Bromeliaceae

VOLUME XLIX **First Quarter 2015**

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: *Nidularium atalaiaense*	By: Lesley Bayliss
Rear Cover: *Alcantarea geniculata* flowering	By: John Byth

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CALENDAR OF EVENTS 2015

April Meeting	23rd April, Uniting Church, Merthyr Road, New Farm
May Meeting	15th May, Uniting Church, Merthyr Road, New Farm
June Meeting	18th June, Uniting Church, Merthyr Road, New Farm

Shows and Exhibitions

Bromsmatta	16-19th April, Parramatta NSW
Pitcairnioide Day	12 July, Newmarket State School (Sunday)
Exhibition	7th – 16th August
Spring Show	14th – 15th November, BTTC, Windsor

EDITORIAL by John Olsen

Firstly I need to express my thanks and on behalf of the BSQ to Chris and Jennifer Coulthard who have formed the editorial team together with me over the past 2 years. Their contribution has been to source material from past journals of the BSQ and other societies who share publications, and to compile that with other contributions into the journal. Jennifer has reformatted the journal layout making it easier to read and to compile. Chris has done deals to keep print costs down and done the running around to get printing done and the copies on to the Membership Secretary. They would not wish me to list the difficulties they have had to deal with over the period but they continued to assist and make a significant contribution to the Society in difficult personal circumstances. Thanks Chris and Jennifer.

Which brings us to the eternal problem with Bromeliaceae. The journal needs contributions of new material. We have been able to strike a balance between new material and reprints over the last couple of years and still adhere to the publication schedule. YOU CAN HELP. Please send photographs and notes to editor@bromsqueensland.com.au. Photographs should be at a resolution suitable for printing (2+Mb is usually OK) and the file name should have the plant name and your name so we can accurately attribute photography. Articles can be short or long – your choice, and send as Word or similar editable files.

And now the *"mea culpa"*. Imagine you have taken a really nice photo and on opening your magazine envelope you are excited to see it on the front cover of Bromeliaceae. Lesley Bayliss provided the cover photo for the last issue. Unfortunately I wrongly attributed the photo to another. My sincere apologies Lesley. You will see another of Lesley's photos on this cover. There is the possibility you can experience the thrill of seeing your photos shown widely so send them in. Photos entered in our Photo section of each Show are also used for the magazine so please support that part of our Show.

PRESIDENT'S REPORT to AGM by Barry Kable

When I look back on the past year it has been a great year for BSQ. You the members have made it great by sharing in the good fellowship, please keep doing so - it works. Tonight I would like to run through our achievements for 2014. Two fantastic shows, and these shows help us financially to conduct activities for the year. Thanks to Pam Butler and her willing workers. A Tillandsia day held at the Newmarket School Hall a day full of great information and learning with the opportunity to purchase a large range of Tillandsia's some rare and some not often seen. Thanks to John Olsen and his band of helpers.

Then the EKKA display – this is a wonderful place to showcase our society and bromeliads to the wider community. Thanks to Amanda and Glenn and all who gave your time and who supplied plants for this. Then to end the year off on a good note our Christmas party, thanks to Fred Thomson and his team, and to the MC for the night Rob Murray what more can you say he did an impressive job.

I would like to thank Olive and Len Trevor for opening their home for the committee meetings for many years; you can now sit back and have a well-earned rest. We will now hold the meeting at Amanda Meads. Thanks to the committee members for all your hard work and

support you have given over the last year to help keep the society running and moving forward in a positive manner. Thank you to some members who are retiring off committee, and welcome on board to our newer members.
I would like to take this opportunity to thank Chris & Jennifer Coulthard for their assistant as co-editors of the Bromeliaceae - you have done a great job and will be missed.
To our Judges led by Narelle Aizlewood - thank you for your time, it is a big commitment to take on Judging School course; our society and Queensland as a whole will be all the stronger for it.
I would also like to say thank you all our volunteers in all positions for doing your jobs so willing throughout the year. Thank you to everyone for coming together to make our society a success. In finishing off, it has been great sharing with you all for 2014 and we look forward to more of the same this year. Just keep turning up.

PENDANT INFLORESCENCES IN BROMELIADS by John Olsen

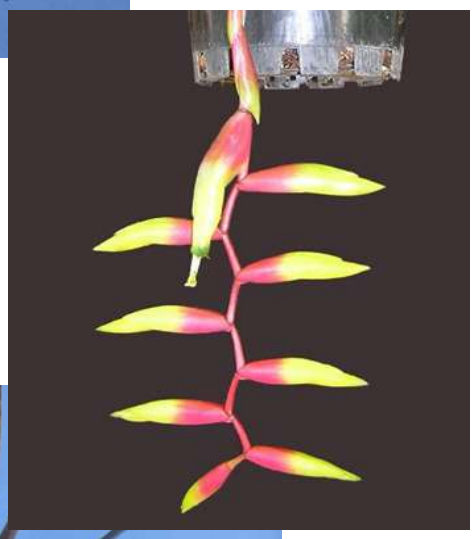
In the last few years we have seen lots of attention given to vertical gardening. Most applications are commercial. The wall on the Airport Link motorway at Toombul has a big proportion of bromeliads in the planting. In that location there is space for larger plants and many Alcantareas have been blooming on the wall over the past couple of months. Jimmy's on the Mall is a recent installation in Brisbane however it is a more constrained location and has few bromeliads planted. On the domestic scene the accent on vertical gardening may be influenced by the move to smaller dwelling blocks and apartment living in our cities. In my own case I have pretty much run out of bench space and in ground planting, so I am working on filling the space above. Plants with a pendulous inflorescence are useful in this situation. The flowers come down to meet you. There are species with pendulous inflorescences in many of the genera. A few are discussed and illustrated in this article.

Aechmea species tend to be larger plants and quite robust, being able to support their inflorescence on a stiff peduncle. (Now you have to read the glossary article on inflorescences). I am aware of a few Aechmea species with pendant inflorescences. These tend to be among the relatively small plants in this genus.

Premier among these is *Aechmea weilbachii*. This is a plant which has featured many times in a hanging basket in our Exhibition displays courtesy of Bob Cross. *A weilbachii* comes in 2 forms, one of which *A weilbachii forma pendula* is as the name suggests, pendulous. The plant forms a green rosette to about 40cm height, from which trailing stems carry numerous pink to blue flowers. The flower bracts are pinkish and the petals open blue and fade to white. The photos opposite come from the BSA website collection. The photo on the right shows multiple inflorescences which all originate from a single plant. Examples I have seen of *Aechmea racinae* are small plants to about 25-30cm height although the formal description of the plant suggests 40-60cm. This species and has a rather small but colourful pendant inflorescence. Interestingly it is verrucose (i.e. has small bumps) on the rachis and ovaries.

