelia ‘Yang’
1st Open John Crawford

Neoregelia ’Caroline Tricolor’
1st Novice Debbie Smith

Tillandsia ‘Marron’
Judges Choice Laurie Mountford

‘3 for New Year’
1st Decorative Dave Boudier

Vriesea ‘Galaxy’
grown by Kay Daniels

Nidularium procerum
grown by Keryn Simpson

Neoregelia ‘Inca’ x ’Fireball’
grown by Dave Boudier

‘Oh What A Feeling’
grown by John Crawford

Orthophytum burle-marxii
grown by Doug Binns

Guzmania ‘Tricolor’
grown by John Crawford

Vriesea ‘Phillip’
grown by John Crawford

Photo’s supplied by: Ross Little

Catopsis subulata

L. B. Smith, Contr. Gray Herb. 1936

Distribution: in pine-oak forests, South Mexico, Honduras, and Guatemala, 500 - 2000m, endemic. This is a stout, bulbous species when grown in bright light it has a bronze-ish appearance. It also gets the typical white powdery appearance on the undersides of the leaves. Grown in a more moist, shadier position it is bright green in appearance.

Catopsis subulata grows well both as an epiphyte and potted in a coarse well drained medium. It grows up to 60cm in height with yellowish sepals turning orange with age and tiny white flowers.

There seems to be several forms around in collections, both male and female plants well worth keeping an eye out for.

Catopsis subulata
male and female

photos and grown by Ross Little

Guzvriesea 'Happa'

Aechmea penduliflora

grown by John Crawford

A Brief Study into How Plants Function Part 2: Air and Water

by Les Higgins 2017

Earth's atmosphere presents a dilemma to land plants. It is the source of carbon dioxide which is needed for carbon fixation during photosynthesis. However, exposure to the atmosphere presents potential lethal desiccation. There is un-ending conflict between the need for water and CO_2 requirement.

There are 'Folk Laws' such as: "Plants breathe out oxygen during the day and breathe out carbon dioxide at night". This is wrong! Plants don't breathe. CO_2 is unendingly produced but not noticed during daylight as it is incorporated into photosynthesis.

C3 plants photosynthesise in single cells and CO_2 accumulation requires water. The amount of water transpired to fix carbon dioxide is the **Transpiration Ratio**. About 500 H_2O molecules are used for every CO_2 molecule 'fixed' giving C3's a **Transpiration Rate** of 500.

C4 plants use a two cell system of photosynthesis. Transpiration rate is about 250. Concentrating CO_2 in the bundle sheath cells suppresses **photorespiration** (loss of CO_2 from cells that are simultaneously fixing CO_2). C4 plants adjust their stomatal aperture to keep water vapour loss to a minimum. Photosynthesis continues even when adverse day conditions force stomatal closure. Compared to C3's most grow more efficiently in high temperature and fix CO_2 at greater rates. Because C4's grow more rapidly than C3's many become weeds.

CAM plants colonize arid areas. Transpiration rate is about 50. Malic acid within large vacuoles (typical anatomic features) and stomata that open in darkness facilitate photosynthesis with very little water. **Obligate CAM**'s include Dyckia, Hechtia, atmospheric Tillandsia and many stiff leaf Bromeliads.

Facultative CAMs change from CAM plants to Non-CAM (C3) plants depending on water availability. One third of Australian epiphyte orchids are considered to be Facultative CAMs. (1986 report)

CAM-idling plants survive prolonged periods without water (2 years?). With stomata closed they re-cycle what in other plants is lost in respiration. These are the opportunists of the plant world! Succulent ephemerals of South African Little Karoo Desert are Cam-idling plants. Drought causes shrinkage of contractual roots pulling the ephemerals into the ground. The arrival of rain makes roots lengthen. Ephemerals pop-up and a desert becomes an instant flower garden. By the time the rain period ends seeds must be mature and ephemerals again disappear under a cover of wind-blown sand.

The water content and the rates of water movement in a terrestrial plant are subject to the type of substrate (soil or potting mix). Intimate contact between

the root and the substrate is essential for effective water absorption. The ability of the roots to take up plant nutrients decreases if the substrate is too wet. Nutrient proportions may also change. Water logging reduces phosphorus up-take and manganese becomes more available.

The movement of water and solute within a plant is described as: “Up the xylem and down the phloem”. Xylem is minute diameter capillary tubes. Phloem is vascular tissue similar to cylinders enclosing strands of pith.

Positive Hydrostatic Pressure lifts water from the roots and into leaves. From the root the water passes into the xylem forming into a continuous unbroken column from root to leaf. Water transport is passive and plants can only take-up water when the moisture value of the plant is below that of the substrate. As the substrate becomes dry the terrestrial plant must become drier otherwise the substrate would extract water from the plant.

Root hydraulic conductance decreases whenever the rate of root respiration decreases. Plants in water logged substrate quickly wilt as submerged roots are deprived of oxygen.

Drainage holes in pots allow oxygen entry and waste gas exit. Net pots are best for monocots (Bromeliads). A net pot put inside a standard pot reduces substrate drying out. Adding rags into the empty standard pot creates humidity that stimulates fibrous root growth and further reduces water demand by retaining substrate moisture.

