

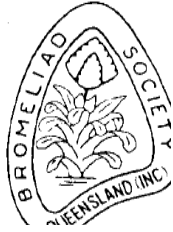
Bromeliaceae



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Front Cover: *Guzmania musaica*

Photo by Ross Stenhouse

Rear Cover : *Guzmania conifera*

Photo by Ross Stenhouse

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Note from the Editor's Desk

What can I say that I haven't already said. That is a challenge I face with each issue. Elsewhere in this journal, I have published a photo of an *Aechmea caudata* or at least I think it is, that was what it was labelled. Did that because I liked the image of the plant and I wanted to use it as a segway to a very technical article on this species that will appear in the next issue.

Bob Reilly is again gracing the pages of the journal with an update on what is happening with AQIS and the importation of bromeliads. Derek Butcher, at my request, produced a technical article on what is a species and what is variegation, Deb Horne has an article about too much white in Neoregelias. Interesting article on why, when and how to take of pups - that is always a topic that receives a lot of interest from the newer members of the Society. Finally a number of reports on Society activities, I call them general interest articles because people like to hear what has happened at Society events.

Not a bad round up of articles and I haven't mentioned anything about the images that grace a number of pages. Bob Reilly used to say to me "Lots of members would be happy if all the journal consisted of was images". In many ways I hope he was wrong, however there is the old saying "A picture tells a thousand words" and in many ways that is right. If you see a good image of a plant (and assuming it has the correct label), then it can be a great aid in learning about our passion.

It's important to be able to correctly identify your plants, sure many bromeliad growers just love the plants, they fill a space in the garden. I hope that members of the Society are above that attitude, by joining it they have indicated that they want to get more out of growing bromeliads. They want to increase the depth of their knowledge about the subject. They want to be able to propagate their plants and pass on pups to friends. They want to be able to advise their friends on the best way to grow bromeliads! That last point always surprises my friends, me a dedicated aviation buff getting carried away growing flowers.



Bromeliaceae

Tillandsia 'Silver and Rose'

by Derek Butcher 9/2009.

Plant obtained from Rolly Reilly, Queensland in 1990 flowered for the first time in 2009 in Adelaide. Yes, slow but sure in Adelaide! The parents were quoted as *T. xerographica* x *T. concolor*. From the inflorescence this seems close to being correct but it just had to start its inflorescence in Winter which could be one of the reasons why the flowers did not open. The plant itself looks very similar to the species *T. xerographica*. Plant 25cm diam., flowering to 35cm high

Many of the plants from this grex must have been distributed in 1990 or thereabouts at least in Queensland but none have been reported having flowered. It is possible that this plant could well have been grown under the species name *T. xerographica*.

Neville Ryan points out that he grew seedlings of *T. xerographica* from the same source as well as seedlings of *T. rothii*. Neville found that when some of his *T. xerographica* flowered they had shortened branches suggesting that *T. rothii* pollen had got involved accidentally. I have not seen photos of this *T. xerographica* x ?*T. rothii* hybrid to see how it compares to the plant I got with *T. concolor* being quoted as the pollen parent. Involvement of both these pollen parents would have shortened the branches. Investigation continues.

As an aside, the *T. rothii* seedlings grew very consistently throughout Australia even to the conformation of the inflorescence which at least convinced me that *T. rothii* was a true species. You see, in 1982 Sue Gardner considered that *T. rothii* was a natural hybrid between *T. roland-gosselini* and *T. jalisomonticola*. If it were a natural hybrid you would

expect differences in the self-set seedlings.

Photos are enclosed to show what 'Silver and Rose' looks like so you can compare it with a 'normal' *T. xerographica*. And for good measure *T. concolor* and *T. rothii*

Portea petropolitana

var. *extensa*

by Derek Butcher 10/2009.

Everybody knows this plant used in landscaping around Queensland. It is even grown in Adelaide but in shadehouses! In fact of the three varieties of this species, (var. *petropolitana*, var. *extensa*, and var. *noettigii*) it is the easiest to identify. I love the name because when you finally get used to speaking the name, it rolls off the tongue and you get a warm feeling inside. Time in writing labels can be irritating! But there is a little problem. How many of you bought the latest BSI Binomial lists when in Cairns at the WBC in 2008? Looking at the species of *Portea* you may have noticed the disappearance of *petropolitana* var *extensa* but the addition of *orthopoda*. You may not have realised the link between these two names and you will have to believe me in this.

In 1892 *Streptocalyx orthopoda* was described by Baker. In 1935 Mez considered it was the same as *noettigii*. In 1943 Lyman Smith agreed with this move. This in itself is surprising because if you compare the way Mez looked at Bromeliaceae and how L B Smith looked at Bromeliaceae you will see what I mean!. In 1943 L B Smith named var *extensa* based in Foster's collection number 196. It would seem that the plant we have in Australia has strong links with this collection.

I understand that Coffani-Nunes started on his Doctoral thesis on *Portea* early in 2000 because we know that he marked the New

York Bot Gardens Herbarium specimen as *Portea petropolitana* var *extensa*. When he presented his thesis he must have had second thoughts because he considered that *Streptocalyx orthopoda* was the same as var. *extensa* and because it was published earlier, it had precedence. We don't know the reasons!

Let us have a quick look at Doctoral theses and the like. They are not published material – per se – but they hold a wealth of information. For example I have amongst others, ones on *Catopsis*, *Encholirium*, *Orthophytum* and lately *Fosterella*. To show how popular they are, I am probably the only one in Australia that has them, but then I am always asking questions to increase my knowledge in Bromeliaceae! I would have liked to have seen Coffani-Nunes work but have been ignored. The same thing has happened to the European taxonomists and if I don't know why something has been done I put it on the backburner.

So I recommend you leave your label as *Portea petropolitana* var *extensa*. I know you are going to say this is the first time Butcher has said this but there is always a first..

The attached photo was taken by Ian Hook when visiting the Alma Park Zoo, in Brisbane.

By the way, in the BSI Binomial list 2008 there was a new genus by the name of *Lapa* to cover the yellow flowered *Orthophytum*. Eventually, we may see this as *Lapanthus*. Regrettably this announcement was premature as there is already a genus *Lappa* for some algae or something.

