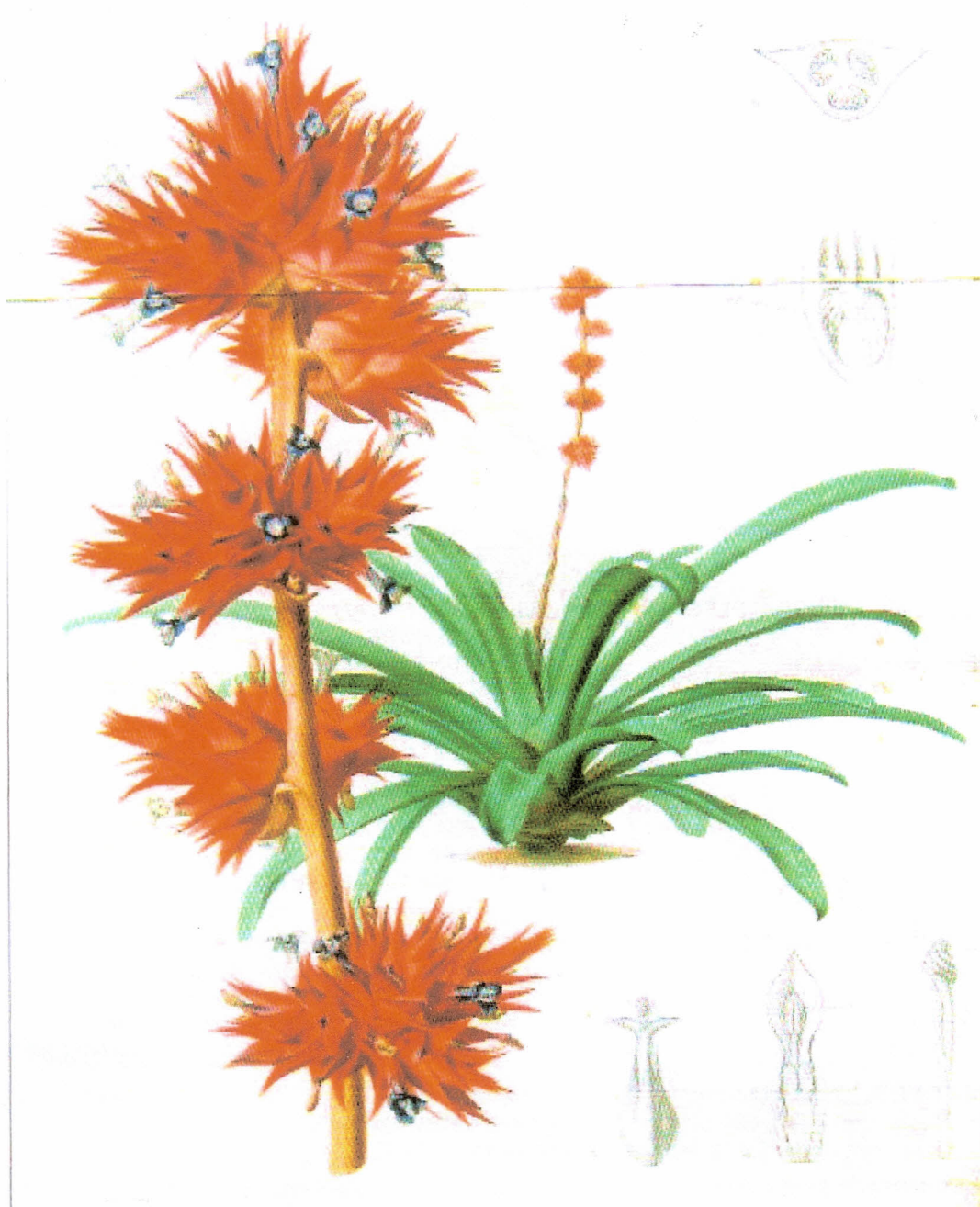


ILLAWARRA BROMELIAD SOCIETY INCORPORATED

NEWSLINK

October 2013



Hohenbergia stellata Schultes fil. Syn.: *Hohenbergia erythrostachys* Brongniart.
Drawing A. Riocreux, lithography G. Severeys, J. de la Société Impériale et Centrale
d'Horticulture de France Vol. 10 Plate 18 (1864). Reprinted from JBS 61(4) 2011

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- The Society is, by the holding of meetings, displays and competitions, to provide a forum for the people of the Illawarra region who are interested in the culture and collection of bromeliads.
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MEETINGS: The Society meets at 12.00 noon on the first Saturday of each month (except January and December) in the Laurel Room* at the Ribbonwood Centre, DAPTO.

*Scribbly Gum Room for November meetings only.

MEMBERSHIP SUBSCRIPTIONS: Subscriptions due 30th June each year. \$10 Single/\$15 Family

SOCIETY FORMED: February 1992

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Also available at <http://www.bromeliad.org.au>

VISITORS ARE ALWAYS WELCOME

NEWS IN BRIEF . . .

NEW MEMBERS: A very warm welcome to our new members Patricia Roberts, Sue Sutton, and Ted and Mary Whybrow who joined at our July meeting and Graham and Helen Eather who signed up at our Show in September.

MONTHLY RAFFLE PRIZE ROSTER:

October - Maria Jakobsen, Bruce Cluff, June Smith, Doreen Netting, Jan Stammers
2014
February - Steve Morgan, Meri Stefanidakis, John Toolan, Beth Clague, Christa Thomas

A REMINDER: A CHANGE OF ROOM FOR OUR NOVEMBER MEETING. As the Illawarra Lapidary Club's annual exhibit requires the use of our usual meeting room in November, we will switch to the Scribbly Gum Room which is located to the right of the main entry of the Dapto Ribbonwood Centre, on the Princes Highway side of the building.

