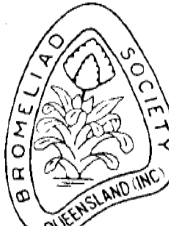


Bromeliaceae



Beginners Focus Edition



The Bromeliad Society of Queensland Inc.

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Front Covers: Open seed pods on Tillandsia photos by Ross Stenhouse
Rear Covers: *Neo* 'Nonis' flower - ants can fertilize Neos photos by Ross Stenhouse

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Notes On Cryptanthus

With the renewed interest in Cryptanthus, I searched through my library of journals and found this article on Cryptanthus; an excellent primer for new members on the culture of this genus. This article was printed in Bromeliaceae some twenty years ago; the source was the Cryptanthus Society U.S.A. author unknown. Peter Paroz

What is a Cryptanthus?

Named from the Greek krypte “hidden”, and anthos, “flower”, these plants, members of the family Bromeliaceae, are related to the pineapple. Their common name, ‘Earth Stars’ came naturally from the way their low spreading rosettes hug the ground ‘like fallen stars’. The variability of shapes, colors, and patterns, plus their adaptability to a wide range of growing conditions, make Cryptanthus a favorite of plant lovers around the world.

Potting *Cryptanthus* in their natural habitat are true terrestrials (growing in the earth). A few varieties are saxicolos (growing in soil pockets among rocks), but none have ever been observed growing as epiphytes (growing on other plants, but receiving nourishment from the air). *Cryptanthus* should always be grown as potted plants.

The growing medium should be a loose, porous mixture. There are many good mixes: commercial potting soils, African violet mix, soil mixes, or a mixture of peat and sand with perlite. Regardless of the mix chosen, it must be kept damp for best growth. It should never be allowed to totally dry out. Plastic pots help conserve moisture. Suc-

cessful growers have used capillary matting, wick watering, misting systems, as well as the old-fashioned method of watching the plant and giving it a drink when needed.

Cryptanthus should not be under potted. They develop root systems at least equal to the size of the plant - a five or six inch pot will allow the root system plenty of room to develop.

Light. In their native habitat of Brazil, *Cryptanthus* can be found growing in a wide variety of conditions; sunny, shady, moist, dry, in forests, and at ocean side. There is a *Cryptanthus* variety to fit any light condition. *C. beucheri* and its hybrids like to be shaded, moist and humid. They are excellent for terrariums. Species such as *C. bahianus*, sp. ‘Cascade’, and *C. warasii* will tolerate full sun, but the plants grow better in diffused light. Too much light causes bleaching, sunburn, or gives a leathery, stressed look to the plants. Bright, diffused light is necessary to bring out maximum color in most *Cryptanthus*.

Lack of enough light will result in dull, uninteresting foliage. “Greening” of a usually colorful *Cryptanthus*, or weak, unbalanced growth, is usually caused by insufficient light. Proper lighting will bring out the best in *Cryptanthus*.

Acclimatise plants to grow in as much light as possible. The light source may be natural (in the greenhouse, outside with strong but filtered light, in a window garden) or artificial (“grow lights” or plant carts). *Cryptanthus* grow equally well with either. The colors intensify under fluorescent light, which make *Cryptanthus* an excellent choice for office decorating.

Whatever the light source, be sure the plants receive even lighting. If the light comes from only one side (as in a window garden), be sure to turn the plants regularly to promote balanced growth.

Cryptanthus 'Bunny



Cryptanthus fosterianus 'Elaine'



Cryptanthus 'Black Mystic'



Cryptanthus zonatus 'Nivea'



Cryptanthus correa-araujo 'Imposter Red'



Cryptanthus bivittatus 'Ruby'



Cryptanthus acaulis variegated



Cryptanthus 'Black'



Temperature. *Cryptanthus* prefer the same temperatures as their growers. Optimum growth occurs in a range 60-85° F (16-29°C). However, *Cryptanthus* will thrive in less than optimum conditions. Outdoor gardeners will be pleased to learn that most *Cryptanthus* can withstand temperatures just above freezing; and some varieties will survive winter outside if they are heavily mulched and the root zone does not freeze. If one wishes to leave plants outdoors over the winter, they should be “hardened off” in the fall by cutting back on the amount of water they receive.

Depending on how long the temperatures remain below freezing, leaf damage may be severe; but the mulch protects the root zone and Spring brings renewed growth. At the other extreme, *Cryptanthus* are very tolerant of high temperatures even above 100°F (38 °C) as long as there is adequate humidity and the potting mix is not allowed to dry out. Again, they should be protected from the scorching effects of direct sunlight.

In temperate climates, *Cryptanthus* grow easily and well outdoors, making beautiful and exotic bedding plants or ground cover. In colder climates, one might consider growing potted *Cryptanthus* outside during the warmer months. The pots can be sunk into the outdoor garden for the Summer and then easily removed to a safe winter inside, beautifying your home or greenhouse. *Cryptanthus* grow just as well, or even better, in the year-round controlled environment of an indoor garden.