The BSQ Web Site

Don't forget that the society has a web site. We place urgent and general information and information on the site.

The URL is:

www.Bromeliadsqueensland.com

Quarantine Project Update

(by Bob Reilly)

In 2007, Australia's plant quarantine authority (AQIS) changed the rules on which bromeliads could be imported (whether as plants or seed) into Australia.

From then, only species and hybrids that were individually approved could be imported. There were less than 200 species/hybrids on the list at the time, so importation became very difficult.

Prior to that decision, species and hybrids of many genera did not need individual approval, i.e. they had "genus level" approval. Most of the popular bromeliads, e.g. *guzmanias*, *tillandsias* and *neoregelias*, fell into this category.

For some genera, species/hybrids were approved for importation on a "case by case" basis, as is currently the case.

AQIS changed the rules because of concern that some bromeliads, not already in Australia, could become weeds here. No bromeliad has ever become a government-declared weed species in Australia.

In response to this situation, the Society has commenced a project (which is being coordinated by myself) to:

- Ultimately, achieve a mixture of "genus" and "individual species"-level importation approvals. (In other words, something similar to what prevailed prior to 2007).
- As an interim measure, and first step towards achieving the ultimate goal, to get as many species as possible onto the list of bromeliads that can be imported.

The focus on species, rather than hybrids, is because if all of the species of a genus are approved for importation, then

there will be a good argument that a “genus level” approval should apply. This would automatically cover all hybrids, in that genus, as well.

Further, AQIS already has a rule whereby if all “parent species” of a hybrid are on the list of plants that can be imported, then the hybrid can be imported (without individual approval) as well, provided the parent species are listed on the import documentation (along with the hybrid’s name, if it has one).

AQIS does not approve individual subspecies, varieties or forms. So, if a species is approved for importation then all of its varieties, forms and cultivars are approved as well – but it is important to show the species on the import documentation.

There are two ways in which a species can be placed on the list of approved species for importation:

1. If the bromeliad is already growing in Australia, then a check is made by AQIS if the species is a declared weed in Australia. If it isn’t, then the plant is approved for importation. This process can take up to a year.
2. Otherwise, a detailed assessment is undertaken. This process can take years if a large number of species are involved.

Recently, over 400 species were approved by AQIS. This is mainly as a result of submissions a range of people have made that relate to certain species already in Australia.

I have also submitted several thousand individual “weed assessments” covering a wide range of species.

I am co-ordinating the submission of another list of species that are growing in Australia. Ten societies are co-operating in this activity and I hope to persuade more to participate. (The more that do so, then the greater notice the Commonwealth Government will take of our claims that this is an important issue for bromeliad growers).

I have also asked Botanical Gardens for a list of bromeliad species they are growing.

It is likely that several hundred more species will be identified through this process. (As an aside, I will be writing some articles, in the future, outlining the range of bromeliad species that are in Australia. There are certainly many more than I thought).

Separately to this project, individual people are applying to AQIS to have species/hybrids added to the list of approved plants. I encourage them to continue to do so, as the more interest that people show in this matter, then the more likely it is that AQIS will change its approach.

3rd December - Christmas Party BSQ at Lakeside Gardens, Mt. Cootha,

Cost: \$25 per member \$35 non- members
Time: 6.30 for 7pm dinner served. Tickets: from Glen Bemoth Please notify Anne McBurnie of any special dietary requirements by the November meeting



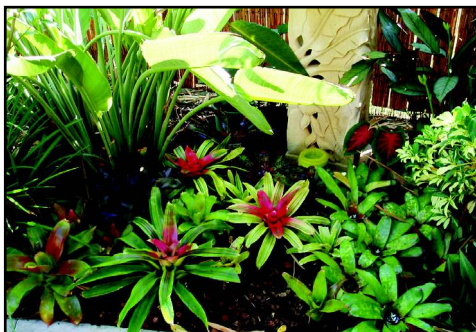
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Portea petropolitana var *extensa*
in Alma Park Zoo, Brisbane.
Photo by Ian Hook



A couple of images of parts of Liesa Driesener's bromeliad garden, other members might like to send in images of their garden for publication in this journal.

Bromeliad species and variegation

by Derek Butcher 8/2009.

What is a species? The BSI Glossary says “a species is a group of organisms that have in common one or more characteristics which definitely separate it from any other group”. The trouble here is that this can also define a hybrid! I thought that the International Code of Botanical Nomenclature would have a definition but they stay clear of such a controversial subject. Another definition is a group of organisms capable of interbreeding and producing fertile offspring. This applies to animals but is close to what could apply to plants if we note that F1 hybrids are less fertile than a species even though they show hybrid vigour.

A new species is generally described

First Release *Tillandsia* ‘Beauty’

T. ‘Beauty’ is a medium sized plant with a ‘fasciculata’ type appearance.

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from several specimens that share similar attributes and grow in a similar habitat. If a new species is only described from one specimen the chances of it being a natural hybrid increase. Different species can grow side by side in the same habitat because there are barriers to prevent cross pollination. These include different pollinators, different flowering times of the day as well as seasons. Change the ecology of the area by chopping down trees etc and some of the barriers can be broken. Natural hybridising can now occur if species A grows near species B and they flower at the same time. They produce a vigorous hybrid C which is less fecund and the chances are that it will be pollinated by either species A or species B rather than with any other hybrid C. The chance of the hybrid C evolving into a species in its own right are remote unless its vigour wins the day and species A & B die out.

I digress. Let us return to the loose term ‘species’. Within species we have subspecies, varieties (this is the only word that can be shortened to var.!) and forma BUT there is no formal ranking for these, although you assume they are in this order. It seems they form a section of the species as a whole and would have similar constraints regarding sexual reproduction.

Now let us look at variegates – that is mostly those that have different coloured longitudinal lines and are called either var. variegata or forma variegata. Of a total of

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Iconic Symbol of Qld

This year Queensland celebrates 150 years, so on that theme here's a couple of pictures of an iconic symbol of Queensland! It's a country member's little "pineapples" (possibly *Ananas* 'Chocolat' cv of *lucidis*). Don't they look great! They come from Lina Van Echtelt's garden in Mackay.