LIBRARY NOTE: Would all members who have books, videos or journals out on loan please return them at or before the December meeting.

PHILLIP ROBINSON TO RECEIVE THE 2013 PRESIDENT OF THE GARDEN CLUBS OF AUSTRALIA AWARD for outstanding contribution by an individual to Gardening and/or Horticulture. Mr. Ken Bradley, President of the GCA, will present this award to Phillip at our October meeting. See further details on page 5.

CHRISTMAS PARTY: This year's Christmas party will again be held at our usual meeting venue and will be a catered affair. Cost for members will be \$16 and will include a choice of carved meats, salads and desserts. The Society will supply punch but wine and beer will be on a BYO basis this year. We will have access to the Laurel Room from 11.30 am on Saturday, 7th December and so, after time for setting up, the festivities should begin around 11.45 am, with lunch served at 12.30 pm. As in past years please bring a small gift for sharing (value up to \$10)—with men bringing plants suitable for men and women bringing presents suitable for women, and bromeliads always welcome! Sue will need to have numbers and monies in by our November 2nd meeting.

RESIGNATION OF GRAHAM AND ELIZABETH: It was with great shock and dismay that the committee learned of Graham and Elizabeth's intention to resign from our Society and their positions of President and Treasurer. These they have held since they were elected at our August AGM in 2001 and since then they have been the backbone and heart of our Society. As well as fulfilling the major roles they also took on many other roles which helped to make it the friendly and thriving group that we have today, such as organising our Christmas parties in July and December, the three or four workshops each year, and the lovely decorative touches at these parties and at our annual Show. Also they have been our liaison people with the Garden Clubs of Australia which involves handling insurance matters, magazine subscriptions, etc. etc.—and how could we forget that they were the driving force behind the organisation of our *Brom-A-Warra* Conference in 2001. They will be missed very much but we do hope that as Lifetime Members they will come back to visit and to catch up with old friends as time and circumstances allow.

YOUR SOCIETY AND THE FUTURE: The Illawarra Bromeliad Society Inc. has reached a crossroads. This situation has been brought about by several events:

- First - Elizabeth and Graham Bevan have recently tendered their resignations from the Society.
- Secondly - Neville Wood has resigned from his position of Vice-President.
- Thirdly - Noel Kennon intends to stand down from office at the next AGM.

Empowered by the Constitution and By-Laws, the Committee has taken actions to ensure that the Society will continue to function, more or less as normal, for the time being. However, the Committee cannot make decisions on your behalf about the ways in which the Society will continue beyond the next few months with the loss of services of those experienced officers.

Those losses give the members a timely opportunity to think about how they want the Society to continue into the future. Do you think the Society should continue? Do you want to continue with the monthly meetings? What do you want to happen at those meetings? Do you want the monthly competitions, plant sales and raffle? What about Workshops? And special events like the Annual Show and the Christmas Party? All these matters and others are on the table for consideration. And, of course, who is going to take up the reins? It is up to the members to decide how they want the Society to function.

To make some of the decisions, a Special General Meeting is called to replace the November General Meeting. There will be no business conducted, no competitions, no plant and general sales, no raffle and no library. But there will be afternoon tea so don't forget to bring a plate. The doors to the Scribbly Gum Room will be open at 12 noon and the meeting will commence at 1.00 pm, giving members the opportunity to discuss the situation and opportunities with each other. Please come along to help design the future of your Society. We hope that all members will be positive about this opportunity and that all suggestions concerning the future will be achievable within the resources of the members.

There will be one item only on the Agenda:

'The Illawarra Bromeliad Society Inc. into 2014 and beyond.'

PLANT SALES: PRICE STICKS FOR MONTHLY MEETINGS AND ANNUAL SHOW

All selling members use paddle pop sticks for their initials and plant price. These sticks are ideally suited for this purpose and members are encouraged to continue using them. However, a few problems have arisen from time to time including the following:

- Some members put their initials at one end of the stick and the price at the other; the initialed end is then buried in the potting mix where it becomes heavily stained and difficult to read—in extreme cases the end rots off and so is impossible to read.
- Some members re-use the sticks and change the price without adequate obliteration of the original which creates a dilemma for the sales officer.
- Some members use faint pencil inscription which is difficult to decipher.
- The initials of some members end with an 'S' which can be confused with a '5' and so lead to an incorrect costing.
- Some members use more than one identifying set of initials or names.
- Some members forget to inscribe their initials or name—or both—on the stick
- ...and so on (there are other problems).

To try to avoid errors arising from problems with the sticks the Committee asks that selling members adopt the following practices:

1. Try not to re-use sticks—they really are cheap from the 'El Cheapo' stores.
2. Put your initials, followed by the price, at one end of the stick—e.g., NK \$7
3. Use the same initials all the time.
4. Use a pen, not pencil.
5. Write on one side of the stick only.
6. Insert or attach the stick next to the 'Plant Name Label'.
7. Arrange the stick with the initials and price outwards.
8. Some members paint their sticks with distinctive colours; this is perfectly OK, but please try to comply with the above suggestions.

GARDEN CLUBS OF AUSTRALIA AWARD TO PHILLIP ROBINSON: In December 2012 Phillip was honoured, along with his friend, Barry Baird, for the work that they are doing in documenting endangered and threatened plants in the Wollongong Botanic Garden. This was part of the *Rise and Shine Awards*, run by the Wollongong Shire Council, and, at a special ceremony, Phillip was presented with his award by Wollongong's Lord Mayor, Mr. Gordon Bradbury.