Humidity. Many *Cryptanthus* varieties enjoy high humidity which may be increased in the home or office with the use of humidifiers, frequent misting, capillary matting, by placing the pots over water, or grouping plants together. *Cryptanthus* make wonderful accent plants in well-lit bathrooms or above the kitchen sink where the humidity is generally high.

Fertilizing. Fertilizer is not necessary for *Cryptanthus* to show off their dazzling colors, but it is necessary for maximum growth. A timed release balanced

fertilizer, (14-14-14 or 10-10-10), combined in the potting mix gives excellent results. Other types of fertilizer such as African Violet, Orchid, or organic, used in a diluted form with each watering work equally well. Like people, *Cryptanthus* require proper nutrition.

Blooming. Although the name *Cryptanthus* means hidden flower, many varieties flatten at maturity to reveal a bouquet of delicate flowers. Some varieties maintain an upright growth with the flowers remaining somewhat hidden, while others actually bloom on a scape (stem). Some varieties display one flower at a time; others exhibit the entire cluster at one show. As different species and cultivars bloom at different times of the year, it is possible to have varieties in bloom the year around. They are reliable



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bloomers - there is no need to force bloom *Cryptanthus*.

Offsets or Pups. Each *Cryptanthus* plant blooms only once in its lifetime. But, after it blooms, it will reward you with new plants! Beginning before or immediately after blooming, *Cryptanthus* will produce offsets, or pups - new plants - which form from the leaf axils, from woody stolons (as with *C. bahianus*), or from the base of the parent plant. One will have the beginning of generations of plants to keep or share with friends.

Offsets may be left on the mother plant for multiple growth. The ideal hanging basket plant, sp. 'Cascade', produces hanging stolons up to two feet long with rosettes (pups) forming at the ends.

Other varieties will form clumps or mats of beautiful color. If one wishes to remove the offsets, allow them to grow to about one-quarter the size of the mother plant. Then, a slight tug will easily detach the offsets from the mother plant. Some varieties release their own offsets when they are sufficiently mature.

Don't be alarmed that there are no roots on the pup. In nature, the pup would roll to a new location, or take root in the decaying humus around the mother plant.

Cryptanthus will root easily in potting medium. Make a small depression, insert the pup's short stem, and press the mixture firmly around it. Pot no deeper than the base of the first leaf. Stake the plant if necessary to keep it from rocking back and forth. It is essential for the plant to be secure for an extra fast start and good growth. Bottom heat may speed root development in colder climates. Place the newly potted plant in a favorable location and water it as one would a mature plant.

Insects and Diseases. *Cryptanthus* are relatively pest-free. By following good horticultural practices severe problems can be avoided.

Getting Pups to Root Quickly

(by Gerry Stansfield)

Editorial comment: Reprinted, with permission of the Bromeliad Society of New Zealand, from Bromeliad, August 2004, v. 44(8), p 14.

On a number of occasions I have advised members not to remove bromeliad pups during the winter months, especially vriesea, tillandsia and guzmania pups because of their susceptibility to rot. Unless you have access to a glass, plastic or a shade house that advice still stands.

Generally de-pupping should finish around March or April and start again around September or October although many of you, like myself, take off pups all year round. But I do wonder just how many pups are lost in the process. I have to admit that I have lost a few!

Sometimes it is impossible to avoid taking off pups in winter because the mother plant decides that the first batch of pups will be the only batch and they have to be removed in order to force her to produce more.

Aechmeas, billbergias, and neoregelias are perhaps not a problem with their hard stolon heels and generally these new plants have already started growing some roots. I don't bother to harden them off and I just dip the ends in Flowers of Sulphur and pot them up. So far I have not lost a pup. However, vriesea, tillandsia, guzmania and nidularium pups do need special care at this time.

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I have found that Aqua PalmPeat is extremely good for rooting these difficult pups. It is sold in a compressed brick form and will make up to 10 litres when soaked in warm water. However a word of caution. Ten litres is a lot of PalmPeat so I tend to cut off small blocks as I need them. I cut off about a quarter of the block and then cut that in half again. The block is very hard so you will have to use a saw or hacksaw. The two small blocks can be put in a bucket of warm water. Use your own judgement over the quantity of water but you might be surprised at how much they absorb.

All vriesea, tillandsia, guzmania and nidularium pups should be allowed to heal for about a week before potting up. Dip them in the Flowers of Sulphur, Captan or any good powdered fungicide because this prevents root rot and helps the healing process of the cut.

Remember to keep water in the cups at all times. After a week, pot the pups in the PalmPeat. You do not have to water them as the PalmPeat is already wet from the absorbed water. Within two weeks the pups will have produced some roots.

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Why Humidity is Important to Plants.

(Anonymous)

(Reprinted, with permission, from Bromeliad, [Journal of the Bromeliad Society of New Zealand], March 2007, v.47(3), p. 12)

All plants inhale carbon dioxide through their leaves. This gas is used in photosynthesis. As the plant opens its leaf pores to take in carbon dioxide, some of the moisture in the leaf can escape. Thus the plants sweat water vapour into the air whenever they breathe.

