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

Edition: April 2022

Agenda: General Discussion

Venue: PineGrove Bromeliad Nursery
114 Pine Street Wardell 2477

Phone (02) 6683 4188

Study Group meets the third Thursday of each month

Next meeting May 19th 2022 at 11 a.m.

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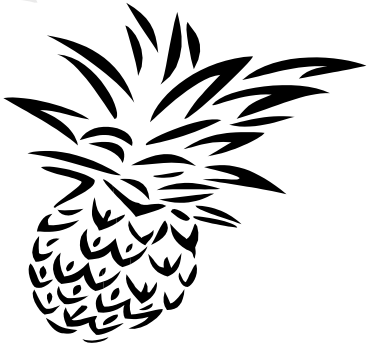


Meeting 17th March 2022

The meeting was opened at approximately 11.00 am
The 10 members present were welcomed.
Five apologies were received.

General Business

This past month we've had rain, rain, rain until our region flooded, fortunately for us here at Pinegrove there has been no damage to the nursery. There was a little water inundation to the cottage/office with a partially wet floor, fortunately most everything in the cottage is stored in plastic tubs. Main damage is a huge hole in a garden area by the side fence where there was a drainage culvert, the damage has involved two neighbors fences partly sinking into the hole. At the time of writing there has been approximately 14 cubic metres of fill put in the hole to only have half filled it!

All those who managed to attend the meeting were welcomed and handed their Newsletter. Most of the members chat was about the major floods our region is experiencing at the moment but they reported little or no damage to their own properties. We wish all our best to those who have suffered loss and many thanks to those who have come to our region to help in the recovery.

Show, Tell and Ask!

From the review of our March Newsletter some more **Questions and Answers** were raised about quilling and rotting. Quilling is a condition in some bromeliads in which the centre leaves form a tight roll, the leaves adhering to each other by means of a glutinous substance and this is sometimes due to a lack of adequate moisture. Quite often quilling can be resolved with a lukewarm solution of water with a few drops of liquid detergent added. Pour this in among the quilled leaves, allow to soak for a few minutes then try to gently pry the leaves apart, you may need to repeat the operation a couple of times. Another method is to soak the affected plant in a bucket of lukewarm water occasionally checking to see if the leaves are beginning to loosen up by gently easing your finger into the centre of the plant to then pry the leaves apart.

Rotting was another issue raised, this can be caused by a number of issues, it may be too wet and overcrowded in your growing area - spacing plants apart to improve air circulation will help. A fungal attack from *Phtytophthora cinnamomi* can be another problem as previously discussed in our FNCBSG Newsletter February 2022, Root Rot and Heart Rot by Peter Paroz. Ridomil (Fongarid) or Captan can be used to treat this condition, as suggested by Peter.

Sometimes after flushing the plant with clean water the affected plant can be left sitting upside down to dry for a few days before repotting and then treated as normal, hopefully you may be rewarded with several pups.

Previous methods used over the years have been: a 50/50 mix of bleach/water or several teaspoons of powdered cinnamon can be effective in treating the problem. Hose the centre of the plant out with clean water removing decaying material and apply either the cinnamon or bleach/water mix, leave the cinnamon in situ, however hose out the bleach mix after half an hour and allow to dry out. Check before adding more water that the infection has cleared.

Sterilize with boiling water any implements used to trim infected plants to avoid contaminating other plants.

In spite of the recent excessive wet weather, you may need to look further back in time, maybe two to three months to consider what may have caused your plant problem. Wet weather today doesn't necessarily cause rot tomorrow. The rot may have been caused by excessive fertilizer or pest spray used over the last couple of months. A foreign object may have fallen into the plant damaging its central growing tip. Sudden changes in the weather can have adverse effects sometimes. Beware cool overcast days for long periods followed by a sudden clear sky and heat wave which can cause burning to tender leaves. Tillandsias kept damp with poor or no air circulation can deteriorate quickly and rot, good air circulation means happy plants.

