

Bromeliaceae



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The Bromeliad Society of Queensland Inc.

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MONTHLY MEETINGS of the Society are held on the 3rd Thursday of each month except for December, at the Uniting Hall, 52 Merthyr Road, New Farm, Brisbane, commencing 7:30 pm.

ANNUAL GENERAL MEETING is held immediately before the February General Meeting

Front Cover: Vriesea 'BSQ Golden Jubilee'

By: M & M Cameron

Rear Cover: *Tillandsia crocata*

By: Peter Tristram

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Starting with Gold



GOLD GOLD GOLD

To borrow the famous line from the ABC's Norman May, this year is GOLD for the Bromeliad Society of Queensland Inc. This issue features an assortment of gold (or perhaps yellow) bromeliads. Many of the gold forms are highly prized particularly when variegated.

As Editor, I must apologise for missing the final 2016 issue but this bumper Golden issue is equivalent in content to 2 standard issues. It contains some key taxonomic information on changes to genera within Tillandsioideae and the result of DNA based research into one particular clade. BSQ was among a range of donors who provided funds to support this research. It is technical in nature but is the result of BSQ's contribution along with others.

Presidents Report to AGM

Barry Kable

Where has the last twelve months gone - seems like only yesterday I was presenting the 2015 report. The 2016 BSQ year started off in January with a planning day where your committee brain stormed to schedule activities and speakers for the year ahead, with the extra challenge of planning for our 50th year. Many have already enjoyed the 50th luncheon in early February, with the unveiling of our special plant *Vriesea* 'Golden Jubilee'.

2016 was a great year for BSQ with a good mix of speakers, Plant of the Month speakers and Information Sessions. The year presented a few challenges, but full of lots of great activities to show off our wonderful bromeliads:

- The Autumn Show with its new venue at Genesis College Bray Park, a few teething problems with set up but over all a good week-end;
- The Spring Show back at the Table Tennis Centre, with a good net result for BSQ. Many thanks to all members who made the shows the success they are. A lot of work goes on before during and after;
- An outstanding Tillandsia Day at Newmarket, both in information and plant sales;
- The Ekka display for 2016 was housed in the Old Museum, which became a part of the Ekka grounds, again new challengers which we overcame to present a beautiful display;
- Parks Alive at Roma Street Parkland.

Looking into the future for BSQ there is an urgent need for you the members to consider taking on some of the positions of the society, some members have been doing these jobs for many years and just need a break. Management continually ask for other members to step forward, please make this the year where you at least help the people in these jobs to learn how they are done with the view take to them on.

I would like to take this opportunity to thank all the Committee members for their dedication and commitment in steering BSQ through another year. Also, a big thank you to all our members who make all our events run so well. Thank you all for sharing in the great fellowship, and look forward to more great times this year our 50th -my last as President of the society.

I registered the name 'Rutschmann's Orange' but have no idea what they call the plant in Germany! It may be prudent to mention here that when I asked Luiz Filipe Varella, Tillandsia grower and intrepid explorer and Porto Allegre resident, what was the colour of *T. crocata*, he said Orange. It would therefore seem that the orange flowered form is more common than I thought.

This seems to be confirmed by reference to a plant named 'Copper Penny' by Mike Kashkin in California in the 1960's but never registered until recently. To me the colour is more light orange. We do not know where this plant originated but assume Bolivia because this area is linked to Kashkin's collecting zone.

This gives an idea of names at species level. Now to hybrids which are an intriguing subject. If you are a rose grower you would probably grow only hybrids with never a species in sight. All hybrid roses seem to be better than the species in colour of flower or vigour.

The first *T. crocata* hybrid to be registered in the BCR would have been 'Tawny Yellow' in 2001 which Rolly Reilly and myself worked out the possible parents to be (*crocata* x *mallemontii*). In 2011 we had Barry Genn's 'Gold Dust' and in the following year 'Nugget'. Then we had a period where Holm's hybrids had been imported from Germany and which circulated under parentage formula. The first one to be given a proper name and registered was in 2015. The only one that gave me concern regarding identity and similarity to species *T. crocata* circulated as either (*crocata* x *caliginosa*) or reverse. If anyone has this name on the label it was registered as T. 'Holm's Wintersun'

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BSQ November Show

The November Show returned to popularity with bromeliad fanciers. Distinct from the previous few shows, we had a substantial queue at the door prior to opening. Attendance across the 2 days was up on previous shows and sales were well supported. The plant competition entries were a little down in number but nevertheless some spectacular plants were entered. Results were:

Champion Plant

Deuterochonia abstrusa

Rick Cairns

Reserve Champion

Vriesea 'Big Bopper'

M & M Cameron

Best Species

Tillandsia straminea

Ron Jell

Best Cryptanthus

Cryptanthus 'Thriller'

Pam Butler

Best Bromelioideae

Neoregelia 'Hawaiian Golden Tiger'

Nigel Thomson

Best Tillandsioideae

Tillandsia streptophylla

Ron Jell

Best Pitcairnioideae

Dyckia 'Talbot White Chocolate'

Barbara McCune

President's Award (best plant in display)

Tillandsia fasciculata hybrid

Pam Butler

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Deutercohnia
abstrusa
(Champion)
above; left
Reserve
Champion
Vriesea 'Big
Bopper' and
species *T*
streptophylla.



Alcantarea Gold!

When you turn the page, photos are clockwise from top L: *Alcantarea* 'Bobby Gold', *Alc glaziouana*, *Alc glaziouana* Yellow Star (Photos B Dunstan), *Alcantarea*. "John Stoddart" (photo JO)



Summer Problems

by Lindsay Jones

Reprinted from: Bromlink the bi-monthly Journal of The Bromeliad Society of Western Australia Inc. Volume 8, No.4, January / February 1988.

Now that we are through summer you may find that some of your plants are showing some unwanted features that could be related to summer's unique conditions. The following are some problems you may be encountering and some possible solutions.

Sunburn: This can occur extremely quickly on very hot days. All attempts should be made to ensure maximum protection for the middle of the day but thought should be given to late afternoon protection as the sun can be quite intense even after 5.00pm on some days. Relocation of a plant when taken from low light (indoors) to outdoors (even not if into direct light) may cause extensive burning. Gradual increase in light will allow the leaves to toughen up after an extensive indoors stay. The sun is higher in the sky so that which was in shade during winter (2hrs mild midday sun) may not be during summer (4hrs intensive direct midday sun). The days are longer in summer which may cause bleaching.

Heat: Usually this is in association with sunlight and dehydration. Plants can be cooked in a glasshouse where the light isn't necessarily high and the humidity is very high. Watch out for heat reflected from walls, windows and from the paths. Plants will be burnt on one side even though they are not in direct light.

Dehydration: The drying out of plants puts strain on plants which in itself will result in irregular growth. The drying of roots reduces their ability to take up nutrients. Soil will fall away from the roots or may be set into a pot-shaped rock. The re-wetting of the soil may be difficult and take a long soak. The lack of moisture can cause young leaves not to develop, stick together and quilling (longitudinal leaf curl) may occur. To avoid the problem, water more often, locate plants in a place where dehydration is minimized, use soil conditioners such as compost, peat moss or artificial conditioners. Wetting agents for the soil also help as they will ensure when watered the moisture goes through all of the pot and is captured.

Pests: These are generally fewer in number in summer however not totally absent. Crickets seem to be the most active, since they are prepared to eat anything, Bromeliads are at risk. Grasshoppers are similar. Mozzies breed and although they won't harm the Broms they may upset people. Heat and humidity in glasshouses (and shade houses) results in high activity from the likes of mealy bug and scale.

Wind: Our strongest winds are winter winds but thunderstorms are common in Perth in summer as are strong easterly winds. However, the most destructive aspect is probably due to their drying affect, particularly to those items that are suspended above ground level. Give special attention to hanging baskets and Brom trees which may need watering daily. If wind is a problem then you can put up a wind break with shade cloth, move plants out of the winds passage or simply lower them to ground level temporarily.

QCGC Award – Congratulations to Barry Kable

In November, our President – Barry Kable- was presented with the Queensland Council of Garden Clubs Award for 'Most Contribution by an Individual to Horticulture'. Barry was presented with the award at Queensland Council of Garden Clubs Inc. Biennial Awards function on 29 November 2016.

Barry was nominated by Eastern Districts Orchid Society. The citation reads:

Before retiring, Barry co-owned and operated Peters Glen, which produced and built shadehouses. Later on, the company expanded to incorporate the sale of garden products, particularly relating to orchids, taking their products to most Orchid Shows in the Brisbane region. Barry has been growing orchids for many years, and has become involved in breeding orchids and as such, has had several orchids registered, and several orchids awarded through AOC

Barry is an active Australian Orchid Council and Queensland Orchid Society Judge, having travelled extensively within Queensland, attending conferences and judging at Orchid Shows. Barry has been actively involved in the current AOC Judge's Course being run in the Southern Regional area, taking part in course lectures, and mentoring some of the current Associate Judges. Barry has been a member of several Orchid Societies for about 20 years. He has been President of EDOS Inc for last 10 years, and a member of Committee prior to that. Barry took over as President of Queensland Orchid Society Inc during the past year, after being on Committee for some time.

Barry is currently President of Bromeliad Society of Queensland and has been on the Committee for many years. Barry is a Member of several other Garden Clubs.

Barry has worked with the RNA, and is currently an Honorary Council Steward of RNA. 3 years ago, Barry instigated and co-ordinated the Orchid Society of South East Queensland display at RNA show, and since then has actively promoted the display. This year the display won first place. Barry is a Foundation Director of Queensland International Orchid Fair which is held in the Brisbane area every year, bringing together orchid vendors from throughout Australia and on occasion overseas.