Dry air causes plants to transpire moisture much more rapidly than does humid air. Water in the leaves evaporates very quickly into air, causing the plant to lose moisture at a rapid rate. When leaves begin to lose water faster than the roots can absorb it – disaster strikes, in the form of self defence. In order not to lose more water to the air, the plant will almost completely close its leaf pores. This slows down the flow of moisture from the plant effectively, but unfortunately it also reduces the intake of carbon dioxide. Without carbon dioxide, the cells begin to die and the plant looks tired and ill.

The important point to remember is that dry air pulls water out of the leaves faster than the roots can supply the leaves. Under these conditions, it doesn't matter how much you water – it doesn't help. Over watering only reduces the amount of air in the soil and invites root rot.

When plants have the right humidity they thrive, because they open their pores completely and so breathe deeply without threat of excessive water loss. When the air is moist, there is little water loss from the leaf. Damping down the benches and surrounds,

also misting leaves will help keep the air moist. Rapid temperature rises damage plants too. It means that the plant's leaves become warm and physiologically active, while the root system in its solid rooting medium, is still cold and physiologically dormant. The active leaves are demanding large quantities of water and nutrients which the root system cannot possibly supply.

Under these conditions, photosynthesis, transpiration and other vital plant processes are severely restricted and as a result, developing flower growth and new growth are damaged. Rapid rises in temperature on sunny days can be avoided by opening vents or doors early in the morning and letting the greenhouse warm up gradually.

A humid atmosphere that is not moving, is also particularly undesirable. Damp, stagnant conditions encourage mould and bacterial diseases. A constantly moving, light and buoyant atmosphere keeps plants vigorous and healthy.

Some Tips on Why, When and How You Take Pups

(by Chris Larson)

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

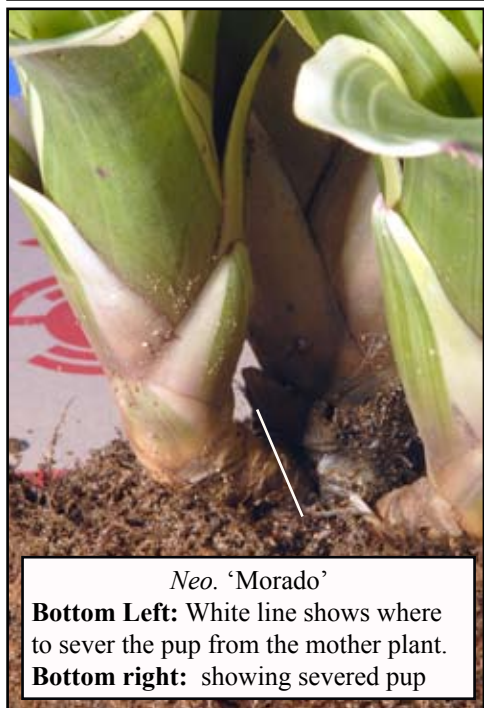
Most bromeliad species reproduce themselves vegetatively (by offsetting), which gives them a greater chance of survival than if they relied only on seed. When you consider that for the seed grown in the wild successfully, even if it is viable, it needs to land in a satisfactory place then get the right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



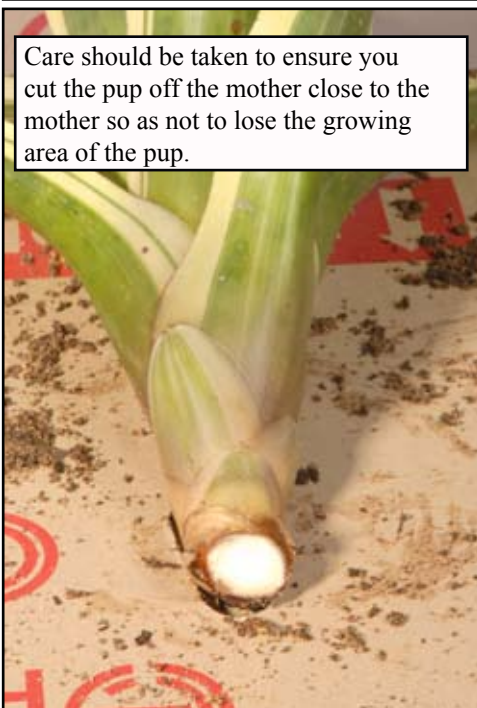
Neo. tigerina - wire shows point of severance of pup from the mother plant stolon



Til. secunda - with viriparous offsets



Neo. 'Morado'
Bottom Left: White line shows where to sever the pup from the mother plant.
Bottom right: showing severed pup



Care should be taken to ensure you cut the pup off the mother close to the mother so as not to lose the growing area of the pup.