Be mindful if you've changed your potting mix to an extra free draining mix due to the very long wet period we've been having. You may need to add coco peat to help your mix hold moisture when this weather system passes and we enter a dry period. We can only hope this rain clears up soon.

John brought along some more *Wallisia cyanea* with light and dark pink paddles having almost white petals to dark blue, explaining how there are many colour variants worth collecting. *Wallisia cyanea* is found growing in Ecuador and Peru as an epiphyte and terrestrially on rocky grounds.

He also had two *Billbergia porteana* in flower (photo p.9). From seed to flower takes about three years, offsets take two years. John was mostly interested in the 'watch-spring" like flowers this year, meaning the petals coil up like watch springs. He also spoke of the distinctive shape of the stigma. This opened a discussion about the varying shapes of stigmas - spiraled, coralliform, cupulate and also the different colours and that they are three lobed and not just one single tube. A question for hybridizers: "does the shape and colour of a stigma pass on to the progeny".

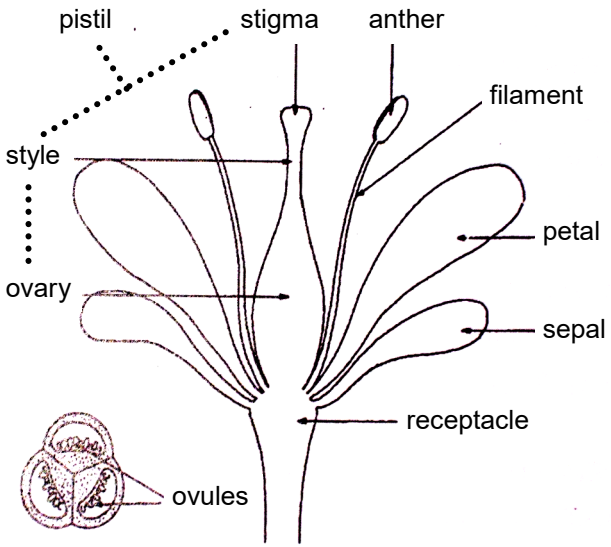
Stigma and Its Function

compiled by Ross Little

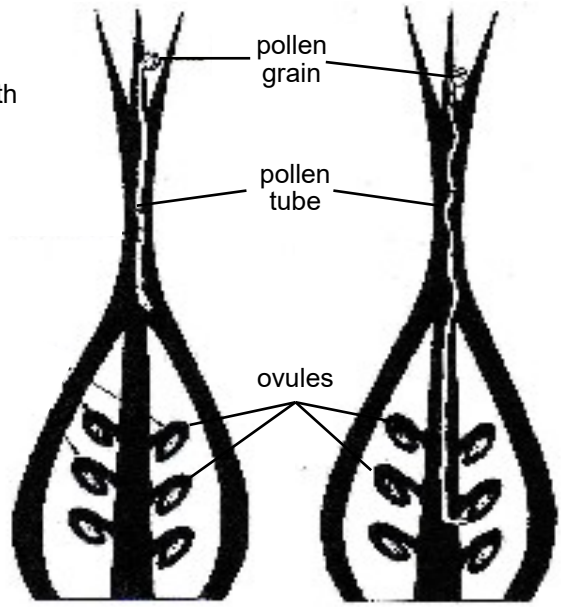
Most bromeliads reproduce by both sexual and asexual means. Seeds result from the sexual process; offshoots arise by asexual (vegetative) reproduction. Of the two kinds of reproduction, only the sexual type allows genes from different parents to be combined in offspring; asexual progeny are usually identical to their single parent. Gene recombination via the sexual process is necessary to assure that a group of interbreeding plants-normally a species-maintains some genetic heterogeneity and therefore a certain amount of evolutionary flexibility without which it would have little chance of adjusting its form, function or way of life to deal with the inevitable, long-term shifts in growing conditions that take place in all habitats.

A flower is, in effect, a short, unbranched, fertile shoot. The floral axis, a stem which is called the receptacle, bears four kinds of appendages. These are usually borne in whorls separated by very short internodes. The lowermost set in the floral series are the **sepals**, just above these are the **petals**, collectively, the sepals are known as the **calyx** and the petals form the **corolla**, together they form the **perianth**. Sepals protect the delicate petals and sexual organs within the bud before the flower opens. Petals normally act to attract pollinators.

