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Cover photographs. Front: An individual of the Hechtia rosea complex in habitat. Photograph by Robert Guess. Back: Hohenbergia ramageana in habitat. Photograph by Maria Solange Dutra da Cruz.

FEATURE ARTICLES

BROMELIAD SOCIETY BUSINESS AND NEWS

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Hechtia rosea Complex: An Example from Chiapas, Mexico

Virginia Guess and Robert Guess[1] **Photographs by Robert Guess**

In April 1925, Carl Albert Purpus (1851-1941) collected a species of *Hechtia* from a ravine at an altitude of 1000 meters near Hacienda Monserrate in La Providencia, southwest of Cintalapa, Chiapas. He sent the specimen to the U.S. National Herbarium where Lyman B. Smith described the plant and gave it the name of *Hechtia meziana* L. B. Smith. At present, this species is one of at least three *Hechtia* purported to grow in the state of Chiapas.

In February 2005, we located a large population of what we believed at the time to be *Hechtia meziana* extending over an estimated three kilometer range at an altitude of 350 to 400 meters in the southwest corner of Chiapas near the border with Oaxaca [FRONT COVER, FIGURES 1,2]. We estimated the population to represent several thousand plants, most of which were densely concentrated along a rocky ravine near a stream, approximately thirty-five kilometers straight-line measurement from where Purpus collected the holotype of *H. meziana*. Looking across the wide expanse of this population at a time when these plants were in full flower with their delicate red inflorescences shimmering in the sunlight was one of the more memorable experiences we have had with the Bromeliaceae of Chiapas.

Hechtia meziana, however, joins a number of other bromeliads from Chiapas that raise taxonomic uncertainties. Kathleen Burt-Utley and John Utley suggest that the distinctive characteristic of pedicle length used by L. B. Smith to distinguish *H. meziana* from *Hechtia rosea* E. Morren ex Baker is variable, and thus they cast doubt on whether the two species are different. The flowering staminate plant we examined at the site mentioned above had pedicles of at least two millimeters in length in contrast to the subsessile pedicles described for *H. rosea*. In addition, the leaf sheaths were indistinct and concolorous with the green blades, as opposed to the distinct, dark brown sheaths of *H. rosea*. Indeed, the specimen had many characteristics of *Hechtia macdougallii* L.B. Smith, collected by Thomas B. MacDougall (1898-1973) from Oaxaca in 1949.

After his evaluation of a dried inflorescence of the species from Chiapas, Harry Luther concluded that it, along with *Hechtia meziana* and *H. macdougallii*, as well as *Hechtia desmetiana* (Baker) Mez, are most likely geographic variations of *H. rosea*. Thus, in his opinion, they form a general complex of *Hechtia rosea* with slight differences in their physical characteristics. It is not for us to comment further on this taxonomic conundrum, as our intent is merely to document the location of a large population of *Hechtia* in Chiapas. We do believe, however, that this species resembles that collected by Purpus in 1925, and later confirmed by MacDougall who, in 1952, retraced the collecting forays of Purpus near Hacienda Monserrate.

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With such a vast and undisturbed collection of plants, as herein reported, relatively safe from pressures of habitation or exploitation, this seems to be one taxonomic puzzle that could be readily resolved by those specifically studying the genus *Hechtia*.

Figure 1. Portion of a large population of *Hechtia* in southwest Chiapas.

Figure 2. Inflorescence of staminate plant of *Hechtia* species.

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Acknowledgments

Our thanks to Harry E. Luther, Director of the Mulford B. Foster Bromeliad Identification Center at Marie Selby Botanical Gardens, for his help in identifying the specimen from Chiapas.

Dear Editor...

I started growing Bromeliads when I moved to Florida about 10 years ago. I first became aware of these amazing plants, however, when I saw hundreds of them adorning large trees in Costa Rica. When I moved to Florida my property was minimally landscaped. I started by planting palms & cycads but soon realized how perfectly bromeliads would fit in around and underneath that mix. At this point I visited the Fairchild Botanical Garden Bromeliad Show and got hooked. I now own many specimens from the major Bromeliad families. The great thing about Florida is that we can grow these wonderful plants with little effort in our landscape. And when you buy one, it multiplies and in a few years you have many. Pups make great gifts!

Yours truly, Mark Engerman

Boca Raton, Florida

Figure 3. *Alcantarea imperialis.*

Photograph by Mark Engerman.

Cultivar Corner - Nothogenera or Bi-Generics

Derek Butcher, BSI Cultivar Registrar

A nothogenus is the name given to a hybrid between a plant from one genus and a plant from another genus. Very rarely do these occur in the wild because they have a great loss in pollen viability and cannot reproduce. No case of a tri-generic has been reported in Bromeliaceae. In fact, even with manual intervention, we have yet to find a proven instance of a bromeliad bigeneric with receptive stigma or viable pollen. Every time I ask pertinent questions of the hybridist concerned with such a claim I get inconclusive answers. I am still open for claims, which regrettably, currently will need to be made without the help of DNA. I would, of course, require a photo!

Nothogenera are the bane for registrars because we must be on the look out for new genera and genera lost in synonymy. In fact, anywhere a species moves from one genus to another on the decision of some taxonomist, a hybrid can move from one nothogenus to another! You then have to decide if this move by the taxonomist is likely to be fairly permanent. I know all the prominent Bromeliad taxonomists, so I seek their views on such a move.

Once a change in the definition of a genus has been decided, I have to find out if any of the species involved need to be accommodated in a new or old Nothogenus. Luckily, thanks to Michael Andreas of Florida we have a great Cultivar data-base where you can search for things like this. Gone are the days when you started reading the Register from cover to cover in your search!

I know that some of you give a name to a hybrid and don't bother to register it, but it is much harder for a new nothogenus name to be accepted. It is made up of the first few syllables of one genus and the last few syllables of the other participating genus. AND it must be published in a recognised botanical journal. I prefer it to be this Journal! The need for a new nothogenus name usually crops up at the time of registration of a hybrid.

A new natural bigeneric, x*Hohenmea* was described in J. Brom. Soc. 53(2): 71-77. 2003, and we have a new man-made one namely x*Hohenmea* 'Betsy McCrory' [FIGURES 4,5] This was named by Karen Andreas of Florida for a plant obtained from Boggy Creek Bromeliads as (*Hohenbergia correia-araujoi* x *Aechmea chantinii*). Investigation showed the plant had come from Pineapple Place Nursery when it closed in 2000. The hybridist is unknown but likely Carol or Geoff Johnson. See Registration Document 7/2003.

In August 1996 Jim Irvin of Florida crossed *Aechmea fendleri* with the pollen from *Ursulaea tuitensis* and obtained a hybrid with both traits [FIGURE 6]. It is called x*Ursumea* 'Ma Williams'. Both names were coined by Jim Irvin. For the record this new bigeneric's parent genera are *Aechmea* Ruiz And Pav., Fl. peruv. prodr.: 47. Oct. 1794 and *Ursulaea* R.W. Read & H.U. Baensch, J. Bromeliad Soc. 44(5): 205-211. 1994.

The following is a list of current Nothogenera, with notes where some are not currently in use.

x*Aechopsis* (*Aechmea x Canistropsis*) D. Butcher, J. Bromeliad Soc. 49: 14. 1999.
x*Anagelia* (Ananas x Neoregelia) E.L. Smith, J. Bromeliad Soc. 33: 72. 1983.
x*Anamea* (*Ananas x Aechmea*) Anon., Int. Checklist Bromeliad Hyb. 22. 1979.
x*Anananas* (*Ananas x Pseudananas*) D.A. Beadle, Prelim. List. Cult. Grex Bromeliad 20. 1991.
x*Androlaechmea* (*Androlepis x Aechmea*) Anon., Bromeliad Soc. Bull. 1: 24. 1951.
x*Billmea* (*Billbergia x Aechmea*) K. Williams, J. Bromeliad Soc. 24:26. 1974.
x*Billnelia* (Billbergia x Quesnelia) A.D. Hawkes, Bromeliad Pap. 1(6): 52. 1959.
x*Billque*. **Note** this name is invalid. See x*Billnelia*.
x*Canegelia* (*Canistrum x Neoregelia*) D. Butcher, Hybridists Handbook Ed. 3: 2. 1991.
x*Canmea* (*Canistrum x Aechmea*) Foster & Foster, J. Bromeliad Soc. 23: 175. 1973.
x*Cryptananas* (*Cryptanthus x Ananas*) D.A. Beadle, Prelim. List. Cult. Grex Bromeliad 36. 1991.
x*Cryptbergia* (*Cryptanthus x Billbergia*) Anon., Bromeliad Soc. Bull.2: 72. 1952.
x*Cryptmea* (*Cryptanthus x Aechmea*) E.L. Smith, J. Bromeliad Soc. 33: 72. 1983.
x*Deuterocairnia* (*Deuterocohnia x Pitcairnia*) D. Butcher, J. Bromeliad Soc. 52: 51. 2002.
x*Dyckcohnia* (*Dyckia x Deuterocohnia*) G.H. Anderson ex Grant, Selbyana 19:116. 1998.
x*Dycktia* (*Dyckia x Hechtia*) D.A. Beadle, Prelim. List. Cult. Grex Bromeliad 82. 1991.
x*Guzlandsia* (*Guzmania x Tillandsia*) Anon., Int. Checklist Bromeliad Hyb. 35. 1979.
x*Guzvriesea* (*Guzmania x Vriesea*) A.D. Hawkes, Bromeliad Pap. 1(5): 45. 1959.
x*Hechcohnia* (*Hechtia x Deuterocohnia*) G.H. Anderson ex Grant, Selbyana 19:117. 1998.
x*Hohenelia* (*Hohenbergia x Quesnelia*) D. Butcher, J. Bromeliad Soc. 52: 51. 2002.
x*Hohenmea* (*Hohenbergia x Aechmea*) Sousa, Silva, & Sousa, J. Bromeliad Soc. 53: 71. 2003.
x*Hohentea* (*Hohenbergia x Portea*) D.A. Beadle, Prelim. List. Cult. Grex Bromeliad 89. 1991.
x*Neobergia* (*Neoregelia x Billbergia*) E.L. Smith, J. Bromeliad Soc. 33:73. 1983.
x*Neobergiopsis* (*Neoregelia x Hohenbergiopsis*) D. Butcher, J. Bromeliad Soc. 51: 7. 2001.
x*Neomea* (*Neoregelia x Aechmea*) M.B. Foster, Bromeliad Soc. Bull. 8: 75. 1958.
x*Neophytum* (*Neoregelia x Orthophytum*) M.B. Foster, Bromeliad Soc. Bull. 8: 73. 1958.
x*Neorockia* (*Neoregelia x Wittrockia*) D. Butcher, J. Bromeliad Soc. 49: 14. 1999.
x*Neostropsis* (*Neoregelia x Canistropsis*) D. Butcher, J. Bromeliad Soc. 49: 14. 1999.
x*Neotanthus* (*Neoregelia x Cryptanthus*) Anon., Int. Checklist Bromeliad Hyb. 47. 1979.
x*Nidbergia* (*Nidularium x Billbergia*) Butcher, Checklist Bromeliad Hybrids Australia: 28. 1982.
x*Nidulistrum* (*Nidularium x Canistrum*) A.D. Hawkes, Bromeliad Pap. 3(9): 85. 1963.
x*Nidumea* (*Nidularium x Aechmea*) L.B. Smith, Bromeliad Soc. Bull. 18: 93. 1968.
x*Niduregelia* (*Nidularium x Neoregelia*) A.D. Hawkes, Bromeliad Pap. 3(9): 85. 1963.
x*Ortholarium* (*Orthophytum x Nidularium*) Foster & Foster, J. Bromeliad Soc. 23: 175. 1973.
x*Orthomea* (*Orthophytum x Aechmea*) E.L. Smith, J. Bromeliad Soc. 33:75. 1983.
x*Orthotanthus* (*Orthophytum x Cryptanthus*) Anon., J. Bromeliad Soc. 24: 26. 1974.
x*Pitinia* (*Pitcairnia x Pepinia*) J. Irvin ex Baskerville, J. Bromeliad Soc. 48: 64. 1998
x*Portemea* (*Portea x Aechmea*) Ariza-Julia, J. Bromeliad Soc. 28: 21. 1978.
x*Pseudanamea* (*Pseudananas x Aechmea*) Baensch & Baensch, Bluh. Bromeliad: 249. 1994.
x*Puckia* (*Dyckia x Puya*) D. Butcher, J. Bromeliad Soc. 52: 52. 2002.
x*Pucohnia* (*Puya x Deuterocohnia*) G.H. Anderson ex D.A. Beadle, Prelim. List. Cult. Grex Bromeliad 200. 1991.
x*Quesistrum* (*Quesnelia x Canistrum*) H. Graf ex D.A. Beadle, Bromeliad Cult. Reg.: 350. 1998.