Aechmea filicaulis is also a small plant to about 40cm. It has red leaves. The inflorescence is extremely long and quite fine but not spectacularly colourful. This plant is interesting on account of the length of the inflorescence which can extend beyond 1m.

Photos clockwise from Top L: *Aechmea weilbachii* (Photos I Hook, T Davis), *A filicaulis* (T Davis), *A racinae* (I Hook), *A contracta* (Olsen)



Photos clockwise from Top R: *V. pardalina, V. guttata, V . scalaris*, Billbergia hybrids(R Stenhouse photos)

Billbergia often have pendant inflorescences due in part to the large head and somewhat skinny peduncle. Many are quite spectacular but tend to be short lived.

Among vrieseas there are a few of the green leaved vrieseas which have pendant inflorescence. *V. scalaris* and *V. simplex* have rather similar pendant inflorescences as shown in the photo of *V. scalaris* at p 7.

More attractive inflorescences are shown in *V. pardalina* and *V. guttata.* These are somewhat similar species, and the differences were discussed in some detail in Bromeliaceae Vol XLVI Second Quarter 2012 by Butcher. The differences are in summary, *V. pardalina* is "*a larger plant with a very long inflorescence, hanging much below the plant's base, with many flowers(>40), and the flowers more spreading….and the bract coloration is more reddish and less waxy".*

The largest group of Vriesea species with pendant inflorescences are currently suggested to transit to Tillandsia. The DNA studies have been discussed previously in this magazine and some seminars, and have proposed re-arranging species into different genera and creation of additional sub families. These proposals remain as proposals pending full acceptance by the taxonomist community. Among Australian collectors this Vriesea group is referred to as TVs. You may often see a plant labelled as TV. The New Bromeliad Taxon List has adopted moving these TVs into Tillandsia.

The examples on p 9 show a selection of pendant inflorescences of Tillandsia. Many are quite spectacular.

Photos are *Tillandsia tequandamae* in habitat top (B Dunstan), Middle R *T violacae* (JBS 60(5). 2010), *T limonensis* (P Tristram), Lower L *T pamelae* (BSI 64(3).

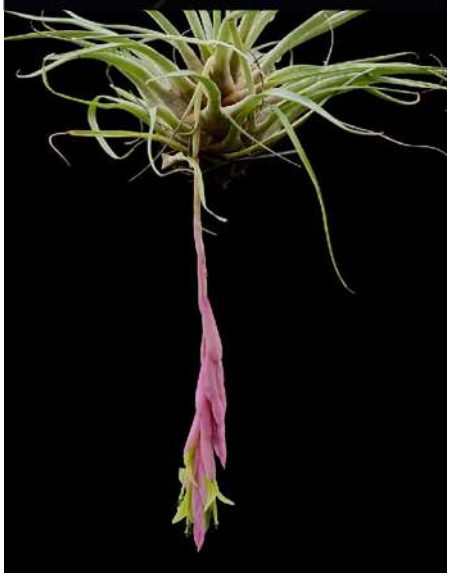
Australasian Conference 16 to 19 April 2015

The next Australasian Conference (Bromsmatta) will be held in Parramatta.

A copy of the registration form can be sourced from the website and was included in the February Newsletter email to members.
Early Bird Discount is finished so Fees after January 2015 - $300

For more information check out the web site at www.bromeliad.org.au

If you are looking at attending this conference, you should consider booking accommodation now as there appears to be a high demand at the time of the conference.



A TRAVELLER'S HOMEWORK by Bruce Dunstan

(Ed: We have all enjoyed the various travelogues Bruce has published over the years. At our meetings Bruce has shown photos and can identify sometimes quite rare plants in habitat. While we "stay at homes" may not need to prepare for such trips, it is useful to bromophiles to know about the sources available to identify plants – if not in habitat, those in our collections which have lost or incorrect labels. I therefore asked Bruce to detail the sources he consults to be prepared to identify plants in habitat.)

Before setting off to the forest there are plenty of things that need to be done to help ensure the best possible result. Airfares never seem to be cheap and travelling is a sure recipe for spending lots of money. Once we have agreed on where we are going to travel I usually begin planning to ensure we get the best result possible. This involves doing a bit of homework rather than arriving blind so to speak.

The Florida Council of Bromeliad Societies web site has a search function that allows you to find what species are recorded by country. This firstly generates a list of Bromeliads that is known for each country.

The Encyclopaedia of Bromeliads CD put together by Eric Gouda and Derek Butcher is an essential tool. It contains descriptions and whatever images are available of all Bromeliads currently described. Over the years I have spent many hours / days looking through these descriptions and images committing them to memory as well as checking where particular plants have been recorded. This allows you to build a knowledge of documented range and also elevations that particular plants occur. As well as getting to know what plant species have been described so when you are on the ground looking at a plant you have some idea as to its Genus and whether it has any relationship to described species.

Google Earth is also a fantastic tool in getting a better appreciation of what you will be heading to in terms of elevations. Some of the images are a little old or sadly in wet areas just show lots of clouds, which is to be expected. I use an app generated by the Missouri Botanical Garden that shows collections in the areas shown on Google Earth. This can help to see what botanists have collected previously and give an indication of areas potential diversity. Collections pop up on the Google Earth screen and can number up to 100 depending on the scale and how many Botanical collections have been done in a given area.

Tropicos www.tropicos.org is a database and search engine developed by the Missouri Botanic Garden that has fantastic information on their botanical collections. Searching through this information often produces images and more recent collection data that may be missing from original botanical descriptions.

The Smithsonian National Museum of Natural History www.botany.si.edu is a great source of botanical information with the national type specimen collection available on line. I have over the years downloaded images of plants I am interested in so I can get information as to where

they were collected as well as when and by whom. This is great information when trying to find particular plants in later days as habitats are destroyed. If you are lucky it can get you right to a plant you may be looking for.

The Field Museum in Chicago produces a great resource for visual people with its large collection of Rapid Field Guides www.fieldguides.fieldmuseum.org. These are generally a collection of images of the plants of a particular region. They are also produced by plant family or groups, which are ideal tools for identification out in the field. This is a great way to see what may be growing in particular areas but also to show a range of plants that may be related to things you will see on the ground.

Having all this information at my fingertips in my laptop allows me to research and help identify plants as we travel where Internet exists. It is amazing the reach of the World Wide Web in recent years. In Panama the roll out of free Wi-Fi in very remote villages is amazing. Travelling with someone who has a local sim card can also allow someone as technically backward as myself to use the phone as a mobile hotspot to allow digital connection through the 3G networks.