He regularly appears as a Guest Speaker for numerous Orchid Societies, Garden Clubs and other Horticultural groups throughout the Brisbane area.

Barry has promoted the growing and showing of orchids on ABC's Gardening Australia, having been part of 3 segments on the Show. *(Ed – one of which was the relocation of the bromeliad garden at Roma St Parklands carried out by BSQ with some help from BCC).*



Champagne Sparkling Wine

You have all seen the small Tillandsias mounted on corks. With the change to screw top bottles now almost complete for still wines, the small regularly shaped corks are becoming harder to find. Champagne and Sparkling wine is still sealed with a cork and a wire contraption to prevent premature ejection of the cork. It seems the popping is essential to the celebratory role which has been assigned to these sparkling wines. At our house, it doesn't need a celebration.

While the natural preference of our readership must surely be to drink the genuine Champagnes, the French seem to create a narrower waist and tighter thinner lower part of their corks. This has no bearing on the pleasure of drinking Champagne. Occasionally you may be forced to settle for the local Champagne Sparkling Wine. While many are of excellent flavour there is a tendency for the corks to come out with a different less compressed waist formed by bottling. These Australian Champagne Sparkling Wine corks are better for mounting although still not quite a uniform cylinder.

All this is important for the Tillandsia growers. We prefer the regular cylinder shapes of the still wine corks and can settle for the less 'waisted' Australian Champagne Sparkling Wine. This creates a real conundrum for the tillandsia growers who are balancing Champagne tastes with the practicality of a well-shaped cork. Do I buy for flavour (or at least some pretence of sophistication) in a French Champagne or go practical with the useful cork?

Now you wonder why anyone would have figured out how to reshape Champagne /Sparkling wine corks, but our thanks go to Steve McLean who had the answer. If you put your Champagne corks in the microwave for 30-40 seconds, the waist disappears. The before and after photos on the previous page show the results. Best results are obtained if you stand them on end. As always don't overcook them as they seem to keep expanding.

So, don't hesitate to order the real Champagne and enjoy in perfect calm.

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Some Golden (or at least yellow-gold) Tillandsia. Top *T ionantha* Sumo (photo J Brittain), L *T ionantha* Sumo on left and *T ionantha* White Knight on right, Top R is *T ionantha* White Knight (both Photos C Larson) and *T rusbyi* below. Photo (R Jell)

A History of Bromeliaceae

by Peter Paroz

The Golden anniversary of the Bromeliad Society of Queensland is an appropriate time to review the evolution of the Society Journal, *Bromeliaceae*. This is the flagship of the Society and the face of bromeliads in Queensland; not only to Society members, but to other plant societies, bromeliad growers and to the public via public libraries.

At the inaugural meeting in 1967, the first resolutions were:

'That a Society be formed;'

'That the name of the Society be 'The Bromeliad Society of Queensland' ; and

*'That a monthly publication, to be titled **Bromeliaceae**, would be produced for the dissemination of information to members.'*

The initial issues were laboriously typed in quadruplicate (using carbon paper). Not surprisingly, the print quality varied depending on which copy you got. There was a quick reassessment when one of the members located a second hand Gestetner duplicator for sale. There was generous support from members via raffles and donations and the cost, which I recollect was 75 pounds, was quickly met; and the duplicator went into production in mid-1968. For younger members bought up on ink jet or even dot matrix printers, this duplicating system required typing on a waxed stencil (master) which was then run through the machine (hand cranked). Where the wax surface had been disturbed, ink was forced through the typing onto the copy paper. Only black ink was available; but the system did allow for the inclusion of line drawings and similar illustrations.

After some time (1974), the Gestetner failed and copying passed to a 'Spirit Duplicator'. With this system, the typing was on a special paper in a 'reversed ink sheet' sandwich which left a mirror image ink impression on the master. When run through the copier, the master was activated with a very light application of methylated spirits, and left a positive image, in purple print, on the copy paper. Again, quality varied as the ink on the master was slowly depleted; and over moistening with spirits gave a blurry print. In addition, the ink slowly faded when exposed to light. As a result, not too many copies of these issues remain.

In February of 1976, the publication was changed to bi-monthly. The presentation at this time was in the form of foolscap pages; corner stapled for multiple sheets. Over the years, the Journal has featured line drawings of bromeliads drawn variously by Paul Clarke, Mary Grasselli and Len Butt. The original drawings were traced onto the master or stencil. Some of the best ones have been copied and are reproduced with this article.

The early 1980s was about the time I commenced my first stint as editor using the spirit duplicator; with my wife typing up the masters. The limitations of this procedure quickly became apparent as membership increased. The response by the committee was to purchase a new motorised Gestetner; its first print run was the March-April issue of 1980. This solved the problem of print quality and quantity; and also allowed a review of the

presentation which was changed to a folded foolscap booklet format. Production of a booklet on a Gestetner required some careful planning of the layout to ensure continuity when articles ran over to multiple pages.

With the later advent of home computers and Desktop Publishing, the difficulties of layout, formatting and continuity have been substantially reduced. DTP also allowed for the correct rendering of plant names in italics. From July 1986, Bromeliaceae was commercially printed. Advertisements were introduced in 1991.

From the beginning of the Society, issues had been mainly text only; with some line drawings and an occasional grey tone (BW) photo. The coloured cover was an initiative of Don Hobbs. This innovation had been debated long & vigorously at Committee meetings; with the main concern being sustainability; and was eventually approved. The first colour pages appeared on the front and back cover pages of issue #3 1995. In the early stages, Don took the photographs and featured plants from the Hobbs's own collection. Later, he had photos of plants from other growers; many due to the photography of Doug Upton.

Don arranged the photocopying of the covers and produced 12 month's supply at a time. Don sourced the articles and gave them a preliminary edit. John Higgins compiled and sequenced the copy; and gave it a final edit. Ruth Higgins typed the articles on A4 pages and final proof reading was done by Ruth and John. Don took the master copy back to the photocopying business for copying, compilation and production. The A4 pages were reduced to A5 during copying. Additional colour photos –in the centre pages- appeared in the Jul-Aug 1996 edition; but were not a regular feature until much later. In 2006-7, in addition to Society members, 94 garden clubs were receiving copies.

In early 2010, a decision was made to produce a monthly Newsletter to record the more social aspects of the Society's activities. The first issue was produced in May 2010 for distribution via email. This initiative also allowed for the issuing of 'Special Bulletins' for the circulation of topical information; the first of which was a procedure for detecting phytophthora in soil or potting mixtures.

In January 2012, due to the difficulty in obtaining quality copy, the frequency of issues was reduced to quarterly.

This history would not be complete without acknowledgement of the contribution of Roy Pugh. Apart from proof-reading copy, Roy has been responsible for the posting and distribution of *Bromeliaceae* since January 2003; a total of 24122 copies (to Dec2016). {This is one of the longest continuous occupancy of any 'working position' in the history of the Society.} The largest mail out was in May/June 2009 when 656 copies were posted. The last mail out in 2016 was 228; 169 to Australian members; plus overseas members in USA, New Zealand, Costa Rica and Brazil; and 43 copies to Garden Clubs

Bromeliaceae editor is one of the 'working' positions of the Society. At various times since 1967, the production of *Bromeliaceae* has been the responsibility of the secretary, editor or an editorial committee. This Roll of Honour recognises the work of the editors and editorial committees who have contributed to the quality and status of *Bromeliaceae* since 1967.

Editor's Roll of Honour

1967-71 Len Butt; 1972 Nez Misso/Len Butt/Nick Kemp; 1973 Nick Kemp/Mary Grasselli/Len Butt; 1974-76 Mary Grasselli, Audry Coley; 1977-78 Mary Grasselli/John Higgins; 1979-83 Peter Paroz; 1984-85 Lorraine Wilton; 1986 Greg Stewart; 1987 Len Butt/Greg Stewart; 1988 Len Butt; 1989-90 Greg Stewart; 1991-3 Len Butt; 1994 Narelle Rowe; 1995 Len Butt/Don Hobbs/John Higgins/Ruth Higgins; 1996 Don Hobbs/Phil Hobbs/John Higgins/Ruth Higgins; 1997 Doug Upton/Len Trevor/Bob Cross/Martin Pfeffer; 1998 Doug Upton/Len Trevor; 1999 Doug Upton; 2000 Ray Nicholson; 2001 Ray Nicholson, Peter Paroz; 2002 Peter Paroz/John Higgins/ Bob Reilly; 2003 Peter Paroz/Greg Cuffe; 2004 Peter Paroz, Ross Stenhouse; 2005-12 Ross Stenhouse; 2013 -14 John Olsen/Chris Coulthard/Jennifer Coulthard; 2015 John Olsen, Barbara Murray; 2016 John Olsen, Barbara Murray, Maxim Wilson.

{Note. The following entry at P20 is a copy of Page 1 of the very first issue of *Bromeliaceae*. It was typed on quarto paper in quadruplicate using carbon paper. Also included is a line drawing from a later issue}

Peter Paroz

Roving Reporter July 2016 (from Brom Soc SA magazine)

I have just read 'Bromeliadvisory' a newsletter from Florida where the Zika virus is on everyone's lips. Anything new and mysterious usually gets the Press involved demanding immediate solutions without really assessing the true risk. So Bromeliad growers bear the brunt of accusations even though they may be only 5% of the problem and even that is subject to challenge. The Miami Herald says 'The good news is you can keep your bromeliads from breeding mosquitoes with just a little effort.'

But, just when the county delivers methods to keep your beloved bromeliads, the Miami Herald writes 'Mosquito breeding sites can be in the most simple and smallest of places at the average home, and bromeliads are often a hidden danger zone.' Affiliating bromeliads with the term 'danger zone' makes the plant less attractive in any sane person's eye.