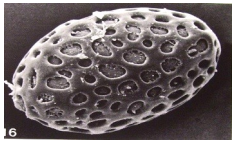
Several **stamens**, the male appendages of the flower, are inserted on the receptacle just above the perianth. Each stamen is made up of a long, slender **filament** topped by a pollen bearing **anther**. Centremost and terminating the floral axis is the female apparatus, the **pistil**. This most complex of the flower's appendages includes a swollen basal portion known as the ovary which contains one or more **ovules**, each with the potential to become a seed. Above the ovary extends a long **style** topped by a **stigma**. This part of the pistil functions as a trap for pollen grains during pollination (the transportation of pollen from anther to stigma). It is within the anther and the ovules inside the ovary that gametes are produced in a process not unlike that in the ovaries and testes of animals.



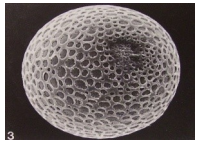
When released from the anther, a pollen grain is surrounded by a thick, almost impermeable wall with one or more thin spots around its periphery. While lodged on a compatible **stigma** following pollination, the long slender **pollen tube** emerges through one of these thin areas in the **pollen grain** wall. Tube growth, guided by chemical gradients in the style, occurs at a rate of several mm/hr. Eventually, the tube and its important contents, the sperm, enters the ovary and makes contact with an **ovule.**



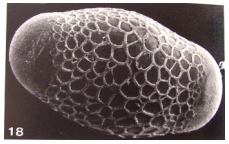
Every plant species produces a unique kind of pollen characterized by grains of a specific size, shape and wall ornamentation.



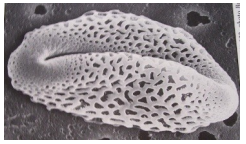
Aechmea echinata



Neoregelia zonata



Nidularium amazonicum



Tillandsia jucunda

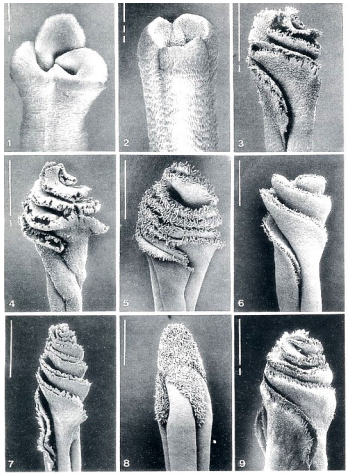


Abb. 1 **Aechmea pubescens**
Abb. 2 **Aechmea bracteata var. pacifica**
Abb. 3 **Aechmea distichantha**
Abb. 4 **Aechmea blumenavii**
Abb. 5 **Billbergia pyramidalis**
Abb. 6 **Billbergia saundersii**
Abb. 7 **Neoregelia sarmentosa**
Abb. 8 **Puya pearcei**
Abb. 9 **Ronnbergia explodens**

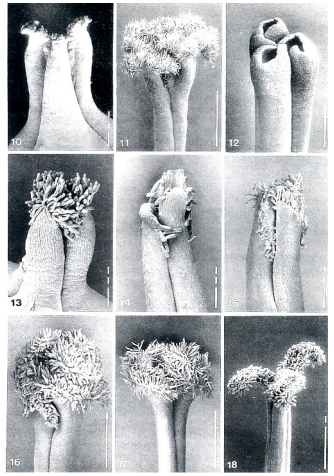


Abb. 10 **Catopsis nutans**
Abb. 11 **Vriesea simplex**
Abb. 12 **Vriesea amazonica**
Abb. 13 **Tillandsia parviflora**
Abb. 14 **Tillandsia latifolia**
Abb. 15 **Tillandsia geminiflora**
Abb. 16 **Tillandsia fasciculata**
Abb. 17 **Tillandsia ionantha**
Abb. 18 **Tillandsia bergeri**