13 species 11 can be considered to be within this definition. The other 2 variegata are at species level and just mean different coloured – somewhere!

They cover ALL forms of variegation which includes the likes of albomarginata meaning white edges to the leaves, flavomarginata meaning yellow edged or mediopicta meaning a central white line etc and mostly differ from offset to offset whatever might be claimed. Cryptanthus growers seem to think that 10 years of offsetting with the same form of variegation is an indicator of permanence and give a different name to a reversion.

This means that growers have to keep changing names when changes in the form of variegation occur. Species names also include 1 albomarginata and 1 flavomarginata which are more specific. Nobody seems to be growing *Aechmea nudicaulis* var *flavomarginata* and yet there are lots who grow variegated A.

nudicaulis with yellow edges to the leaves under fancy Cultivar names – I wonder why! All of you will have heard of *Aechmea coelestis* var. *albomarginata* which is one of the few that seems to faithfully produce white edges to the leaves. But any who have grown this from seed knows to expect albino seedlings! With the variegata this means that ANY plant within that species would acquire the variegata name irrespective of the sort of variegation and this concept is carried through into cultivars.

Most growers will quickly notice that there are many more variegated species plants out there that have not been described by Taxonomists. You may ask why this is so but then realise that variegation is NOT transferred faithfully from seed – it is hit and miss.

Let us now look at cultivar names which include hybrids AND special outstanding forms thought to be horticulturally different to the norm of the species. What easier to pick out as being different than a variegata! Just as first in best dressed applies to the naming of species so too does the naming of Cultivars. In my term as Registrar several variegates of species have been given registered Cultivar names - Variegated Ananas, now 'Tricolor' and 'Variegatus', *Edmundoa lindenii* var *lindenii* now 'Alvim Seidel', *Quesnelia marmorata* now 'Rafael Oliveira', *Alcantarea imperialis* normal now 'Gladys', with 'rubra' now 'Helenice', *Alcantarea glaziouana* now 'John Stodart' to mention just a few.

Finally, I must stress that this only applies to plants identified as species and as such has a greater meaning to say Brazilians than say Aussies because they find them in the wild! If a plant is recognised as a 'normal' cultivar before sporting as a variegata then you enter a whole new ball game. A Cultivar name is anglicised and given to plants not identified under ICBN rules which have Latin

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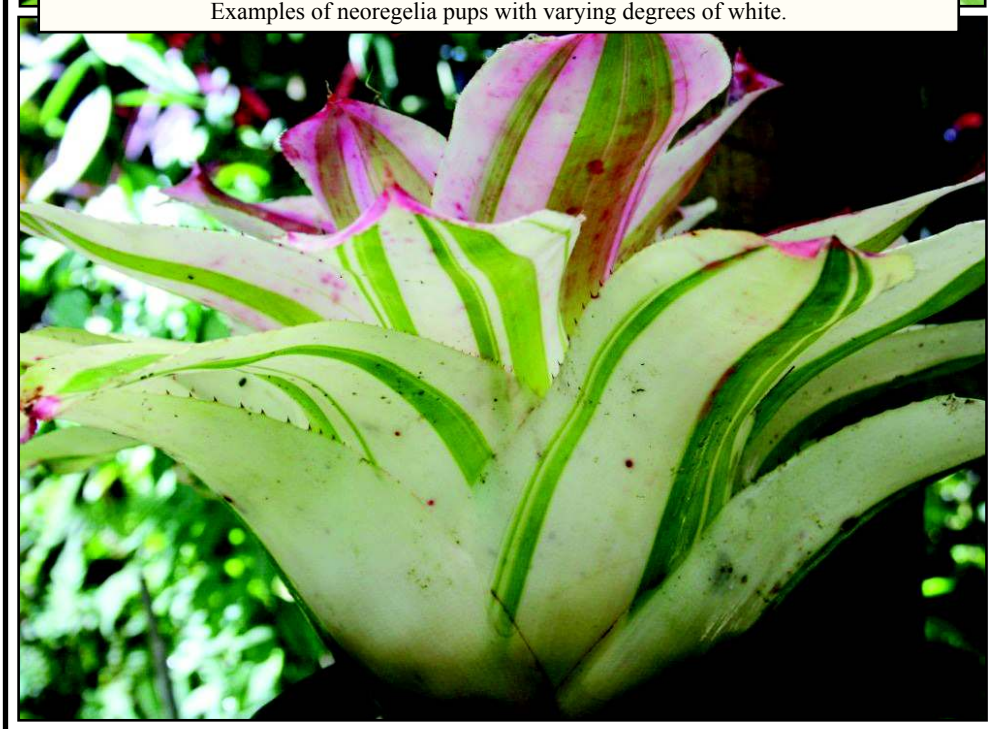
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Examples of neoregelia pups with varying degrees of white.



names. It can mean a special clone of a species considered by horticulturists as different or more likely, a man-made hybrid.

**Variegated +
Albomarginata
Neoregelias when is
too much white?**

Author: Deb Horne

So many collectors find themselves steadily acquiring more and more of these wonderful plants at some stage it's inevitable that we will all eventually come across that long awaited offset, emerging as a 'whitie'.

A 'whitie' is merely a pet name for an albomarginata or variegated plant that has produced too much white. Sadly these 'Whities' are often weak, stunted and prone to fungal attack due to the lack of chlorophyll resulting in the plants inability to adequately photosynthesize.

For those unfamiliar with this problem, basically the lack of green results in the plant being unable to adequately utilize essential nutrients. However if you do succeed in growing on these 'whities' they make truly fabulous contrast plants making a very showy statement especially among darker plants.

Heart wrenching as it may seem, some admirable soldiers merely cut them off in disgust and throw it as far away as they can - but for those dedicated fellow 'bromingtons' who have found themselves scrambling in the bushes to find where this poor little darling has landed- here are a few tips on how many of these offsets can often be grown into a handsome sometimes even truly, stunning plants.

Being guilty of the latter and found myself desperately scrambling though the

bushes with the agonising thought that the poor beggar will die out there, experiments began- after all what have we got to lose. Going against the idea of leaving the offset on longer to gain extra strength & nutrition off the mother, [unless of course it is the last pup]...off they come, after all the mother can now hopefully focus on producing more stable offsets.