The above-described mosquito guru has told the Miami Herald that in his perfect world, he would dig up every bromeliad. But, he says little about destroying every bird bath, shredding every tire, etc. From my own experience with mosquitoes here in Adelaide I got more buzzing around when I grew Cactus many years ago. Bromeliads seemed to keep them in check!

1701 Feb
Secretary: 25 Ortive Street,
YESRONGPILLY.

BROMELIACEAE.

Official Bulletin of BROMELIAD SOCIETY OF QUEENSLAND.

The next meeting of the above Society will be held at Mrs. Grasselli's residence, 23 Colebrook Avenue, Moorooka on the 6th. February, 1967 at 7-30 P.M.

Mr. A. W. ^{FK} Kurth has kindly consented to give a short lecture on our favourite subject. There will also be a table of plants for discussion after the meeting with possible sale of offsets to interest Members. Percentage of these sales will go into Society funds so bring along your plants with offsets attached and help swell our funds while gaining useful information about your plants.

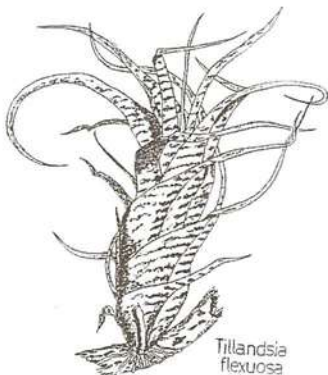
Joining fee is \$1 per head and our Treasurer, Mrs. Grasselli will be there to welcome you into our fold,

Please note the name of our Bulletin, which covers the entire Bromeliad family. Please note also that this Bulletin is for your convenience and a few short educational notes will be published monthly to aid growers.

Members are invited to send me brief notes of their experiences with various Broms.

Member of Brom. Soc of Aust has been invited from Sydney to discuss affiliation

Secretary. *L.P.B.*
BROM. SOCIETY OF QUEENSLAND.



*Tillandsia
flexuosa*



*Cryptanthus
acaulis*



Anthurus chalcidii var. *chalcidii*

My *Tillandsia ionantha* Collection

by Alan Phythian

Last year I posted on Face Book photos of my *T. ionantha* collection and received many requests for information about them so I will try to answer some of the questions here. I must thank a few people such as Chris Larson, Bob Hudson and Neville Ryan for making it possible to get such a collection together.

I started collecting Tillandsias some fifteen years ago and was quite taken with *ionanthas* with their huge variations between different clones. The length can vary from about 15cm to 2.5cm in my collection, though I have seen photos of some much longer. Some are slim and others are quite stout, some colour all over when flowering, whilst others only colour from about half way to the tips of the leaves when coming into flower.

The colour can range from mid pink through the reds to maroon depending on which clone you have and how much sunlight you give them. There are three albino plants in my collection which turn yellow when flowering namely Druid, Sumo and Pink Champagne. Personally, I give them the maximum light the plants can take from dawn to mid-day and shaded the rest of the day. Much rarer are the variegated and albo-margined forms and the beautiful crested *T. 'Montrose'*.

Another strange thing happens after flowering when the pups arrive. Some of the larger forms have pups high up on the mother. Others have them both up high and around the base whilst the smaller varieties always seem to have the pups around the base of the plant.

While a lot of growers use cork to mount the new plants I use small blocks of wood (8cmx 3cmx 6mm) and glue (Selley's All Clear) or wire baskets I make up myself.

I water the *T. ionanthas* every second day late in the afternoon when the minimum temperature is 15 degrees or over and every fourth day in the early morning when it is cooler than the 15 degrees. I've been watering this way for so long that I forgot why I do it but it seems to work. I fertilise fortnightly using either Thrive or Aquasol at half strength at the same times I use for watering.

I don't know how many different clones of *ionantha* I have but it must be a couple of hundred but quite often you think you have found something new only to find it's the same as what you've got when grown in your conditions.

I hope I've answered most of questions I was asked..... Alan Phythian



Alan Phythian's *Tillandsia ionantha*

Tillandsia 'Dilemma'

by Derek Butcher

In 1947 a plant from Marnier Lapostolle's collection was given the name *T. dianthoides* var *grisea* with a vague description and which Lyman Smith considered a synonym of *T. bergeri*. What happened to the name on the label? Because the inflorescence looks more like a *T. aeranthos* it is reasonable, but not proven, that the plant was soon being grown in Europe as *T. aeranthos grisea* but with possible hybrid connections. As we know, most Germans interested in Tillandsias at that time ignored recording anything that had not been found with wild provenance. This was no different to the American Bromeliad Society which in 1950 extolled hybridisation but set up no system to record such happenings.

In Australia from the same vintage we had *T. 'Nez Misso'* which can be loosely described as a *T. aeranthos* with grey petals. We guess that it was seed sent from Europe with a likely suspect being Dr Oeser. In the 1970's or thereabouts Joan White imported *T. aeranthos grisea* and this flourished in NSW and in 2000 I started checking this up but did not get very far other than linking it to 'Nez Misso'. I even sent a piece to Eric Gouda who forced it to flower and it had blue flowers. We kept the name *T. 'Aeranthos grisea'* although why the 'grisea' (grey) we did not know.

In the 1980's Hiro Takizawa imported *T. aeranthos grisea* from Germany - see Tillandsia Handbook: 30. 1998. This shows even more variability. Could this be because it is a grex?!

In 2004 in Australia we bumped into a plant called 'Nez Misso' but it had blue flowers so we registered it as 'Confusion'. Dare I suggest that you compare the plant in the BCR with the name 'Aeranthos Major' being used in the USA. The plot thickens. In the 1990's Tillandsia International had a plant on offer as Tillandsia purple Peru. It did not take long for this to be identified as *T. purpurea*. In fact, in 1992 it got to Andrew Flower at Anwyl Bromeliads in New Zealand who treated it as *T. purpurea* 'Purple'.

In this early period, David Sheumack of Sydney imported plants from Tillandsia International and one was called Tillandsia purple Peru. David was not impressed but still has it in his collection. His comments were 'very slow growing and has only flowered twice in the last couple of decades, inflorescence like a BIG aeranthos but petals are a rather uninteresting grey/blue and the bracts a pinky/grey as I remember. Size of the inflorescence was the catching part, colour was rather boring.' Clearly David was not impressed with the plant but it is still surviving.

What is intriguing with Adelaide growers is that over the years the name on the label became a formula '*T. purpurea* purple X unknown hybrid' with variations. Without it having a registered name this detail could not be checked but easily changed. The problem here was that the plant has *T. aeranthos* attributes. This indicates that Tillandsia International had inadvertently got plants mixed up. The mysterious plant got to Adelaide but took years to flower and questions started to be asked. How did a plant called *T. purpurea* x 'Purple' look like a *T. aeranthos* with grey leaves?

Is the actual plant still surviving in Tillandsia International after 25 years? Nobody has reported having imported a plant with such an odd name from Tillandsia International since David Sheumack did so.

There is yet another twist in that Plant Oddities is offering this plant with such an odd name on their website, clearly not bothering to check its authenticity but is it the same as our 'Dilemma'? Even more intriguing is that Tillandsia International do not list 'purpurea' or 'purple' but do list *aeranthos* Purple Giant, *aeranthos* Purple Fan and *aeranthos* Mini Purple – all just nurseryman's names or NN and we do not know where they differ from the type.

Tillandsia purpurea "Purple"
ex Tillandsia International, 1992.
Photo by Andrew Flower, 2002.



'Dilemma' by
Julie Batty



Formulas should not be used either, to identify plants and the Bromeliad Cultivar Register is a way that such crosses can be given cultivar names and registered. Therefore, we will be registering 'Dilemma' with links to Adelaide and to *T. aeranthos* but parents unknown. If Tillandsia International and Plant Oddities can link their offerings to this registered name, they are recommended to do so.

Just one final comment. A few years ago, in my quest to find out what was *T. aeranthos* grisea like in Europe I got a photo from Leo Dijkgraaf showing a *T. aeranthos*-like plant and flower. It went into my too hard basket. When I got Julie's photo of flowering 'Dilemma', I sent it to Uwe Scharf (a Lector for Die Bromelie). AND he said looks like '*aeranthos* grisea' to me. As I said in my opening paragraph I believe this all started with a vague description in 1947. Too many variations on a theme!

Taxon Changes - Tillandsioideae

The key in Smith and Downs major tome 'Flora Neotropica, Monograph 14 Part 2 – Tillandsioideae' establishes what distinguishes the sub family Tillandsioideae. In summary, the subfamily Tillandsioideae has entire leaf margins, ovaries superior or nearly so and fruit capsular, and seeds with a plumose appendage at base or apex or both.

Within that subfamily 'petals bearing scales on the inside of the claw' was the basis to differentiate the genus *Vriesea* from the genus *Tillandsia*. These petal scales are not simple to identify, but with a trained eye, can be discerned as small attachments on the base of the petal. Benzing some years back commented 'this is perhaps the most arbitrary taxonomic boundary standing in Tillandsioideae today'.

A couple of years back, Australian Bromeliad Societies and individuals were canvassed to raise funds to launch DNA based research into the subfamily Tillandsioideae. BSQ was among contributors. With the publication of molecular studies of Tillandsioideae, there have been new genera added in this sub family of Bromeliaceae. There was some consternation leading up to the 2016 publication that we would be re labelling most of our collections.

However, the changes are generally to the more unusual plants which are 'on the fringes' and mostly rarer. Charlie Birdsong in his recent presentation to the Society referred to 'the eyesight test' which hints that a different looking plant may not belong where it is currently assigned taxonomically. The group of plants all similar to what was *T. cyanea* are now grouped into *Wallisia*. The night flowering plants with large petalled flowers and fine leaved rosettes (*cornuta*, *narthecoides*, *dodsonii* etc.) are grouped in *Lemeltonia*. The plants formerly *Vrieseas* and known for the last few years as TVs have formally moved into *Tillandsia*. Other changes are as listed at pages 32 and 33.