Strichmarken:
Der weiße Balken markiert eine Länge von 1 mm, mit einem kürzeren Strich davor eine Länge von 0,5 mm, mit 2 kurzen Strichen davor eine Länge von 0,1 mm.
Nomenklatur nach SMITH & DOWNS

Text taken in part from: The Biology of The Bromeliads by David H. Benzing
Pollen photos from: Canistropsis, Bromeliads of the Atlantic Forest, Elton M. C. Leme and Tillandsia, Paul T. Isley III
Stigma photos: Gortan 1990 db 44, from the Butcher files plus name corrections to **2.** *Aechmea bracteata,* **12.** *Werauhia gigantea* and **13.** *Racinaea parviflora,* changes made in line with: The New Bromeliad Taxon List (2022), Gouda & Butcher.

Ross showed two of his new registrations from this past month. He pollinated a Neoregelia in 2013 using *Neoregelia* 'Skotak's Tiger' as the pollen parent which he crossed onto *Neoregelia* 'Ladd's Gem' as the selected seed parent. Only two seedlings from the grex were saved, one being a very red striated slow grower that will probably get culled.

The second, shown here, grows to around 60 cm across and has bronze green leaves with a pink flush and random creamy striations, at blooming its central nest turns rosy red.

After ensuring its stability through several generations it has now been registered and released for sale as: *Neoregelia* 'PineGrove Gem'.

At the Australasian Bromeliad Conference, Sunnybroms held in Caloundra, Qld, Eloise Beach explained for budding breeders that striates are the most unstable form, however from these we may see median and albomarginated forms sport.

This has proven to be so true, from *Neoregelia* 'PineGrove Gem' we gained an albomarginated sport. Through a couple of generations now it is proving to be stable, therefore it was registered as *Neoregelia* 'PineGrove Gem Too".

It also grows to around 60 cm across and will be released when sufficient numbers are amassed.

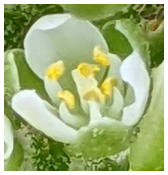
A **sport** is a sudden spontaneous deviation from a typical form; a mutation. As we can see with these two newly registered hybrids, the second plant, the sport, is distinctly different to the parent plant warranting a new name to distinguish it.

For more information about variegation selection in Neoregelias refer to: "Variegated Neoregelias - Challenges and Rewards", by Eloise Beach, pages 52 through 56 of the Australasian Bromeliad Conference proceedings book 2017 .

Brocchinia reducta Baker

compiled by Mitch Jones

Brocchinia reducta is found growing in Brazil, Colombia, Guyana swampy savannas, 900 - 2200 mt alt. in Bolivar, Venezuela.



Brocchinia reducta is one of a few carnivorous bromeliads and is found in nutrient-poor soil.

The leaves surrounding the cup of *Brocchinia reducta* are coated with loose, waxy scales. These scales are highly reflective of ultraviolet light. This forms an efficient lure for insects which is also reflected by the many flowers it bears, as well as the water in the cup that emits a sweet odour.

The loose waxy scales provide a poor foothold for landing insects, causing them to slip into the water-filled cup and eventually drown providing nutrients to the plant.

Brocchinia reducta Growing Hints
by Mitch Jones

I grow *Brocchinia reducta* in full Sun with high airflow in a nutrient poor substrate consisting of Canadian sphagnum peat and perlite.

The pot sits in water either in another pot or in the pond with sarracenias with water just 1cm below the rim of the pot and is always kept wet.

No fertiliser prills are provided to this species as I have found it causes death. The plants occasionally get a light mist with a balanced water-soluble fertiliser with trace elements from the sprinkler over spray when fertilising the collection.

Photo by Ross Little, *Brocchinia reducta* grown by and flower close-up photo by Mitch Jones.