When the opportunity arose for Phillip to be considered for another award—this time *The 2013 President of the Garden Clubs of Australia Award*, our President, Graham Bevan, put forward Phillip's name with a write-up of some of Phillip's history in the gardening/horticulture and botanic fields. Graham also included an extract from a speech given at that ceremony by Phillip's friend and colleague, Vice President of the Friends of the Wollongong Botanic Garden, Barry Baird. Because it tells us such a lot about this quiet, unassuming man I will include some of this speech in this article.

"Over 5 years ago I decided that I would act as a volunteer in the Discovery Centre, helping to provide educational resources for Michael Connor (grounds staff coordinator) and his team. I recognized that I did not have sufficient botanical knowledge for the job but I knew who to turn to—Phillip Robinson.

I had known Phil since the early 70s through the Illawarra Natural History Society. Since Phil, Michael, and I first met the direction has changed!

In a November 2012 *Illawarra Mercury* feature by Jody Duffy, Phil explained this all started because 'we came to the conclusion that the knowledge that I have stored in my head should be written down so that it's not lost. We began with the self-guided walks around some of the collections but now we've decided to catalogue as much as we can.'

It is only since the beginning of 2012 that the Friends have been asked to record their volunteer hours and to the end of January 2013 Phil has logged approximately 600 hours. Mostly this is intensive research on identification, classification, origins, uses and ethnic connection and the mapping of plant locations in the Garden. This research has led to the publication of a number of documents which can be used as a reference point for the Education Centre and act as a resource for the curatorial garden staff. These documents include reference books, maps, pamphlets and plant signs for the 'dry tropical house', the 'humid tropical house', herb garden, palm collection and 'temperate courtyard'.

In addition, Phillip has provided research for Debbie Downs (Living Collections Officer), covering a number of collections, including an update of the haworthia collection classification. The genus *Haworthia* has undergone reclassification and this required the Leo Cady collection of approximately 1000 plants to be reviewed, reclassified and renamed, according to the new system. This work alone occupied 150 hours. Phil has also worked on the bush medicine/bush tucker garden species and plant of the month, together with the identification of camellias, tree ferns, and the agaves and aloes of the dry mound.

And just in case you think this is a recent, isolated burst of energy, Phil's work at the Garden stretches back 20 years, when he first led the Friends' guided walk program. I have 65 of Phil's word documents on the aspects of the Wollongong Botanic Garden. Most of these were used to prepare for the garden walks or for articles in the newsletter. There are various topics from 'areas of interest in the garden', 'labelling information for plant sales', and 'woodland garden sources'. A list of endeavours by Phil include the formalising of the infrastructure of the propagation team and the conduct of the plant sales for approximately 10 years. He also presented a regular program with Margaret King on local Vox FM on plants of interest and walks within the Wollongong Botanic Garden."

Phillip was a founding member of the Illawarra Bromeliad Society and served as Vice-President from 1992 to 1998. In the early days of the Society he was instrumental, along with people like Margaret and Jeff Bartley (our first President and Secretary), in setting up the Wollongong Botanic Garden's bromeliad displays, both in the glasshouse and surrounding garden beds. To honour Phillip for the myriad things that he has taken on for our Society he was awarded Lifetime Membership in June 2010.

MARGARET PATERSON RECEIVES OAM IN QUEEN'S BIRTHDAY HONOURS LIST: Our sincerest congratulations to Margaret on receiving this recognition for the work she has done making many beautiful bromeliad hybrids, some of which I am sure we would have in our collections. The award reads: "Mrs. Margaret Joan Paterson OAM for service to horticulture through cultivation and hybridization of bromeliads." A few years ago Margaret and her husband, Bill, put out a book, *Bromeliad Hybrids: For My Own Satisfaction* covering the hundreds of neoregelias she has made over the years, and more recently they have published Book 2 – *Bromeliad Hybrids: For My Own Satisfaction – Cryptanthus, Tillandsias, Vrieseas and Others*.

FOLLOWUP INFORMATION TO MAX WILLIAMS' PRESENTATION AT OUR AUGUST MEETING: Max has kindly supplied details of the potting mix and fertilizer regime that he uses to good effect in his garden.

Potting Mix:

2 parts **DEBCO** 5-10 mm Orchid Potting Media
1 part **AMGRO** Orchid Potting Mix

Fertilizer - 4.5 litres in Sprayer:

20 ml HARVEST)	
10 gm (2 teaspoons) Potash Powder – BRUNNINGS)	Every 7-10 days
3 gm (1/2 teaspoon) THRIVE Powder)	
		OR

ECO Fertilizer - 4.5 Litres in Sprayer:

25 ml ECO AMINOGROW)	
5 gm (1 teaspoon) ECO SEAWEED)	Every 7-10 days
15 ml ECO OIL)	

Pest Spray - 4.5 Litres in Sprayer:

20 ml ECO OIL)	
7 ml ECO NEEM)	Every 7 – 14 days
10 gm (2 teaspoons) ECO FUNGICIDE)	

UPCOMING EVENTS . . .