November Show Rare Plant Auction

The rare plant auction saw a longer list of plants than previously and few were passed in. The next two pages illustrates several with photos by M Cameron, R Trevor, N Thomson.

Plants offered were:

Tillandsia 'Lucille' and 'Queen's Delight'

Neoregelia 'Bahiana Dude', 'Chester', 'Scarface', 'Julia', 'Optimus Prime',

Aechmea 'Meteor Shower', 'Brown Under'

Nidularium 'Bahia'

Vriesea 'Splendide Vista', 'Living in Paradise', 'Tulipe', 'Yellow Wave' x 'Hunua Ember'

Hohenbergia 'Ouchi'



Clockwise from top L: Neoregelia 'Scarface', Vriesea 'Living in Paradise', Neo 'Chester', Nidularium 'Bahia', Neo 'Bahiana Dude'



Clockwise from Top L:
Vriesea 'Tulip'; *Neoregelia*
 'Optimus Prime',
N. 'Julia';
Vriesea 'Kiwi Summer
 Fever',
N. 'Ironside'

Skotak's Orange Crush Cont.

Why 'Skotak's Orange Crush'? Just as Botanists know you cannot have a plant with two names the same applies under the ICNCP rules which is one of the reasons why we have the BCR so you can check if you are interested. 'Orange Crush' is listed as having been used by Mulford Foster before 1980. Remember that 'Freddie' or even 'Freddy' is now officially an illegitimate name. However, in practice the name will persist. You are warned of these sorts of instances to save you having duplicate plants with different names. Please advise the BSI Registrar if you know of similar circumstances.

Fire ant biosecurity laws for gardeners

Fire ants are attracted to flower gardens, vegetable patches and turf that are watered and fertilised regularly, and have the potential to damage gardens by eating seeds, roots and stems. Fire ant mounds can appear in pot plants, compost, mulch, retaining walls, and beside pathways, garden edging, fencing, and water sources (taps, water features, etc.).

It is important to note that under the *Biosecurity Act 2014* (the Act) and the Biosecurity Regulation 2016 (the Regulation), a person moving fire ant carriers such as soil, mulch, animal manures, baled hay or straw, potted plants and turf will have to meet the conditions prescribed in the Regulation. Everyone has a **general biosecurity obligation (GBO)** to take all reasonable steps to ensure they do not spread fire ants. You can fulfil your GBO by:

- understanding what fire ants look like and what carriers they might be moved in;
- being aware of the fire ant biosecurity zone in your area (you can view the fire ant biosecurity zone map at www.daf.qld.gov.au/fireants);
- being aware of movement controls relevant to the fire ant carrier you intend to move, for example, if you are selling or receiving potted plants you need to check which biosecurity zone the plants have come from and follow the restrictions listed in the biosecurity zone map;
- cleaning machinery and equipment before moving them off site;
- conducting inspections for any ant activity in material that can carry fire ants.

For gardening club members, the onus is on you to store and treat potted plants correctly if you intend to sell them for profit at market stalls. You can read more on the two key management techniques (preventative treatment and storage) by searching for potted plants on the www.business.qld.gov.au website.

More information

You can find further information on correct management practices of fire ant carriers, a map of the biosecurity zones, and how to report suspect ants by calling Biosecurity Queensland on 13 25 23 or visit www.daf.qld.gov.au/fireants. Photos p 31.



Neo 'Skotak's Orange Crush' Deroose



Neo 'Skotak's Orange Crush' as 'Freddie'

Moving potted plants has been a contributor to the spread of Fire Ants shown below on a coin



Tillandsioideae - Genera Changes List

BARFUSSIA (3) ◁ ▷

- Barfussia laxissima* (Mez) Manzan. & W. Till
- Barfussia laxissima* var. *moorei* (H. Luther) Manzan. & W. Till
- Barfussia platyrhachis* (Mez) Manzan. & W. Till
- Barfussia wagneriana* (L.B. Sm.) Manzan. & W. Till

GOUDAEA (2) ◁ ▷

- Goudaea chrysostachys* (E. Morren) W. Till & Barfuss
- Goudaea chrysostachys* var. *stenophylla* (E. Morren) W. Till & Barfuss
- Goudaea ospinae* (H. Luther) W. Till & Barfuss
- Goudaea ospinae* var. *gruberi* (H. Luther) W. Till & Barfuss

GREGBROWNIA (4) ◁ ▷

- Gregbrownia brownii* (H. Luther) W. Till & Barfuss
- Gregbrownia fulgens* (L.B. Sm.) W. Till & Barfuss
- Gregbrownia hutchisonii* (L.B. Sm.) W. Till & Barfuss
- Gregbrownia lymansmithii* (Rauh & Barthlott) W. Till & Barfuss

JAGRANTIA (1) ◁ ▷

- Jagrantia monstrum* (Mez) Barfuss & W. Till

JOSEMANIA (5) ◁ ▷

- Josemania asplundii* (L.B. Sm.) W. Till & Barfuss
- Josemania delicatula* (L.B. Sm.) W. Till & Barfuss
- Josemania pinnata* (Mez & Sodiro) W. Till & Barfuss
- Josemania singularis* (Mez & Wercklé) W. Till & Barfuss
- Josemania truncata* (L.B.Sm.) W. Till & Barfuss
- Josemania truncata* var. *major* (H. Luther) W. Till & Barfuss

LEMELTONIA (7) ◁ ▷

- Lemeltonia acostasolisii* (Gilmartin) Barfuss & W. Till
- Lemeltonia cornuta* (Mez & Sodiro) Barfuss & W. Till
- Lemeltonia dodsonii* (L.B. Sm.) Barfuss & W. Till
- Lemeltonia monadelpha* (E. Morren) Barfuss W. & Till
- Lemeltonia narthecoides* (C. Presl) Barfuss & W. Till
- Lemeltonia scaligera* (Mez & Sodiro) Barfuss & W. Till
- Lemeltonia triglochinosoides* (C. Presl) Barfuss & W. Till

LUTHERIA (4) ◁ ▷

- Lutheria bibeatricis* (Morillo) Barfuss & W. Till
- Lutheria glutinosa* (Lindl.) Barfuss & W. Till
- Lutheria soderstromii* (L.B. Sm.) Barfuss & W. Till
- Lutheria splendens* (Brongn.) Barfuss & W. Till
- Lutheria splendens* var. *chlorostachya* (Oliva-Esteve) Barfuss & W. Till

Lutheria splendens var. *formosa* (Oliva-Esteve) Barfuss & W. Till
Lutheria splendens var. *ainochroma* (Steyerm.) Barfuss & W. Till
Lutheria splendens var. *striatifolia* (Steyerm.) Barfuss & W. Till

PSEUDALCANTAREA (3) ◁ ▷

Pseudalcantarea grandis (Schltdl.) Pinzón & Barfuss
Pseudalcantarea macropetala (Wawra) Pinzón & Barfuss
Pseudalcantarea viridiflora (Beer) Pinzón & Barfuss

RACINAEA (78) ◁ ▷

Racinaea dyeriana (André) Barfuss & W. Till
Racinaea hamaleana (E. Morren) Barfuss & W. Till
Racinaea venusta (Mez & Wercklé) Barfuss & W. Till

STIGMATODON (18) ◁ ▷

Stigmatodon apparicianus (E. Pereira & Reitz) Leme, G. K. Br. & Barfuss
Stigmatodon belloi (Leme) Leme, G.K. Br. & Barfuss
Stigmatodon bifidus (Leme & L. Kollmann) Leme, G.K. Br. & Barfuss
Stigmatodon brassicoides (Baker) Leme, G.K. Br. & Barfuss
Stigmatodon costae (B.R. Silva & Leme) Leme, G.K. Br. & Barfuss
Stigmatodon croceanus (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon euclidianus (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon fontellanus (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon funebris (L.B. Sm.) Leme, G.K. Br. & Barfuss
Stigmatodon gastiinianus (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon goniorachis (Baker) Leme, G.K. Br. & Barfuss
Stigmatodon harrylutheri (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon magnibracteatus (Leme & K. Kollmann) Leme, G.K. Br. & Barfuss
Stigmatodon multifolius (Leme & G.K. Br.) Leme, G.K. Br. & Barfuss
Stigmatodon plurifolius (Leme) Leme, G.K. Br. & Barfuss
Stigmatodon rosulatus (Leme) Leme, G.K. Br. & Barfuss
Stigmatodon sanctateresensis (Leme & K. Kollmann) Leme, G.K. Br. & Barfuss

WALLISIA (5) ◁ ▷

Wallisia anceps (Lodd.) Barfuss & W. Till
Wallisia cyanea Barfuss & W. Till
Wallisia x duvalii (L. Duval) Barfuss & W. Till
Wallisia pretiosa (Mez) Barfuss & W. Till

WERAUHIA (92) ◁ ▷

Werauhia insignis (Mez) W. Till, Barfuss & R. Samuel

ZIZKAEA (1) ◁ ▷

Zizkaea tuerckheimii (Mez) W. Till & Barfuss

Modern Taxonomy – a Glossary

For a very long time, taxonomic separation of species has been based largely on the morphological characteristics of bromeliads and largely on characteristics of the floral parts of plants. More recently phylogenetic analysis using DNA and other markers has enabled a new approach to taxonomy. This type of classification is based on evolutionary relationships, as deduced, for example, from morphological, chemical, and DNA characteristics.