x*Quesmea* (*Quesnelia x Aechmea*) Knobloch, J. Bromeliad Soc. 22: 58. 1972.
x*Quesregelia* (*Quesnelia x Neoregelia*) J. Carrone, J. BromeliadSoc. 33: 207. 1983.
x*Streptolarium* (*Streptocalyx x Nidularium*). **Note** This is now obsolete because *Streptocalyx* is now *Aechmea*.
x*Streptomea* (*Streptocalyx x Aechmea*). **Note** this is now obsolete because *Streptocalyx* is now *Aechmea*.
x*Ursumea* (*Ursulaea x Aechmea*) D. Butcher, new Nothogenus
x*Vriecantarea* (*Vriesea x Alcantarea*) J.R. Grant, Phytologia 79: 256. 1996
x*Vrieraubia* (*Vriesea x Weraubia*) D. Shiigi ex D.A. Beadle, Bromeliad Cult. Reg.: 363. 1998
x*Vrieslandsia* (*Vriesea x Tillandsia*) C. Chevalier, Bull. Soc. Nat. Hort. France V, 4: 213-5. 1931.

Figure 4. *Hohenmea* "Betsy McCrory".

Photograph by Michael Andreas.

Photograph by Michael Andreas.

Figure 5. *Hohenmea* "Betsy McCrory".

Photograph by Jim Irvin.

Figure 6. *Ursumea* "Ma Williams Irvin".

You Get Strong, Fast Growth with Fertilizer (and Light)

Herb Plever[2]

Many members have asked me to review fertilizer techniques to increase the size and rapidity of blooming their bromeliads. I have experimentally applied frequent, high strength doses of fertilizer to my plants for the past ten years and have written about the results in BROMELIANA and in the BSI Journal [see:"The Fertilizer Revolution", Nov.-Dec. 1996, V. 46(6)]

In that article I noted that my proposals for high strength fertilizer worked for me because I have good to strong available light, in south, west and unobstructed east windows and 4 to 6 tube fluorescent fixtures. Bromeliads take in only enough fertilizer they can readily process and use; they will absorb about 70% of the nutrients you pour in the cup within the first hour or so. It is necessary, therefore, to thoroughly flush out the unabsorbed fertilizer from the leaf axils within the next 24 hours or the fertilizer salts will precipitate out on the margins of the leaves especially at the lower sheaths as the water evaporates, and it will burn the margins. That is a definite downside to using so much fertilizer at one time (1 1/2 tsp to a gallon of water), but I have overcome this by modifying that regimen with the procedures listed below.

At the other end of the spectrum is the cautious advice one reads in bromeliad publications to use no more than 1/4 of the strength recommended by the manufacturer which is usually 1/4 tsp to a gallon of water, i.e., a 1/16 tsp strength. This would be effective only in greenhouse or lath house conditions where the fertilizer is introduced by a proportioner when watering overhead or with a hose, and watering is done many times a week. It will do very little for indoor grown guzmanias and vrieseas, which love and need fertilizer to grow and bloom rapidly and shouldn't be watered more frequently than every 7 to 10 days.

Moreover, those publications rarely discuss the proper proportions of nitrogen, phosphorus and potassium (listed on the package in that order as, *for* example, 15-30-15), or the dangers of using most commercial fertilizers, which have high proportions of nitrogen, derived from urea. The only commercial fertilizer I recommend is Peter's Peat Lite Special (20–10-20 and Epiphytes Delight (20-10-30). These formulas will work very well for all bromeliads.

I have been creating my own fertilizer mixes for different genera. I now use a formula of 20-17-37 for tillandsias and vrieseas and a proportion of 20-25-55 for spiny, stiff-leaved genera like *Aechmea*. And if that were not enough nutrients for my plants, I also place a small amount of Nutricoat fertilizer pellets (13-13-13) on the top of the mix. They are put into action when the fertilizer is flushed out or the mix is watered.

[2] Herb Plever, New York. Reprinted from Bromeliana 42(4). 2005, the newsletter of the New York Bromeliad Society.

How much fertilizer should one use and how often? I have now modified my regimen in line with the amount of available light and with the seasons. Plants grown under fluorescent lights get the same quantum of lumens and somewhat similar temperatures the year round, so they get the same regimen throughout the year: 1/2 tsp fertilizer to a gallon of water once a week for two weeks in a row followed by a week when they are watered without fertilizer. Windowsill plants get the above regimen from May through September.

From October to mid-November and from mid-March to the end of April they are fertilized with that same strength but only every other week. If it is very cold I do not fertilize window sill plants in December, January or February or in early November and late March as the early morning temperatures at the window may be 50°F or lower when the outside temperature around 20°. If it is warm during those winter periods I may treat the plants to a 1/4 tsp strength fertilizer a few times.

I still flush out the fertilizer with fresh water within a day after application. We are lucky that we have such decent, soft water in New York so we can use it right from the tap. I have not noticed any deleterious effects from the chlorine in the water.

Is all this fuss with fertilizer worthwhile? I think it produces very rapid growth to maturity and larger inflorescences than you might get without it. In that Journal article I boasted that with a high strength regimen I am able to bloom *Aechmea* 'Morgana' from pup size in 18 to 20 months with 4" wide leaves and a 6" diameter inflorescence.

In the March 2005 issue of *Bromeliana* there was a picture of my *Cryptanthus* 'Strawberries Flambé' at maturity. It was grown close to the daylight fluorescent lights in a 6-tube fixture (i.e., strong light at 5500° to 6200° Kelvin). With foliar spraying of a high strength fertilizer once or twice a week, the plant matured with bright red leaves, which were 11/2 inch wide and 6 inches long. The photo in the March issue, taken in early February, shows the first flower with 1" long petals, but soon the inflorescence enlarged and I can see that it will end up with 18 to 20 flowers!

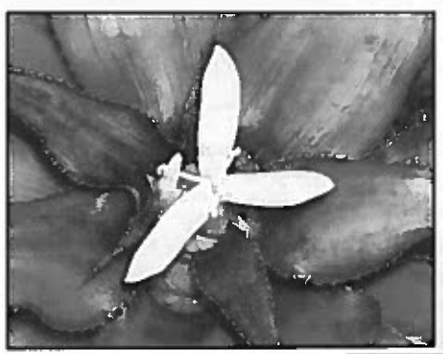


Figure 7. *Cryptanthus* "Strawberries Flambé" with 1" long petals.

Figure 8. *Pitcairnia tabuliformis*, tissue cultured.

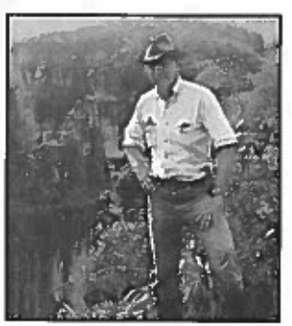
I bought a tiny tissue cultured clump of three *Pitcairnia tabuliformis* in an enclosed 2" pot from DeRoose Plants at the World Bromeliad Conference in Chicago last August. Each plant had 3 or 4 leaves, 3/16" wide and 3/8"10ng. *Pitcairnia tabuliformis* is a very finicky grower and I took the chance with low expectations of their survival not only because it is so rare, but also as an expression of gratitude to Reginald DeRoose for tissue culturing this beautiful plant which has little commercial value.

After a month of acclimatizing them to growing under my light unit I transplanted the clump to a 4" pot with slow release fertilizer pellets on the mix. I began to lightly foliar spray it with fertilizer almost every time I passed by (many times a week), and these tiny plants really took off. Now, seven months later, you can see the rapid growth made by these plants (FIGURES 7, 8). They each have 10 leaves, the longest being 3" long and 11/8" wide! Such is the power of nutrition and light. Members should start experimenting using fertilizer on a few plants; start with 1/4 tsp. per 2 quarts water every third week. If you see a positive result, gradually increase the strength and frequency as we come into the late spring and summer.

Welcome New BSI Directors

We introduced new BSI Directors Jay Thurrot and Francisco Oliva-Esteve in the previous journal issue, but did not have photographs of them at the time, and so we are pleased to provide their pictures here.

Another new Director is Reinaldo "Rei" Irizarry. Ray is a a retired electrical engineer. He became a member of the Bromeliad Society circa 1990 after he and his wife, Gloria, found some bromeliads in the 'hot house' that came with the house they purchased when they moved to Mobile, Alabama. Ray was familiar with bromeliads since his mother had sent him out to the rain forest in Puerto Rico to collect when he was a teenager. Rei is a certified judge and has served as president, vice-president, and show chairman of his local society, and he has also served as Vice-President, and Director of the Crypthantus Society.



Figures 9-11. Left to right. Rei Irizarry, Francisco Oliva-Esteve, Jay Thurrot.

Tom and Carol Wolf Honored by the Bromeliad Guild of Tampa Bay

Bill Carr[3]

At the monthly meeting of the Bromeliad Guild of Tampa Bay, Harold Sisco, President, presented Tom & Carol Wolfe (FIGURE 12) of Lutz with an Honorary Lifetime Membership in the Guild. In addition to the gold medallion presented them, a framed certificate from the Guild which read, "This Honorary Lifetime Membership is awarded to Tom & Carol Wolfe in recognition of their many years of valuable service, time, and contributions to the Bromeliad Guild of Tampa Bay, Inc."