Oct. 12 - 13	BROMELIAD SOCIETY OF AUSTRALIA – SPRING SHOW – BURWOOD RSL
Oct. 17 - 20	BERRY GARDENS FESTIVAL - \$20 for 8 gardens/\$5 individual gardens; Tickets at gardens and Apex Park. www.berrygardens.org.au Mary Seelis (02) 4464 1191
Oct. 18 - 20	GALSTON OPEN GARDENS – 8 gardens open from 9.30 am to 4.30 pm each day. \$5 indiv. gardens/\$20 all gardens, valid over 3 days. www.galstongardenclub.com.au .
Oct. 19 - 20	TAMWORTH COTTAGE GARDENERS INC. – 2013 BIENNIAL OPEN GARDENS Eight established gardens, open 9 am to 5 pm Entry Fee \$20 weekend pass or \$3 per garden. Sandra Ph: 6766 2272 ph360420@bigpond.net.au ; Beryl Ph: 6766 1624
Dec. 1	HILLS DISTRICT ORCHIDS OPEN DAY (with Dark Star Orchids) 9.00 am – 4.00 pm 183 Windsor Road, NORTHMEAD (next to "The Home Team" - Park in Mary Street or Windermere Avenue
<u>2014</u>	
Feb. 23	HILLS DISTRICT ORCHIDS OPEN DAY – Park Mary Street or Windermere Avenue
Sep. 8 - 14	WORLD BROMELIAD CONFERENCE - <i>BROMELIADS IN PARADISE</i> – HONOLULU
<u>2015</u>	
April 16 - 19	BROMSMATTA – 18 TH AUSTRALASIAN BROMELIAD CONFERENCE, NOVOTEL, PARRAMATTA. Hosted by The Bromeliad Society of Australia. Early Bird Registration before April 30, 2014 \$260 pp. www.bromeliad.org.au

July 6, 2013: Plant Results**Open:**

1 st	Jørgen Jakobsen	<i>Aechmea orlandiana</i> 'Rainbow'
2 nd	John Carthew	<i>Billbergia sanderiana</i>
3 rd	Jørgen Jakobsen	<i>Aechmea nudicaulis</i> 'Costa Rica'
3 rd	John Carthew	<i>Quesnelia marmorata</i> 'Tim Plowman'

Novice:

1 st	Yvonne Perinotti	<i>Neoregelia</i> 'Sunrise'
2 nd	John Toolan	<i>Vriesea</i> 'Elemeri' (Unreg.)

Tillandsia:

1 st	Ann Kennon	<i>Tillandsia punctulata</i>
2 nd	Graham Bevan	<i>Tillandsia brachycaulos</i> X <i>T. streptophylla</i>
3 rd	Ann Kennon	<i>Tillandsia caerulea</i>

August 1, 2013: Plant Results**Open:**

1 st	Ann Kennon	<i>Neoregelia lilliputiana</i>
2 nd	Graham Bevan	<i>Aechmea</i> 'Foster's Favorite'
3 rd	Jørgen Jakobsen	<i>Vriesea</i> 'Waverly' (Unreg.)

Novice:

1 st	Max Williams	<i>Vriesea</i> 'Snows of Mauna Kea'
2 nd	Yvonne Perinotti	<i>Neoregelia</i> 'Royal Cordovan'
3 rd	Barbara Jones-Beverstock	<i>Neoregelia</i> 'Fireball' X

Tillandsia:

1 st	Jørgen Jakobsen	<i>Tillandsia stricta</i>
2 nd	Suzanne Burrows	<i>Tillandsia dura</i>
3 rd	Suzanne Burrows	<i>Tillandsia streptocarpa</i>
3 rd	Ann Kennon	<i>Tillandsia ortgiesiana</i>

August 31, 2013: Plant Results**Open:**

1 st	Ann Kennon	<i>Neoregelia</i> 'Alley Cat'
2 nd	Neville Wood	<i>Billbergia</i> 'Fred Red' X 'Hallelujah'
3 rd	Ann Kennon	<i>Vriesea</i> 'Purple Cockatoo'

Novice:

1 st	Yvonne Perinotti	<i>Billbergia</i> 'Hallelujah'
2 nd	John Toolan	Creative Display
3 rd	John Toolan	<i>Aechmea</i> 'Rakete'
3 rd	John Toolan	<i>Aechmea orlandiana</i>

Tillandsia:

1 st	Ann Kennon	<i>Tillandsia punctulata</i>
2 nd	Suzanne Burrows	<i>Tillandsia bulbosa</i> (Silver)
3 rd	Ann Kennon	<i>Tillandsia stricta</i> var. <i>albifolia</i>

SHOW RESULTS - 2013

CHAMPION BROMELIAD: OPEN

Catherine Wainwright	<i>Tillandsia recurvifolia</i> var. <i>subsecundifolia</i>
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CHAMPION BROMELIAD: NOVICE

Ann Kennon	<i>Tillandsia punctulata</i>
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BEST SPECIES:

Catherine Wainwright	<i>Tillandsia recurvifolia</i> var. <i>subsecundifolia</i>
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DULCIE DOONAN MEMORIAL AWARD:

Elizabeth Bevan	White wicker basket with Neoregelias
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DIVISION 1: OPEN

Class A - Aechmea (7 entries)

1 st	Nina and Jarka Rehak	<i>Aechmea fasciata</i>
2 nd	John Carthew	<i>Aechmea recurvata</i>
3 rd	Jan Stammers	<i>Aechmea recurvata</i>

Class B - Billbergia (6 entries)

1 st	Neville Wood	<i>Billbergia</i> 'Fred Red' x 'Hallelujah' #001 (Unreg.)
2 nd	Neville Wood	<i>Billbergia</i> 'Perriam's Pride'
3 rd	Catherine Wainwright	<i>Billbergia</i> 'Hallelujah'

Class C - Neoregelia (9 entries)