Ursulaea macvaughii
1st Open Mitch Jones

Lemeltonia narthecoides
1st Tillandsioideae Mitch Jones

Wallisia cyanea
1st Tillandsioideae John Crawford

'Cloud Forest'
1st Decorative Mitch Jones

Neoregelia 'Painted Delight'
1st Judges Choice Michelle Hartwell

Neoregelia 'Blast'
grown by Kayelene Guthrie

Neoregelia 'Julia'
grown by John Crawford

'Two Pygmies'
Note: the blue petals emerging on the inflorescence (mini pineapple) shown by John Crawford

Billbergia porteana
shown by John Crawford

Photos by: Ross Little

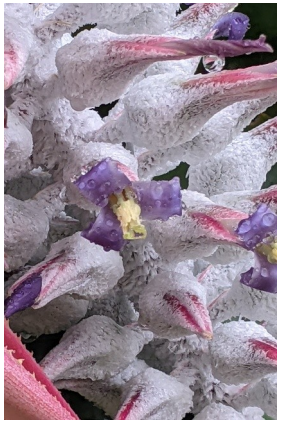
Ursulaea macvaughii by Mitch Jones

(L.B. Smith) R.W. Read & H.U. Baensch, *comb. nov. et descr. emend* J. Brom. Soc. 44(5): 193, 207-9. 1994.

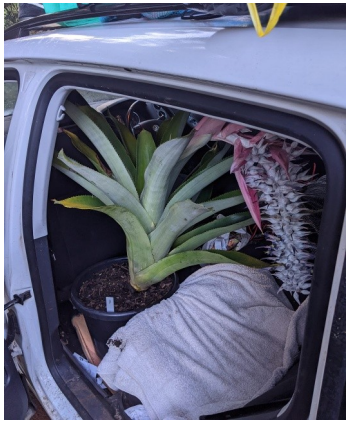
Ursulaea macvaughii is endemic to Mexico. It is found growing in mixed tropical forest, almost always as an epiphyte on limestone cliffs or high up in trees in dense forest dominated by Brosimum trees on the steep mountainside, 500 - 600 mts alt, Jalisco, Mexico.

Mitch's Growing Notes:
I grow *Ursulaea macvaughii* in full sun with my Alcantarea collection in a well draining substrate consisting of pine bark, pine bark fines, perlite, zeolite and diatomaceous earth chunks. Fertiliser prills are provided to this species every six months which is a high nitrogen based fertiliser as a top dressing. The plant gets a regular application of balanced water soluble fertiliser with trace elements at least weekly to the vase.

I tend to leave the substrate on the dry side unless it is hot days in summer when it gets watered at the root level unless it is raining.



My plant has grown to 800 mm high x 900 mm across. The overall length of the spike is 1.30 metres, the inflorescence itself is 500 mm long x 250 mm across with approximately 7 mm wide blue petals. At this size one can understand the care taken and difficulty of getting the plant in the car to take to our FNCBSG NSW meeting!



The Types of Types By Alan Herndon in Meristem March 2010

Plant taxonomy is the study of variation in plants with the goal of determining how to distinguish and recognize species (and other natural groups, such as genera, families, etc.) In simplified terms, a taxonomist recognizes a plant (or better, a population of plants) that differs in some important way from all other recognized species. This new species is described in a formal manner according to internationally recognized rules. One part of the description is the designation of a type specimen.

Types play a crucial role in plant taxonomy because they represent the best record of the plant being described. No matter how detailed a description is written by the taxonomist (or how detailed a drawing of the species is provided), it is never complete. In fact, in any description of a new species it is very hard to avoid emphasizing how the new species differs from known existing species. This unavoidably leads to emphasis of some characters at the expense of others and may not match the type specimen because some characters are interpreted incorrectly. In all cases, whenever a conflict between the original description and the type specimen arises, the type specimen prevails.

A holotype is a single specimen that a new species is based on; it is identified by the original describer as part of the formal description. In practice, a holotype is a dried herbarium specimen (for large plants, a single specimen may cover several herbium sheets). It may seem that a living plant would survive much better than a fragile dried specimen (especially if you consider a plant as imposing and durable as a tree), but this turned out to not be the case. Many plants during the 19th century were described based on living plants, but even in institutions such as Kew Gardens, the plants died or labels were lost over the years. The humble dried specimens, in contrast, survived.