The Bromeliad Guild of Tampa Bay was formed in 1964 and within a year or two, Tom had become interested in bromeliads and joined the Guild. He and Carol were married in 1975 and Carol said she had a hard time just getting the name right!. She thought it was Tom's hobby but within months after they were married, he convinced her to start attending the meetings with him. One of the hostess at the meeting asked her how long she had been in love with bromeliads. Carol said it wasn't the bromeliads she was in love with, it was Tom. However, Carol says that if you love the man, you'll eventually love his hobby too. Today, they have thousands of bromeliads on their two and one-half acres in Lutz..

Tom has been a BSI Bromeliad Master Judge since 1982. He is in much demand as speaker throughout Florida and the United States presenting programs on bromeliads to Bromeliad Clubs, Garden Clubs and Circles, as well as speaking at the USF Botanical Gardens, New Orleans University, and Chicago Botanic Gardens. Tom has always been instrumental in encouraging and working with the BGTB members to present annual shows, participating in community shows and sales to promote bromeliads, refurbishing bromeliads beds at Lowry Park Zoo, Eureka Springs Park and Ybor City Museum State Park. Tom helps create displays at the Florida State Fair annually promoting bromeliads and educating thousands of attendees who visit the horticulture display in the Family Living Center.

Photograph courtesy of the Bromeliad Guild of Tampa Bay.

Figure 12.
Tom and Carol Wolfe.

Tom has worked tirelessly though the years, providing leadership and promoting bromeliads on the local, state, national and international level. Over the span of many years of membership in the Guild, Tom has been elected President of the Guild five terms. He served the Florida Council of Bromeliad Socieites as Chairman on a number of occasions. The FCBS is composed of bromeliad societies located in Orlando, Miami, Ft. Pierce, Ft. Myers, Ormond Beach, Clearwater/St. Petersburg, Gainesville, Sarasota, Matiland (Seminole), Bacon Raton, Tampa, and Davie. On the international level, Tom recently completed six years as President of the Bromeliad Society International by serving two consecurive terms. Carol also served as President of the local club for two years and served for eight years as the BGTB Newsletter Editor. She helps Tom with the shows, speaking engagements and helps run the computer and projector with bromeliad slide presentations. She also works as a real estate salesperson with Kelly Realty & Associates.

[3] Plant City, Florida.

Tillandsia Symposium to be Held at the World Bromeliad Conference, 2006

Sue Gardner-Sill[4]

A symposium dedicated to the taxomony of *Tillandsia* will be held at the World Bromeliad Conference 2006 in San Diego, California. This special session will take place on Wednesday, June 7, with presenters from around the globe reporting on their work and how it advances our understanding of the relationships among the species currently classified as *Tillandsia*.

There is perhaps more interest in the study and classification of *Tillandsia* at this time than at any other time in history. Scientists on several continents are working on the ecology and taxonomy of this challenging group. At the same time, a large following of enthusiastic commercial and hobby growers devote their interest and energy to growing these interesting plants as horticultural specimens.

The genus, as currently recognized, is being examined by geographically scattered scientists using a variety of tools and techniques. The result of these studies is expected to be a new and better understanding of the biology and relationships among these plants. This ***Tillandsia Symposium*** will provide a venue for academic exchange and dialogue among these workers, with the goal of improving future revisions to the classification of *Tillandsia* and its close relatives. It will also be an opportunity for *Tillandsia* enthusiasts to learn more about what is going on with the classification of the group.

Please Help Support this Symposium

We are seeking donations to defray the travel and lodging expenses of our speakers, including our student speakers. Today's students will have a major impact on the future classification of *Tillandsia*. The opportunity they will have at this symposium can have far-reaching influence on their future

[4] Mission, Texas.

work, and the availability of adequate funding will make sure these students are financially able to attend. Contributions should be designated *for Tillandsia Symposium* and mailed to Ed Doherty, 3533 Milton Ave, Dallas TX 75205-1221. If there is enough interest in this symposium, the BSI may organize a larger symposium in the future.

Plant Taxonomy has Evolved Over the Past Several Decades

New advances have made it more of a science and less of an art form. Instead of shuffling and sorting dried specimens, trying to distinguish traits and patterns that hold groups together and separate them from closely related groups, plant taxonomists today are just as likely to be found in the laboratory or in the field, as in the herbarium. DNA sequencing and other molecular techniques have given us formerly unimagined sources of characteristics. An accumulation of these new bits of knowledge about natural plant populations will eventually lead to a better understanding of their relationships. When we speak of a genus, such as *Tillandsia*, we make assumptions about the relationships among the species it encompasses. Species within a subgenus, such as *Tillandsia* subgenus *Tillandsia*, are assumed to share even more important characters and thus be more closely related to each other than they are to species in other subgenera. The work currently being done by scientists on several continents is aimed at refining the taxonomy of *Tillandsia*. More natural taxonomic systems will better reflect the evolutionary relationships among the species that make up the taxa, and will allow us to communicate more intelligently about the plants that interest us.

Symposium Schedule

As of this writing, the morning session will be devoted to 3 featured speakers who utilize diverse techniques, and whose work has already made important impacts on our knowledge of *Tillandsia*. Each featured speaker will make a 45 minute presentation. The afternoon will be divided into two sessions. The first two hours of the afternoon will likely be devoted to 5 short talks, of which the first three are students who are working on taxonomic problems with *Tillandsia*. The last hour or two will be a round table discussion with the speakers and other invited experts forming a panel to discuss taxonomic issues with *Tillandsia*.

Featured Speakers:

Dr. David Benzing is author of *Bromeliaceae, Profile of an adaptive radiation*, and two other books on bromeliads, as well as dozens of scientific research papers. Dr Benzing, a Biology Professor at Oberlin College, has produced a massive body of work on the physiology of bromeliads, with a special emphasis on *Tillandsia*. Not only has Dr. Benzing been a frequent speaker at former World Bromeliad Conferences, he is considered an international authority on epiphytes and has delivered addresses to 15 international symposia around the globe. Although his work has not focused on taxonomy of *Tillandsia*, his extensive research on members of the genus and their relatives give him a perspective on the group's systematics that few taxonomists can equal.

Dr. Adolfo Espejo Serna is Professor of Botany at Universidad Autonoma de Mexico, Iztapalapa, Mexico. Dr. Espejo has published numerous studies on *Tillandsia* over the past decade, including the circumscription of *Viridantha* as a new genus for a group of species that are indigenous to Mexico, including the former *Tillandsia atroviridipetala* and *T. plumosa*. Dr. Espejo's students also contribute to the systematic study of *Tillandia*.

Dr. Walter Till is Professor of Botany at the University of Vienna. Dr. Till is exploring the relationships among the Tillandsioideae by using modern molecular techniques, including DNA sequencing. These techniques are providing exciting new information about the relationships among all living organisms and are expected to play an important role in defining natural groups within *Tillandsia*.

Short Talks (list tentative):

Tania Chew Taracena, The genus *Tillandsia* L.: a phylogenetic exploration of its internal relationships. Tania is a doctoral student at Instituto de Ecologia, Xalapa, Veracruz, Mexico.

Carolina Granados Mendoza, Systematics of the *Tillandsia macdougallii* complex (Bromeliaceae) Carolina is an undergraduate student at Universidad Autonoma de Mexico, in Mexico City.

Brian Sidoti, Systematic Study of *Tillandsia fasciculata*. Brian was formerly assistant to Harry Luther, Director of the Bromeliad Identification Center at Marie Selby Botanical Gardens, and is currently a master's student at Florida International University, in Miami, Florida.

Renate Ehlers, Variation in *Tillandsia makoyana/T. dasylirtifolia* complex. Renate is a passionate amateur *Tillandsia* specialist from Stuttgart, Germany, who has explored much of Latin American in search of Tillandsias. She has published many accounts of *Tillandsia* in its habitat, and described many new species.

Dr. Sue Gardner-Sill, Adaptative radiation in *Tillandsia utriculata*. Sue is has published several research papers dealing with the systematics of *Tillandsia* and is currently Executive Director of NABA International Butterfly Park in Mission, Texas.

Round Table Discussion:

The speakers will form a panel, with the addition of other *Tillandsia* experts in attendance. Symposium coordinator, Sue Gardner-Sill, will pose questions to the panel from the audience.

Flower Ovaries in the Subfamily Bromelioideae (Bromeliaceae)

Dylan Wade and Gregory K. Brown[1]

Historically, fruit and seed morphology in the Bromeliaceae has received little attention by taxonomists. In fact, only 12% of the generic and species descriptions found in Flora Neotropica: Bromelioideae by Smith and Downs (1979) contained a fruit description and only 5% contained any sort of seed description. Thus, there is a need to document fruit and seed characters as they may provide some insight into the convoluted Bromelioideae taxonomy. In addition, these surveys may provide new information and insight into frugivory and seed dispersal for species in the subfamily. The study of frugivory and seed dispersal has been difficult due to the lack of information on the fruits and seeds themselves.

Ovary morphology has been studied extensively in the Bromeliaceae, however the ovary characters used in previous studies (e.g. Smith and Downs, 1979; Read, 1984; Read and Baensch, 1994) have not been consistent and thus have limited taxonomic use. Furthermore, when ovary characters are provided, usually only one character is mentioned. In addition, the states of many characters are not consistent among genera, making it difficult to produce a phylogeny at the generic or species levels. In descriptions of species and genera since Smith and Downs (1979), usually only one or two ovary characters are noted. Thus, there is a great need for a systematic survey of Bromelioideae ovaries. In this paper we discuss some interesting features found in the survey of Bromelioideae ovaries. Future articles will discuss our fruit and seed surveys, respectively, as well as frugivory and seed dispersal in the Bromelioideae.

Materials and Methods

One hundred and ninety-one specimens representing 109 species and 16 genera of the Bromelioideae were collected at Marie Selby Botanical Gardens, Sarasota, Florida, the Federal University of Rio de Janeiro, Brazil, the cultivated research collection of Elton Leme, Teresopolis, Brazil, and from plants collected in the field. Specimens were fixed and stored in 70% ethanol for subsequent observation and hand-sectioning, using a razor blade. All specimens, both whole and sectioned, were observed under a dissecting microscope. For smaller sections and specimens a compound microscope was used. Photography was done with a 35mm camera for larger specimens, and with a digital camera mounted on the compound microscope when high magnification was needed.

[1] Bromeliad Research Lab, Department of Botany, University of Wyoming, Laramie, WY 82071

Results and Discussion

Smith and Downs (1979) used ovary characteristics often in their descriptions of the Bromelioideae genera and species, yet rarely were they consistent. In this study it was found that Bromelioideae species exhibit a wide diversity of ovary features, with size, and indument-type showing the most variation. There is also a good indication that these characters may have arisen independently in several different lineages (Benzing 2000).