1 st	Neville Wood	<i>Neoregelia</i> 'Stairway'
2 nd	Nina and Jarka Rehak	<i>Neoregelia</i> 'Red Empress'
3 rd	John Carthew	<i>Neoregelia</i> 'Red Macaw'

Class D - Miniature Neoregelia (10 entries)

1 st	Stephen and Laila Astill	<i>Neoregelia</i> 'Shamrock'
2 nd	Stephen and Laila Astill	<i>Neoregelia</i> 'Shep'
3 rd	Neville Wood	<i>Neoregelia</i> 'Wild Tiger'

Class E - Tillandsia (13 entries)

1 st	Catherine Wainwright	<i>Tillandsia recurvifolia</i> var. <i>subsecundifolia</i>
2 nd	Laurie Dorfer	<i>Tillandsia tectorum</i>
3 rd	Catherine Wainwright	<i>Tillandsia tectorum</i>

Class F - Vriesea/Guzmania (7 entries)

1 st	Catherine Wainwright	<i>Vriesea ospinae</i> var. <i>gruberi</i>
2 nd	Freda Kennedy	<i>Vriesea platynema</i> var. <i>variegata</i>
3 rd	Nina and Jarka Rehak	<i>Vriesea</i> 'Highway Beauty'

Class G - Other Bromeliad (7 entries)

1 st	Catherine Wainwright	x <i>Neophytum</i> 'Galactic Warrior'
2 nd	Ann Kennon	<i>Cryptanthus</i>
3 rd	Maureen Wheeler	<i>Canistrum triangulare</i>

Class H - Multiples/Clumps: Aechmea/Neoregelia/Vriesea [17 entries]

1 st	Ted Clare	<i>Neoregelia</i> 'Jack Smack'
2 nd	Suzanne Burrows	<i>Neoregelia</i> 'Rien's Pride'
3 rd	John Toolan	<i>Aechmea recurvata</i>

Class I - Mounted Tillandsias [8 entries]

1 st	Laurie Dorfer	<i>Tillandsia ionantha</i>
2 nd	Laurie Dorfer	<i>Tillandsia kautskyi</i>
3 rd	Catherine Wainwright	<i>Tillandsia fuchsii</i>

Class J - Mounted Bromeliad other than Tillandsias [4 entries]

1 st	Neville Wood	<i>Neoregelia</i> 'Strawberry Cup'
2 nd	Noel Kennon	<i>Vriesea vagans</i>
3 rd	Ted Clare	<i>Neoregelias</i>

DIVISION 2 - NOVICE**Class K - Aechmea** [6 entries]

1 st	Edwina Caruana and Stephen Wain	<i>Aechmea</i> 'Royal Wine'
2 nd	Jørgen Jakobsen	<i>Aechmea recurvata</i>
3 rd	Jørgen Jakobsen	<i>Aechmea</i> 'Bert'

Class L - Billbergia [5 entries]

1 st	John Toolan	<i>Billbergia</i> 'Hoelscheriana'
2 nd	John Toolan	<i>Billbergia</i> 'Hoelscheriana'
3 rd	Jørgen Jakobsen	<i>Billbergia</i> 'Hallelujah'

Class M - Neoregelia [7 entries]

1 st	Edwina Caruana and Stephen Wain	<i>Neoregelia</i> 'Shamrock'
2 nd	Stephen and Laila Astill	<i>Neoregelia</i> 'Painted Delight'
3 rd	John Toolan	<i>Neoregelia</i> 'Painted Desert'

Class N - Tillandsia [7 entries]

1 st	Ann Kennon	<i>Tillandsia punctulata</i>
2 nd	Edwina Caruana and Stephen Wain	<i>Tillandsia foliosa</i>
3 rd	Edwina Caruana and Stephen Wain	<i>Tillandsia sprengeliana</i>

Class O - Vriesea/Guzmania [9 entries]

1 st	Jørgen Jakobsen	<i>Guzmania conifera</i>
2 nd	Edwina Caruana and Stephen Wain	<i>Vriesea</i> 'Amelita'
3 rd	Edwina Caruana and Stephen Wain	<i>Vriesea gigantea</i> hybrid

Class P - Other Bromeliad [7 entries]

1 st	Stephen and Laila Astill	<i>Cryptanthus</i> 'Alberta'
2 nd	Stephen and Laila Astill	<i>Quesnelia marmorata</i>
3 rd	Edwina Caruana and Stephen Wain	<i>Nidularium</i> 'Ruby Lee'

CATEGORY II: - ARTISTIC**Class Q - Basket/Decorative Container** [7 entries]

1 st	Elizabeth Bevan	White wicker basket containing neoregelias
2 nd	Noel Kennon	Wicker basket containing neoregelias
3 rd	Catherine Wainwright	A black basket containing <i>Aechmea recurvata</i> plants

Class R - Bromeliad Garden [9 entries]

1 st	Stephen and Laila Astill	'Asian Garden' using cryptanthus and driftwood
2 nd	Lydia and Ian Chinnock	A large glass snifter containing cryptanthus and <i>V. carinata</i>
3 rd	Stephen and Laila Astill	'Summer Garden' in a terracotta bowl

Class S - Artistic Arrangement

1 st	Elizabeth Bevan	'Goodies in a Box' – A florists' box featuring pink bromeliads
2 nd	Elizabeth Bevan	'Swan Song' – Red and white nidulariums and aechmeas in a swan vase.
3 rd	Freda Kennedy	A barbed wire ball featuring <i>Tillandsia secunda</i> and <i>T. usneoides</i>