Since the holotype is specified by the original describer, it can be accepted without reservation as representative of the plant being described. It is also irrevocably attached to the name proposed in the original description. For instance, *Aechmea orlandiana* was described by Lyman B. Smith in 1941. Smith designated a specimen collected by Mulford and Racine Foster (their number 165) deposited in the Gray Herbarium at Harvard University as the type. (In this case, two specimens were actually cited in the original publication without designation of a holotype, but 165 was later so designated).

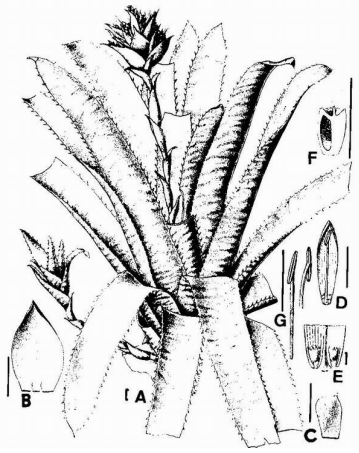
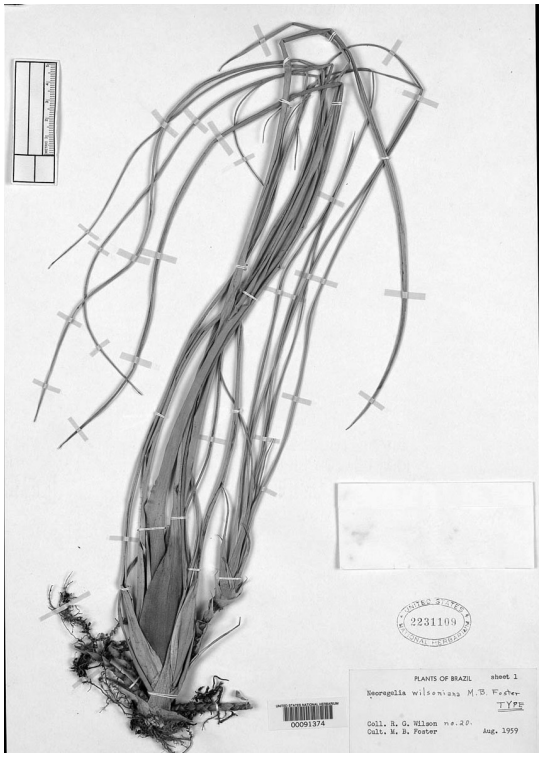


FIG 605. A-G, *Aechmea orlandiana* (Foster 165): A, habit; B, floral bract; C, sepal; D, petal and stamen; E, base of petal; F, section of ovary; G, stamens.

An isotype is a specimen that was, by definition, a duplicate of the holotype. It is easy to see how this would be accomplished with a tree or shrub by making specimens from different flowering/fruiting branches collected from the same plant. Most bromeliads form clumps in favorable conditions, so collections of several rosettes within a clump will usually yield isotypes. If these conditions are met, an isotype will be just as useful as a holotype in defining a species.

However, there are some unusual circumstances where an 'isotype' may not represent the intentions of the original describer. Within clumps of bromeliads, you may have 2 or more genetically different plants intermingling. These might represent 2 very similar, but distinct, species. For these reasons, isotypes require more careful scrutiny before being accepted as faithful representations of the original describers intent.

Many bromeliad species have been described from cultivated plants. In many cases, type specimens are made from clones that continue in cultivation. Thus you can grow plants that are genetically identical to the type specimens. (For instance, if you grow *Neoregelia wilsoniana* you are likely growing the clone introduced by Robert Wilson that provided the type specimen.) However, all parts of a specimen have to be prepared at the same time to be recognized as valid. A composite specimen with a flowering plant dried in one month and a fruiting plant added the next month cannot be used as a type. Now, if you propagated a clone until you had dozens of blooming plants, then produced dried specimens from these plants to support publication as a new species, you would have produced a single holotype and a potentially unlimited number of isotypes. If, on the other hand, you make dried specimens from the same clone on different dates than the holotype, they receive no recognition in the International Code of Botanical Nomenclature. Given a choice, put your money into clones of types that most nearly reflect the intent of the original describer.