A total of 10 ovary characters were selected (see following table). Collections were restricted to plants in the post-anthesis stage thus only 9% of the species were represented in the ovary survey (48% of genera). Unless otherwise indicated all character definitions were based on Harris and Harris (2001).

A. Ovary Color
0 White or transparent
1 Yellow or orange
2 Pink or red
3 Green
4 Blue, purple, or violet
5 Brown or black

B. Ovary Indument
0 Arachnoid
1 Lanate
2 Glandular hairs
3 Absent and glaucous
4 Absent and glabrous

C. Ovary Surface
0 Smooth
1 Verrucose
2 Ribbed
3 Elongated papillae

D. Ovary Length at the Longest Point
0 Long (> 10 mm)
1 Medium (6-10 mm)
2 Short (< 6 mm)

E. Ovary Diameter at the Tube Dimensions Widest Point
0 Wide (> 6 mm)
1 Medium (5-6 mm)
2 Narrow (< 5 mm)

F. Ovary Epigynous
0 Diameter = height
1 Broader than deep
2 Deeper than Broad

G. Distribution of Ovule-bearing Placenta
0 Medial to full locule
1 Apical

H. Ovary Shape in Cross-section
0 Terete
1 Triangular with posterior hump
2 Triangular without posterior hum
3 Hexagonal

I. Width of Ovary Wall at Mid-locule
0 Wide (> 2 mm)
1 Medium (1-2 mm)
2 Membranaceous (> 1 mm)

J. Raphides in Ovary
0 Absent
1 Present without druse-like crystals
2 Present with druse-like crystals

There were several interesting features and trends pertaining to ovaries found in this survey. The diversity in *Aechmea* ovary characters was one such trend. Of all of the genera surveyed, *Aechmea* was found to possess almost all states for each character studied, making the genus very diverse (FIGURE 13). For example, *Aechmea* species may exhibit most colors of the spectrum as well as a variety of different indumentum types. They also can be found in many different sizes (i.e., 5 to 23 mm long and 3 to 13 mm wide) in the early stages of maturation. Surface ornamentation is another character with a wide variety of states displayed in this genus. This trend was not surprising as *Aechmea* is considered to be artificial (Faria et al. 2004) and the variation in ovary characters seems to support this.

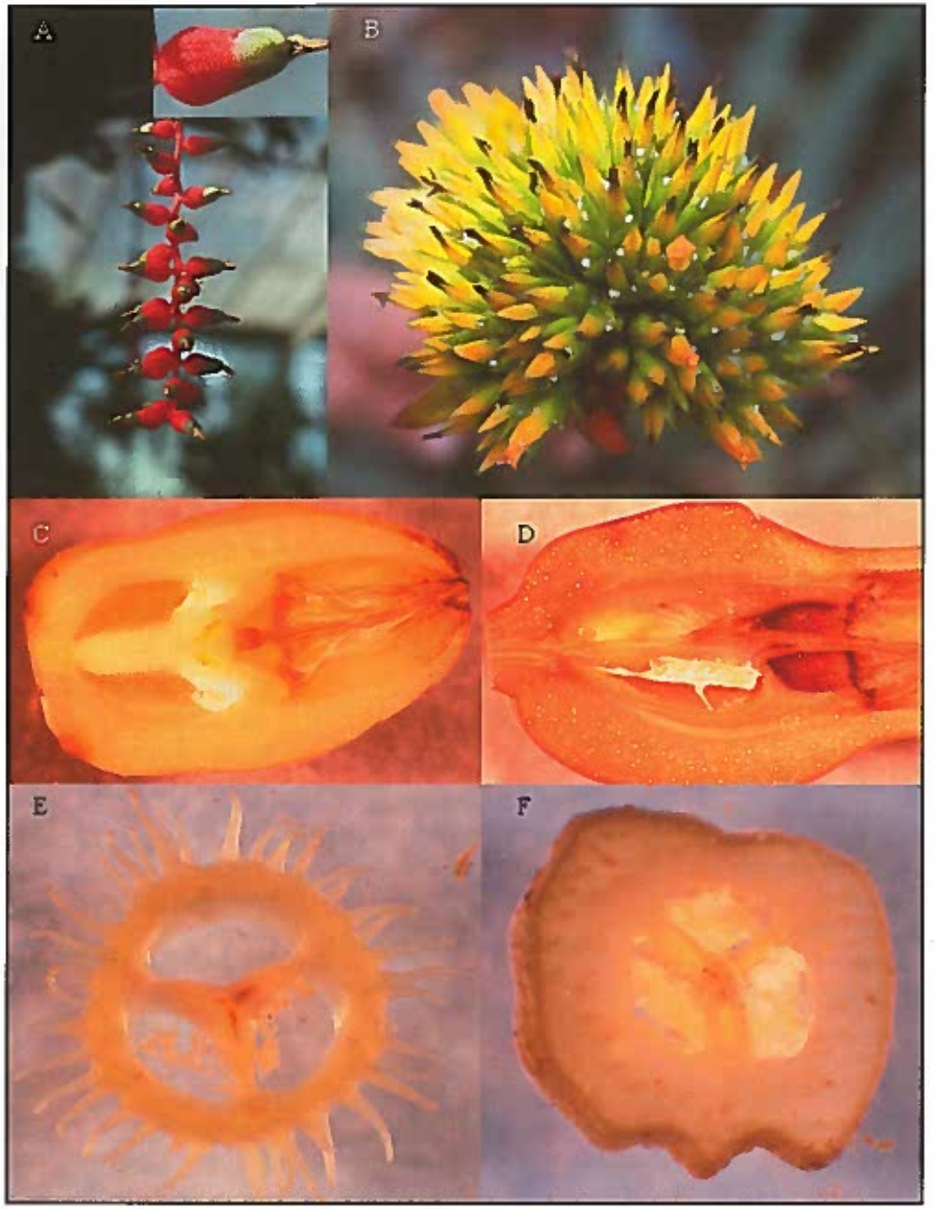


Figure 13. Ovaries. A. *Aechmea racinae* pendular inflorescence, inset: close up of *A. racinae* ovary. B. Inflorescence of *Aechmea exigula*. C-D. Longitudinal sections of two different *Aechmea* species. E. Cross-section of *Aechmea pedicellata*. F. Cross section of *Aechmea burle-marxii*.

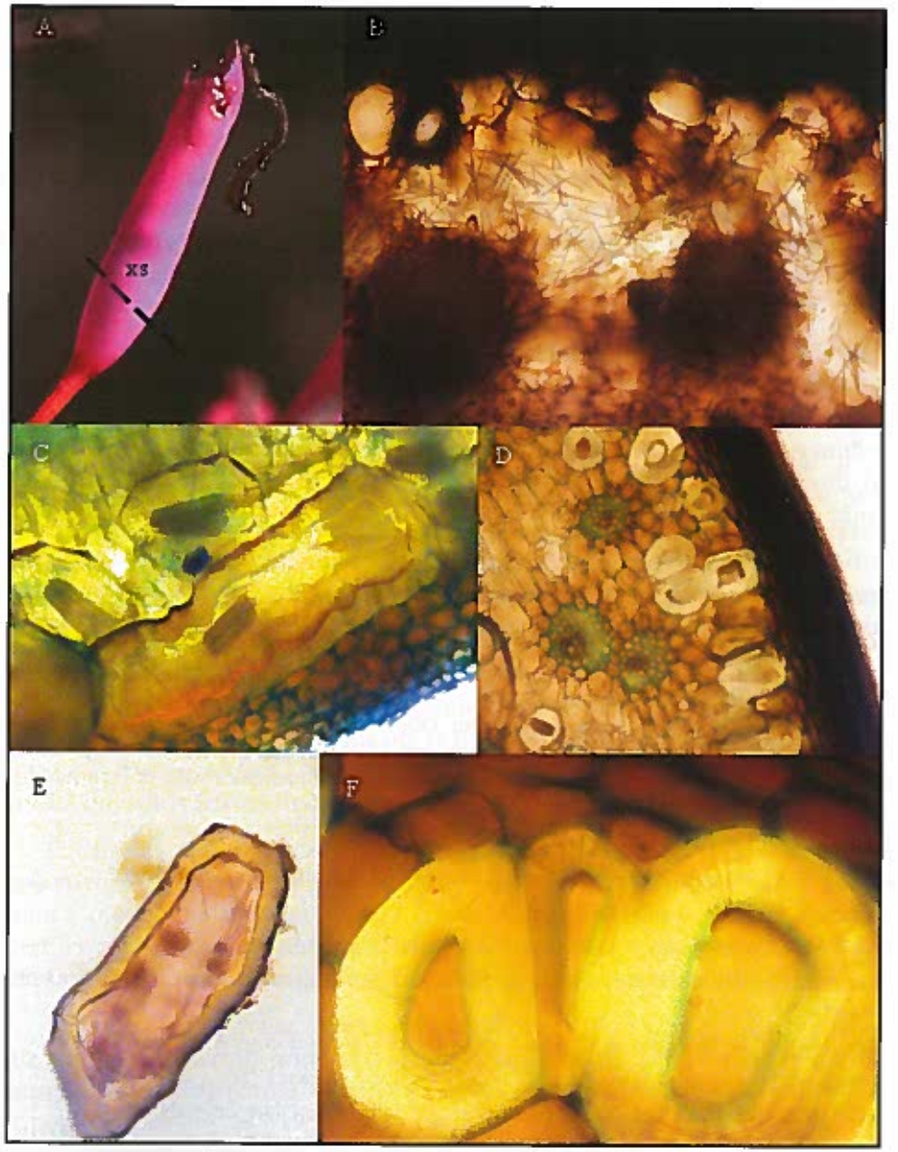


Figure 14. *Portea* characteristics (B-F. *Portea kermesina*). A. *Portea* sp. ovary, dashed lines indicate where cross-section was taken on ovaries. B. Cross section of *Portea kermesina* ovary with a high concentration of raphide crystals (needle-like appearance) disrupted from bundles inside the ovary walls. C. Longitudinal section of an iridescent cell from the ovary wall. Notice the bundle of raphide crystals stacked inside. These cells have an iridescent look under lighted conditions. D. Cross-section of an ovary. Notice the large, thick-walled cells just inside of the ovary wall. E. Longitudinal section of an isolated iridescent cell. These iridescent cells are rigid and strong enough to be pulled out of the ovary with forceps. F. A closer look at a group of three thick-walled cells. Notice the striations in the cell wall.

Another interesting find were the amount of raphide crystals found in the ovaries of *Portea* species (FIGURE 14). Raphide crystals are calcium oxilate crystals that are produced by plants and have been found in many monocot families (Prychid and Rudall, 2000). Raphides have a characteristic needle-like shape, being pointed on both ends, and occur in bundles. In this study most of the genera possessed raphide crystals, which were found in ovaries and fruit and sometimes even in the seed coat. In particular, several specimens from the genus *Portea* contained noticeably more raphides than any other genus studied. This feature will be discussed more in depth in a future paper on the frugivory and seed dispersal of the Bromelioideae.