COMPETITION STATISTICS

2009	17 th Show	146 entries	19 competitors
2010	18 th Show	113 entries	16 competitors
2011	19 th Show	151 entries	20 competitors
2012	20 th Show	154 entries	15 competitors
2013	21 st Show	158 entries	19 competitors

'SNIPPETS'

By Neville Wood, Illawarra Bromeliad Society

A friend of mine was just recently singing the praises of using 'rice hulls' in her bromeliad potting mix to improve drainage, which immediately started alarm bells ringing in my head and I had to tell her the following information. I remember many years ago when I grew orchids there was a craze for putting rice hulls in the orchid potting mix to improve the drainage. What they didn't count on was that it also attracted rats and mice that came looking for bits of grain among the hulls and they would sometimes dig a plant completely out of the pot in their search. While some brom growers still use peanut shells in their potting mix, it's been discovered this, too, can sometimes attract rats and mice as they also like peanuts.

Just for a final bit of useless information you probably don't need to know anyway: Did you know that peanut butter spread over a pumpkin seed is the best bait to put on rat and mouse traps? (Catches them every time!)

I frequently visit some of the bromeliad forums, both Australian and international. Often there are some good tips and warnings shared by other growers and below are just a few that I would like to pass on:

Seaweed Sprays - Foliar sprays made from seaweed have been found to be very effective in reducing fungal diseases that affect leaves and flowers. Seaweed extract also increases the microbial activity in the soil. This activity helps to make existing nutrients more available to plants. Seaweed also increases the ability of plants to cope with extremes of temperature, including frost and drought.

Condy's Crystals - (Potassium permanganate). A tiny amount mixed in a bucket of water—until it turns the water dark pink—can be used to provide extra potassium to your plants, control powdery mildew and is used by some gardeners to kill ants in potted plants. However, BEWARE it is toxic to worms!

Copper sprays - Copper oxychloride, cupric hydroxide and Bordeaux mixture are still commonly used to control a range of fungal diseases including mildews, anthracnose and leaf spots. They are also TOXIC to bromeliads and MUST NOT BE USED on them.

THE FAMILY BROMELIACEAE

I was prompted to print up this reference guide because I wonder if a lot of us, like the lady attending the World Bromeliad Conference in Cairns and visiting Peter Sargent's beautiful Whyanbeel Arboretum, when told that the beautiful clump of plants that she had been admiring was *Portea kermesina*, said, "Oh, but I thought they were bromeliads!" Well, while perhaps most of us might be familiar with *portea*, *Disteganthus*, *Steyerbromelia* and *Deinacanthon* would possibly be genera that we had never run across before. New technologies have persuaded botanists to make many changes, causing some

genera to be transferred to within other genera —e.g., *Pepinia* being swallowed up into *Pitcairnia* and the one species previously known as *Andrea selloana* has now become *Eduandrea selloana*—and there are many more changes in the wind. However, I have extracted the following information from recent work which Derek Butcher and Eric Gouda have compiled. While there are 58 genera listed here, this is open to different interpretations from different botanists, but I hope that it will provide you with some better idea of what our wonderful world of bromeliads has to offer us! Perhaps about 90% of these different genera are represented in collections throughout Australia.

This Table represents the 3 sub-families of *Bromeliaceae*—*Tillandsioideae*, *Pitcairnioideae*, and *Bromelioideae*—differentiated by the way in which they set seed.

***Tillandsioideae*:** Have winged seeds with little, silky, featherlike parachutes that enable the seed to be borne aloft by the breezes.

***Pitcairnioideae*:** Have winged seeds, but without the 'parachutes'.

***Bromelioideae*:** Have berry-like fruit, adopted for dispersal by birds or other animals because of food value or stickiness. Another distinguishing feature is that all genera within this group have spined leaves.

<i>Tillandsioideae</i>	Number of Species	<i>Bromelioideae</i>	Number of Species
<i>Tillandsia</i>	704	<i>Aechmea</i>	283
<i>Vriesea</i>	250	<i>Neoregelia</i>	125
<i>Gumania</i>	218	<i>Billbergia</i>	65
<i>Werauhia</i>	91	<i>Cryptanthus</i>	78
<i>Racinaea</i>	76	<i>Bromelia</i>	62
<i>Alcantarea</i>	36	<i>Hohenbergia</i>	67
<i>Catopsis</i>	19	<i>Nidularium</i>	47
<i>Mezobromelia</i>	9	<i>Orthophytum</i>	67
<i>Glomeropitcairnia</i>	2	<i>Greigia</i>	36
9 genera		<i>Quesnelia</i>	23
<i>Pitcairnioideae</i>		<i>Ronnbergia</i>	13
<i>Pitcairnia</i>	407	<i>Canistrum</i>	13
<i>Puya</i>	229	<i>Canistropsis</i>	11
<i>Dyckia</i>	162	<i>Lymania</i>	9
<i>Navia</i>	93	<i>Araeococcus</i>	9
<i>Hechtia</i>	64	<i>Portea</i>	8
<i>Lindmania</i>	39	<i>Wittrockia</i>	7
<i>Fosterella</i>	31	<i>Ochagavia</i>	4
<i>Encholirium</i>	28	<i>Edmundoa</i>	3
<i>Brocchinia</i>	20	<i>Lapanthus</i>	3
<i>Deuterocohnia</i>	20	<i>Neoglaziovia</i>	3
<i>Brewcaria</i>	6	<i>Acanthostachys</i>	2
<i>Connellia</i>	6	<i>Ananus</i>	2
<i>Steyerbromelia</i>	6	<i>Androlepis</i>	2
<i>Ayensua</i>	1	<i>Disteganthus</i>	2
<i>Cottendorffia</i>	1	<i>Fascicularia</i>	2
<i>Sequencia</i>	1	<i>Fernseea</i>	2
16 genera		<i>Ursulaea</i>	2
		<i>Deinacanthos</i>	1
		<i>Eduandrea</i>	1
		<i>Hohenbergiopsis</i>	1
		<i>Pseudachmea</i>	1
		<i>Pseudanas</i>	1
		33 genera	