Water vapour transpiring from the stomata encounters the **Boundary Layer**, a film of still air covering the leaf surface. When air movement is zero the layer of unstirred air on the surface of the leaf may be so thick that it is the primary deterrent to stomatal vapour loss.

Trichomes are an essential feature of Bromeliads, they absorb atmospheric moisture. One trichome type is an epidermal extension looking like microscopic lattice work scale or scurf of many shapes. Another trichome type looks like a tiny valve or plug. Water accumulated by the trichomes transfers into the parenchyma tissue. (C3 parenchyma is closely spaced columnar cells located beneath the upper epidermis). Even *Cryptanthus* that have an extensive root system use trichomes to make a water reservoir inside a thick leaf.

Oil emulsions applied to Bromeliads has the potential to hobble trichomes and clog the parenchyma cells. Mineral (white oil) emulsion permanently waterproofs Bromeliads. Pre and during the Second World War (1939-1945) Pineapple Scale was controlled by an emulsion of degraded Vegetable oil. The spiricules (breathing tubes) are clogged in an attempt to suffocate the insect. (To be effective must remain clogged for hours). Trichomes and stomata are also

encumbered often resulting in leaf drop and permanent debilitation of some plants. Oil emulsions were never 100% effective and are definitely obsolete.

Vastly superior chemical poisons emerged post Second World War. Their mode of action is to pass through the insect’s cuticle and exoskeleton to dissolve the nervous system. Using the correct active ingredient (a.i) pest species can be annihilated without harming plants. Plant safe carriers for a.i include water, flowable liquid and powders. Hydrocarbon solvents (EC’s and petroleum etc.) are destructive to plant hydrocarbon wax surfaces. However, they give an additional dimension to killing pests on inanimate surfaces by dissolving the insects hydrocarbon cuticle causing dehydration.

CO_2 cylinders with metering equipment are in many large glass houses. In theory a slight enrichment in CO_2 increases growth. In practice increasing CO_2 results in smaller stomatal apertures to reduce vapour loss (described as a “Plants death wish”). During the last +100 years atmospheric CO_2 has steadily increased but this is not reflected in plant quantity.

The Mexican government (1980) issued a scientific publication: Industrialization is increasing. Sulphur released from tall factory chimneys disperses over a large area and results in acid rain. Orchids evolved by detecting a minute amount of any element in virtually pure water and concentrate it into a usable amount. Concentrated sulphuric acid is killing the native orchids of Mexico City. The recommendation is keep all orchids under cover. All living organisms, including humans and Bromeliads, are becoming increasingly affected by air pollution.

In Bromeliads industrial polluting gases such as Sulphur dioxide (SO_2) and Nitrous oxide (NO_2) (diesel exhaust fumes) enter leaves through the open stomata following the same diffusion pathway as CO_2. SO_2 causes stomata closure. NO_2 dissolves in plant cells and gives rise to nitric ions that disperse into nitrogen metabolism. NO_2 is particularly dangerous to humans.

In conclusion: The best water to use is unpolluted rain water ideally around pH 5.6. Tap water is usually alkaline and should be made acidic with citric acid or vinegar. Tap water contains chloride and other substances. Some plants are gluttons for chloride. However in other plants the cells have ‘chloride pumps’ within their vacuoles to eliminate this substance, but it takes energy.

Watering of C3 and C4 plants should coincide with stomata opening in early morning. In CAM plants carbon dioxide and water use the same pathway, therefore night time watering suppresses CO_2 up-take. Only during summer should late afternoon/night watering be contemplated. A cold and wet overnight substrate invites root rotting fungus.

Next month: Light, shade and photosynthesis.

Novice Popular Vote

1st	Debbie Smith	*Neoregelia* 'Caroline Tricolor'
2nd	Keryn Simpson	*Nidularium procerum*
3rd	Dave Boudier	*Neoregelia* 'Inca' x 'Fireball'

Open Popular Vote

1st	John Crawford	*Neoregelia* 'Yang'
2nd	Kay Daniels	*Vriesea* 'Galaxy'
3rd	- - - - - - - - - -	- - - - - - - - - -

Judges Choice

1st	Laurie Mountford	*Tillandsia* 'Marron'

Decorative

1st	Dave Boudier	'3 for New Year'

Comments from the Growers:

John's *Neoregelia* 'Yang' is kept in the shade house and has had one treatment for scale with confidor, a follow-up treatment will be done in Autumn.

Kay's *Vriesea* 'Galaxy' has been getting morning sun and very little attention and is thriving on neglect. The sun seems to have brought out the red markings on it.

Debbie's *Neoregelia* 'Caroline Tricolor' has been kept in semi-shade receiving no special attention other than some TLC for the days presentation.

Keryn's *Nidulariun procerum* as with most of her plants has been grown under trees, there has been some trouble with scale however with regular spraying this appears to be under control.

Dave's *Neoregelia* hybrid is a cross between *Neo*. 'Inca' and *Neo*. 'Fireball' and is grown in bright light.

Researching information on the Bromeliad Cultivar Registry (BCR):

NOTE: an asterisk * beside a persons name indicates that person **NAMED** the plant but is **NOT** the hybridiser (the person who created the hybrid).

Where do I Find the Dates ?

www.bromeliad.org.au then click "Diary".

Check this site for regular updates of times, dates and addresses of meetings and shows in your area and around the country.