Not that they deserve a reward, but I always feed a mother plant who pulls off this rotten trick. The idea of this is to help give the naughty mum a tad more nitrogen for the task of producing hopefully more desirable well striped plants, preferably on a different side of the plant. It is thought that offset leaves are always produced similar to the mother plant leaves, directly above the offset although this happens often, it is not always the case.

Providing of course the offsets are not pure albino- EG; see photo. Good results can often be achieved and plants have bounced back beautifully when pre-feeding the offending mum lightly and almost doubling the normal fertilizer on the offset that is normally given to the non-variegated Neos. EG: 2 teaspoons of NPK 10. 15. 8 Also additional sulphate of potash and calcium were added to the potting medium. Some plants with green even on only 1 or 2 leaves have later produced green striping on almost all the new emerging leaves. Liquid feeding at early stage has also appeared useful.

Although starting with a strong healthy pup, I believe, is really essentially the key to growing the best Neoregelias of any type plants that have fungal problems can often be saved successfully by washing them in a solution of Condy's crystals (approximately 1/8 [a pinch] of a teaspoon to two litres of water) or a spray or Bacur usually helps. Perhaps that's worth a thought for those plants considered 'more special' but ultimately a healthy start the essence of the best plants.

EKKA 2009

Author: Carol Evans - Russell Island.

Volunteering to man the BSQ exhibit at the EKKA was a most rewarding experience. Even arising at 4.30am did not dampen my spirits.

BSQ exhibit won First Prize in 'Flower & Garden Specialist Group Display' and also the perpetual 'Flower & Garden Mabel Burnett Award for Overall Best Exhibit'. Praise from the general public and other exhibitors was endless throughout my four hours on the first day.

I was astonished by peoples' passion for Bromeliads! There were continual questions on every aspect of Bromeliad growing & Society meeting dates, venues and shows in various areas of QLD (on my second day I brought a Society contact name list). Only one question puzzled me:- "Caravans?" Humm, not a name I know!!!. Someone looking for the caravan display area!!!

Congratulations to Bob Cross and his team for creating such a superb, prize-winning, exhibit. I look forward to EKKA in 2010.

A Roundup of the BSQ Bus Trip on 29th Aug.

Author: Leisa Driesener

Members eagerly joined the bus in New Farm & Aspley; filling it to capacity and stowing numerous empty boxes below deck in anticipation of purchases! And didn't we do well!

First stop was Cheryl Basic's Wildfire Garden Bromeliad Nursery at Yandina. Her garden and shade houses displayed a fabulous array of broms especially Vrieseas, Alcantareas and Neoregelia, with lots on offer to fill those boxes stowed in the bus.

Having momentarily whetted our bro-

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meliald appetite, we then worked on our food appetite at the tasty BBQ lunch on Cheryl's lovely back patio, including little Jasper who was the youngest aboard! Next followed a flurry of raffle ticket sales and draws, with many nice prizes on offer. Janet Richter, in particular won two nice Vrieseas!

Reboarding the bus, we then travelled to Nigel Thompson's Nursery north of Pomona, where he gave an informative talk on his current activities with lovely Guzmanias and Vrieseas. Again we plunged into the shade houses, revelling in the choice of lovely flowering Guzmanias, Vrieseas & more. Again sales were brisk with Fred Thomson in particular doing his bit for the bromeliad economy!

Finally with the bus's hold brimming with plants, we headed for home. Enroute we briefly escaped the heavy traffic for a rest stop & the chance to try a Krispy Crème donut! A great day was had by all. And the pictures I took are available via the BSQ web site, ie go to: <http://www.bromsqueensland.com> and click on the links on the right hand side.

Some Tips on Why, When and How You Take Pups

(by Chris Larson)

(Reprinted, with permission, from Bromeliad Post, [April 2007], pp 45-48)

Most bromeliad species reproduce themselves vegetatively (by offsetting), which gives them a greater chance of survival than if they relied only on seed. When you consider that for the seed grown in the wild successfully, even if it is viable, it needs to land in a satisfactory place then get the right climatic conditions to grow into a mature specimen. Seedling plants in the wild would

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find it hard to tough it out in adverse situations such as droughts. Of course it would be of advantage to most species for the plant to evolve with a back mechanism such as offsets. There are some species that either die after flowering, or continue to grow, i.e. not producing offsets, but these are by far the minority of bromeliads. However, this article is only concerned with those that produce offsets, or as offsets are more commonly called “pups”.

There are many advantages of reproducing plants vegetatively in your collection. Firstly, when growing by seed you are not ever sure of who the father is until the seedlings have matured. Secondly, the seedlings may damp off, and unless you have kept an offset, you have lost the plant. Thirdly, some hybrids are sterile, and some species need another clone to pollinate it, so seed is not always the way to achieve your aims. Fourth, mutations or particular cultivars are usually only reproducible vegetatively.

At this point I feel it is necessary to bring in the subject of apical dominance, which is present in varying degrees in bromeliads. Apical dominance is the principle where the plant will allocate the best resources to the highest point of the plant. To achieve this, the plant produces auxins which inhibit the growth of offsets seemingly in an effort to give free reign to the main plant, without having to support offsets. Only when the plant has a damaged growing tip, the growing tip has turned into a flower, or there is a sufficient shock to the plant’s usual growing environment does it stop producing this auxin to allow the production of offsets. Thus, offsets are produced by most bromeliads when the growing point turns into a flower or has been removed. Then the dormant buds at the base of each leaf become stimulated because the plant can’t grow from the apex any longer. Many of you will know of plants where apical

dominance does not seem to apply at all. For example, *Tillandsia kirchoffiana* pups prolifically, but seldom flowers. Some plants do not produce pups at all, and others only produce pups in their seedling stages.

There are a number of types of offsets:

Basal offsets. Most bromeliads produce these offsets directly from the base of the plant.

Stoloniferous offsets. These are produced on stems from the base of the plant. They often make good hanging basket specimens.