In 2016, new genera were introduced into Tillandsioideae as listed at pages 32-33 of this edition. The complete article on which these changes rest can be accessed at:

Barfuss, M.H.J., Till, W., Leme E.M.C., Pinzón, J.P., Manzanares, J.M., Halbritter, H., Samuel, R. & Brown, G.K. 2016. Taxonomic revision of Bromeliaceae subfam. Tillandsioideae based on a multi-locus DNA sequence phylogeny and morphology. *Phytotaxa* 279: 1–97.

With this new analysis comes many new terms which we must come to grips with. Commencing at p35 is an article which deals with genetic analysis of a particular clade within Tillandsia. This is a technical botanical article and to assist comprehension, a glossary of terms which are somewhat unfamiliar is provided in advance of the text.

Phylogeny, Phylogenetic Classification – type of classification based on evolutionary relationships, as deduced, for example, from morphological, chemical, and DNA characteristics.

Morphological- based on shape and external appearance.

Plastid -The plastid is a major specialized subunit found, among others, in the cells of plants and algae. Plastids are the site of manufacture and storage of important chemical compounds used by the cell. They often contain pigments used in photosynthesis,. They have a common evolutionary origin and possess a double-stranded DNA molecule that is circular.

Bootstrap analysis- In statistics, bootstrapping is any test or metric that relies on random sampling with replacement. Bootstrapping allows assigning measures of accuracy (defined in terms of bias, variance, confidence intervals, prediction error or some other such measure) to sample estimates. This technique allows estimation of the sampling distribution of almost any statistic using random sampling methods.

Parsimony - The parsimony principle is basic to all science and tells us to choose the simplest scientific explanation that fits the evidence. In terms of tree-building, that means that, all other things being equal, the best hypothesis is the one that requires the fewest evolutionary changes.

Clade - a group of organisms believed to comprise all the evolutionary descendants of a common ancestor.

Monophyletic - the taxa on the phylogenetic tree that are descended from a single common ancestor.

Basifixed attached by its base - said of anthers that are attached to the filament at the base and pointing away from the filament.

Subbasifixed – anthers attached near but not at the base such that the anthers do not present as an extension of the filament.

Mesomorphic leaves are adapted to conditions of abundant water and relatively humid conditions; **xeromorphic** leaves are adapted to dry conditions with relatively low humidity; and **hydromorphic** leaves are adapted to aquatic situations, either submerged or in standing water.

Imbricate – one overlapping the next, like tiles on a roof.

Axillary – arising in an axil, the point between a stem and a leaf or another organ that arises from the stem.

Panicle – an inflorescence in which the main axis has several lateral branches, each of which is branched.

Raceme – a monopodial inflorescence in which the flowers are borne on stalks along a central axis with the terminal flowers being the youngest and last to open.

The *Tillandsia multicaulis* clade (Bromeliaceae: Tillandsioideae): A case of convergent floral evolution. By J Pinzon et al.

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Introduction

The phylogenetic hypothesis and taxonomy of *Tillandsia* L., the largest genus within the Bromeliaceae family, has been recently revised and some lineages were re-established or newly recognized as genera [*Barfussia* Manzan. & W. Till, *Lemeltonia* Barfuss & W. Till, *Pseudalcantarea* (Mez) Pinzón & Barfuss, *Wallisia* (Regel) É.Morren], based on DNA sequence data and on a new set of morphological characters (Barfuss *et al.* 2016). However, within the genus *Tillandsia* in the narrowed sense, the phylogenetic relationships of species still need attention. Several studies have been conducted aiming to elucidate the composition and phylogeny of some particular groups of species, for example the *T. macedougallii* complex (Granados 2008), the bulbous species of *Tillandsia* (Chew *et al.* 2010), the *T. capillaris* complex (Castello *et al.* 2016) and the *T. utriculata* complex (Pinzón *et al.* 2016), but none of them were designed to assess the evolutionary relationships of the whole genus or even subgenera using an exhaustive sampling.

The revision of the internal classification of the genus *Tillandsia* is relevant because it still comprises most species of subfamily Tillandsioideae (more than 650) with a very diverse morphology. The published phylogenetic studies (Barfuss *et al.* 2005, 2016; Barfuss 2012, Pinzón *et al.* 2016) have showed that the traditional subgeneric classification, based on few or unique floral characters (Smith & Downs, 1977) does not reflect the evolution of the genus.

As pointed out in the presentation of our project on the phylogeny of *Tillandsia* subg. *Tillandsia* (Pinzón *et al.* 2013), we included in this study as many taxa as possible, i.e. more than 230 spp., to assess its composition and relationships with other species of the genus. According to the traditional classification (Smith & Downs 1977), *T.* subg. *Tillandsia* is solely characterized by its stamens and stigma exerted from the corolla, together with naked petals (see also Pinzón *et al.* 2013, table 1).

However, the preliminary results of our study have shown that this set of characters did not arise only once in the course of evolution, and interestingly, there is a case of convergent evolution between the actual *T.* subg. *Tillandsia* and a group of more distantly related species with a similar floral morphology: the *Tillandsia multicaulis* clade.

Here we will describe the diagnostic characters, the composition and the phylogenetic position of this complex in relation to *Tillandsia* subg. *Tillandsia* in the narrow sense (*sensu stricto* = *s. str.*).

Materials and Methods

Taxon and DNA markers selection. - Sampling includes 262 accessions (238 spp.) of nine genera of Tillandsioideae:

Barfussia (1 sp.),

Catopsis Griseb. (1 sp.),

Gregbrownia (1 sp.),

Guzmania Ruiz & Pav. (1 sp.),

Lemeltonia (1 sp.),

Mezobromelia (1 spp.),

Pseudalcantarea (2 spp.),

Racinaea (1 sp.),

Wallisia (1 sp.), and

Tillandsia (228 spp.), including the re-established *T.* subg. *Aerobia* Mez, and the new *T.* subg. *Viridantha* (Espejo) W.Till & Barfuss and *T.* subg. *Pseudovriesea* Barfuss & W.Till. In addition, species assigned to all six traditional subgenera are included: former *T.* subg. *Allardtia* (A.Dietr.) Baker, *T.* subg. *Anoplophytum* (Beer) Baker, *T.* subg. *Diaphoranthema* (Beer) Baker, former *T.* subg. *Pseudalcantarea* Mez, *T.* subg. *Phytarrhiza* (Vis.) Baker, and *T.* subg. *Tillandsia*. Of these, 197 species belong to *T.* subg. *Tillandsia* (i.e., 74% of the subgenus).

Figure 1. Scheme of the strict consensus tree resulting from the 6500 most parsimonious trees obtained through a maximum parsimony analysis of *trnK-matK-trnK* and *ycf1* markers of plastid DNA of 262 accessions of *Tillandsia* and related genera (Tillandsioideae). The triangles represent different lineages: blue, *Pseudalcantarea*; red, *Tillandsia multicaulis* clade; green, *Tillandsia rauhii* complex; violet, *Tillandsia* subg. *Pseudovriesea*; blue, *Tillandsia* subg. *Tillandsia* s. str. Over the branches, the bootstrap values.

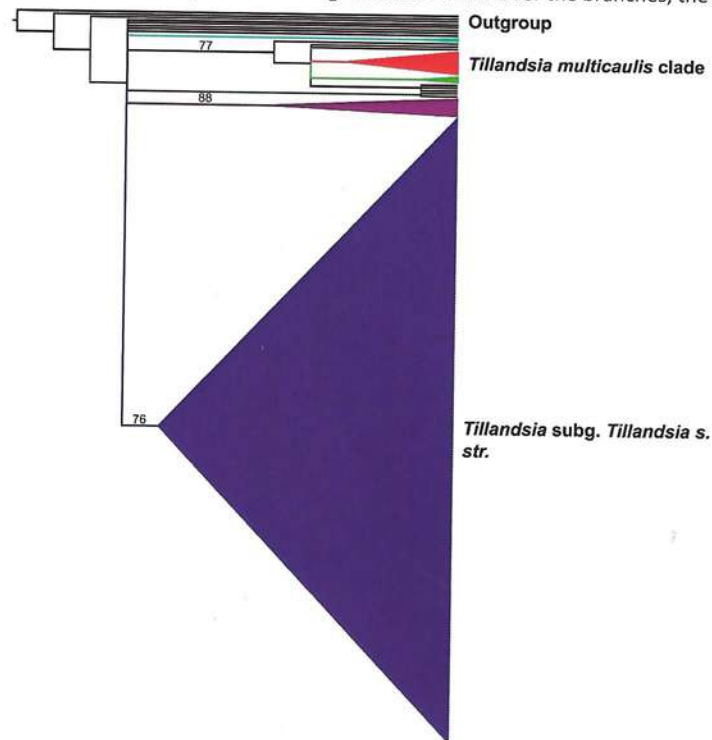
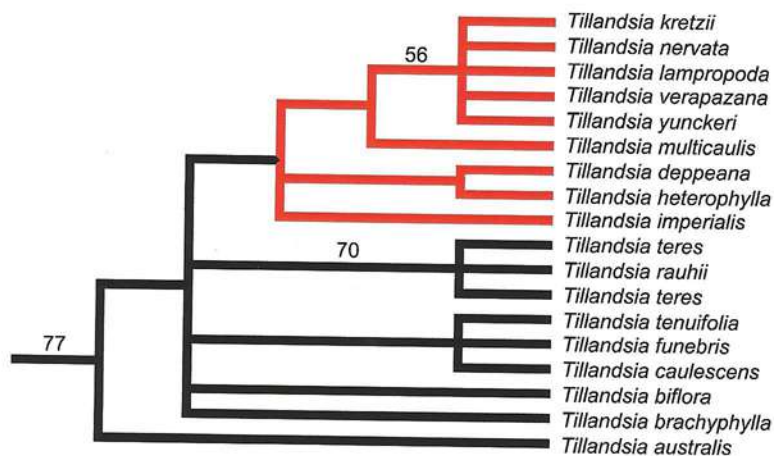


Figure 2. Fragment of the tree shown in Figure 1 emphasizing the position and composition of the *Tillandsia multicaulis* clade (red). Over the branches, the bootstrap values.