Portea ovaries also exhibited a unique anatomical trait. Relatively large (0.5-1 mm) iridescent cells containing raphides lined the ovary wall in most species (Figure 2). These cells were seen in both fresh specimens as well as specimens fixed in 70% ethanol. The purpose of these cells is not evident and more survey work needs to be done to determine the potential taxonomic usefulness of these cells.

Ovary morphology in this subfamily has been inconsistently and incompletely studied. Hopefully, this survey will stimulate more surveys of Bromelioideae ovary morphology.

Acknowledgements

We thank the UW botany department; Dorothy Tuthill, Ana Paula Faria, and Rachel Schmitt in the lab; Elton Leme, Tania Wendt, and Harry Luther for access to specimens; and funding from the NSF Grant (DEB-0129446) and the Bromeliad Society International.

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Growing Pitcairnias and Pepinias

Bob Reilly[6]

The genus *Pitcairnia* was named after a London doctor, Pitcairn. Species of *Pitcairnia* can be found from southern Mexico and the West Indies south to northern Argentina and Peru. The only bromeliad species whose native habitat is outside of the Americas is a pitcarinia, namely, *P. feliciana*, which grows on cliff faces in tropical West Africa.

Some botanists argue the genus *Pepinia* should be included in the *Pitcairnia* genus. However, in this article the distinction has been maintained, following the BSI's "An Alphabetical List of Bromeliad Binomials" by Harry Luther. There are over 250 species in these two genera.

Many pitcairnias and pepinias are grass-like plants that grow in the ground (terrestrials) or on rocks (lithophytes). A few are epiphytes. Most grow in moist, shady locations. Typically, they form a clump that develops through underground rhizomes. Some pitcairnias and pepinias have relatively spineless leaves, while others range from only slightly spiny to very spiny.

Leaves are quite variable in length and shape. Some have several types of leaves on the one plant. Perhaps the most graphic example of this variation can be found in deciduous species *Pitcairnia heterophylla*. In this species, the "normal" leaves drop off at the start of the dry season to help the plant conserve moisture. The short brown "spikes" that remain are composed of reduced, spiny leaves that contain no chloroyphyll.

Pitcairnias and pepinias can be propagated easily either from seed or, for many species, by detaching a piece of the underground rhizome (taking care to obtain a piece with roots attached). The underground rhizome can be severed by either using a knife or, in some cases, a spade. Other pitcairnias and pepinias form bulbous-like growths that can be broken apart to provide new plants.

In Brisbane, Australia, where I live, plants experience a sub-tropical climate and are grown in unheated shade houses. In winter, average night-time temperatures are around 10 degrees Celsius (50°F), although I do experience temperatures as low as 3 degrees Celsius (37.5°F). Summer maximum temperatures can reach as high as 40 degrees Celsius (104°F), although the average would be close to 30 degrees (86°F). Rainfall is concentrated in the summer months. So, while the cultural suggestions outlined in this article work well for myself, they may not be applicable to your growing conditions.

Pitcairnias and pepinias will thrive if grown in a mixture similar to that used for most indoor plants. A mixture, which has given good results for myself, is comprised of 1 part Cocopeat or peatmoss to 1 part of coarse sand. A continuous release fertiliser, such as Osmocote, should be added to

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the potting mixture in the concentrations recommended by the manufacturer for indoor plants.

Re-pot the plants once a year...they typically like bigger pots for their size than other bromeliads. For example, a single offshoot of many species can often be grown into a small clump that requires a 250 mm bucket (10" pot) within 30 months.

Plants should be watered until water starts to flow through the pot's base, at least three times a week in summer. Twice a week in winter should be adequate, except during periods of low humidity.

Leaves generally do not suffer from insect attacks, although in Australia grasshoppers can attack young leaves on rare occasions. Aphids can also cause significant damage to flowers.

Pitcairnias and pepinias grow well for me under 50% shadecloth in winter and 75% for the rest of the year. They also thrive in shaded, well-drained areas in the garden, but are unlikely to do well in situations that receive the full afternoon sun (especially in summer). When grown in the ground, pitcairnias produce relatively tall (usually 50 cm or more; 20") green, grass-like foliage that can form an effective "backdrop" to a planting, of, for example, colorful neoregelias.

Photograph by Phil Nelson.

Figure 15. *Pepinia sanguinea.*

Photograph by Phil Nelson.

Figure 16. *Pitcairnia andreana.*

Figure 17. *Pitcairnia atrorubens.*

Photograph by Doug Upton.

Figure 18. *Pitcairnia grafii.*

Photograph by Doug Upton.

The ancestors of many of the plants currently grown in Australia were obtained by growing plants from seed obtained from overseas. While many interesting plants were obtained, it has become obvious that quite a few are incorrectly identified. While there are few named pitcairnia and pepinias hybrids, it is possible many of the "species" grown in Australia could be hybrids. Alternatively, some species are much more variable in appearance than is commonly believed.

Though pitcairnias and pepinias are not readily available in Australia, you can build up a collection of 10 or more species over a period of several years by searching for them at shows. Eighteen species are described below, though it is likely there are at least 30 species and hybrids cultivated in Australia.

(Conversion note: 2.5 cm = 1 inch).

Pepinia sanguinea. The plants arching leaves are up to 60 cm long and 6 cm across at their widest point. The leaves are a velvet green, flushed with maroon, on their upper surfaces, and maroon underneath. This plant is well worth growing. Several hybrids have been made with it as one of their parents.

Pitcairnia andreana. This is one of the smallest plants in the genus. The light green leaves are 30 to 40 cm long and up to 4 cm wide. The inflo-

Photograph by Phil Nelson.

Figure 19. *Pitcairnia heterophylla.*

Photograph by Phil Nelson.

Figure 20. *Pitcairnia imbricata.*

Figure 21. *Pitcairnia smithiorum.*

Photograph by Ross Stenhouse.

Figure 22. *Pitcairnia smithiorum.*

Photograph by Ross Stenhouse.

rescence rises above the leaves on a stalk that is about 15 cm long. A cluster of around 10 flowers, each of which is about 10 cm long, constitute the inflorescence. The petals are orange at their base, and yellow for their remaining length.

Pitcairnia atrorubens. The arching, green leaves are up to 100 cm long and 5 cm wide at their widest point. The dark red, cylindrical spike, which is 40 to 60 cm long, arises from a 30 to 50 cm long stalk. The 3 cm long flowers have yellow or red petals.

Pitcairnia burle-marxii. This plant forms a distinct stem. The semi-succulent leaves are 3 cm wide and 15 cm long, olive-green on top and maroon in colour underneath. It has an unbranched spike of about 15 flowers.

Pitcairnia carinata. The dark green leaves are about 60 cm long and up to 3 cm wide. The raceme (an elongated cluster of stalked flowers) is bright red, and 20 to 30 cm long. The flowers have red petals.

Pitcairnia flammea var. *roezlii*. The arching leaves are 60 to 80 cm long, and 3 cm wide at their widest point. The upper surface of the leaves is dark green, while the underside is covered with a dense, silvery-grey "scurf". The cylindrical infloresence is about 40 cm long, and 5 cm wide. The top of the infloresence is about 60 cm above the tips of the leaves.

Pitcairnia funkiae. The arching green leaves are up to 100 cm long and 8 cm across at their widest point. The 20 cm long, cylindrical, brown inflorescence does not reach the top of the leaves.

Pitcairnia grafii. The light green leaves are 30 cm long, 3 cm wide, and form a semi-erect rosette about 50 cm across. The infloresence rises well above the leaves, and consists of a red-orange pyramidal spike about 30 cm tall. Its flowers have yellow petals.

Pitcairnia heterophylla. This deciduous plant has 60 cm long light green leaves. At the start of autumn, these leaves are shed and the plant consists of a small clump of brown, spiny, reduced leaves. In spring, a cluster of flowers with pink to red or white petals appears at the end of a short stalk. As the plant is basically dormant in winter, be careful not to over-water it.

Pitcairnia imbricata. The light green leaves are up to 60 cm long and 5 cm wide. The inflorescence is a light-red cylindrical spike about 50 cm long. The flowers are about 5 cm long, while the petals are creamy-yellow.

Pitcairnia integrifolia. Leaves are 60 to 80 cm long and up to 3 cm wide. The leaf upper surface is a dull green, with the lower surface being covered with dense, grey scales. The branched inflorescence is about 50 cm long and 30 cm wide. The flowers are about 3 cm long, and have petals that are yellow at their base and bright red at their tips.

Pitcairnia maidifolia. This has two types of leaves. The inner, green leaves are about 10 cm wide, 30 cm long, and occur at the end of long stalks, while the outer leaves are reduced to blackish sheaths at the base. Its yellow-green flower spike consists of a 20 cm long elongated cluster of flowers, located on top of a 30 to 60 cm long stalk. The flowers have white petals.

Pitcairnia nigra. The plant is about 80 cm tall, with leaves up to 15 cm wide. A cylindrical spike, which is 10 to 50 cm long and 5 to 7 cm wide, arises from a 20 cm long stalk. The flowers have 10 cm long petals that are yellowish-white at their base, and are black-purple at their tips.

Pitcairnia riparia. Individual plants occur on the ends of numerous, above-ground, branching, rhizome-like growths. Each plant consists of a semi-erect tight cluster of 5 to 10 leaves. Each of the light green leaves is about 40 cm long and 1 cm wide. The pendent inflorescence consists of a spike having around 10 red-petalled flowers. This plant can be grown in a hanging basket.

Pitcairnia smithiorum. The species was botanically described only in 1991, and is one of the most spectacular pitcairnias. The arching, light green leaves are up to 80 cm long and 5 cm wide. An egg-shaped, reddish spike, which is about 10 cm long and 7 cm wide, arises from a 30 to 50 cm long stalk. The spike is level with the top of the plant's leaves. The flowers have orange-yellow petals. Several named hybrids have been made using this plant. They include: 'Beaujolais', 'Bud Curtis', 'Stephen Hoppin', and 'Jim Scrivner'.

Pitcairnia tabuliformis. This plant has a very different appearance from the other pitcairnias described in this article. About 20 green leaves, 15 cm long and 7 cm wide, form a flattened (table-like) rosette. About 40 flowers form a 5 to 7 cm wide, "head-shaped" cluster in the plant's centre. The petals are orange-red. This is a rare plant.

Pitcairnia undulata. The leaves are 15 to 20 cm wide, 70 cm long, pale green on top, and whitish-green on their lower surface. The red inflorescence is about 30 to 45 cm long, and consists of an elongated cluster of flowers that have red petals.

Pitcairnia xanthocalyx. This plant readily forms a large clump. The 100 cm long leaves are up to 2.5 cm in width. The upper surface of the leaves is light green, while the lower surface is light grey. The many-flowered raceme, which is 50 to 70 cm long, arises from a 60 cm long stalk. The 2 to 5 cm long petals are yellow.