Despite the lack of recognition, these specimens (and the living plants) are informally referred to as clonotypes. Of course, in addition to the potential problems with isotypes listed above, clonotypes carry the additional uncertainty that labels could become mixed at some point, so the plants being grown as clonotypes no longer have any connection to the holotype. Again, careful scrutiny is required before accepting these plants as true representatives of types. Still, clones of the type plants can be particularly important in the study of bromeliads. For instance, pups of an *Orthophytum* may have a radically different appearance from the mother plant. This clearly confuses the task of finding characters to separate different species. By growing clones of the types over several generations, you can better learn what characters consistently define a species.

Two other types of types have to be considered (there are more, but they are encountered very infrequently.) These are paratypes (specimens other than holotypes and isotypes designated by the original describer as conforming to the new species) and topotypes. Designation of paratypes means these specimens were studied during the description of the new species and had some influence on the description. However, as noted above, it is the holotype, not the description, that fixes the identity of the species. In cases where the holotype is destroyed or otherwise missing, a new type specimen (lectotype) must be selected. If any isotypes are available, the lectotype is selected from among those specimens. If there are no available isotypes and there are existing paratypes, the lectotype is selected from the paratypes.

Of course, there is always a possibility that some of the paratypes were incorrectly assigned to the species (i.e., belong to a different species than the holotype), so the selection process must be very painstaking. Topotypes are even further removed from revealing the original intent of the describer. This is an informal name with no standing in the rules of plant nomenclature that refers to specimens collected in the same locality as the original type specimen (usually many years after the original collection). The idea is that they are likely to represent the population of plants seen by the original collector. In many cases, this is true. However, it is necessary to carefully compare such a collection with a holotype before giving it any credence as an authentic representative of the species - otherwise the original population may have disappeared from the original collection site, or, in the worst case, it may have been replaced by a different, but similar, species that more-or-less fits the original description.

If you have any interest in understanding bromeliad species, nothing beats having as many type clones in your collection as possible. You might, of course, find clones from any of the types of types. Just remember, before you start paying premium prices, that all type clones are not equally valuable. Given a choice, put your money into clones of types that most nearly reflect the intent of the original describer.

Bromeliad Genus Name Etymology - part 2 compiled by Ross Little

Jagrantia – for Jason Randall Grant (1969−), curator of the Herbarium of the University of Neuchâtel, Switzerland.

Josemania – for José Manuel Manzanares Vilaplana (1957−) from Quito, Ecuador. Leading authority of Ecuadorian Bromeliaceae.

Karawata – the genus is named for the word in the native Tupi language used by local people to identify bromeliad plants in Brazil.

Lapanthus – for Dr. Maria das Gracas Lapa Wanderley, botanist from Instituto de Botanica, Sao Paulo. Lapa also refers to the rocky substrate where these plants grow and is a word in Portuguese for the rocky shelter type habitat.

Lemeltonia – for Elton Martinez Carvalho Leme (1960 −) from Rio de Janeiro, Brazil, leading authority of Brazilian Bromeliaceae.

Lindmania – for Carl Axel Magnus Lindman, Swedish botanist and specialist in bromeliads, 1856-1928.

Lutheria – for Harry Edward Luther (1952−2012) from Sarasota, Florida, one of the most experienced bromeliophiles in the world.

Lymania – for Dr. Lyman B. Smith, on his eightieth birthday.

Mezobromelia – for Carl Mez who published monographs of the family in 1896 and 1935.

Navia – for Bernard S. von Nau, student of natural history and physics.

Neoglaziovia – for A. Glaziou, French landscape architect, 1833-1906, who was in charge of public gardens in Rio in the late 19th century.

Neoregelia – for Edouard von Regel, director of St. Petersburg Botanic Gardens in Russia. Formerly Aregelia, “neo” meaning new, so new regalia.

Nidularium – “nidus” referring to the nest form of the leaves around the flowers.

Ochagavia – for Sylvestris Ochagavia, minister of education in Chile in 1853-54.