Another great resource is Flora Pix http://botu07.bio.uu.nl/Tropical/index.php?gal=brom This website allows one to post images and have access to taxonomists with their thoughts on identification in real time. Of course then the fun begins when you start finding things that may have been collected decades or centuries ago or even plants that have never been seen before.

For the past decade or so I have limited myself to just collecting seed. The import restrictions and conditions on bringing live plants back into Australia have made spontaneous collecting impossible. This then means you have to be in the right place at the right time to have any chance of finding viable seed. Knowing when a group of plants you might be interested in are producing seed can affect what time of year you may visit a particular region. Generally I have found hindsight a wonderful thing in regards to seed collection.

In the field I travel with a few essentials that over the years have proved their worth and get packed as priorities each year.

Steri Pen. This is a UV light that sterilises water. It takes 90 seconds to do 1 litre and saves having to buy bottled water or carry large amounts of water with you in the car. Having suffered through plenty of bad experiences of Inca quickstep or Montezuma's Revenge I can happily say that I haven't suffered while travelling with a Steri Pen and that is a great thing!

A small folding umbrella. I have recently been travelling in some of the wettest places on the planet so rain is always going to happen and time is always limited so there is no time to wait for the rain to clear. A small umbrella allows you to move through the forest without running into branches vines etc. while also allowing air movement. In the humid tropics having a rain coat on is like being in a sauna, producing copious amounts of heat and sweat.

Plastic bags of all sizes and types always are essential. I use large heavy duty self-standing garbage bags as seat covers in hire vehicles after rolling around in the mud, creeks etc. They are also really good for keeping luggage dry or dust free in drier areas. Some plants will produce seed for extended periods so by cutting inflorescences and bring them along you can get seed you may have otherwise missed collecting, so big heavy duty bags help with cut flowers. Zip lock bags of varying sizes are essential as seed must be clean, labelled and look professional before you even start talking to AQIS about them letting it into the country. I also take plenty of paper envelopes along to help dry seed from Tillandsioideae.

A small machete is always handy in the forest. I prefer shorter ones than what many locals use as there never seems to be enough room to swing the larger ones in places where the plants are. I've also found that putting some fluorescent flagging tape on tools is a good idea as things covered in mud that get dropped in the excitement of a new plant tend to merge with the verdant background and never get found again, so knowing where your machete is in the forest is essential.

A good camera with a large zoom is important and thankfully camera prices are coming down as technology improves. Bromeliads often grow well out of reach in trees or on cliffs so having a camera with a good zoom is very important. It might be your only chance of seeing the plant

so capturing a good clear image is important. (*Ed: these photos show how remote a plant must be before Bruce relies on photos!)*

GPS is a handy tool that we have started to use a little more now as their price has dropped. We generally use them for altitude so you know when you are getting into good elevations to find particular species. Elevation is something we don't consider in Australia but in the Andes knowing your elevation helps finding plants that are likely to succeed in cultivation rather than perish.

Lastly something we found last year, as being hugely helpful was a bird watching guide. When we travel we see groups of birdwatchers and some of them are even more intrepid in their travels than plant people. As they add to their life lists they are heading out into remote or previously dangerous areas. We found Bird Watching in Colombia to be a great guide to areas that still had forests and habitat. The information was up to date and reasonably accurate as well as having information on accommodation, routes and importantly general security. In previous trips we have spent days driving around looking for forest and habitat that hasn't been cleared the bird watching guide helps save on wasted time.

REPORT ON JUDGING SCHOOLS by Narelle Aizlewood

Judges Schools for members of the Bromeliad Society of Queensland commenced on the 12/8/2012 at the home of Olive Trevor, at Canvey Road, Upper Kedron. An enthusiastic group of interested Student Judges met for the first school in 2012. Numbers did drop due to various circumstances, i.e. work commitments, travelling distance, financial issues, and just a general lack of interest, to name a few. At the end of the six schools and three years later we have registered thirteen student judges keen, willing and interested in completing their schools.

Our last and final school for Series I was completed on the 1 February with eight student judges passing all schools and awaiting the final exam papers to arrive from Betty Ann Prevatt the J.C.C. for the BSI. Make up schools are being organised for students who have either not achieved the required pass mark, or who were in fact absent from a certain school, and I am endeavouring to get as many Student Judges through as possible before the Conference in Sydney in April.

It is my intention that these Student Judges will be presented with their BSI Nationally Accredited Pins and Certificates by Terrie Bert (Master Judge for the BSI) at the upcoming Australasian Conference to be held in Sydney.

These Student Judges are:
Maxim Wilson - Pam Butler - Olive Trevor - Barbara Murray - Narelle Aizlewood
Peter Ball - Rebekah Trevor - Len Waite.

This number of Nationally Accredited BSI Judges holds the Bromeliad Society of Queensland in very good stead. Olive Trevor and Narelle Aizlewood are also Internationally Accredited BSI Judges and Pam Butler and Maxim Wilson will add to this list, as I know it is their intention to attend future BSI Conference in the States and take part in their Judges Schools also becoming Internationally Accredited BSI Judges.

The format / curriculum for the Judges Schools is based on the BSI Handbook. Student Judges completing the six schools will be deemed to be Nationally Accredited BSI Judges. Schools were held at six monthly intervals to enable students to study, test their skills i.e. judging at various shows, tabling plants for competition and obtaining certain minimal requirements in order to be an accredited BSI Judge, attend planned garden visits to view how other people grow their bromeliads, and prepare work for the next school.

I would particularly like to thank Olive Trevor for providing a venue for our Schools and sharing her knowledge with us all. I would like to formally thank Pam Butler who has been a great support and took on the role of organising the garden visits for our student judges to attend. Peter Ball, Bev Mulcahy, and Ruth Kimber should also be thanked for providing an endless amount of photocopying for resources for all the Student Judges.

It would be my intention to commence Series II Judges Schools in the beginning of 2016 if any other members are interested doing the Schools. There would be more information on this at a later date.

DECORATIVE CONTAINERS FOR SHOWS by Barbara Murray

In our schedule for the Spring and Autumn shows there is class 47 "Bromeliad in a decorative pot". What is a decorative pot and how is it judged? Note that the category is artistic design. Immediately our mind discards the conventional black plastic pot used to grow plants. Now is your chance to think beyond the ordinary to the original.

Category II – Artistic Design				
Division V – Artistic Arrangements				
Section A.				
47	Bromeliad in a decorative pot			

Think more of a container than a pot – fancy colourful pots may be your choice, but don't forget the natural containers such as sea shells, driftwood, barks. Other fun articles can be eggcups, water pitchers, Champagne glasses, teacups, and umbrella stands. Consider any open container for holding bromeliads. Even items that won't hold water can be used as containers simply by placing another container inside it. Your imagination is the limiter of what you may use. The container does not necessarily have to sit on a table either. It can be suspended however you choose. The plant need not have been grown in the container – it is acceptable to place the arrangement in the container on the day of the show.