If you have space for only a few pitcairnias, I suggest you try *Pitcairnia atrorubens, P. heterophylla, P. nigra,* and *P. smithiorum*. The best *Pepinia* to grow is *P. sanguinea*. Colour photographs of pitcairnias and pepinias, including the *Pitcairnia smithiorum* hybrids mentioned previously, can also be seen on the Florida Council of Bromeliad Societies' website: *www.fcbs.org*

Acknowledgements

I thank Mike Symmons for his help in preparing this article, and Doug Upton and Ross Stenhouse for taking the photographs used to illustrate it. Additional photographs by Phil Nelson are from the Selby Gardens collection.

Bromeliads and Art

Ron Parkhurst[7]

I have come to the conclusion that gardens were probably the first forms of art known to man. From arranging plants in a landscaped design, man was able to creatively express basic forms of art using plants, rocks, wood and other elements to compose works of art for visual pleasure. Today, art has evolved to include many media such as sculpture, painting, woodworking, dance, ceramics, theater, just to name a few.

Bromeliads are the perfect plant for any art piece or garden because of their diverse shapes, colors and markings. Because some Bromeliads are epiphytes, they make excellent attachments to driftwood and rock bases. This is exactly what I did to create the piece titled "hinahina", which in Hawaiian means Spanish moss or *Tillandsia usneoides*. (FIGURE 23) First, I searched for a suitable base and since Hawaii has an abundance of lava rock, it was not hard to find an unusual rock piece with lichen already growing on it. Next finding the right pieces of wood to attach to the lava rock base was also easy to find in Hawaii. Since we are surrounded by ocean, driftwood is the natural selection of choice. This is where a person can get creative by finding unusual shapes of wood and attach them to your lava base. I also like manipulating other colors of lava rock to the rock base or using something contrary such as smooth beach pebbles.

Figure 23. Bromeliad sculpture by Ronald Parkhurst, from the Art Maui 27th Annual Juried Exhibition catalogue.

Once the basic shape of your now sculptured piece comes to form, adding Bromeliads is the easy part. I just wire them on the wood and cover them with a green moss. When I mount Bromeliads in a rock, I just manipulate the hole to hold the plant roots by adding moss and poking it tight with a screwdriver. Lastly, I hang some hinahina or Spanish moss.

Art Maui is the largest and most prestigious juried art show in Hawaii. Never before has a person entered and been accepted by using live plants as art and this may now give a renewed meaning to art. I am equally happy that the plants used were Bromeliads, one of my favorite plants and the subject of this article. Of course the icing on the cake was when I received a phone call from Art Maui that my art piece had been sold for several hundred dollars and all in the name of "art".

[7] Olinda, Maui, Hawaii.

The Curative Power of Bromeliads - *Hechtia glomerata*

Robert W. Kopfstein[8]

When most bromeliad aficionados think of the plants of the Bromeliaceae family, they likely regard most of these specimens as primarily decorative. The myriad colors and shapes of these bromeliads present a stunning variety of aesthetically pleasing effects in anyone's garden.

What may surprise some people is that certain types of the bromeliads are also known to be useful for medicinal purposes. One such plant is *Hechtia glomerata* Zucc., native to the Mexican states of Chiapas, Guanajuato, Hidalgo, Mexico, Nuevo León, Puebla, Queretaro, San Luis Potosi, and Tamaulipas (Espejo-Serna et al. 2004). *Hechtia glomerata* was formerly known as *Hechtia ghiesbreghtii* Lem., and the local common name for the plant is quapilla.

Chemical analysis indicates that this hechtia contains essential oils, gum, an acid and a neutral resin, catechin (a yellow compound used in tanning and dyeing), benzoic acid and several mineral salts. The cut base of the leaves yields a balsamic substance that is like a yellow, brittle varnish.

The curanderos (herbal healers) in Mexico use the plant both fresh and dried. Four to five grams of the leaves or stalk are added to 150 milliliters of water and brewed into a tea. This "tea" should be drunk three times per day before eating.

The benefits of this *Hechtia* tea are many: it alleviates respiratory and urinary problems. The balsamic component (the base of which is benzoic acid) is good for bronchitis. It relieves mucous tissue inflammation, calms coughs, reduces mucous discharge, and disinfects expectorants. It also relieves symptoms of whooping cough in children.

The tea combats inflammation of the kidneys, gallbladder, and urethra and reduces nephritis. There are no toxic substances in *H. glomerata* and the extracts of the leaves and stem have antiseptic properties.

In southern Sonora there is also a species of hechtia that grows in the vicinity of the towns of Sahuaripa and Alamos, which the local people report, has curative properties, especially related to the respiratory system. The common name that is used locally to describe the plant is savila (which is also used to describe other plants, aloe vera for example). This hechtia usually grows on steep rocky cliffs and road cuts. To date this author has not been able to attach a scientific name to it. [Editor's Note: Harry Luther, Director of theBromeliad Identification Center, suggests that this is probably *Hechtia montana*]

[8] Reprinted with minor modifications from Pup Talk, March, 2005, the newsletter of the Saddleback Valley Bromeliad Society, California.

One of the things a visitor to the rural areas of Mexico soon discovers is the remarkable awareness and knowledge that the local people have of the indigenous plants. It seems as if nearly every plant has some sort of practical use, and many of these uses are medicinal. *Hechtia glomerata* is apparently a well-known source of medicine that is used even today in Mexico.

Source

Cabrera, Luis G. 1945. *Plantas Curitivas de Mexico*, 3rd ed. Mexico, D.F. Ediciones Ciceron.

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Other References

For text and illustrations of *H. glomerata* in the Journal, see 7(2): 17-21. 1957; 22(2): 34.1972.

For mention of *H. glomerata* in the Journal, see 3(1-2): 6. 1953; 15(3): 57. 1965; 40(3): 113. 1990.

Moving?

If you are moving, or have recently moved, please send your name, the old and new addresses, and the effective date to: John Atlee, BSI Membership Secretary, 1608 Cardenas Dr. NE, Albuquerque, NM 87110 or by e-mail to membership@bsi.org.

Affiliate Show and Judges Certification News

Betty Ann Prevatt, BSI Judges Certification Chair

The Affiliates Shows Committee and the Judges Certification Committee (JCC) are introducing a new type of BSI Show. It is called a BSI JUDGED SHOW and is in addition to the BSI STANDARD SHOW.

The BSI Judged Show is a relaxed version, with only a few requirements. It is good for those socities who do not award the Mulford B. Foster and Morris H. Hobbs awards. It allows you to use BSI judges, and the judges will receive credit providing that the BSI Scales of Points are used.

If your society has not been staging a BSI Standard Show because of "too many requirements," you might want to try this show. Please contact Carolyn Schoenau, Affiliated Shows Chair, for a guideline for the BSI Judged Show.

Starting in 2005, we ask that the judges list for your BSI show be sent to Betty Ann Prevatt, JCC Chairman, for approval. Betty Ann will now be sending Judge's Record sheets to the judge's chairmen.

Two new species of *Vriesea* (Tillandsioideae, Bromeliaceae) from Southeastern Brazil

Bruno Rezende Silva[9]

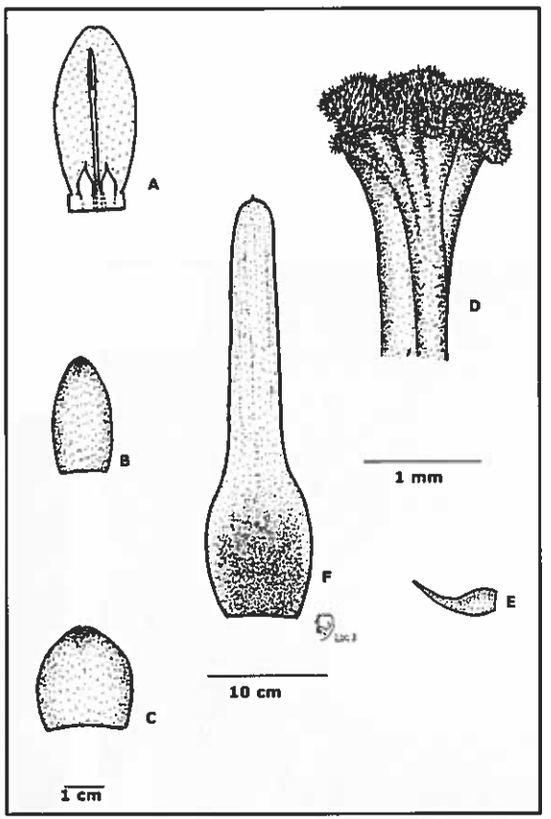
The southeastern states of Brazil present a high diversity of Bromeliaceae, where, at least in the state of Rio de Janeiro, the genus *Vriesea* Lindl. contains the greatest number of species (Fontoura et. al. 1991†).

Two new species of *Vriesea* section *Xiphion* (E. Morren) E. Morren *ex* Mez are here described, one from Rio de Janeiro state and the other from the adjacent Espírito Santo state. Both of these new taxa are placed in *Vriesea* section *Xiphion* due to the mostly dull green or brownish bracts and included stamens (Smith & Downs 1977).

***Vriesea fontourae* B.R. Silva, sp. nov.** TYPE: Brazil. Rio de Janeiro: field collected at Município de Silva Jardim, Jan. 2001, by *Eduardo Luiz Lopes Torres s.n.*, and flowered in cultivation at the Jardim Bot,nico Neotropicum (JBN 875), Aug. 2001, B.R. *Silva s.n.* (Holotype: RB). FIGURES 24-26.

A *Vriesea jongbei* (K. Koch) E. Morren, cui affinis, sed laminis foliorum latioribus, viridibus, apice obtuso-acuminato, scapo crassiore, rhachidi recta et crassiore, floribus patentibus, bracteis floriferis orbiculatis, apice obtuso-emarginato et recto et sepalis majoribus differt.

Plant epiphytic, propagating by short basal shoots, flowering ca. 60 cm tall. ***Leaves*** ca. 25, densely rosulate, arching, forming a crater-



Drawing by Bruno Rezende Silva.

Figure 24. *Vriesea fontourae*: a) petal; b) sepal; c) floral bract; d) stigma; e) ovule; f) leaf.