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 by 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 prolifi-

cally, but seldom flowers. Some plants do not produce pups at all, and other 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 pups. 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 1/3 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, people prefer them as single specimen plants. This is due to an opinion that the shape is



Alcantarea burle-marxii - closeup of removed adventitious pup - when removing the pups it's important to make sure you don't snap it off at the base and lose the growing point. The image above right shows what the base should look like



Tillandsia secundata
with viviparous
offsets

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 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 necessary.

Seed Raising – Simplicity Works

(by Howard Martin)

(Reprinted, with permission, from *Bromeliad Newsletter*; December 2007, v.25(12), pp 8 – 9).

My first attempts at seed raising bromeliads began in 1999 with *Tillandsia* species. Using Dr. Oeser's method of tying pencil-thick, live juniper twigs into bundles, seed was spread evenly and sprayed firmly to secure. I also used sections of old tomato stake, securing seed with fine fishing line. Both methods proving successful. Keep in high humidity and mist twice daily until noticeable seed swelling. ¼ strength fertilise weekly.

After approx. 3 years seedlings are large enough to mount individually. Some species will start flowering in as little as 5 to 6 years, e.g. *recurvifolia*, *tenuifolia*, *ionantha*. Others can, and will, take 10 years or longer.

In early 2005 I decided to try growing seed of other genera. Having an old fish tank light fitted with a 40 watt Gro/lux tube and an old baby's cot electric blanket, I had the basic requirements for seed raising. Inside an east facing window with louver blinds the electric blanket was laid on up-turned polystyrene boxes for a flat surface and to prevent heat loss. A plastic sheet covers the electric blanket for protection from moisture.

The fish tank light was hung 30 cm. above and plugged into a timer for 16 hours per day. The electric blanket also on a timer keeps the night temp at 10° and days at 23° to 25°.

Fresh seed of *Neoregelia* and *Vriesea* were sown on coco peat seed raising mixture in Chinese takeaway containers. Holes

drilled in bottoms for drainage, and in lids for some air exchange. I spray at sowing with fungicide/bactericide to settle seed and prevent any onset of disease. I use NAT-RIPHENE. Others would work just as well. Spray with tepid water when required, maybe weekly for even moisture. NOT WET.

Sprouting should be noticeable in 10 to 14 days. At this stage commence fertilising at ¼ strength every second watering. (10 to 14 days) Spray with fungicide monthly. When seedlings reach approx. 1 cm start lifting lids to harden seedlings readying them for planting to flats or tubes. When plants are at the five leaf stage (approx 2 cm) plant out. After 6 months transplant to 100 mm pots.

Some small *Neoregelia* species can flower in as little as 2 years. Growth rates vary greatly depending on genus + species.

To date this system has been successful with – *Neoregelia*, *Vriesea*, *Aechmea*, *Alcantarea* and *Orthophytum*.

The reward of flowering your own seedlings is well worth the wait.....

Warning: Treated Pine and Broms Do Not Mix!

(by Gerry Stansfield)

Editorial comment: Reprinted, with permission, of the Bromeliad Society of New Zealand, from Bromeliad, March 2005 v.45(3), pp 8 -9.

After speaking recently with a friend who was heartbroken by the damage done to her bromeliads after placing them in a newly built shadehouse made of treated pine, I wondered if there might also be others out there who needed to know about the problems associated with treated pine.

The following is a story by Elaine Jones of New South Wales, which appeared in the

September/October 1992 issue of BROMELLETTER Vol. 30 No. 5, and although it was written over 10 years ago, the problem still persists...

‘In June 1988 after several years living in rented houses in Sydney, we purchased a home in the suburb of Dundas. It was an old house needing renovation and after several months we started on the garden.

One of the requirements was a shadehouse for my bromeliads. As we were using treated pine in the landscaping we decided to use the same for a pergola-shadehouse. Knowing that bromeliads are copper sensitive, I checked with the supplier as to whether there was any risk of the salts leaching from the timber, I was assured that problem only occurred if the wood was burned.

Everything went well for a few months until I noticed brown marks about the size of a one-cent coin at the base of some of my bromeliads. The affected spots gradually became “mushy” and sometimes could be removed by scraping out, each leaving a hole in the outer leaf. Removing the leaf entirely only made the next leaf more susceptible to the problem. If not removed, the mark spread across the leaf causing it to break off, revealing another spot on the leaf inside. Draining plants and flushing with fresh water seemed to delay the emergence of the marks but nothing stopped them appearing.

To add to the confusion not all plants were affected. Tillandsias which were growing to one side and not directly under the frame were quite healthy. Nidulariums didn’t seem to show as much damage as neoregelias. Other pot plants were unaffected and a tub of parsley needed a lawn mower over it every week to keep it under control. The vase-shaped bromeliads seemed to suffer most and the tough-leaved genera most of all, particularly neoregelias and billbergias. Tillandsia usneoides hanging on pots was not

affected but where it was in direct contact with the timber it desiccated and died.