Now is the time to choose a bromeliad to complement the container. Make sure the size of the plant and the container are in proportion. The general rule when it comes to height is that your arrangement should be one and half times the height of the container it's in, and wide enough to balance the height. Look at the formality of the design and keep it consistent with the effect you are trying to achieve. Colour is also important. The most effective combination is to choose the least found colour in your bromeliad and match that colour to your container colours. The texture and the colour should also harmonise or contrast in an artistic way. There are 30 points dedicated to this selection choice. Let's look at the Bromeliad choice. The bromeliad/s may be kept in the pot in which they are growing and the pot disguised by embedding it into the container and using another material such as stone, tree fern, glass marbles (both natural and man-made materials) to hide the pot.

The bromeliad need not be confined to a single specimen. Maybe your preference is for two or more of the same specimen. Maybe you prefer to mix up the genus. Definitely your selection choice could be species, hybrids, cultivars, varieties or forms. Your selection may be blooming or non-blooming. The only restriction is that the plants must have been grown by you and owned by you as the exhibitor for 6 months. Cultural perfection scores 20 points, conformation of the plant/s including the inflorescence (if applicable) scores 20 points and the colour and marking of the plant/s including the inflorescence (if applicable) scores another 20 points.

Balance the design by ensuring that the container is the proper size and weight for the plant/s and by visually using colour, texture and size. Darker colours appear heavier and so do larger inflorescences. Colour is the first thing you see when looking at a decorative arrangement. Create a focal point using colour, size or a unique shape and having the lines converge at the focal point, remembering that the bromeliad/s must be the focal point of the arrangement. Larger flowers should be closer to the focal point and placed low. Small flowers can be high.

Repetition of plants can create a feeling of motion and can blend the design together, as can a repeated combination of line, form, colour, texture and/or space. Patterns can generate a sense of interest and rhythm. Vertical lines give a feeling of height and suggest power and strength whereas horizontal lines give a feeling of width and suggest peacefulness and calmness and a sense of stability. Diagonal lines are lively and energetic and cause eye movement. Curved lines suggest motion but are softer and more comforting, encouraging the eye to move quickly through the design. Texture is important – the surface quality of design can be smooth, rough, coarse, delicate, waxy or velvety – and it is the combination that pleases. Too many combinations can be distracting. The originality and uniqueness of your final design scores 10 points. The biggest difficulty, before beginning, is deciding if you want to find a bromeliad to match your container or if you want to find a container to match your bromeliad. Be creative and give this class a go.

I don't own a bromeliad by Roy Pugh

I don't own a bromeliad, although I once did. It was sitting unsold on the sales table at the end of one of our monthly meetings. It had beautiful dark green strappy leaves and an orange flower that was almost fluorescent in its intensity. It was one of Nature's little miracles and a joy to look at. Pam Butler happened to be walking past the table and I commented that it seemed extraordinary to me that no one had bought it, especially considering the modest price. As it happened, it was one of Pam's plants and she promptly gave it to me. It was a kind and generous gift which I appreciated greatly. Thank you, Pam. I, of course, gave Pam nothing in return. I'm a retired Customs Officer, remember? We Customs people don't give anyone anything – except possibly a hard time at the airport.

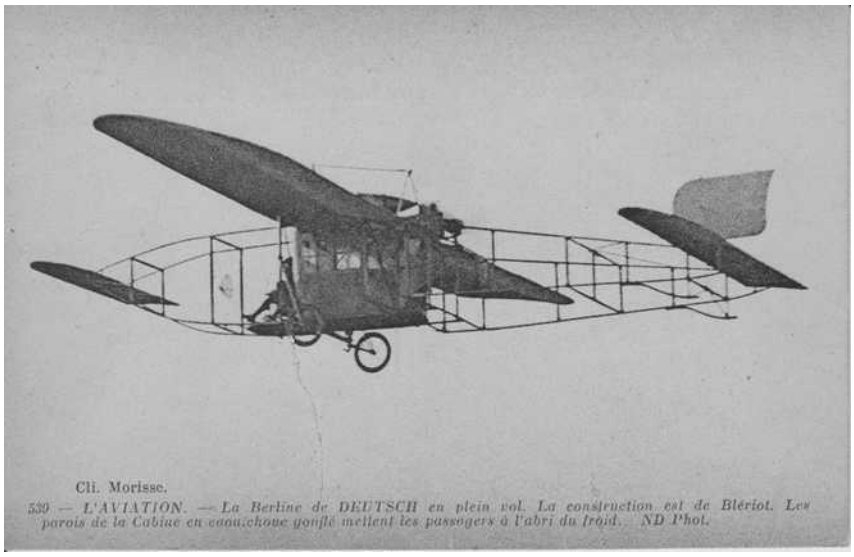
I took the plant home and then soberly considered its future. I am not noted for my horticultural skills. In truth I am not noted for any discernible skills at all (that's why I became a Customs Officer). The life of any plant in my care can be measured in hours and I did not want a visit from the Prevention of Cruelty to Plants people so I passed Pam's plant over to my wife Barbara. I'm pleased to say that there are now three plants and the family is expanding. I'm darned if I know what the name of the plant is; I'm not good at that sort of thing. I didn't even know there were two types of bromeliads until Barbara took me along to a BSQ meeting.

So now I don't own a brom, but I have been happily occupied with my own interests. Some years ago I developed an interest in collecting Customs-related items such as uniforms, hats, medals and other insignia but as the collection expanded into the garages of the neighbours on either side of us Barbara said 'Enough!' One of my treasured possessions is a hat badge for a Customs Clerk from the Islamic Principality of Tonk. Who bothers to make a hat badge for a *clerk*, for goodness sake!! Well, clearly the I.P. of Tonk did. Here's a challenge (and I know a lot of our members have been everywhere from Wonglepong to Winnipeg) – if you can tell me where Tonk is (and it still exists as a town and district), without reference to a map, or Google, Rob Murray will give you $100 out of his own pocket. Note - Please don't try to claim your prize until I've had a chance to explain to Rob his part in my generosity.

Since Barbara firmly put her foot down regarding my Customs collection I have sought new interests. I considered competitive bungy-jumping, triathlons and Formula One racing but finally settled on postcard collecting. Not just any postcards but cards issued (mainly) before 1914 related to early attempts at aviation.