The plastid DNA markers selected for this study were the partial *trnK* intron with the *matK* gene (*trnK-matK-trnK*), and the *ycf1* gene, the former because it is one of the most widely used marker for phylogenetic studies in flowering plants, and the latter because it has been demonstrated that it is one of the most variable regions of the plastid genome, and thus, more informative for phylogenetic reconstruction (Dong *et al.* 2015, Castello *et al.* 2016, Barfuss *et al.* 2016).

Plant material. - DNA was extracted either from silica-gel dried or fresh leaf material from plants collected in the field or maintained in the Botanical Gardens of the University of Vienna, the Marie Selby Botanical Gardens, Centro de Investigación Científica de Yucatán, or from private collections (see acknowledgments). Herbarium specimens are deposited in CICY, SEL, and WU.

DNA extraction, amplification, purification, and sequencing. - Total genomic DNA was extracted using the CTAB-based protocol for difficult plant tissue (Tel-Zur *et al.* 1999) in combination with the DNeasy Plant Mini Kit (QIAGEN). Primers, PCR cycling conditions, PCR reaction volumes and concentration of components of amplification and sequencing were performed following Barfuss *et al.* (2016). Sequences were assembled using the software Geneious 7.1.3 and aligned using the algorithm MUSCLE 3.6 (Edgar 2004) through eBioX 1.5.1. (Lagercrantz 2008).

Phylogenetic analysis. - To obtain the phylogenetic trees, a maximum parsimony analysis was performed with the combined dataset of *trnK-matK-trnK* and *ycf1* markers. This analysis allowed us to reconstruct the evolutionary history based on shared characters passed through lineages by inheritance. Also, a bootstrap analysis was carried out to assess the support of the clades (branches in the tree); in this analysis, the closer to 100, the more reliable the result. All analyses described above were performed with the software TNT 1.1 (Goloboff *et al.* 2003). The most parsimonious trees (MPT) were summarized in a strict consensus tree, calculated with WinClada 1.00.08 (Nixon 2002).

Results

The combined data matrix *trnK-matK-trnK* and *ycf1* yielded 6 500 most parsimonious trees (CI=72, RI=91), which are summarized in a strict consensus schematized in Figure 1.

According to these results, it is not possible to ascertain if all members of genus *Tillandsia* share an exclusive common ancestor, because the clades (branches) of *Tillandsia* and other genera, such as *Guzmania*, *Lemeltonia*, *Barfussia*, *Pseudalcantarea* and the clade formed by *Racinaea* and *Wallisia* are branching at the same level (a so-called polytomy).

Tillandsia subg. *Tillandsia* in the traditional sens is not monophyletic: the species sharing the floral characters of this subgenus (i.e. stamens and style exerted from the corolla, no petal appendages) are distributed in several clades and these features would have coincided together two or three times (in brackets, below) during the course of evolution.

The first of these lineages (1) is related to the species belonging to former subgenera *Anoplophytum* and *Diaphoranthema*, as well as some *Allardtia* (sensu Smith & Downs 1977); this clade is called the '*Tillandsia multicaulis* clade' here (Figures 2, 3, 4). All the species within this clade share the subg. *Tillandsia* diagnostic characters, except *T. heterophylla*, which shows an *Allardtia*-type flower. Another clade (2) with species of *T.* subg. *Tillandsia* related to this group is the one formed by *T. teres* and *T. rauhii* (*T. rauhii* complex, Figures 2, 5) but it is not clear if these two constitute a single lineage or two. The majority of species of subg. *Tillandsia* are included in a moderately supported clade (3) which we will call *T.* subg. *Tillandsia s. str.*



Figure 3.

***Tillandsia multicaulis* group:**

- A. *Tillandsia multicaulis*,
- B. *Tillandsia deppeana*; and

***Tillandsia imperialis* group:**

- C. *Tillandsia imperialis*,
- D. *Tillandsia yunckeri*,
- E. *Tillandsia candelifera*.

Photographs by Dan Valle Vargas (A), Juan Carlos López Domínguez (B), Timm Stolten (C), Peter Tristram (D), and Walter Till (E).

The independent origin of the *Tillandsia multicaulis* clade and the *T.* subg. *Tillandsia* s. str. is moderately well supported since the former is nested inside a clade (BS = 77) together with other species with stamens and style included in the corolla (*T. australis*, *T. biflora*, *T. tenuifolia*, *T. funebris*, etc.) and the latter forms a separated clade with BS=76 (Figure 1).

The *Tillandsia multicaulis* clade is composed, aside from *T. multicaulis*, of *T. imperialis*, *T. deppeana*, *T. heterophylla* and a subclade including *T. kretzii*, *T. nervata*, *T. yunckeri*, *T. verapazana*, and *T. lampropoda* (Figures 2, 3, 4). Also, some groups can be recognized morphologically, which are summarized in Table 1

Table 1. Morphological groups of the *Tillandsia multicaulis* clade ($\equiv$ *Tillandsia* sect. *Caespitosae* Harms), including four tentatively, currently not investigated members (marked with an asterisk).

<i>Tillandsia heterophylla</i> group	<i>Tillandsia heterophylla</i> É.Morren * <i>Tillandsia lucida</i> É.Morren in Baker
<i>Tillandsia imperialis</i> group	* <i>Tillandsia candelifera</i> Rohweder * <i>Tillandsia hotteana</i> Urb. <i>Tillandsia imperialis</i> É.Morren ex Roezl * <i>Tillandsia ponderosa</i> L.B.Sm. <i>Tillandsia yunckeri</i> L.B.Sm.
<i>Tillandsia lampropoda</i> group	<i>Tillandsia kretzii</i> Ehlers & Lautner <i>Tillandsia lampropoda</i> L.B.Sm. <i>Tillandsia lampropoda</i> var. <i>major</i> L.B.Sm. <i>Tillandsia nervata</i> L.B.Sm. <i>Tillandsia verapazana</i> Ehlers
<i>Tillandsia multicaulis</i> group	<i>Tillandsia deppeana</i> Steud. <i>Tillandsia multicaulis</i> Steud.

Discussion

The polyphyletic origin of *Tillandsia* subg. *Tillandsia* sensu Smith & Downs (1977) observed in other studies (Barfuss *et al.* 2005, 2016; Barfuss 2012; Pinzón 2012; Pinzón *et al.* 2016) is consistent with our results, but now we have a better understanding of the composition of the different lineages due to a more intensive taxon sampling. It is clear that the characters associated with the traditional diagnosis of the subgenus coincided more than once in the course of evolution. The two most diverse lineages sharing these characters are the *T. multicaulis* clade and *T. subg. Tillandsia s. str.* and this coincidence might be a result of convergent evolution of the floral traits (Figure 6).

However, these two lineages differ in some characters. All species in the *Tillandsia multicaulis* clade share the diagnostic floral traits of Gardner's group III (Gardner, 1986), i.e. filaments equal in length, round in cross section near apex, flat at base, and subbasifixed anthers, larger than 4 mm long (Figure 6: A, C). This set of species is mesomorphic, with green, soft leaves, with a tank, most of them growing in humid mid-elevation or highlands of southern Mexico and northern Central America, sharing distribution areas with other species of *T. subg. Tillandsia s. str.*

Interestingly, Gardner (1986) included *T. heterophylla* in Group III, because it possesses all the defining characters, but has the stamens and style included in the corolla (former *T. subg. Allardtia*), this being an evolutionary reversion. The only member of Gardner's Group III that is not part of the *T. multicaulis* clade is *T. superinsignis*, which is derived within the *T. subg. Tillandsia* clade, and thus, the floral morphology of the Group III also seems to be a result of convergent evolution, but this would need a deeper investigation.

In spite of the similarities of the floral morphology inside the *Tillandsia multicaulis* clade, there are also morphological differences and some groups can be recognized: *Tillandsia imperialis* and *T. yunkeri* form a narrowly pyramidal to cylindrical, erect inflorescences with long, red, imbricate primary bracts, enclosing the short branches. *Tillandsia candelifera* and *T. ponderosa* also match this description and although they were not included in this study, they are related to this group (Barfuss, unpubl. data). *Tillandsia hotteana*, from Cuba and La Hispaniola, also shares the morphology of this group. All the species considered here form the ***Tillandsia imperialis* group** (Figure 3: C-E).

Another group that can be recognized is that composed by *Tillandsia multicaulis*, and *T. deppeana*: both species possess long, flattened, branches with imbricate, scarlet floral bracts; the primary bracts are green and foliose, but shorter than the branches. Although the inflorescence of *T. multicaulis* would appear to be formed by axillary racemes, it is more probable that it is just a case of a panicle with the main axis very reduced, which is elongated in the case of *T. deppeana*. Both species would form the ***Tillandsia multicaulis* group** (Figure 3: A-B).



Figure 4.

Tillandsia lampropoda group:

- A. *Tillandsia kretzii*,
- B. *Tillandsia verapazana*, and
- C. *Tillandsia lampropoda*.

Tillandsia heterophylla group:

- D. *Tillandsia heterophylla*.

Photographs by Peter Tristram (A), Timm Stolten (B), Grant Paterson (C), and Claudia Hornung-Leoni (D).