Eventually I felt I should again contact the timber suppliers to see if they could shed any light on the problem. They assured me that nothing in their timber would be the cause. They explained that many vegetable growers used their produce without adverse effects to plants or consumers. Finally I took some of the affected plants to them and they analysed water samples. Their findings were that the levels of salts in the water were not above the accepted levels and could not help me any further. Meanwhile, plants were still dying. Pups would appear, grow quite normally until they reached a reasonable size, and then begin to develop the same trouble as their parents. Even newly purchased plants would show signs of damage within a few weeks.

We decided to move to the Central Coast so we gathered all our plants and put them in shadehouses on the property. These were built of hardwood and the survivors and bromeliads purchased since then are now doing fine. Admittedly, some of the leaves have grown with holes in them where I was able to remove damaged parts, but after 18 months the problem has not re-occurred.

There may have been several reasons for the damage. The shadehouse was a new structure and any excess salts on the surface of the timber had not washed away. We had extremely wet weather during this time which may have caused abnormal leaching of the salts. However, my advice is – DO NOT USE TREATED PINE NEAR BROMELIADS!

This article is by permission of the Illawarra Bromeliad Society Inc. Australia.

Another article written by John Moreland was published in our Journal in March 2003 and told a similar story. At the time it was footnoted by Gerry Stansfield, who wrote:

‘There are a number of other materials one can use for construction and these will vary depending on just how much you are prepared to spend. They all come with their own advantages and disadvantages and, of course, the cost factor is an issue. However, do not entirely rule out treated timber construction. It will be the cheapest by far, and the easiest to work with and it will almost last forever, but the downside is the treating.

Because the copper cyanide treatment is DEATH TO ALL BROMELIADS it is imperative that the timber is properly sealed. There are a number of proprietary lines available and your local hardware/Paint DIY can

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Aechmea fasciata



Guzvriesea 'Happa'



Bromeliad growing in water - pond and photo - Rob Smythe

advise. Fence stain is no good. After sealing, two good topcoats of enamel paint should be applied, making sure the ends of the timber are also coated to stop the timber from bleeding. Don't be fooled into thinking that old treated timber will not leach out. This is not true, and it could even be worse, as much stronger brews were used in days gone by! Regard all treated timber, both new and old, as requiring special treatment before putting your precious bromeliads under it.'

The (Very) Small Vrieseas

(by Carol Johnson)

Editorial comment (Bob Reilly): Carol Johnson owned a bromeliad nursery in Florida, United States of America. Growing conditions in that location are similar to much of southern, coastal Queensland, so it is well worth trying Carol's suggestions.

Reprinted, with permission, from the Journal of the Bromeliad Society (1995), v. 45(3) pp 132- 133.

The many small vrieseas tend to get lost in the maze of their big, glamorous relatives, but to those who have a limited or very little space, or who specialise in small plants, there are real gems available. Most of the truly miniature vrieseas are native to eastern Brazil and, in my experience, all self seed and are easily grown. All seem to prefer low light but in all other ways should be treated like their bigger relatives. I list here only four, but they are my favourites of the really small plants. All are species.

- *Vriesea modesta*. To 12" (30 cm) high including inflorescence. Beautiful, simple bloom spike rising just above the recurved green leaves. Spike is wider than

tall, red blending to yellow-orange and rose. Very long lasting. Best grown as a clump in a six-inch bulb pan.

- *Vriesea racinae*. Eight to ten inches (20 cm to 25 cm) tall, including inflorescence. Green leaves are numerous, heavily brown-spotted and tightly recurved. Blooms and bracts are insignificant, greenish yellow and reputed to smell like Ivory soap. It is rightly the most popular of the small vrieseas. It self seeds and is easily propagated. It is named for Racine Foster who discovered it in Espirito Santo, Brazil.

- *Vriesea poenulata*. To 12 inches (30 cm) tall, including the inflorescence. It has many, thin, recurved leaves growing from a modified-bulbous base. If kept fairly dry, the leaves develop dark speckles, which are very attractive. Flowers are yellow and fairly large for so small a plant. The plant blooms regularly and produces numerous offsets. It requires little care.

- *Vriesea correia-araujo*. It is very similar to *V. poenulata* but without the speckled foliage. The blooms are white. The leaves are more erect than recurved.

There are many other small – to medium-sized vrieseas that are a joy to grow but all of those listed below can be force-fed and overpotted to increase their size. Grown normally, all are small enough to qualify as space savers:

- Vriesea bleheri* (bleherae)
- V. carinata* (see photograph p. 19)
- V. flammaea* (stoloniferous)
- V. guttata* (see photograph p. 19)
- V. lubbersii* (stoloniferous)
- V. rodigasiana*
- V. scalaris*
- V. simplex*
- V. sucrei* (see photograph p. 19)

There are also gray-leaved tillandsias that are like vrieseas but they require different treatment and deserve separate discussion.



Tips for Summer Growing

(by Odean Head)

Reprinted, with permission of the Bromeliad Society of Greater Chicago, from the BSGC News, July 2006, pp 4-5.