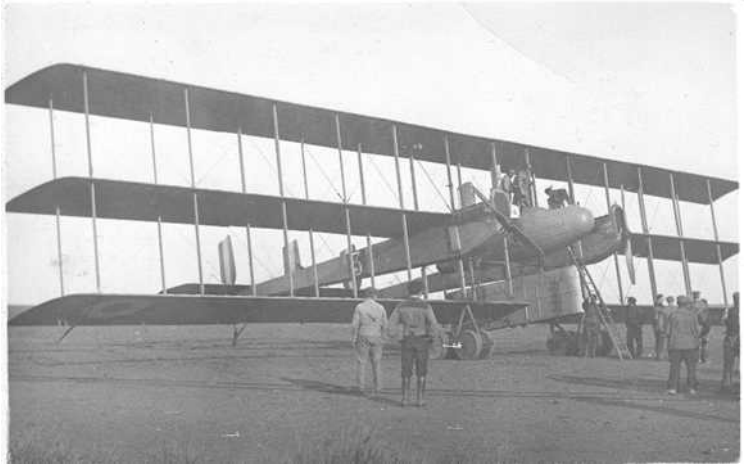
This was a fascinating era when a plethora of strange flying machines appeared about the same time as postcards became a hugely successful innovation. Many of these extraordinary machines are largely unrecorded in aviation reference books, often because only a prototype was built, found to be unsuccessful and was discarded. I have a number of these postcards gathered under the heading of *"What were they thinking?"*

The first card I would like to show you is of an early passenger plane built in 1911 by the Bleriot Company and similar in concept to a stage-coach. The four (and sometimes eight!) passengers sat in the enclosed compartment while the pilot sat in the open in front of them. The card explains briefly that passengers were protected from the cold by 'inflated rubber strips' which I assume were installed around the door or windows in similar style to the rubber cushion strips that are fitted around the doors of our cars. It seems not to have bothered anyone that the pilot, the most vital person on board, is protected by nothing more than a burning desire to get to his destination before experiencing a bird-strike or hail storm.



Also built in 1911 was this Antoinette monoplane. The Antoinette Company had been very successful until they built this aluminium-clad creation. The Antoinette had one small problem – due to its aluminium cladding, which also shielded the undercarriage, the aircraft was too heavy to fly! Building an aircraft that can't fly is right up there with such brilliant ideas as making water-soluble fire hoses – technically very clever but utterly useless. The Antoinette Company, unsurprisingly, did not gain a contract and the firm went out of business. *What were they thinking?*

Another novel creation was the "Oiseau Bleu" (Bluebird) more formally known as the Farman F 180. With its two huge engines and fully enclosed cockpit and passenger compartment, it was intended for the Paris-New York transatlantic route. However, when tested it was found to have a range of only 620 miles. Those of you who are



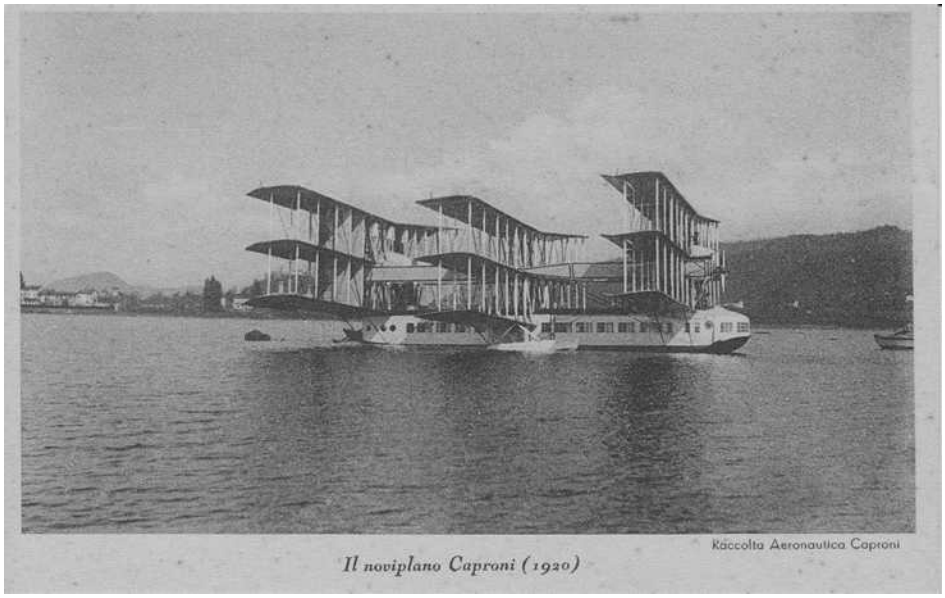
not geographically challenged can probably see a problem here. Again, you have to ask, *what were they thinking*?

Lest I be censured for ridiculing French attempts to conquer the air I'll turn to England, that lovely country that gave us Rolls Royce – still the bench mark for engineering excellence around the world. Sadly (or perhaps fortunately) neither Rolls nor Royce had any involvement with this masterpiece – the Bristol Tramp.

The Tramp evolved from a late WWI bomber that arrived too late on the scene to actually bomb anything. It was intended for the Royal Mail Steam Packet Company to move passengers between ports. The Company had extensive knowledge of steam engines but knew little about internal combustion so this aircraft was to be powered by two steam turbines which would drive the two propellers mounted on the wings through a series of drive shafts and clutches. *Does anyone see a problem with this?*

Suffice it to say the two Tramps built in 1921 never got off the ground but were moved to Farnborough in 1922 and saw out their lives as ground test rigs.

Italy also had a crack at the transatlantic aviation business. Aircraft designer/builder Count Gianni Caproni had done well with his WWI triplane bombers and other more conventional aircraft and at war's end fairly successfully converted some of his bombers to passenger planes.



Il noviplano Caproni (1920)

Caproni was well respected in aviation circles for his successful designs but perhaps he had one pepperoni pizza too many when he came up with his transatlantic seaplane design. This monster had nine wings (a triple triplane!!) and eight engines! But did it fly? Well, yes…..sort of. On its first, and only, test flight it rose to a height of sixty feet – and promptly stopped flying. It made a sharp nose dive into Lake Maggiore. The test pilot was unhurt but the aircraft was considerably damaged. Caproni had the wreckage towed ashore and vowed to rebuild it but that same night it mysteriously caught fire, was reduced to ashes and the Noviplano Caproni was never mentioned again in polite society. In justice to Caproni, he went on to produce many great aircraft but on this one occasion – *what was he thinking?*

I have deliberately refrained from listing the boring technical details of these strange aircraft but if you feel the need to know more perhaps you should contact Greg Aizlewood.

He was a Warrant Officer in the RAAF last century and probably worked on these, or similar, aircraft.