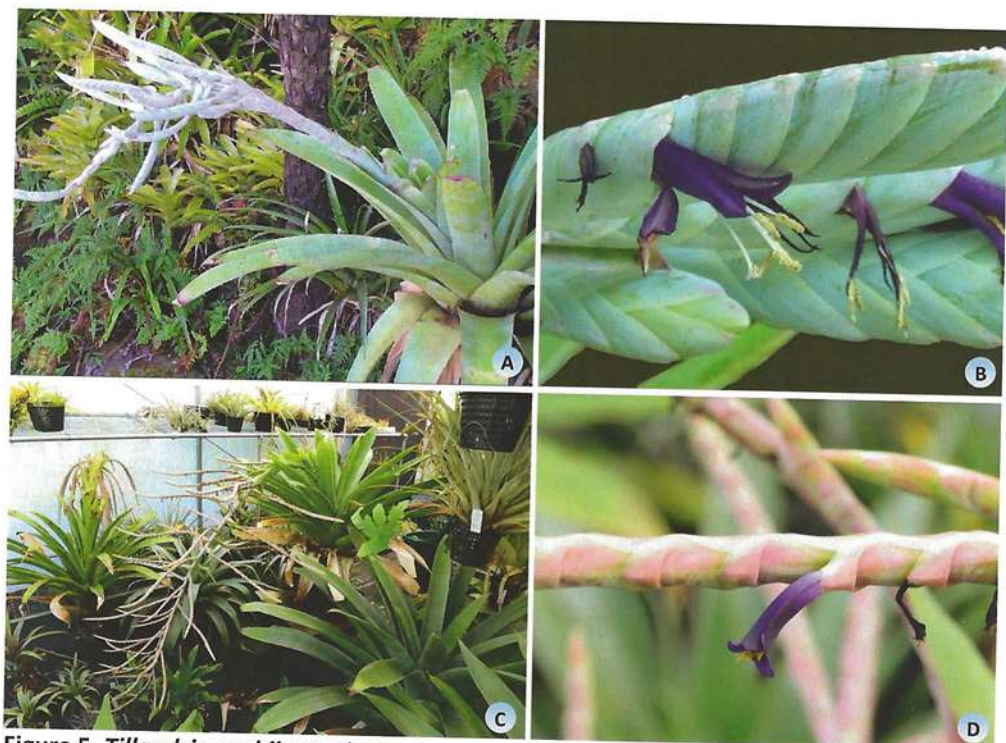


Figure 5. *Tillandsia rauhii* complex:

Tillandsia rauhii,

A. rosette and inflorescence;

B. Flower.

Tillandsia teres,

C. Inflorescence,

D. Flower.

Photographs by David Sheumack (A, B), Peter Tristram (C), and Timm Stolten (D).

On the other hand, there is a set of species grouped in a weakly supported clade dominated by species with a simple inflorescence with distichous flowers and large floral bracts, usually brightly colored and light colored petals, namely: *Tillandsia lampropoda*, *T. verapazana*, and *T. nervata*. *Tillandsia kretzii* is also found in this clade and would be an intermediate form between the paniced species and the racemose ones, because it displays a panicle but each branch resembles the racemes of *T. lampropoda* or *T. verapazana*. This group of species will be called here the ***Tillandsia lampropoda* group** (Figure 4: A-C).

The morphology of *Tillandsia heterophylla* is special, because the inflorescence is a raceme or panicle with few branches (Figure 4: D), the primary bracts are much shorter than them, floral bracts are green-glaucous, and the petals are white (Figure 6: B). This is probably a consequence of a shift in the pollinators; according to Aguilar-Rodríguez et al. (2016), this species has a generalist pollination system, since at least four different morphospecies of visitors pollinate its flowers, and apparently the most common pollinators are bats.

Another species that seems to be related to the *Tillandsia multicaulis* clade is *T. lucida* (Barfuss, unpubl. data) but it could not be included in this study. Morphologically it is similar to *T. heterophylla* in its long branches, short primary bracts and flowers with the stamens included, although with bright pink floral bracts and light violet petals. Because of this, *T. lucida* will be placed tentatively in the ***Tillandsia heterophylla* group**.

The phylogenetic placement of the *Tillandsia multicaulis* clade is in concordance with the results of Barfuss et al. (2016), who found that it is nested in the *T. biflora* complex, composed mainly by South American species of former *T. subg. Allardtia*, with the exception of *T. mac-brideana* (former *T. subg. Anoplophytum*) and of *T. baliophylla* from La Hispaniola (former *T. subg. Pseudalcantarea*). In that study, the *T. multicaulis* clade was only represented by three species (*T. multicaulis*, *T. imperialis*, and *T. heterophylla*), whereas in this study, the composition of this group rose to nine species. Thus, the independent origin hypothesis of both clades is strongly supported.

With respect to the historical biogeography of the groups, we found that the *Tillandsia multicaulis* clade colonized Mexico and Central America most probably from a South American ancestor (all other species in the related clade are South American), and independently from the colonization of the same areas of the species of *T. subg. Tillandsia* clade, which would be also of South American origin (Pinzón et al. 2016). Hence, the members of the *T. multicaulis* clade and of the *T. subg. Tillandsia* clade not only share some traits of the floral morphology (stamens and style exerted) (Figure 6), but also their geographical and ecological distribution. This leads us to think that probably some environmental factors of these regions drove the change from inserted to exerted stamens and style. One of these factors could be the pollinators: typically, the pollinators of the *T. subg. Tillandsia* have been observed to be hummingbirds and moths (Krömer et al. 2008). If the species of both lineages share pollinators, then probably the optimal shape of the flower favoring the transfer of pollen is that of exerted stamens and style. However, this remains to be tested through observations of the pollinators.

In conclusion, it can be said that the *Tillandsia* subg. *Tillandsia* as traditionally defined (stamens and style exerted from the corolla) does not reflect a natural group. This floral morphology evolved at least twice; once in the *T.* subg. *Tillandsia* s. str. clade, and again in the *T. multicaulis* clade. The species of the latter clade, however, are distinguished from others of *T.* subg. *Tillandsia* by its Group III floral morphology (with the only exception of *T. superinsignis*, that must be re-investigated) and inside it at least four sets of species can be recognized by morphology: *Tillandsia heterophylla*, *T. imperialis*, *T. lampropoda*, and *T. multicaulis* groups. The situation of *T. candelifera*, *T. hotteana*, *T. lucida*, and *T. ponderosa* should be further analyzed to confirm their membership in the *Tillandsia multicaulis* clade.

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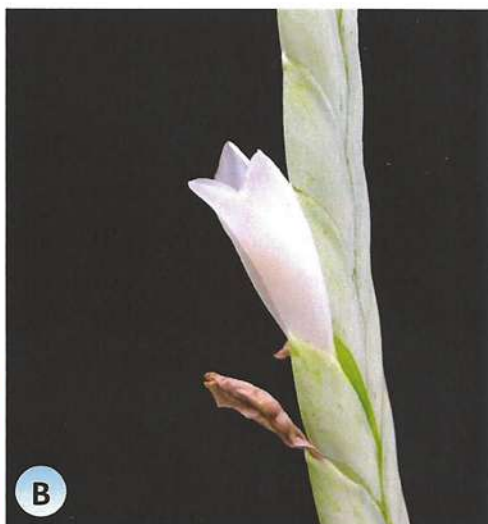
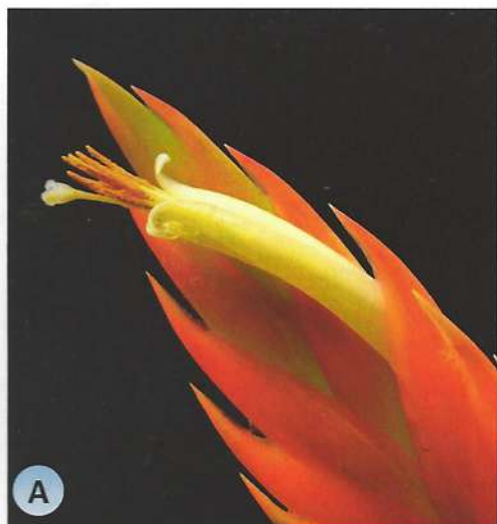


Figure 6. Floral morphology:

A. *Tillandsia kretzii*,

B. *Tillandsia heterophylla*,

C. *Tillandsia multicaulis*, and

D. *Tillandsia hildae* (*Tillandsia* subg. *Tillandsia* s. str.).

Photographs by Peter Tristram (A), Göttingen University (B), Nikolai Friesen (C), and Juan P. Pinzón (D).