First, we need to observe more closely as to how each plant is responding to the amount of light it is receiving. This is especially true for those plants that have been getting several hours of direct sunlight. Plants that show signs of color fading or burning need to be moved to lower light. We do not want to make extreme changes. Small changes help us to determine the ideal lighting for each plant. We may even want to swap places with some of the plants that could use more light. We may want to add some shade cloth to areas that receive too many hours of hot sun.

Bromeliads are like most other plants in that they will tell you when they become stressed from being too dry. Leaves will begin to curl and the plant will become dehydrated and look sick. You can correct this condition if you catch it quick enough, but it will take some TLC. You can take your dehydrated *Tillandsias* and immerse them in a bucket or tub of water and let them stay in there for several hours. Sit terrestrials such as *Cryptanthus*, *Dyckias* and *Hechtias* in a container of water and allow the medium to remain saturated for a few days. (This is my normal watering procedure for these plants when they are in individual pots. It is difficult and sometimes impossible to water well from the top when the plant has clumped.)

Plants whose leaves form cups will normally require special attention from both the bottom and top of the plant. First, pour water in the top of the cup. If the plant has

several leaves, some of them may be stuck together, keeping the water from flowing down through the plant. You may need to pour water in several times. You can also assist the water flow by placing your hands around the base of the plant and squeezing it a few times.

If the center leaves have quilled (become stuck together), extra steps will be required. After pouring water in the restricted cup, let it sit for awhile, then try opening the leaves by sticking your finger down through the center. Do not force too hard or you will split the leaf. You may need to pour more water and try again later. I have heard that a drop of detergent in the center will cause the quilled leaves to turn loose. The roots also need to be saturated by either continuous wetting from the top of the pot, or by sitting it in a container of water.

More Unfamiliar Genera – L to N – Plus 9 Bigenerics

(by Herb Plever)

Editorial Comments (Bob Reilly). In this article, Herb Plever a long-time grower of bromeliads in New York City apartments, discusses some of the rarer bromeliad genera, and some bi-generics i.e. crosses between two genera. Given the different climates, many of his cultivation suggestions are not directly applicable to Queensland, but may have some application to apartment dwellers.

(Reprinted, with permission, from Bromeliana, (2007) v.44(3), pp 1-3)

At the March meeting (of the New York Bromeliad Society) we will continue with our survey of more of the species and cultivars of the 57 bromeliad genera. Over the years we have covered all of the genera but there have



xGuzvriesea 'Marian Oppenheimer'



Neomea 'Exquisita' - close up flowers



Nidularium innocentii var *striatum*

been changes, new species and cultivars and we have many new members who have little knowledge of this material.

This month we are starting with letter “L” up to letter “N”, and we will show 5 genera which will not be familiar to most of our members, plus *Nidularium* and 9 bigeneric groups. (You will recall that we presented *Neoregelia* at our February meeting). Many of the bromeliads shown in our programs are or can be made available in our spring plant order. It is a good idea to make notes of the plants that strike your fancy and ask questions about their size and culture and whether they can be ordered.

The 6 genera that will be shown at our March 6th meeting are as follows: in subfamily Pitcairnoideae – *Lindmania* (with 38 species) and *Navia* (92 species); in subfamily Bromelioideae – *Lymania* (8 species), *Neoglaziovia* (3 species) and *Nidularium* (45 species); in subfamily Tillandsioideae – *Mezobromelia* (9 species). The 9 bigenerics will be discussed below after the material on the 6 genera.

Lindmania and *Navia* are found exclusively on the tops and *flanks* of the tepuis, the table-topped mountains in southeastern Venezuela and in Guayana. Tepuis range in altitude from 2,500 ft (750M) to 7,500 ft (2,250 m). The surface summit of large tepuis have an average area of about 270 square miles (70 km²). They are covered with fog for many hours and are cool. The average temperature of high tepuis is 57°F (10°C) but it can go as low as 39°F (3°C).

These mountains have cores of igneous and granitic rock and are covered with deep layers of reddish sandstone. The top mesas are divided by canyons and crevices, creeks and streams and are covered with moist, acidic bogs. In ancient times it was this habitat that spawned *Brocchinia*, the first bromeliad. Many plants other than *Lindma-*

nias and *Navias* grow on the tepuis. The carnivorous bromeliad, *Brocchinia reducta*, and a number of carnivorous pitcher plants are found there.

Lindmanias are found at the cooler, higher altitudes on the top mesas or on cliff faces near the summits. They grow saxicolous on rocks or in their crevices and cracks, or terrestrially on river banks or in bogs.

Navia species are found mostly at the lower altitudes on the forest or rock slopes of the tepuis, growing epiphytically, saxicolous or terrestrially.

The steep, vertical sides of a tepui makes it a very arduous and dangerous climb for collectors to reach the top. (Modern collectors with financial resources can use helicopters to get there). 18th and 19th century botanists and adventurers who made the climb came back with stories about this fabulous, isolated world. Those stories prompted A. Conan Doyle to make the trip which stimulated his science fiction novel: “The Lost World”.