Why are we reading about aircraft in *Bromeliaceae?*

Because too few articles relating to bromeliads were submitted to the Editor to fill the pages of our journal. Remember, the Editor's job is to sift through the articles presented to him/her and select those which are deemed most suitable for a particular purpose. It is ***not*** the Editor's job to go out and find, or create, articles to amaze and inform the readers of *Bromeliaceae*. But, sadly, if too few articles are submitted you may find yourself reading more stories of the strange and weird aircraft that (sometimes) staggered into the skies in the early part of the twentieth century or something else even more bizarre.

If each of our 200 members submitted an article about some aspect of their experiences with bromeliads just once every four years the Editor would have plenty of material to work with. Your choice, really, Roy

Plant Glossaries and Names

If language is incorrect, then what is said does not agree with what was meant; and
If what is said does not agree with what is meant, what is to be done cannot be completed.
The Analects of Confucius circa 400BC

A Bromeliad Glossary published by BSI 1998 is the base text for understanding botanical names and the component parts of bromeliads. This is available from our book sales area.

Another useful reference is The Kew Plant Glossary by Henk Beentje illustrated by Juliet Williamson 2010. The advantage of the latter book comes from its illustrations. This is available online. The book has 130 pages explaining particular terms and another 30 pages given to Grouped Terms. These latter illustrations cover the variety of leaf shapes, leaf surfaces, inflorescences, seeds and flowers etc. The Kew glossary also provides guidance on the preferred terminology where obsolete terminology or variations are sometimes used.

Photos clockwise from Top R: John Byth's garden; Alcantarea Tarawara Hybrid (J.O.); Group L to R Alcantarea Totara Orange, Red Ensign, Vampira; Al Devine Plum

ALCANTAREA SEASON 2014-15 by John Olsen

This summer has seen many alcantareas flowering. It may be unusual but it may be chance. Alcantareas have become fashionable landscape plants over recent times. These are large plants which can be 1.5 – 2m across and with an inflorescence reaching 3-4m high.

Availability of plants was limited until the 'noughties' when one of our members Bruce Dunstan acquired seed and developed techniques which pushed plants to saleable size quickly. Bromeliaceae XXXIX No 4 July 2005 provides details of techniques for rapid vegetative propagation – turning one adventitious offset into 100 plants in 12 months is quoted. The profuse flowering may well be related to release of greater numbers of alcantareas which have now matured.

The genus Alcantarea was created as a separate genus in the Tillandsioideae sub family of Bromeliaceae. Harms in 1930 proposed separation of Alcantarea from Vriesea. However taxonomic notables Mez, Smith and Downs preferred to keep it as a group under Vriesea on the basis Harms had included a couple of taxa which didn't fit all the characteristics. Grant in 1995 resurrected the genus Alcantarea and excluded two taxa from Central America and West Indies. That leaves Alcantareas having a restricted geographical range in the NE (Bahia) and SE (Espirito Santo, Minas Gerais, and Rio de Janeiro) states of Brazil. Recently the genus has been discovered in Sao Paulo state also. The genus Alcantarea is named for Dom Pedro d'Alcântara, second Emperor of Brazil.

Alcantarea species are strictly rupicolous and occur on gneiss-granitic inselbergs (*insel* = island, *berg* = mountain) from eastern Brazil or, more rarely, on quartzite rocky outcrops in grasslands. The photo opposite shows one of the landmarks in Rio de Janeiro – Sugarloaf - and the line of alcantareas growing on the right hand side. A key feature of the genus is the adaptation to life on inselbergs. This includes having large capacity tanks holding up to 45litres of water and other anatomical adaptations of leaves. Pollination is variously by bats, hummingbirds, and insects of various kinds.

The species seem to fit into two distinct clades on the basis of recent DNA analysis:

Core Alcantarea and extensa complex (*burle-marxii, extensa, duarteana, turgida, glaziouana, nahoumi, odorata, patriae, trepida, vinicolor*); and

Serra dos Órgãos complex (*brasiliana, imperialis, regina, geniculata, nevaresii, martinellii*)

With *Al. roberto-kautskyi* falling between these major clades.

Of this list of species above used in recent studies, many are readily available in Australia. Species seen in BSQ sales events are *extensa, glaziouana, nahoumi, odorata, vinicolor, brasiliana, imperialis, regina*. There are many cultivars being developed from the 30 or so species in the genus. Some 46 cultivars are registered currently on the Bromeliad Cultivar register (registry.bsi.org).

Growing Alcantareas

Alcantareas grow well in large pots and in the ground in the garden. You can control the growth rates to an extent by the amount of fertiliser provided. In a landscape situation I choose to provide no additional nutrition beyond what nature delivers. All bromeliads need to establish a reserve of energy to flower. Large alcantareas make attractive focal features in the garden so it is usually preferable to have them continue growing rather than to flower. The inflorescence is long lasting but such a plant will produce offsets which are small and leave your garden without the feature you had.

(Ed: Photos are courtesy of John Byth. Watch for more on growing techniques next issue)

Autumn Show Competition Results

Champion
Len Waite *Dyckia* Talbot White Chocolate
Reserve Champion
Mal Cameron Vriesea Merlin's Dream
Best Bromelioideae
Barry Kable *Billbergia* Hallelujah
Best Tillandsioideae
Len Waite *Tillandsia tectorum*
Best Pitcairnioidede
Barbara McCune *Dyckia delicata*
Best Species
Len Waite *Tillandsia narthecioides*
Best Cryptanthus
Barbara McCune *Cryptanthus* Silver Zone
President's Award
M&M Cameron *Neoregelia* Atomic Blast
Best Hobbyist
Barry Kable
Best Commercial
True Grant

Clockwise from Top L: Al Bart Simpson, *vinicolor*, Vampira, glaziouana.

Tillandsia capitata 'Roja', 'Rubra' or just plain 'Red' by Derek Butcher Jan 2015

Recently the name 'Roja' has caught the notice of the Registrar Geoff Lawn because it has been cited as a parent of a new hybrid but had not been registered. I have been interested in the variability of plants collectively called *T. capitata* by Botanists and in 2002 presented a paper at a biennial conference of Tillandsia enthusiasts at Albury, Australia. As an amateur I was trying to get some semblance of order basing my findings on numerous collections by Renate Ehlers. The only solution seemed to be on geographical grounds based on where the plants were found. I then tried to link these plants with plants being offered in the nursery trade. I regret I was unable to get clear links probably because of variability in growing conditions. My grumble was the lack of locality collection data from Nurseries.