References

- Aguilar-Rodríguez, P. A., Krömer, T., García-Franco, J. G. & MacSwiney, G. M. C. 2016. From dusk till dawn: Nocturnal and diurnal pollination in the epiphyte *Tillandsia heterophylla* (Bromeliaceae). *Plant Biology* 18: 37–45.
- Barfuss, M.H.J. 2012. *Molecular studies in Bromeliaceae: Implication of plastid and nuclear DNA markers for phylogeny, biogeography, and character evolution with emphasis on a new classification of Tillandsioideae*. University of Vienna, Vienna, 244 pp.
- Barfuss, M.H.J., Samuel, R., Till, W. & Stuessy, T.F. 2005. Phylogenetic relationships in subfamily Tillandsioideae (Bromeliaceae) based on DNA sequence data from seven plastid regions. *American Journal of Botany* 92: 337–351.
- Barfuss, M.H.J., Till, W., Leme E.M.C., Pinzón, J.P., Manzanares, J.M., Halbritter, H., Samuel, R. & Brown, G.K. 2016. Taxonomic revision of Bromeliaceae subfam. Tillandsioideae based on a multi-locus DNA sequence phylogeny and morphology. *Phytotaxa* 279: 1–97.
- Castello, L.V., Barfuss, M.H.J., Till, W., Galetto, L. & Chiapella, J.O. 2016. Disentangling the *Tillandsia capillaris* complex: phylogenetic relationships and taxon boundaries in Andean populations. *Botanical Journal of the Linnean Society* 181: 391–414.
- Chew, T., De Luna, E. & González, D. 2010. Phylogenetic relationships of the pseudobulbous *Tillandsia* species (Bromeliaceae) inferred from cladistics analyses of ITS 2, 5.8S ribosomal RNA gene, and ETS sequences. *Systematic Botany* 35: 86–95.
- Dong, W., Xu, C., Li, C., Sun, J., Zuo, Y., Shi, S., Cheng, T., Guo, J. & Zhou, S. 2015. *ycf1*, the most promising plastid DNA barcode of land plants. *Scientific Reports* 5: 8348.
- Edgar, R.C. 2004. MUSCLE: multiple sequence alignment with high accuracy and high throughput. *Nucleic Acids Research* 32: 1792–1797.
- Gardner, C.S. 1986. Preliminary classification of *Tillandsia* based on floral characters. *Selbyana* 9: 130–146.
- Goloboff, P., Farris & J., Nixon, K. 2003. *T.N.T.: Tree Analysis Using New Technology*. Program and documentation, available from the authors, and at www.zmuc.dk/public/phylogeny.
- Granados, C. 2008. *Sistemática del complejo Tillandsia macdougallii*. Universidad Nacional Autónoma de México, México DF, 75 pp.
- Krömer, T., Kessler, M., Lohaus, G., Schmidt-Lebuhn, A. N. & Lagercrantz, E. 2008. Nectar sugar composition and concentration in relation to pollination syndromes in Bromeliaceae. *Plant Biology* 10: 502–511.
- Lagercrantz, E. 2008. *eBioX. Version 1.5.1*. Available at: <http://www.ebioinformatics.org>.
- Nixon, K.C. 2002. *WinClada ver. 1.00.08*. Available at: <http://www.cladistics.com/wincDownload.htm>.
- Pinzón J.P. 2012. *Sistemática del complejo Tillandsia utriculata L. (Bromeliaceae): filogenia, evolución y taxonomía*. Centro de Investigación Científica de Yucatán, Mérida,, Mexico, 243 pp.
- Pinzón, J.P. Barfuss, M.H.J., Ramírez-Morillo, I., Carnevali, G. & Till, W. 2013. Phylogeny and evolution of *Tillandsia* subg. *Tillandsia*: A preliminary project. *Journal of the Bromeliad Society* 63: 75–82.

- Pinzón, J.P., Ramírez-Morillo, I.M., Carnevali, G., Barfuss, M.H.J., Till W., Tun, J. & Ortiz-Díaz, J.J. 2016. Phylogenetics and evolution of the *Tillandsia utriculata* complex (Bromeliaceae, Tillandsioideae) inferred from three plastid DNA markers and the ETS of the nuclear ribosomal DNA. *Botanical Journal of the Linnean Society* 181: 362–390.
- Smith, L.B & Downs, R.J. 1977. Tillandsioideae (Bromeliaceae). In: Rogerson, C.T. (ed.) *Flora Neotropica Monograph no. 14. Part 2*. Hafner Press, New York, pp. 661–1492.
- Tel-Zur, N., Abbo, S., Myslabodski, D., & Mizrahi, Y. 1999. Modified CTAB procedure for DNA isolation from epiphytic cacti of genera *Hylocereus* and *Selenicereus* (Cactaceae). *Plant Molecular Biology Reproduction* 17: 249–254.

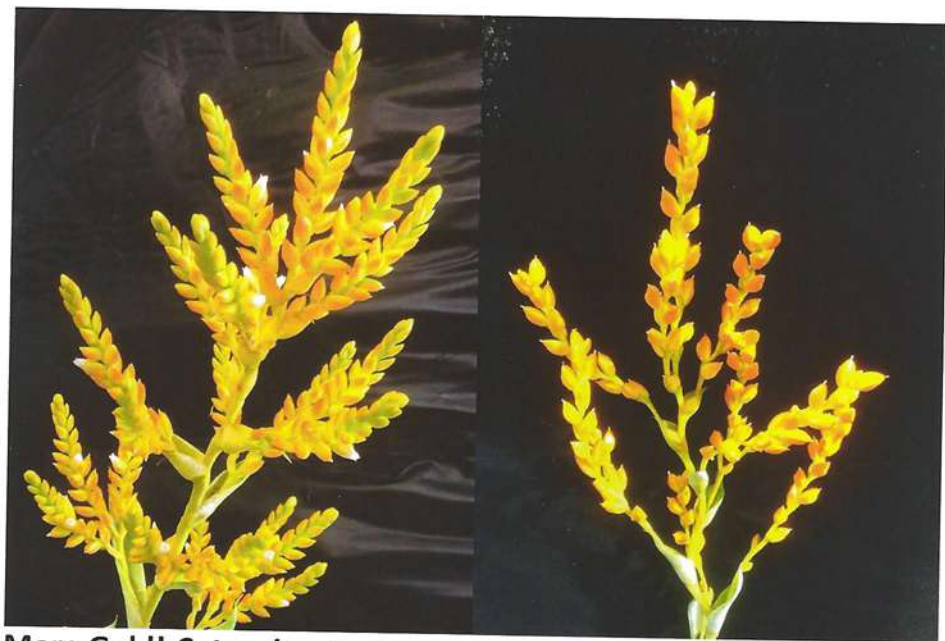
2016 Popular Vote and Mini Show Results

Popular Vote

Advanced		Points
First Place	Barbara McCune	43
Second Place	Barry Kable	37
Intermediate		
First Place	Ron Jell	37
Second Place	Dorothy Andreason	19
Novice		
First Place	Livia Doidge	31
Second Place	Denice Mclean	26
Decorative		
First Place	Denice McLean	20
Second Place	Janet Richter	19

Mini Shows

Advanced		Points
First Place	Barbara McCune	60
Second Place	Barry Kable	51
Intermediate		
First Place	Ron Jell	66
Second Place (tie)	Maxim Wilson	14
	Jenny Ittensohn	14
Novice		
First Place	Livia Doidge	35
Second Place	Denice McLean	17



More Gold! *Catopsis compacta*

Catopsis compacta is a dioecious plant, i.e. it has unisexual flowers with male and female flowers on different plants with male and female parts. Photos above show male (left) and female inflorescences. Seed is produced on the female flowers but as you would expect, the offspring are a mix of male and female. Thus, growing this plant from seed is a lottery and several individuals must be grown to maturity to produce male and female plants for another generation from seed.

The lower photos show male (top) and female flowers enlarged. The photo below right shows the very scurfy leaves. These are very slippery and it is said this is a carnivorous bromeliad with insects slipping into the vase.



CALENDAR OF EVENTS 2017

Meetings are held at Uniting Church, Merthyr Road, New Farm on third Thursday each month except December.

Monthly Meetings commence with plant sales from 6:45pm;

Information/Practical sessions at 7pm on odd numbered months;

presentations then commence at 7:30 PM.

AGM is held prior to Feb meeting.

March	16 March
April	20 April
May	18 May
June	15 June
July	20 July
August	17 August
September	21 September
October	19 October
November	16 November

SUNNY BROMS CONF	31 March – 2 April 2017, Caloundra Event Centre
Autumn Show	22 April at Genesis College, Young's Crossing Rd, Bray Park
Tillandsia Full Day Workshop	21 May at Newmarket State School
Tillandsia Study group	July, Sept, Nov, dates tba
Spring Show	11-12 November at Table Tennis Centre, Windsor
Xmas Party	7 December – venue tba

Plant of the month List for 2017

April	Dyckia, Hechtia, Orthophytum
May	Alcantarea
June	Vriesea
July	Intergenerics
August	Rare Genera
September	Billbergia
October	Guzmania
November	Neoregelia, Nidularium

COMPETITION SCHEDULE 2017

Note: Each member may enter 3 plants in any class at a Mini Show and 3 plants for Popular Vote.

Feb & Mar POPULAR VOTE – any genus species & hybrids + novelty bromeliad display

April -MINI SHOW

Class 1 – Bromelioideae not listed elsewhere in Schedule, species & Hybrids
(Acanthostachys, Ananas, Androlepis, Araecoccus, Bromelia, Canistropsis, Canistrum, Edmundoa, Fascicularia, Hohenbergia, Hohenbergiopsis, Neoglaziovia, Nidularium, Ochagavia, Orthophytum, Portea, Quesnelia, Ursulaea, Wittrockia)

Class 2 – Guzmania species & hybrids

Class 3 – Pitcairnia species & hybrids

Class 4 - any other flowering bromeliad species & hybrids

May & June POPULAR VOTE – any genus species & hybrids + novelty bromeliad display

July - MINI SHOW

Class 1 – Billbergia

Class 2 – Tillandsioideae not listed elsewhere in Schedule, species & hybrids
(Alcantarea, Catopsis, Mezobromelia, Racinaea, Werauhia)

Class 3 – Neoregelia up to 200mm diameter when mature, species & hybrids

Class 4 - any other flowering bromeliad species & hybrids

Aug & Sept POPULAR VOTE – any genus species & hybrids + novelty bromeliad display

October - MINI SHOW

Class 1 – Neoregelia over 200mm diameter when mature, species & hybrids

Class 2 – Tillandsia species & hybrids

Class 3 – Pitcairnioideae not listed elsewhere in Schedule, species & hybrids
(Brockhinioideae, Lindmanioideae, Hechtia), Puya), Navioideae, Deuterocohnia, Encholirium, Fosterella)

Class 4 - any other flowering bromeliad species & hybrids

November - POPULAR VOTE– any genus species & hybrids + novelty bromeliad display