Lindmania species are adapted to high altitude, cool temperature and fog-laden humidity; thus they are rarely found in cultivation. Perhaps collectors have been unable to provide a sufficiently cool environment for the plants when they are brought down as they have rarely survived. This is a pity because there are absolutely wonderful plants among the 38 species, including the small *Lindmania holstii* and *L.huberi*, and the tall *L.oliva-estevae* with many white blooms clustered on the branched inflorescence like large roses. Bruce Holst found *L.holstii* on a sandstone floor at the mouth of a bat cave on a cliff face near the top of a tepui. It has a diameter of 6 inches and would make a good windowsill plant if we could ever get a few pieces of it and manage to grow it. I have a pipe-dream that I could grow one on

a window sill directly in front of a humidifier, because my apartment is air-conditioned when it is warm, and the winter temperatures near the window panes range from about 64°F (18°C) down to 56°F (13°C) at night when it is really cold. One of these days....

No *Lindmania* are available for sale anywhere, and only one *Navia*, *Navia igneosicola*, will be on our plant order. That is unfortunate, because we know we can grow *Navia*..

Genus *Lymania* was created by Dr. Robert Read (Lyman Smith's close associate) in 1984 with four species transferred from *Aechmea*, *Ronnbergia* and *Araeococcus*. Since then four new species have been added to the genus. *Lymanias* are attractive, small

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forest epiphytes from Bahia, Brazil and they are good indoor plants in size and culture. Available on the plant order are *Lymania alvimii*, *L.corallina* and *L.smithii*.

Genus *Neoglaziovia*'s three species grow epiphytically or saxicolous in open, dry thorn forests in Brazil. *Neoglaziovia variegata* is the only species available.

Nidularium with 45 species and 31 registered cultivars is a well known genus. The species are all found in mid and south coastal Brazil, growing terrestrially on the forest floors or as epiphytes, low on tree trunks. The genus name comes from the Latin nidus or next, describing the inflorescence that sits low in the centre like a nest. In *Neoregelia* the cup ends of the leaves turn bright colours at blooming time to attract pollinators. In *Nidularium* the primary bracts of the inflorescence are bright red, orange, yellow etc. Judging from the scarcity of *Nidularium* entries in WBC shows, they are much less popular now than a few decades ago. 10 species and varieties and 9 cultivars can be made available on our plant order.

Except for *Nidularium innocentii* var. *innocentii* cv. 'Nana' all of these very attractive plants are of medium to medium-large size. Worth growing are *Nidularium fulgens*, *N. innocentii* var. *lineatum*, *N. innocentii* var. *innocentii*, *N. rutilans*, *N. antoineanum*, *N. scheremetiewii* and *N. 'leprosa'*.

Although they grow low in the forests, that tropical light still may be higher than good available light indoors. You will have to differentiate the cultural needs of different species and cultivars. *Nidularium fulgens* gets the best markings and leaf colour in a full sun south window, whereas *N. innocentii* var. *lineatum* will do better in diffuse light, and you should not permit its medium or the leaf axils to dry out. Var. *lineatum* grows best for me under fluorescent lights where its lines are white rather than cream coloured.

Most of the cultivars from the 9 bi-generic crosses will be shown in the video.

XNeobergia (*Neogreglia* x *Billbergia*) has but one cultivar. *X Neobergiopsis* (*Hohenbergiopsis* x *Neoregelia*) also has only one cultivar.

X Neomea (*Neoregelia* x *Aechmea*) evidently is an easy cross to make as it has 34 registered cultivars. Most are unavailable except *XNeomea* 'Strawberry'. *Neoregelia* is dominant for size of the blooms in Neomeas. These resemble miniature *Aechmea* inflorescences with very small or no scapes, and they are low in the cup like the Neos. Because it has dramatic colour and tight conformation, my favourite is Nat DeLeon's beautiful cross of *Neoregelia* 'Royal Flush' x *Aechmea fasciata*. I regret that it was never registered and is not available.

There are 13 beautiful bi-generic crosses from *X Neophytum* (*Neoregelia* x *Orthophytum*), and most seem to have been made using *Orthophytum navioides* as one of the parents. Outstanding and available are the variegated *X Neophytum* 'Galactic Warrior', *XNeophytum* 'Burgundy Hill' (Herb Hill) and *X Neophytum* 'Lisanne Kiehl' (by Michael Kiehl). From the somewhat oversaturated photos of *X Neophytum* 'Aurora' and 'Ecstasy' on fcbs.org (not yet available) I would say that these cultivars should be prized additions to your collection. Of course, you must take into account that *Neophytums* are medium-large to large and need strong light.

X Neorockia (*Neoregelia* x *Wittrockia*) and *x Neostropsis* (*Canistropsis* x *Neoregelia*) each have but two cultivars, and none of them are available.

X Neotanthus (*Neoregelia* x *Crytanthus*) has five registered cultivars. Three of them are lovely crosses and can be available on our plant order. *X Neotanthus* 'Cardboard', 'Firefoam' and 'Waffle'.