T capitata Roja/Red (photos clockwise from top L by S Haines, J Catlan, S Haines, and J Olsen)

Let us now look at this 'Red' *T. capitata* where most forms of this species have a reddish tinge to the leaves at flowering and we know that the higher up the mountain the more likely you find that the redness intensifies. Sometimes this redness continues under cultivation but usually this is not the situation. The first article I found on this subject is as follows:

***Tillandsia capitata* 'Red'** by Joseph J Ramos in J. Brom. Soc. 27:63-5. 1977
After 25,000 miles of traveling throughout Mexico, I have finally come to the conclusion that the red form of *Tillandsia capitata* is indeed rare.

I first saw this beautiful bromeliad on a plant collecting trip some seven or eight years ago. After collecting a number of plants, I remember leaving Mazatlan for some bromeliads that Bill said he had to find. What they were, I did not know. We travelled east towards Durango, stopping from time to time gathering tillandsias. Suddenly George stopped and the mid-afternoon sun was shining directly on a mass of red plants high up on the barranca. From where we were they couldn't be identified. We looked in vain for plants that were within our reach, but there weren't any. The slope leading to the plants was gravelly and crumbling. It was not hard to climb the first half of the slope, but as it became steeper, we were practically crawling. It got to the point where we were clawing up three feet and sliding back two, but by helping each other, we finally made it to the top, some 800 feet high. The bromeliads were growing just below the brim of the cliff. We lay down on our stomachs hanging over the edge and while one of us scraped the plants up against the side of the rock, the other would reach down as far as he could for them before they fell. We had no idea what we had collected.

This trip was my initiation into plant collecting. On subsequent excursions to Mexico I have gathered more of this tillandsia at the same location - always a difficult job.

In January 1976, I made an extensive trip to Mexico. I found a second location of the red capitata, a small colony which will probably be exterminated within the year for agriculture. Mexico, on the whole, is on a clearing program - clearing and burning the native plant life for agriculture.

I collected two plants from this area to compare with those from Durango. We camped a short distance from Oaxaca on Highway 125 which leads to Puerto Escondido on the west coast. This road has a wealth of tillandsias, cacti, and other succulents. Here I found a third location of the red capitata. It was another small colony, which will also be cleared away to make for agricultural purposes very soon. I noticed that these last two locations were not on high inaccessible rocky formations as in Durango, but rather on high, tall, deciduous trees - also very dry areas on the west side of the sierra..Somewhere along Highway 110 between Tamazula and Colima, I saw another colony of *T. capitata*, the red variety. These were on boulders, like in Durango, growing on the west side of the rocks.

Regarding the red *T. capitata*, I made several observations, which may be of interest to those who grow this beautiful plant.

- First, the elevation at all locations, a total of five, was between 3,500 and 4,000 feet.
- Second, they were also between 35 to 45 miles away from the Pacific Ocean.
- Third, all the red capitatas were growing in full sun and in arid conditions.
- Fourth, in all areas they were growing on the west side of the barrancas or sierras.
- Fifth, only in three locations were they growing on rocks. The ones growing on tall deciduous trees were bigger, but not so red, the same way they grow in cultivation."

No detail is given other than colour which is not much use to the Botanist but is of interest to the Nurseryman. The following is the detail received from Paul Isley of Rainforest Flora in California

"This is from Mexico and was originally in the trade in the 1970s as a wild collected plant called *Tillandsia capitata rubra*. I have no idea from whom we got the original plants, it was undoubtedly from one of those "pot and brush" guys who appeared on the scene for a bit and then disappeared. The name rubra can't be used so I called it *T. capitata* 'Roja' which is Spanish, not Latin so it can be used. We have grown them from seeds over the years and all we've sold for over twenty years are either from seeds or from offsets of seed grown plants."

Checking around other US nurseries I find Tropiflora offering *T. capitata* 'Red', Tillandsia International offering *T. capitata* 'Rubra', and Bird Rock Tropical offering two forms of *T. capitata* 'Rubra'. Are these similar or different botanically or horticulturally? To the keen grower I suggest you take note of the name of the supplier.

USES OF BROMELIACEAE by Peter Paroz

In bromeliad society Journals and Newsletters, the topics are usually those of plant identification, plant description, plant culture and personalities; with only very occasional reference to the use of bromeliads other than as ornamental plants. (*Bromeliaceae Vol*. XLVIII pages 15and 16 is an exception.)

Dr. D.H. Benzing, in his book, **Bromeliaceae Profile of an Adaptive Radiation** (c. 2000), allocated a chapter to this topic. The following articles are reprints, with some reviewer's licence, removing references, of that chapter.

Uses of Bromeliaceae

Part 1 of 3

Nine, nonexclusive categories of plant uses apply to Bromeliaceae (fibre, food, forage, fuel, medicine, ornamental ritual/mythical, miscellaneous and commercial). These categories reflect local applications and perceptions, and may not always coincide with Western notions of utility. For example, indigenous people consider fruits eaten by monkeys, or trees inhabited by spirits, to be useful species.

The fibre category includes bromeliads that provide clothing, thread, rope and paper. Food and forage groups contain plants consumed by humans and animals, respectively. This category also accounts for plants used to prepare foods and beverages. Fuel types provide material for cooking and heating fires. The medical category is self-explanatory. Indigenous and rural peoples also cultivate simply for their aesthetic value, whereas ritual/mythical flora have a place in shamanistic or religious ceremonies.

Major use categories and number of species found in each	
Use category	Number of species
Fibre	13
Food	25
Forage	21
Fuel	4
Medicine	25
Ornamental	37
Ritual/mythical	30
Miscellaneous	10
Commercial	10

The miscellaneous category encompasses all other applications, including those associated with hunting fishing, personal matters and crafts. Commercial plants are those valued outside the local community. At least 90 species have non-horticultural utility. Many possess medicinal properties, and two are poisonous. Other species yield fuel, despite the absence of woody tissues. The ornamental, ritual/mythical food and medicinal categories exceed the others in size. No bromeliad provides material for construction although fibre extracted from the foliage of several species may be used for lashing. No dye plants have been reported.

Fibre

At least 13 species yield useful fibre. Indeed it, and foods, are the principal products derived from Bromeliaceae. *Aechmea magdalenae, Ananas comosus, Neoglaziovia variegate,* and *Tillandsia usneoides* top the list for importance. Indigenous people weave hammocks from *Aechmea bracteata, A. magdalenae* and *Ananas comosus* fibre. Hammocks are more comfortable than beds in the lowland tropics, and portability makes them ideal for nomadic life.