BROMELIACEAE AND ITS [PROPOSED] EIGHT SUB-FAMILIES

By Derek Butcher – http://www.fcbs.org/articles/Bromeliaceae_and-its_eight_sub_families

Yes, you thought there were only three, namely *Pitcairnioideae*, *Tillandsioideae*, and *Bromelioideae*, known by their winged seeds, plumose seeds, and fleshy fruits, respectively. But for the last 10 years much research has been conducted to test whether this classification reflects actual evolutionary history, as reconstructed based on variation in the DNA carried by their chloroplasts.

Things are now taking shape and you should be aware of where things are heading. Thomas Givnish and his team at the University of Wisconsin recently published a paper in 2007 in *Aliso*, where the proceedings of the *Third International Congress on Monocot Evolution* (held in California nearly five years ago) have appeared in two special issues.

Remember we are considering how bromeliads evolved millions of years ago, when North and South America were separated, when the Venezuelan highlands were lowlands ready to be pushed up, and when the Amazon drained through Lake Maracaibo!

Givnish and his colleagues sequenced *ndhF*, a rapidly evolving gene found in the chloroplast, in 35 bromeliads and 16 closely related monocots to infer relationships among present-day bromeliad genera. They found that the long-recognized subfamilies *Tillandsioideae* and *Bromelioideae* were each monophyletic—i.e., each subfamily included all the descendants of a single ancestor. Surprisingly, however, Givnish *et al.* showed that the subfamily *Pitcairnioideae* was strikingly paraphyletic, with both tillandsioids and bromelioids arising from within it. Given the ladder-like family tree the investigators recovered, they found it necessary to recognize EIGHT subfamilies, if each were to be properly monophyletic and easily diagnosed in terms of recognizable morphological characters.

As a result, they described four new subfamilies, recircumscribed *Pitcairnioideae* and *Navioideae*, sunk *Ayensua* into *Brocchinia*, and described a new genus *Sequencia* (named after it having been recognized initially based on its DNA sequence). The subfamily *Brocchinioideae* is basal-most, sister to all other subfamilies, followed by *Lindmanioideae*; both of these groups are restricted to the ancient Guayana Shield of northern South America. Above these subfamilies is an unresolved, three-way branch involving *Hechtioideae* (from Central America), *Tillandsioideae*, and the remaining bromeliads (involving subfamilies *Navioideae*, *Pitcairnioideae*, *Puyoideae*, and *Bromelioideae*, in their respective order of branching).

Based on the extent of genetic divergence found among present-day bromeliads, calibrated against the amount of such divergence among various groups of monocots, Givnish and his colleagues inferred that bromeliads arose roughly 70 million years ago, as terrestrial plants with C3 photosynthesis, on moist infertile sites on the Guayana Shield. Subsequently, they spread centrifugally in the New World, and reached tropical West Africa (in the form of *Pitcairnia feliciana*) via long-distance seed dispersal some 10 million years ago.

Modern genera and subfamilies began to diverge from each other 19 million years ago, implying a great deal of evolution (and, most likely, a lot of extinction) during the 51 million years of time since the ancestor of all bromeliads (and only bromeliads) arose 70 million years ago. Bromeliads appear to have begun invading drier areas in Central and South America beginning roughly 15 million years ago, at the same time as bromeliads underwent a major adaptive radiation involving the repeated evolution of epiphytism, CAM photosynthesis, impounding leaves, several features of leaf and trichome anatomy, and an accelerated rate at which new genera subsequently appeared. Givnish and his team call this the “bromeliad revolution”, and it appears to have occurred just after the uplift of the northern Andes and the shift of the Amazon to its present course. They suggest that epiphytism may have accelerated speciation by increasing the ability of bromeliads to colonize along the length of the Andes, allowing bromeliads to occupy a cloud-forest landscape punctuated frequently by drier valleys. Avian pollination (mainly by hummingbirds) appears to have arisen at least twice about 13 million years ago, at about the time hummingbirds themselves were diversifying; insect-pollinated, relatively small flowers (like those in *Brocchinia* or *Lindmania*) were ancestral. Despite their representing three different lineages, members

of *Hechtia*, of *Puya*, and of *Abromeitiella-Deuterocohnia-Dyckia-Encholirium* have evolved a suite of several different leaf and trichome traits in parallel, apparently as convergent adaptations to drought.