X Nidumea (*Nidularium* x *Aechmea*)



Photo Above: *Nidularium rutilans* Photo Below: *Neophytum* 'Galactic Warrior' this plant won a "First in Novice Class" at the 2009 BSQ Autumn Show - grown by Margaret Kraa



has four registered cultivars, but none are presently available. Outstanding are: *XNidumea* (*Nidularium innocentii* var. *innocentii* x *Achmea fasciata*) made by Nat DeLeon and *XNidumea* ‘Penumbra’ made by Chester Skotak. Since ‘Penumbra’ was exhibited by Michael’s Bromeliads at the 2006 WBC in San Diego, it is to be hoped that plant will soon be available.

Incredibly, there are 17 registered cultivars of *X Niduregelia* (*Nidularium* x *Neoregelia*). Only two of these, *XNiduregelia* ‘Garnet’ and ‘Something Special’ are available to be ordered. The exquisite *X Niduregelia* ‘Suvenir De Casimir Morobe’, ‘Heart A Fire’ and ‘Pipe Dream’ are worth acquiring when they are available.

Water and Bromeliads
 Author: Ross Stenhouse

The photo below shows a *Neo. augustifolia* x *paucifolia* I have been growing continuously in water for about 4 years. In the photo, you can see the original mother plant and a one year old offset.



Often we hear that bromeliads die if they are too wet, well here is living proof of the fallacy of that general argument. Many of my bromeliads have died because of vase rot, my contention is that it is when the water allows bacteria to grow, then the problems start. It is the moist conditions rather than wet conditions that allow this to happen.

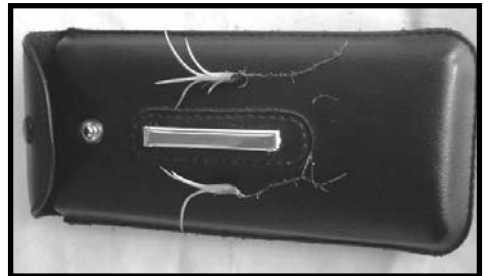
In the photo on pg. 17, you can see some bromeliads growing in water at Rob Smythe’s place, in this case a rock pool.

An Oak Tree From An Acorn Make
 Author: Rob Smythe MSc

I had been discussing technical things like ‘Genetic Drift’ and other things that I can barely understand with a botanist working with Alcantareas.

Pollinators and the like were discussed but some clones appear in different places. The mind ticks over at the strangest times. While visiting a friend living in a rural setting I asked for a hair pup that I was promised. “Sorry, too late the birds have taken it”.

This aspect had never been considered. I took this picture to show the botanist how



mature these small hair pups can be and how easily they can be detached (only a bump is required). Something for them to look into regarding clone dispersal in the wild. I am sending the picture to Bromeliaceae as well

just to show how these often monstrous-in-size bromeliads can grow from a minute well formed 'hair pup' often called 'grass pup' but more correctly called adventitious offshoot.

The Back End

by the Editor - Ross Stenhouse

Here we are again, and this journal follows closely on the heels of the Mar/April edition. At last I am starting to get them out somewhat on time. In this issue I have used mainly repeated articles that are of interest and value to the beginner.

I am labelling this "The Beginners Focus Edition", my goal is to produce a compendium of beginner level articles about growing bromeliads. Some of you may recall that Bob Reilly and myself authored a book titled "Beginning with Bromeliads".

The book was published by the Society

and was targeted at beginners. This issue of Bromeliaceae, together with a copy of that book should give a beginner in growing bromeliads a solid base of knowledge. It should help too avoid many of the disasters that often plague beginners.

I can still remember what it was like when I first became interested in growing bromeliads, I was plagued by a lack of knowledge and an inability to pronounce the Latin plant names. I have managed to somewhat overcome the first, but correctly pronouncing the names - that's still a problem.

For the more advanced bromeliad enthusiasts, I have published an article and photos on *Cryptanthus*. I am not sure just how big they can grow, all the ones I have seen have been pretty small, so to someone who is space challenged and wants to have a large number of plants, this genus could be for you!

Calendar of Events

September 3rd. Barry and Ann Kable 281 Redland Bay Rd. Capalaba. Join us on our field day and listen to our MYSTERY SPEAKER. Barry and Ann have a large range of prize winning Bromeliads, Orchids and Foliage Plants. There will be plant sales and Barry will speak on how he uses a variety of mixes for his plants. Morning tea provided. Please bring a chair. 9a.m. to 1p.m. If you need more info. Contact Ruth (after 4p.m) on 32080546 or Bev. On 32087417.

October 29th. Terry Tierney 125 Boulia St. Greenbank. Terry has a large variety of Bromeliads, Cacti and Succulents. There will be two speakers on the day, so come along and join in the fun with Ruth and Bev. Morning tea will be served. Plant sales from 9a.m to 1p.m. Don't forget your chair. Contact Ruth [after 4p.m.] on 32080546 or Bev. on 32087417.

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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.

ANNUAL GENERAL MEETING is held immediately before the February General Meeting