Orthophytum – from the Greek "ortho" straight and "phytum" plant, in reference to the erect scape of the plant. Scape = stem of the inflorescence.

Pitcairnia – for Dr. William Pitcairn, London physician and gardener, 1711-1791.

Portea – for Dr. Marius Porte who collected in Brazil in 1834 and 1859.

Pseudaechmea – from the Greek “pseudos” (false), meaning false Aechmea.

Pseudalcantarea – from the Greek “pseudos” (false), meaning false Alcantarea.

Pseudaraeococcus – from the Greek “pseudos” (false), meaning false Araeococcus

Puya – means point from the Mapuche Indians of Chile.

Quesnelia – for French patron of botany Edouard Prosper Quesnel, of Le Havre A French Consul in French Guiana.

Racinaea – for Racine Foster (1910 - 1991), wife of Mulford B. Foster, they collected more than 200 new species of Bromeliads.

Rokautskyia – for Roberto Anselmo Kautsky (1924 - 2010) from Domingos Martins, Espìrito Santo, Brazil.

Ronnbergia – for Auguste Ronnberg, Belgian director of Agriculture and Horticulture in 1874.

Sequencia – formerly in the genus Brocchinia, the genus was separated based on DNA sequence details (hence its name) and restriction site characteristics.

Sincoraea – possibly named for the type collection area for *Sincoraea amoena* (Ernest Ule, Nov. 1906, described in 1908) of Serra do Sincorá, Bahia, Brazil, where they are commonly known as "*Raio de Sol*" or "Sunburst" bromeliads.

Steyerbromelia – for Julian Alfred Steyermark who was an American botanist.

Stigmatodon – from the Greek “stigmatis” plus “odon” meaning tooth, in reference to the irregularly denticulate to laciniate (‘toothed’) stigma lobe margins.

Tillandsia – named in 1737 by Linnaeus for Swedish physican, Elias Tillands, professor at Abo in Finland (see Brom. Bull. Vol.I, No.4, July-August 1951).

Ursulaea – for Ursula Baensch, superb horticulturist and co-author of the book “Blooming Bromeliads”.

Vriesea – named in 1843 by Lindley to honor Dr. De Vriese, Dutch Botanist and Professor of Botany in Amsterdam, (1807-1862).

Wallisia – for Gustav Wallis (1830 - 1878) was a German plant collector.

Waltillia – for Walter Till, botanist, Curator of the Herbarium of the Department of Botany and Biodiversity Research, University of Vienna.

Werauhia – for Prof. Dr. Werner Rauh (1913-2000). Heidelberg, Germany.

Wittmackia – for Marx Carl Ludwig Wittmack (1839-1929), German botanist.

Wittrockia – for Veit Bracher Wittrock, Swedish botanist, (1839-1914).

Zizkaea – for Georg Zizka, professor of Botany at the Goethe-Universität Frankfurt/Main, Germany.

Open Popular Vote

1st	Mitch Jones	*Ursulaea macvaughii*
2nd	John Crawford	*Neoregelia* 'Julia'
3rd	Kayelene Guthrie	*Neoregelia* 'Blast'

Tillandsioideae

1st	Mitch Jones	*Lemeltonia narthecoides*
1st	John Crawford	*Wallisia cyanea*

Decorative

1st	Mitch Jones	'Cloud Forest' with LED lit cloud pool.

Judges Choice

1st	Michelle Hartwell	*Neoregelia* 'Painted Delight'

Web Links for Checking Correct Identification and Spelling ?

Bromeliad Cultivar Register (BCR): http://registry.bsi.org/
Refer to this site for correct identification and spelling of your hybrid or cultivar.

New Bromeliad Taxon List : https://bromeliad.nl/taxonlist/
Refer to this site for latest species name changes and correct spelling.

Bromeliads in Australia (BinA) http://bromeliad.org.au/
Refer to this site for its Photo Index, Club Newsletters many with Table of Contents Index and there's Detective Derek Articles.

Keep these web sites set as desktop icons for quick reference access.

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.