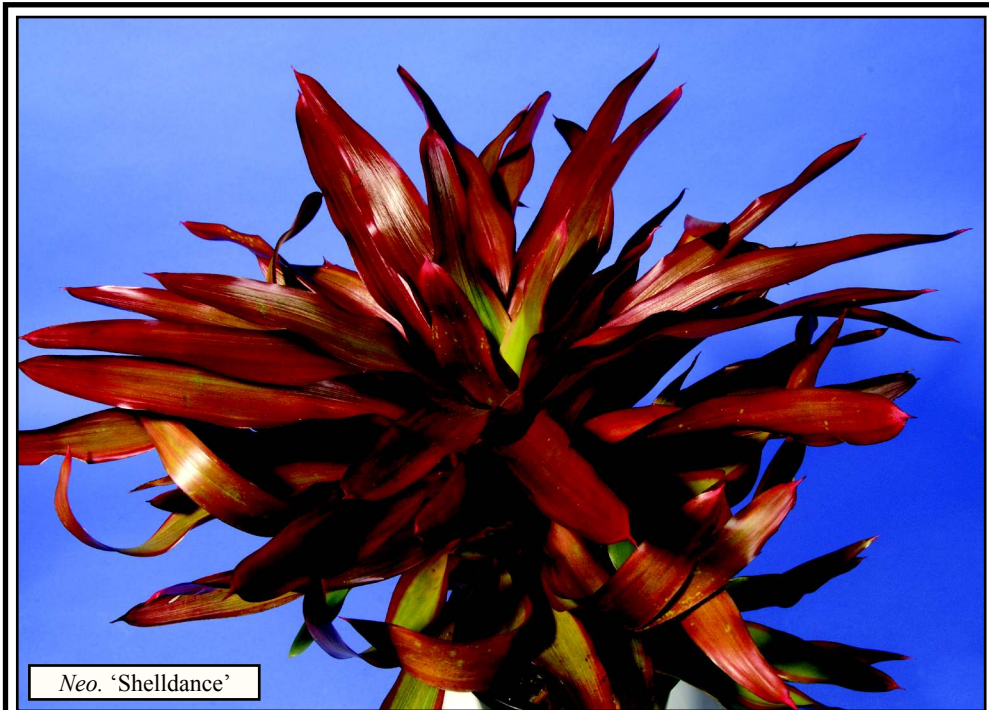
Central offsets. Some plants offset from the centre of the cup, making it difficult to remove them without destroying the plant.

Adventitious offsets. Produced out of unusual or abnormal places, such as some roots or buds, or from stems or leaves. Most commonly, this refers to seedling-like growths that are common on such bromeliads as most species of *Alcantarea* and some species of *Tillandsia*.

Viviparous offsets. These are produced from either the scape bracts (flower stem) or from the actual inflorescence.

Prior to discussing the motivation for taking the pups it is necessary to look at what I call the one-third rule. This is a commonly held belief that a plant should be left on the mother plant until it is least one-third of the mother. It works on the assumption that a plant needs to have gained a degree of strength before it is removed from the mother, and I think as a general rule it is good to abide by, though there are exceptions. When the pups have formed, the decision on when, or in fact if, you should remove them is dependant on what you wish to achieve. Some aims which might lead you to remove pups are:

Single Specimen. Usually for plant competition, and often for plants such as the majority of non-stoloniferous neoregelias,



Neo. 'Shelldance'



*August 2009
Bus Trip
Photos
by Lesia
Driesener*

people prefer them as single specimen plants. This is due to an opinion that the shape is at its best when solitary, or, in the case of competition, due to the rules. To achieve the best results it may be necessary to remove the plant before it is one third of the parent's size, that is, before it is too distorted by growing beside the parent. This will allow it to reach a nice conformation by the time it flowers.

Propagating quantities of plants. Some plants are shy to pup. If left to their own resources some plants only produce one or two pups, particularly species, so that you never have a backup in case one dies. Often it is advantageous to remove an offset to put in another spot (where you may experiment with other growing conditions), or give to a friend so that you know where there will be another if you kill the original.

If you mark a plant for harvesting the pups it is important to take the pups off at around 1/3 size, allowing as much time as possible for the plant to produce more pups. This way, in the couple of years most bromeliads have to produce pups, you will get the maximum number out of them.

Some people think that the first couple of offsets are the strongest and that all subsequent offsets are weaker and therefore should be destroyed. My experience is that these first offsets get the best 'kick start' from the mother, and that is the only reason that they are more vigorous than the subsequent pups. At work, where we have a regular foliar fertilisation program, all pups tend to perform equally, no matter where they came in the order of removal.

One of the problems with milking the pups is knowing when to stop. It is best to leave the last pups on the mother giving them a little more support, when the mother is not going to produce any more anyway. I never take a pup off a yellowing mother, just before winter, or in the middle of summer.

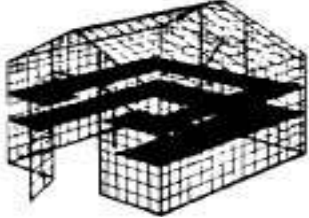
Sometimes this backfires on me because the mother dies taking the pups with it.

Multi planting. Some people wish to get a pot full of plants, especially of plants of genera such as *Billbergia* and *Quesnelia*. The way, I find, to get the result more quickly is to separate the pups, then plant them into a larger pot but spread out around the pot. This way the individual plant's foliage is fuller, and in some cases makes for a better display. By the time these form individual clumps it looks fantastic. I find this method is the best one to use to quickly fill a good sized area in the garden.

Hanging baskets of stoloniferous plants. I find that after a couple of years stoloniferous plants often have 'bald spots'. I regularly take out some of the leads to replace the dying mothers in the middle of the pot, or create a balance on a side where previously the pups have not grown.

Picking out the eyes. Often I get a plant which was slow to form a clump, and with the techniques mentioned above I have a small

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Aechmea dactylina

Bromeliaceae

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clump, but there is still only one lead coming from each mother. In this case I will leave the clump together while taking out each of the leads. The general principle that I have found, even if the plant usually only throws one pup after you take off the first pup out it mostly throws 2 or more pups. This way your clump gets even bigger, and you have some more spares.

When to take pups and what are the right conditions. Most people will tell you to take your pups in spring, but most people with large collections will remove pups at all times of the year. The trick is to know which ones to do in what I term the hostile months and which ones to only do in the most favourable conditions. This knowledge you can usually only gain by experience. But remember that there is only one way to get to know the limits- by experimenting.