The new subfamilies with their genera are as follows:

- **Brocchinioideae** Givnish, subfam. nov.-TYPE: *Brocchinia* J.H. Schultes
Included genus: *Brocchinia*
- **Lindmanioideae** Givnish, subfam. nov.-TYPE: *Lindmania* Mez.
Included genera: *Connellia*, *Lindmania*
- **Hechtioideae** Givnish, subfam. nov.-TYPE: *Hechtia* Klotzsch
Included genus: *Hechtia*
- **Puyoideae** Givnish, subfam. Nov.-TYPE: *Puya* Molina
Included genus: *Puya*
- **Navioideae**, descr. emend.
Included genera: *Brewcaria*, *Cottendorfia*, *Navia*, *Sequencia*, *Steyerbromelia*
- **Pitcairnioideae**, descr. emend.
Included genera: *Abromeitiella*, *Deuterocohnia*, *Dyckia*, *Encholirium*, *Fosterella*, *Pitcairnia*

KEY TO BROMELIAD SUBFAMILIES

1.	Fruits indehiscent, baccate	Bromelioideae
	Fruits dehiscent, capsular	2
2.	Seeds plumose-appendaged	Tillandsioideae
	Seeds winged or naked	3
3.	Flowers dioecious, plants of Central America	Hechtioideae
	Flowers perfect, or rarely monoecious or polygamodioecious and plants of the Brazilian Shield	4
4.	Petal blades showy, tightly spiralled after anthesis, broad and distinct from claws	Puyoideae
	Petal blades remaining free after anthesis, or if slightly coiled then not clawed	5
5.	Petals large and conspicuous or, if minute, then sepals imbricate and anthers basifixed, linear	Pitcairnioideae
	Petals minute and sepals cochlear, or petals and bracts various and sepals convolute	6
6.	Sepals convolute	Lindmanioideae
	Sepals cochlear and petals minute	7
7.	Leaves entire, stellate chlorenchyma abundant	Brocchinioideae
	Leaves toothed, stellate chlorenchyma absent	Navioideae

Am I being premature in bringing these proposed changes to the notice of the layman? I think not, even though the study of DNA is in its infancy it is revealing some interesting results that we should all be aware of. I have used these findings to create a new *Key to the Bromeliaceae genera* which these days seems to be a yearly chore because of changes. In fact it is a never-ending story. Currently, an international consortium involving labs in the U.S., Australia, Germany, England, Panama, and Australia are compiling data on several different chloroplast genes and nearly 100 bromeliads to test the new classification.

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Literature cited:

Givnish, T.J., Millam, K.C., Berry, P.E., and Sytsma, K.J. (2007) *Phylogeny, adaptive radiation and historical biogeography of Bromeliaceae inferred from ndhF sequence data*, *Aliso* 23, pp. 3-26, Rancho Santa Ana Botanic Garden

FRONT COVER PICTURE: *HOHENBERGIA STELLATA* Schultes fil.

(Stellata = Starlike)

The *Journal de la Société Impériale et Centrale d'Horticulture de France* was founded in 1827 in Paris (published originally as *Annales* instead of *Journal*). A plate in 1864 shows *Hohenbergia erythrostachys*, described by Brogniart 10 years earlier but turning out to be the same species as *Hohenbergia stellata* Schultes fil. from 1830. The illustrated plant was collected by Porte in Bahia. This is an epiphytic and terrestrial plant from Trinidad and Tobago, Venezuela and northeastern Brazil.

THE GENUS *HOHENBERGIA*

By Karen Andreas, Florida, U.S.A.

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The genus *Hohenbergia* was first described in 1830 and was named after the Prince of Wurttemberg, a patron of botanists who was known as Prince Hohenberg. There are 67 species and 4 varieties in this genus, which is found in Brazil, Venezuela, the Lesser Antilles, Jamaica, Puerto Rico and Cuba. *Hohenbergias* have such a sturdy appearance that they add drama and interest to the landscape and in collections. The largest number of *hohenbergias* are found in Jamaica, with Brazil having the next largest number. *Hohenbergias* grow under diverse conditions, including as epiphytes on palms and trees, on sand dunes of coastal Brazil and on rocks. *Hohenbergias* can be grown like aechmeas for which they are often mistaken because of the similar appearance of their leaves, tall inflorescences and upright, tank-type growth habit.

Hohenbergias like light shade to morning sun to maintain their colour and the best form, although they do tolerate filtered afternoon light. Unlike many aechmeas, however, they are sensitive to the cold and should be protected from frost. The inflorescence rises from the centre of the bromeliad and, in some species, has long-lived colour. Here in Florida you will often find *Hohenbergia stellata* in bromeliad gardens. This bromeliad is named 'stellata' because of the star-shaped floral bracts on its metre long inflorescence. Its 'stars' turn a dramatic red when in bloom and stay in colour for months, eventually fading to white. Purple flowers are especially dramatic against the bracts. Its green leaves grow about one metre long when grown in good light, so give it plenty of room in the garden. Although native to the cloud and rain forests of eastern Brazil, Martinique, Trinidad and Venezuela, this *Hohenbergia* grows well in our landscape.

Hohenbergia rosea is another large member of this genus that grows in wide rosette form and needs room in the garden. Its inflorescence is similar in structure to that of the *stellata* but its 'stars' are pink to rose in colour. Its leaves also are a dark rose colour. *Hohenbergia rosea* is best grown in light shade or morning light. It may take up to three years to reach blooming maturity.

Hohenbergia correia-araujoi was discovered in 1979; it's another popularly grown member of this genus. Its leaves are copper-coloured with silver bands and its growth habit is upright and narrow. It is not nearly as large as *stellata* and *rosea*. *Hohenbergia correia-araujoi* needs plenty of light in order for the leaves to maintain their upright stiffness. While the floral bracts are mostly white, they are striking against the dark rose pink colour of the stalk of the inflorescence. The leaves of this Brazilian bromeliad *Hohenbergia correia-araujoi* are wavy on the edges, giving it a most interesting look.

Rather than growing in large rosette form, some *hohenbergias* have more of a vase shape. *Hohenbergia penna* is one such member of this genus.

Hohenbergia leopoldo-horstii is another example of a compact, vase shape.

Whether planted in the garden or in a pot in a collection, *hohenbergias* always offer a dramatic and stately look.