[9] Rio de Janeiro Botanic Gardens (JBRJ) and Neotropicum Botanical Gardens. Rua Dr. José Pereira Mouco, Lote 52, Várzea das Moças, Niterói, RJ, Brazil, CEP: 24330-300. E-mail: brsilva@jbrj.gov.br

iform rosette. ***Sheaths*** elliptic, 8-11 x 6-8 cm, chartaceous, dark brown to greenish toward blade, very densely brown-lepidote. ***Blades*** ligulate, subchartaceous, 20-30 x 3.5-4.5 cm, apex broadly rounded and apiculate, apiculus 2-4 mm long, green, densely covered on both surfaces with brown trichomes, covered with a waxy whitish layer, especially abaxially. ***Scape*** erect, 30-35 cm long, 6-8 mm in diameter, glabrous, purplish green. ***Scape bracts*** imbricate, slightly exceeding the internodes, broadly elliptic, apex attenuate and apiculate, dark green with purple toward apex, chartaceous, densely covered with brown trichomes, especially toward apex. ***Inflorescence*** a raceme, linear, erect, 20-30 cm long, 6-8 cm wide, 15 to 18 flowered, rachis slightly sinuous, conspicuously mucilaginous, ca. 5 mm in diameter, stout, glabrous. ***Floral bracts*** orbicular, apex obtuse-emarginate and straight, 24-27 x 25 mm, densely covered with brown trichomes on both surfaces, ecarinate, chartaceous, reddish cream colored with purple at apex, chartaceous, base bearing conspicuous auricles decurrent on the rachis, about equaling 2/3 of sepal length and incompletely enfolding them. ***Flowers*** 4-5 cm long, anthesis nocturnal, spaced ca. 1 cm apart, distichous, bearing a strong garlic-like flagrance, pedicels ca. 7 mm long, stout, green, glabrous. ***Sepals*** elliptic, apex obtuse and rounded, 30-35 x 16 mm, yellowish-green except for the purple apex, ecarinate, inconspicuously lepidote outside, densely covered with brown trichomes inside, chartaceous, free. ***Petals*** elliptic, apex emarginate, spreading at anthesis, ca. 40 x 20 mm, forming a campanulate corolla

Figure 25. *Vriesea fontourae*: Paratype blooming in cultivation, detail of flower in front view.

Photograph by Elton Leme.

Figure 26. *Vriesea fontourae*: Paratype blooming in cultivation, habit.

Photograph by Elton Leme.

ca. 25 mm in diameter at apex, pale yellow, connate for ca. 4 mm. ***Petal appendages***, subsymmetrical, overlapping, obovate, long-attenuate, 14 x 4 mm, adnate to the petals for ca. 4 mm. ***Filaments*** slightly complanate, dilated toward apex, adnate to petal for ca. 5 mm. ***Anthers*** ca. 10 mm long, dorsifixed near the shortly sagittate base, apex obtuse. ***Stigma*** convolute bladed, slightly exceeding the anthers, ca. 3 mm in diameter at apex, papillae conspicuous, cylindrical and numerous. ***Ovules*** ca. 1 mm long, including the ca. 0.6 mm long flattened appendix.

Paratype: Brazil. Rio de Janeiro: field collected in Município de Silva Jardim, Poço das Antas, Aug. 1994, by *Talita Fontoura s.n.*, and flowered in cultivation at the Refúgio dos Gravatás, Aug. 2001, *E. Leme* 2681 (HB).

Vriesea fontourae is closely related to *V. jonghei* (K.Koch) E.Morren, differing from it vegetatively by the rosette with fewer leaves (approximately half), foliar blades are wider (3.5-4.5 vs. 2-3 cm), homogeneously green instead of vinose abaxially, apex broadly rounded and apiculate, not acute. At flowering, the main differences are the thicker scape (6-8 vs. 4-5 mm) and rachis (5 vs. 3 mm), the rachis is straight instead of slightly geniculate. Flowers are patent, not at all slightly reflexed. The floral bracts are orbicular versus broadly ovate, with an obtuse-emarginate apex and not just obtuse, occasionally apiculate and straight, never slightly reflexed at apex, densely covered with brown trichomes versus glabrous, the sepals are longer (30-35

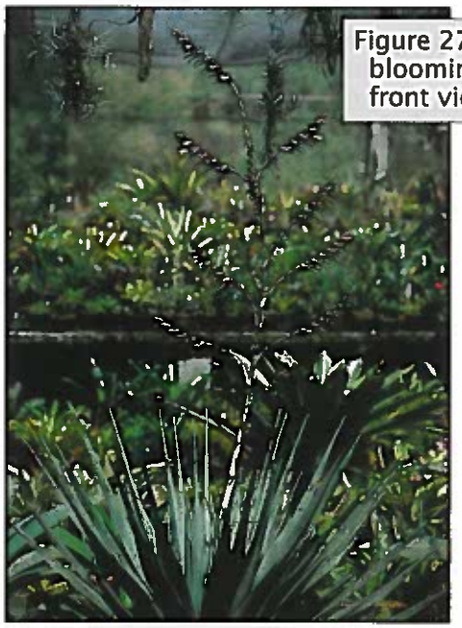


Figure 27. *Vriesea revoluta*: Holotype blooming in cultivation, detail of flower in front view.

Photograph by Elton Leme.

Figure 28. *Vriesea revoluta*: Holotype blooming in cultivation, habit.

Photograph by Elton Leme.

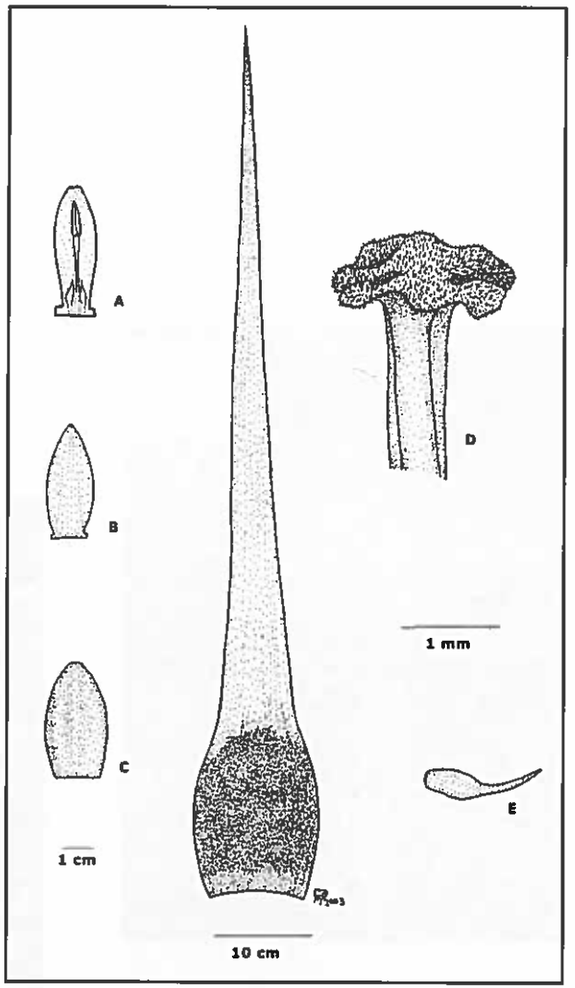
vs. 20-30 mm) and densely covered by trichomes instead of glabrous. Measurements for *V. jonghei* reflect specimens from eastern Brazil, larger measurements present in Smith & Downs (1977) reflect Caribbean (Trinidad) specimens that may represent a different species.

This species was named in honor of Talita Fontoura, an accomplished Brazilian botanist and collector of the paratype.

Vriesea revoluta **B.R. Silva, sp. nov.** TYPE: Brazil. Espirito Santo: field collected in Domingos Martins, Reserva de propriedade de Roberto Kautsky, epífita, ca. 800 m, Feb. 1986, by *R. Kautsky & E. Leme 837*, and flowered in cultivation at the Refúgio dos Gravatás, Oct.-Nov. 2001, *B.R. Silva s.n.* (Holotype: RB). FIGURES 27-29.

A *Vriesea gigantea* Gaudich., cui affinis, sed laminis foliorum angustioribus, subtriangularibus, marginis revolutis, apice acuminato-caudato, inflorescentia plus ampla, basi ramorum sterili bracteis carinatis internodia superantibus, rhachidii geniculata, bracteis floriferis longioribus, carinatis, obtuso-emarginatis et secundis, floribus secundis infra rhachim et densioribus, sepalis minoribus carinatis et petalis minoribus et emarginatis differt.

Plant epiphytic, propagating by short basal shoots, ca. 2.5 m tall. ***Leaves*** ca. 40, densely rosulate, suberect to spreading, forming a crateriform rosette. ***Sheaths*** elliptic, 15-18 x 9-11 cm, subcoriaceous, dark brown, very densely covered with brown trichomes. ***Blades*** narrowly triangular, acuminate-caudate, upper third revolute, chartaceous, 40-70 x 5-7 cm, light green with transverse and longitudinal dark green straight lines, densely covered abaxially with cinereous trichomes, reducing in number toward apex, sparsely covered adaxially with cinereous trichomes, covered with a whitish waxy layer, especially adaxially. ***Scape*** erect, ca. 70 cm long, 10-18 mm in diameter, glabrous, deep purple, covered with a whitish waxy layer. ***Scape bracts*** imbricate, much exceeding the internodes, concealing the scape with cinereous trichomes, glabrous towards apex, covered with a whitish waxy layer, specially adaxially. ***Inflorescence*** a panicle, pyramidal, erect, ca. 1 m long, ca. 60 cm in diameter, main axis straight, exposed, ca. 8 mm in diameter, stout, glabrous, covered with a whitish waxy layer. ***Primary bracts*** elliptic-attenuate, 3-4 x. 2 cm, shorter than the sterile bases of the branches, suberect, greenish purple, chartaceous, ecarinate, densely covered with cinereous trichomes on both faces. ***Primary branches*** suberect, 12 in number, each with ca. 12 flowers, ca. 30 cm long, including a 10-15 cm long sterile base, straight and bearing ca. 4 bracts similar to the floral bracts, slightly exceeding the internodes, rachis slightly geniculate. ***floral bracts*** elliptic, obtuse-emarginate, 32-36 x 18 mm, glabrous, inconspicuously carinate, chartaceous, stramineous, about equaling 2/3 of sepal length, pointing diagonally down but not secund with the flowers. ***Flowers*** ca. 5 cm long, anthesis nocturnal, spaced ca. 1 cm apart, downwardly secund at anthesis, bearing a strong sweet fragrance, pedicels ca. 8 mm long, stout , green, glabrous. ***Sepals*** subelliptic, apex acute, 32-36 x 15 mm, purplish-green, inconspicuously carinate, inconspicuously lepidote outside, densely covered with brown trichomes inside, chartaceous, connate for 1 mm. ***Petals*** linear-elliptic, apex emarginate, spreading at anthesis, ca. 38 x 13 mm, forming a campanulate corolla ca. 25 mm in diameter at apex, cream colored, connate for ca. 3 mm, bearing at base two subsymmetrical ***petal appendages*** obovate, long-attenuate, 13 x 3 mm appendages, adnate to the petals for ca. 6 mm. ***Stamens*** (included?). ***Filaments*** slightly complanate, dilated toward apex, the antipetalous adnate to petal for ca. 6 mm, the antisepalous adnate to petal tube for ca. 4 mm. ***Anthers*** ca. 10 mm long, dorsifixed near the shortly sagittate base, apex obtuse. ***Stigma*** convolute bladed, slightly exceeding the anthers, ca. 2 mm in diameter at apex, papillae conspicuous, cylindrical and numerous. ***Ovules*** ca. 1 mm long, including the ca. 0.6 mm long appendix.



Drawing by Bruno Rezende Silva.

Figure 29. *Vriesea revoluta*: a) petal; b) sepal; c) floral bract; d) stigma; e) ovule; f) leaf.