I find, as I mentioned previously, that there are two stressful times of the year – winter and summer. If a plant is difficult to strike, or is cold tender I will leave it to take either in October to December, or March to early April. These I find to be the best times for the plants to settle in before the extremes in temperature hit them. (Remember, tropical plants often find the very high temperatures stressful, too).

If the mother is green and healthy, and the pup is a good size, then remove it. If the mother is yellowing it may be best to leave the pup on for the reserves of the mother to be passed on to the pup. If you can provide the right conditions then pups should survive whenever you take them. Some options to try to maximize your chances may be:

Leave the pup to callous before planting (3 to 7 days – do not allow the centre to dry out). It can be a difficult decision if the pup has come away with roots, as it may be better for the plant to be potted straight away to keep the roots alive, however you may

choose not to water it in.

In cold months, pup new pups in a bright warm spot. In summer put them in good filtered light, in a spot that doesn't get too hot.

You may use a fungicide, or a rooting hormone. Often rooting hormones are not long lasting, so that after a short time the only element that works in them is a fungicide. I often use sulphur as a fungicide for bromeliads. Note: Do not use copper based fungicides.

Use a heat pad, glasshouse, shade house, or any other aid you may have. However, if you are removing the pup from a hardy type of bromeliad and it is a good time of year, these things should not be

CAM Metabolism

(by Bob Heer and Tom Montgomery)

(Editorial comment (Bob Reilly). At the April 2008 meeting of the Society, our speaker, Barry Genn, referred to CAM metabolism. This article gives some more details. Reprinted, with permission, from Bromeliad Newsletter, March 2008, v.26(3), pp 10-11).

As a layman, I can only touch on a complex and complicated evolutionary metabolic advice. First, C.A.M. stands for crassulacean acid metabolism. It deals with photosynthesis as an adaptation of the metabolism of certain dry-growing plants, and was first studied in the Brassulaceae, the botanical name for the Orpine family.

Most of us plant lovers learned at an early age that green plants use the energy of light during the day to combine, through something called photosynthesis, carbon dioxide and water to form carbohydrates and release oxygen to refresh the air. Most of us did not know that some plants utilize one of



Effects of Cultivation techniques

Both of these plants are mature *Neoregelia* 'Raphael' and were offered for sale at the Autumn Show by well-respected growers. Both plants were pleasing to the eye. Looking up the photo index of the Florida Council of Bromeliad Societies doesn't help much as the images presented on the site favour the larger plant, however one suggests the shorter wide leaves of the other plant.

two other methods of chemical manufacturing to arrive at a similar result. One of these we are not concerned with, but the C.A.M. metabolism is utilized by Dyckia in the Pitcairnioideae subfamily, Guzmania and Tillandsia in the Tillandsioideae subfamily and most, if not all, of the Bromelioideae subfamily.

Oversimplifying the situation, C.A.M. deals with an attempt by the plant to conserve moisture. Closing the stoma cells (pores) during the day reduces transpiration (water loss) to a minimum; this process also interferes with gas exchange. By opening the stoma at night when atmospheric water vapour pressure demand is lower, carbon dioxide diffuses into the leaves and forms the organic malic acid that requires far less energy consumption than photosynthesis that produces carbohydrates.

When daylight comes, the stoma close and when light becomes intense enough, the malic acid releases the carbon dioxide internally in the leaf and provides enough carbon dioxide for true photosynthesis to occur. A sharp differentiation between day and night temperatures seems beneficial to this process. For more accurate and detailed information please refer to: The Biology of the Bromeliads (1980) by David H. Benzing P. 103-128.

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Books For Sale

The Society has the following books for sale:

- | | |
|---|------|
| • Starting with Bromeliads | \$18 |
| • Pitcher Plants of the Americas | \$60 |
| • Bromeliads: A Cultural Manual | \$5 |
| • Back Copies of Bromeliaceae (2005, 2006 Editions) | \$4 |
| • Bromeliads for the Contemporary Garden by Andrew Steens | \$36 |
| • Bromeliads: Next Generation by Shane Zaghini | \$33 |
| • Bromeliads: The Connoisseurs Guide by Andrew Steens | \$36 |

Postage and package extra. Unfortunately we cannot supply overseas orders. Please phone the Librarian, Mrs Evelyn Rees (07) 3355 0432 to order books.

Making a Miniature Bromeliad Tree

(by Joan Williams)

Editorial comment (Bob Reilly). In this article, Joan Williams, an Australian grower, described how to make a small bromeliad tree. Reprinted, with permission, from the Journal of the Bromeliad Society, 1997, v 47 (1), pp 11-13.

Whether in your home or at a bromeliad show, a miniature bromeliad tree will always draw interest and admiration from those viewing it.

If your climate allows you to start a bromeliad tree in your garden, choose a tree which provides some shelter from strong winds and full sun. Make sure that it does not shed its bark frequently or you will lose bromeliads in the process.

A tree with rough bark is the best choice. To attach the plants to the tree, wrap their roots in sphagnum moss or coconut fibre and tie them on firmly with strips of panty hose, hessian or some other non-obtrusive binding material. Once the roots grow and attach themselves to the tree, you can remove the ties if you wish.

Most bromeliads will adapt as readily to tree dwelling as they do in their natural habitat but it is best to choose the hardier types. Stoliferous ones are ideal. Vrieseas, aechmeas, billbergias, neoregelias, and tillandsias are all suitable to grow in this fashion, but tillandsia and miniature neoregelias are the best. Place the larger species at the base of the tree and smaller ones nearer to the top.

Plants will dry out more quickly when grown on trees than they would if grown in

soil in a pot, so water frequently during summer and less often in winter.

For those not fortunate enough to be able to grow bromeliads outdoors, a miniature bromeliad tree can be grown in a glass house or any other protected area where there is good light. Driftwood, an old gnarled branch, an old tree-fern stump or even a nice rock will suffice. If it is top-heavy enough to need a base, you can cement it into a fancy container or place it directly into soil, sand or gravel used to fill the pot.

If using any of the latter, particularly with tree fern, remember that the base of the tree will become the weakest point. Several years ago I bought a tree fern stump already made into a bromeliad tree at a plant auction at one of our meetings. I placed it in a prime location next to my fish pond under 70% shade cloth and the plants grew very well.