Quichua women in lowland Ecuador fashion hammocks from *Aechmea magdalenae* fibre by first removing the spines from the leaf margins. Leaves are then rubbed across the thigh or a post to loosen the fibres. Leaves tied to a smooth log are scraped with a knife to remove all non-fibrous tissue prior to soaking in water and then dried in the sun. Women fashion a strong twine by rolling three fibres across their thighs with one hand while using the other to braid loose ends. Suitability for hammocks and net bags (chigras) to carry fruit, food and game is high. *Puya chilensis* leaves yield a rot-resistant fibre employed in fishing nets. *Bromelia laciniosa* fibres support a small industry in Brazil. Bromeliad fibres also yield string, rope, twine and thread for sewing leather. Philippine natives fashion a fine cloth from *Ananas comosus* fibres. Brazilian *Neoglaziovia variegata* is one of the most important fibre-producing bromeliads. Its leaves yield a commercial-grade product, called caroa suitable for manufacturing cordage, coarse fabric, mats and reinforced paper. Each shoot bears about 30 leaves but only two to four are suitable for processing at each harvest. Fibre content is 12-14%.

Fibrous tissues from *Tillandsia usneoides,* especially the heavily sclerified stele, once served as a horsehair substitute in upholstery and mattresses, and as packing material. Thirty-five processing plants once operated in Florida alone. Preparation was crude, but inexpensive. Fresh material usually collected in Cyprus swamps, was wetted, then placed in pits for 6-8 months to allow for soft tissue to rot away. Final processing occurred off-site where the fibres were cleaned, sorted and baled. Native North Americans weaved clothes from this rough material.

Food

Although *Ananas comosus* is by far the most widely utilised bromeliad, at least 25 additional species provide edible fruits, leaves or meristems. The first European record of the pineapple dates from Columbus's second voyage. In a letter describing his arrival on Guadeloupe on 4 November 1493, the explorer writes: "There were some (fruits) like artichoke plants, but four times as tall, which gave a fruit in the shape of a pine cone, twice as big, which fruit is excellent, and it can be cut with a knife like a turnip and seems to be wholesome."

Group	Common Name
Chachi	chilla
Cofan	chiviya
Quichua	chihuilla
Quechua	chihuy
Tikuna	chi-na
Shuar	chiu

Pineapple also impressed other European explorers. Oveido wrote in his *Historia General y Naturales de las Indias,* of 1535, "[t]here are no other fruits in the whole world to equal them for their beauty of appearance, delicate fragrance [and] excellent flavour". As with other New World domesticates, Spanish explorers carried pineapples to all corners of the tropics. Today, we associate the fruit with Hawaii, but the Hawaiian pineapple, like the Irish potato, originated in South America. Hawaii did not receive its first pineapple until the early 1800s.

The pineapple probably originated in the Parana-Paraguay drainage system. Indigenous people were already cultivating the plant throughout the New World by the time Columbus arrived. Resemblance to the pine cone (pina in Spanish) prompted the English name pineapple. *Ananas* is derived from the Tupi-Gurani language, an idiom still spoken in Paraguay and Southern Brazil. *Ananas ananassoides, A. bracteatus, A. lucidus, A. paraguazensis* and *Pseudananas sagenarius,* which also yield edible fruits, are all possible ancestors of the pineapple. Certain species of *Aechmea, Bromelia and Gregia* also bear edible fruits.

Today, pineapple ranks among the most widely cultivated tropical fruits, growing best between 25 N and S latitude where rainfall ranges from 1000 to 1500 mm. However, crops can survive wherever annual precipitation falls between 635 and 2500 mm and frost is absent. Fruits are often eaten fresh, but much of the commercial harvest is canned. A fermented beverage is made from pineapple fruits in Panama and throughout much of Amazonia. Fermented and nonfermented drinks are also made from *Aechmea magdalenae, Bromelia alsodes, B. hemisphaerica, B. niduspuellae, B. pinguin* and *B. plumieri* fruits.

Some indigenous Americans consume bromeliad leaves and meristems. The tender leaf bases of *Puya hamate* are eaten in salads and ground into flour. A sweet drink is concocted from young inflorescences and soft leaf tissues in southern Ecuador.

Leaf bases of *P. sodiroana* are edible, and *Tillandsia complanata leaves* are used to wrap tamales. The Pima of Mexico occasionally eat *T. erubescens* and *recurvata* inflorescences, apparently attracted by the high sugar content. Shoot apices of *T. maxima* and *T. rubella* are consumed in Bolivia and Argentina. Highland Quechua drink water trapped in the phytotelmata of *Tillandsia oroyensis* much as the Seminole of southern Florida once used *Tillandsia utriculata.*

Forage

At least 21 species produce forage suitable for domesticated or wild animals. Monkeys eat the young inflorescences and drink water impounded by numerous species including *Aechmea tessmannii, A. tillandsioides, A. zebrina, Guzmania acuminata, G. eduardii, G. melinonis,* and *G. monostachia*; *and* many forest people in turn hunt these primates.

Hunting is more successful where forest canopies host abundant phytotelmata Bromeliaceae. Other animals depend on these plants and some of their terrestrial relatives. *Puya sodiroana* is a 'favourite food of bear', probably the rare Andean spectacled bear (*Tremarctos ornatus*).

Dendrobatid frogs inhabit the tanks of some epiphytic bromeliads. Most indigenous people tip poison darts with phytotoxins (often species of Loganiaceae and Menispermaceae), but inhabitants of Columbia's Choco use toxic skin secretions produced by these animals to arm blowgun darts. One dendrobatid species is so potent that a single individual contains enough poison to kill 100 people. Knowledge of which bromeliads host frogs assures the hunter of a continuous supply of curare substitutes.

Scores of other animals consume bromeliads given the opportunity. Mules eat *Pepinia pulchella* leaves and goats consume *Tillandsia recurvata shoots*. Native Andean people collect the foliage of *Puya ferruginea, P. pyramidata, P. sodiroana and P. eberbaueri;* and the seeds of *P. lasiopoda, P. oxyantha* and *P. weberbaueri* to help raise domesticated guinea pigs. Cattle, sheep and llamas feed on bromeliads including *Puya sodiroana, P. weberbaueri, Tillandsia biflora, T. chartacea, T. fasciculata, T. ionochroma, T. sphaerocephala,* and *T. streptophylla among* others.

COMPETITION SCHEDULE 2015

Note: In all MINI SHOWS Class 4 is any other flowering bromeliad species & hybrids

January - MINI SHOW

Class 1 – Aechmea species & hybrids
Class 2 – Vriesea species & hybrids
Class 3 – Dyckia species & hybrids

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, Araeococcus, 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

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

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 *(*Brocchinioideae, Lindmanioideae, Hechtia), Puya), Navioideae, Pitcairnioideae (= Deuterocohnia, Encholirium, Fosterella)

November - POPULAR VOTE

Plant of the month List for 2015

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