The tree was in a large pot with soil, and had plants growing in the soil as well as on the tree fern trunk. After many years I noticed that the tree had a lean to it and found that its base had rotted away and was in danger of falling into the pond.

It was quickly banished to a garden corner where the plants still grow, but it now has to be propped up so as not to fall since the tree fern fibre has badly deteriorated.

If you prefer driftwood from a beach, remember that it is probably saturated with salt which needs to be leached out before use or it will damage your plants. Soaking the driftwood for about a week or so in a bucket of fresh water, changing the water daily, will do the trick. Then leave it out in the sun until you are sure that it is completely dry before you start to glue your plants on to their new host.

When using an old branch or log, make sure that there are no suspicious holes that could be harbouring borers or other creatures that you may not wish to invite indoors. Also,

in the case of borers, you might one day see your masterpiece crumble before your very eyes.

Also remember to leave a couple of drainage holes if you are cementing your tree into a fancy pot, or it may eventually rot off at the base. Poke some smooth sticks up through the natural drain holes of your container, cement the tree in place, and when the cement is nearly dry, remove the sticks. This should prevent water from collecting at the base of the tree.

Some people say that a tree struck by lightning can't be used for fire wood as it will not burn, as it is said to become almost petrified. If true, that would make a perfect host for your plants but unfortunately, there are not many of these available.

Instead, you might do as some growers have done and mould your own bromeliad tree out of roughened cement. These can be made to look quite natural with touches of paint if you have an artistic flair. Most plants grow quite happily on this type of host.

To grow bromeliads on a rock provides a separate challenge. The biggest problem is attaching the plant and keeping it upright until it is able to grow roots and hang on to its host unaided.

One technique is to drill holes in the rock and drive sphagnum moss around the base of the plant to keep it firmly in place until it is rooted, but there is a risk of water lodging in the hole and rotting the plant.

If your plant is small, just a small glob of glue on the surface of the rock will probably suffice to hold it. Remember that many bromeliads grow on rocks and cliff faces in their natural habitat, so it is worth the challenge. Most plants grow quite well once they get a hold on their new substrate.

If the plants are small enough you can use any durable non-toxic glue to give them a start but you may need nylon strips to hold

them firmly until they grow roots. It is up to you whether to fertilize or not, but most bromeliads respond to foliar feeding.

For indoor trees, you should select smaller bromeliads for use than you might use outdoors. If you are mounting tillandsias, the silvery-grey ones are the best, but they need bright light and plenty of air movement.

Using all plants of the same species often looks nicest but using a mixture of plants can also look attractive. Know beforehand how big each plant will become. Otherwise, small seedlings can provide an unwanted surprise when they grow too big for the tree.

Another consideration when selecting plants is the compatibility factor. You should not mix sun-loving plants with shade-loving plants, for example. In fact, your first consideration should be where you are going to put your bromeliad tree. That will determine which plants you should select.

It is not good planning, for example to grow *Aechmea recurvata* with many vrieseas,

M. J. PATERSON

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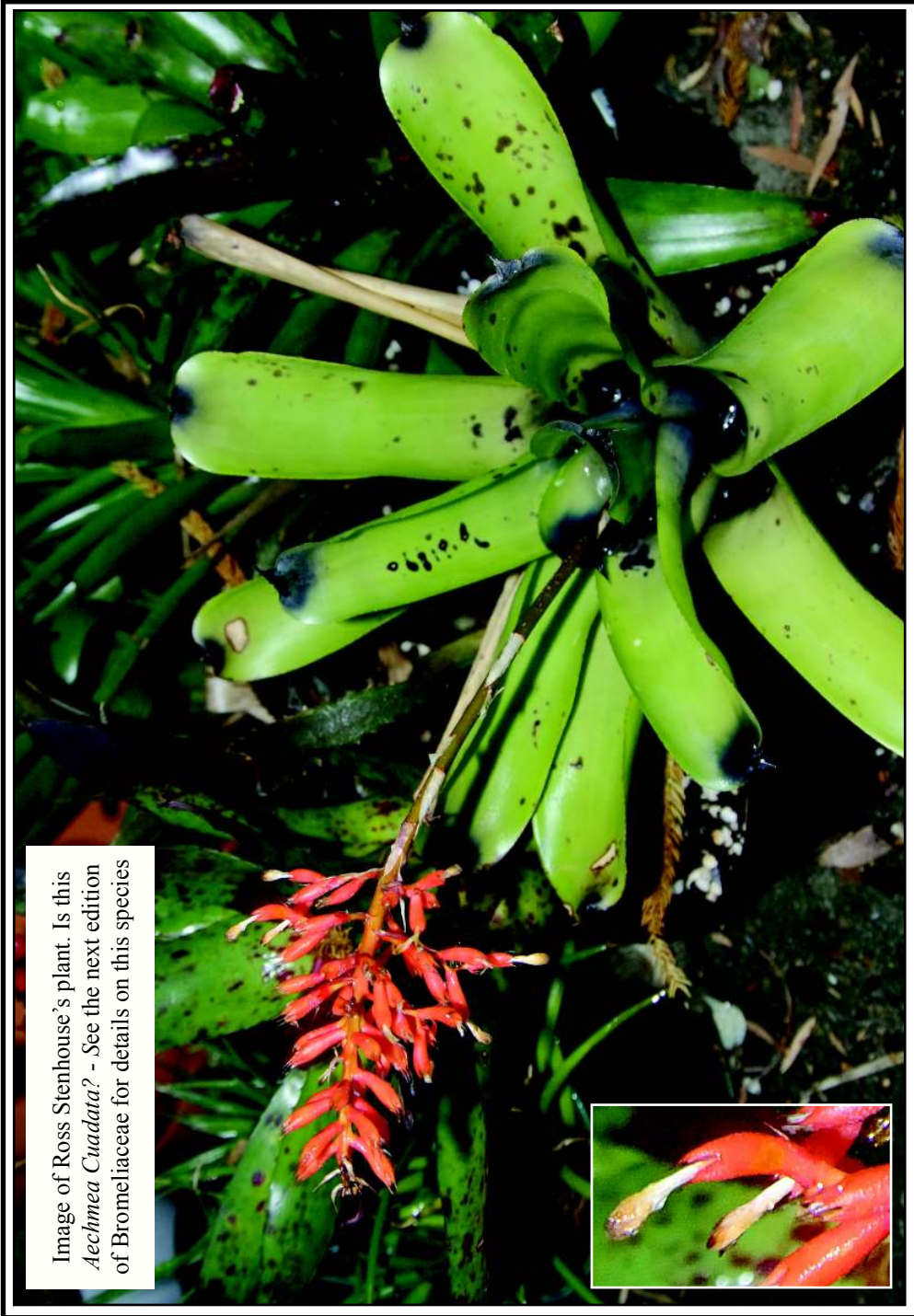


Image of Ross Stenhouse's plant. Is this *Aechmea Cuadata?* - See the next edition of Bromeliaceae for details on this species

for example, as your *A. recurvata* would lack colour if grown in a shady spot, and the vrieseas would suffer leaf burn in full sun. Plants selected should also be compatible in their watering needs.

Remember that, except perhaps for many tillandsias, the plants mounted on your bromeliad tree will become stressed to some degree. The disadvantage is that they

will require more frequent watering but the advantage is that they are likely to remain smaller and more compact and become more colourful than those grown in soil.

The pleasure you derive from your bromeliad tree will well compensate you for the extra maintenance involved.

Calendar of Events

Sat 24th-Sun 25th Oct - Open Garden at Anne McBurnie & Phillip Beard's

7 Timbertop Court, Capalaba 9am to 4:30pm For more info ph: 3206 0807

Aust. Open Garden Scheme entry \$6. Vibrant & diverse all seasons garden, including beautiful bromeliads, over 60 varieties of crotons & other interesting & blooming plants.

Prize winning bromeliads, crotons, bougainvilleas, cordylines etc for sale. ** Sat 10-12 Ross M'Kinnon A.M.- curator of the Bris. Botanical Gardens will be available to answer gardening questions & do a walking tour of the garden. * 12-2pm Heavenly Harp played. Devonshire tea served.

7th-8th Nov – BSQ Spring Bromeliad Bonanza Mt Cootha Gardens Auditorium

Sat 8am-4pm Sun 9am-3pm. Spectacular bromeliad displays. Monster bromeliad raffle.

Entry \$3 Children under 14 free. Over 700 varieties/hybrids of bromeliads for sale.

Wide range of bromeliad books on sale. Refreshments available. Plenty of free parking.

Public transport: BCC Bus 471 from City or Greta Circle Bus 598 from various suburbs.

3rd December - Christmas Party BSQ at Lakeside Gardens, Mt. Cootha,

in the Camellia Room . Beautiful ambience, wonderful company and FABULOUS plants to be raffled not to mention the food!!! Cost: \$25 per member \$35 non- members Time: 6.30 for 7pm dinner served. Tickets: from Glen Bemoth Please notify Anne McBurnie of any special dietary requirements by the November meeting

20th Feb 2010 - Field Day to Genny & John Caitlin's Garden

17 Pelican Parade, Jacob's Well. Plant sales. 8am to 2pm. Morning tea provided.

Guest speakers. Please bring your own chair. For more information contact Ruth (after 4pm) on 3208 0546 or Bev 3208 7417

6th March 2010 - Field Day to Len & Olive Trevor's Nursery

232 Canvey Rd, Ferny Grove Plant sales 9am to 3pm Guest speakers.

GENERAL MEETINGS of the Society are held on the 3rd Thursday of each month except for December, at the Uniting Hall, 52 Merthyr Rd., New Farm, Brisbane, commencing 7.30 pm. Classes for beginners commence at 7.00 pm.

Plant of the Month Programme for 2009

FEBRUARY:	Ananus, Intergeneric Plants, Tillandsias and Full-sun Neoregelias.
MARCH:	Cryptanthus, Tillandsias, Full-sun Aechmeas and Canistrums
APRIL:	Cryptanthus, Tillandsias
MAY:	Spotted Neoregelias, Orthophytums, Tillandsias and Variegated Bromeliads
JUNE:	Alcantareas, Foliage Vrieseas, Dyckias, Hechtias
JULY:	Billbergias, Pitcairnia, Nidulariums
AUGUST:	Billbergias, Foliage Vrieseas, Catopsis and Miniature Neoregelias.
SEPTEMBER:	Billbergias and Guzmanias.
OCTOBER:	Vrieseas, Neoregelias, Nidulariums, Guzmanias
NOVEMBER:	Not often seen Bromeliads and Succulents

Competition Schedule for 2009

Novice, Intermediate and Advanced in each Class of the Mini-Shows and in the Popular Vote.

January: MINI-SHOW

Class 1: Aechmea - species and hybrids

Class 2: Vriesea - species and hybrids

Class 3: Dyckia - species and hybrids

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

February : **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

March: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

April: MINI-SHOW

Class 1: Bromelioideae not listed elsewhere in the schedule – species and hybrids.

Class 2: Guzmania - species and hybrids

Class 3: Pitcairnia and Peperomia - species and hybrids

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

May: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

June: POPULAR VOTE: Any Genus – species or hybrid, Novelty Bromeliad Display

July: MINI-SHOW

Class 1: Billbergia - species and hybrids

Class 2: Tillandsioideae not listed elsewhere in the schedule – species and hybrids.

Class 3: Neoregelia - species and hybrids – up to 200mm diameter when mature.

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

August: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

September: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

October: MINI-SHOW

Class 1: Neoregelia - species and hybrids – over 200mm diameter when mature.

Class 2: Tillandsia - species and hybrids.

Class 3: Pitcairnioideae not listed elsewhere in the schedule – species and hybrids.

Class 4: Any Other Mature (flowering) Bromeliad - species and hybrids.

November: **POPULAR VOTE:** Any Genus – species or hybrid, Novelty Bromeliad Display

Note 1: *Class 4 in each Mini Show schedule provides for any flowering bromeliad that would not be in its prime for the appropriate Mini Show.*

Note 2: Class 1 (April), Class 2 (July) and Class 3 (October) provide for plants from these subfamilies not elsewhere included in the Mini Show schedule.



Guzmania conifera

Bromeliaceae

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