Vriesea revoluta is only known from the holotype, collected originally by Roberto Kautsky in Espirito Santo State, without exact locality and was noted by Leme (personal communication) as being rather superficially intermediate between *Vriesea gigantea* and *V. neoglutinosa* Mez, thus raising the hypothesis of a hybrid origin for the taxon. In order to confirm or refute this hypothesis, the pollen viability of the living type was tested using the technique of coloration with acetic carmine developed by Beçak & Paulette (1976) and elaborated by Souza and Leme (2000). This approach proved very useful when dealing with hybrids in Heliconiaceae (Silva et al. 2003) and even between different genera in Bromeliaceae (Sousa et al. 2003). Using this method, a total of 500 pollen grains were counted, 97% being viable.

Additionally, no foliar corrugations, asymmetries of foliar apices, nor scape and inflorescence twisting characteristic of hybrids were observed, thus further reinforcing the species status of the taxon here described.

Vriesea revoluta is closely related to *V. gigantea* Gaudich. differing from it vegetatively by the narrower (5-7 vs. 6-9 cm) and narrowly triangular, not at all ligulate, acuminate-caudate, not broadly acute and apiculate foliar blade with revolute margins, never planar. At flowering, the main differences are the broader inflorescence (60 vs. 40 cm) with the sterile bracts of the branch bases equaling or surpassing the internodes instead of equaling about half of the internodes and the slightly geniculate rachis as opposed to flexuous. Floral bracts are longer, reaching the upper third of the sepals (versus equaling the middle of the sepals), inconspicuously carinate (versus ecarinate), secund with the flowers (versus not secund at all), with an apex obtuse-emarginate, never subacute. The flowers are downwardly secund, not distichous or rarely somewhat secund, in addition to being much more dense. The sepals are shorter (32–36 vs. 37-40 cm) and inconspicuously carinate, not ecarinate. The petals are cream colored instead of greenish yellow, shorter (38 vs. 40-50 mm) and have an emarginate, (versus obtuse) apex.

The specific epithet refers to the revolute character of the upper third of the foliar blades.

Acknowledgements

I thank Dr. Jorge Fonttela for his assistance in preparing the Latin diagnosis and Elton M.C. Leme for donating the photographs, the only known cultivated specimen of Vriesea revoluta, as well as the paratype of *V. fontourae* for this study. Special thanks also to the Rafaela Forzza for the careful review of the manuscript.

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Past Honorary Trustees

The classification of Honorary Trustee was established to recognize individuals whose distinguished contributions have advanced the purposes of the Bromeliad Society. To keep their names and memories alive for the Society, those who have passed away will be annually listed in the *Journal*. See inside back cover for a listing of the living honorary trustees. Please send corrections to the editor.

Name	Country	Year elected	Date of death	*Journal* references relating to election and death
Alberto Castellanos	Argentina	1951	5 Sept. 1968	1:3; 9:123-126
Jules Chantrier	France	1951	?	1:3
Charles Chevalier	Belgium	1951	?	1:3
David Fairchild	USA	1951	6 Aug. 1954	1:4
E.C. Hoehne	Brazil	1951	?	1:3
Charles G. Hodgson	Australia	1951	1969	1:3; 19:53
Charles K. Lankester	England	1951	8 July 1969	1:3; 19:127; 20:8-10
Henry Teuscher	Canada	1951	?	1:4
Muriel Waterman	New Zealand	1951	1985?	1:3; 35:225
Raulino Reitz	Brazil	1954	20 Nov. 1990	41:58
Walter Richter	Germany	1960	10 Feb. 1997	10:2; 47:226-227
Lyman B.Smith	USA	1960	4 May 1997	10:2; 47:199-210
Adda Abendroth	Brazil	1962	23 Nov. 1981	12:2; 32:79
Mulford B. Foster	USA	1962	28 Aug. 1978	12:2; 28:243-244
W.B. Charley	Australia	1963	1976	13:74; 26:123
Richard Oeser	Germany	1963	1980?	13:2
Werner Rauh	Germany	1969	7 Apr. 2000	19:26; 50:122-24
Luis Ariza-Julia	Dom. Rep.	1970	24 Sep. 1989	20:98; 40:10
Julien Marnier-Lapostolle	France	1970	18 Feb. 1976	20:122;26:93
Robert G. Wilson	Costa Rica	1970	8 Apr. 1989	20:98; 39:205
David Barry, Jr.	USA	1972	1 Feb. 1978	22:74; 28:115-116
William W.G. Moir	USA	1980	21 Feb. 1985	30:98; 35:158
Roberto Burle Marx	Brazil	1982	4 Jun. 1994	32:3-11; 44:198-199
Victoria Padilla	USA	1982	16 Sep. 1986	32:2; 37:3-7
WilliamWeber	Germany	1984	30 Jul. 1986	36:264-265
Racine Sarasy Foster	USA	1985	21 Mar. 1991	35:191; 41:109
Ed Hummel	USA	1991	29 Nov. 1979	30:23; 42:33
Charles A. Wiley	USA	1991	30 May 1980	30:227-228; 41:219; 42:33
Robert W. Read	USA	2003	15 Jul. 2003	27:194; 53:157-159

Gloria Irizarry — In Memoriam

Larry Giroux, BSI Director, Florida Region

Photograph by Rei Irizarry.

Figure 30. Gloria Irizarry.

Gloria Irizarry, a native of Shreveport, Louisiana, who served on the Board of Directors of the Cryptanthus Society since 2002, succumbed to her long battle with cancer in January 2005.

Gloria was an avid grower, exhibitor and advocate of Bromeliads, especially *Cryptanthus*. For many years Gloria and her husband, Rei, have been acquiring a vast collection of *Cryptanthus* species and hybrids. In spite of the inclement weather, especially the high rainfall and low temperatures in the Mobile, Alabama area, they have been able to produce blue-ribbon winning plants which adorn their backyard during the summer months.

Gloria's involvement with Bromeliads started about 15 years ago, and her passion for *Cryptanthus* consumed about 12 of these years. Gloria and Rei were active members of the Greater Mobile Bromeliad Society, where Gloria served in various officer positions and as their newsletter Editor until its dissolution a few years ago. However, this did not curtail their involvement with bromeliads; in spite of the distance from Mobile, they continued as regular attendees of the Greater New Orleans Bromeliad Society with involvement at both the organizational level and as annual show and sale participants. In addition to her involvement with the Cryptanthus Society on the Board of Directors and at international Cryptanthus shows, Gloria was on the Board of Directors of the Bromeliad Society International until her passing.

Distance was never an obstacle to the couple's enjoyment of their hobby. Gloria and Rei would drive to events such as sales, shows and international conferences throughout the United States in pursuit of new Bromeliads and to spend time with other bromeliad enthusiasts. Gloria commuted to Houston, Texas to attend judging school and in 2002 became a BSI accredited Judge. Once she had these credentials, she became a familiar face amongst panels judging shows in Texas, Louisiana, Florida and World Bromeliad Conferences. She has shared her expertise of *Cryptanthus* at bromeliad meetings and in articles that she has had published in various newsletters, as well as the Cryptanthus Society Journal.

Rei intends to continue working with the Bromeliads and Societies, which this couple together have supported for so many years. Ray has agreed to serve Gloria's remaining terms as director of the Cryptanthus Society and the Bromeliad Society International. Our sympathy goes to Rei and Gloria's family for their loss. All of us who knew Gloria will cherish the times we spent with her and forever miss this humble and gracious Southern lady.

Reprinted with minor modifications from the Cryptanthus Society Journal 20(1). 2005.

Bromeliad Databases Available on the Internet

Derek Butcher, BSI Cultivar Registrar

Why do you need Computers when you have the printed word? The main problem is that as soon as a book or list is printed, it is out of date and these days change is the only constant. If you use your computer to search for detail on Bromeliads BEWARE because of the thousands of sites only a few give reliable information which is why the Bromeliad Society International (BSI) and the Florida Council of Bromeliad Societies (FCBS) tries to be at the forefront in giving reliable advice.

At the current time there are 6 databases, all the brainchildren of Michael Andreas - Mr. fcbs.org, and it all started in 1998. The first was a photographic file on www.fcbs.org. The second was the Cultivar Register in 2000 on www.bsi.org under Cultivar Corner. Since then a further 4 have been added to the FCBS website. These are:

1. Photographic file. This was set up as the numbers of photographs posted on fcbs.org were increasing in number and difficult to control. It was quickly realised that we would never have a photograph for all the bromeliad names that were in use both for species and cultivars. The first priority was in cultivars where Don Beadle was trying to find a successor. The new Registrar was living in Australia and he wanted to be able to regularly update the computer database held in the USA. The best way was to convert the Cultivar Register files to a data base format and Mike Andreas was the one who designed it - with prompting from the Registrar!

2. Cultivar Register. This gives all the details that the Registrar wishes to record and if a photograph is held there is a link to the photographic file. Therefore if you are searching for a cultivar you should refer to the Cultivar Register first and not go direct to the photographic file. You could miss vital information! Note that the use of formula is not accepted under the International Code on Nomenclature of Cultivated Plants (ICNCP) rules because a cultivar *cannot* be identified in this manner.

3. Bromeliad Species. This started as simple file of names from the binomial listings just to provide a control for the species photographs held in the photographic database. Over the years more data has been added to the names such as references to publications and collection information, and more will be added in the future. This now provides comprehensive data on new species and synonyms made since the Smith & Downs 3 volumes of *Flora Neotropica* 1974-1979. Latinised species names concocted by dealers, collectors, and even taxonomists are also referenced in case you come across some odd name, which is unacceptable by taxonomists but still used, regrettably, by the uninitiated. If you want detail on a species you go first to the species database, then the photographic file. No attempt has been made to show what is accepted by the Bromeliad Identification Center and published

by the BSI every two years in *An Alphabetical List of Bromeliad Binomials*.

4. Bromeliad Natural Hybrids. Under the rules of the International Code of Botanical Nomenclature (ICBN) a natural hybrid can be described and named using a multiplication sign in front of the latinised name or it can be identified by a formula of the putative parents. Both types of names are recorded in the database. Here the formula is slightly different to that used for man-made hybrids (which later become designated cultivars on leaving the control of the hybridist - I hope) because the seed parent is not known. Collectors of wild plants only see a plant and were not present at the time of conception! Also we do not know how much back crossing has taken place. Therefore we can expect variability in natural hybrids. In the database the parents are expressed in alphabetical order even though for reasons unknown, they may have been originally recorded in the order of the choice of the person naming the plant. This too has links with the photographic database.

5. FCBS Seed Collection, for 'Save Florida's Native Bromeliads' program. This is a special database for those who collect and grow seed for eventual release back to the wild.

6. Bromeliad Tank Dwellers. This is a special database for those interested in the relationships between insects and other fauna and Bromeliad plants.

What are the advantages of having databases when you cannot easily print details as you would with a list? There are several lists on Bromeliads at www.bsi.org and elsewhere.

1. For the person who is responsible for updating it is a much easier process.

2. Every field shown in the search format can be searched. Any combination of fields can be searched. The more fields you search at the one time does increase your chances of getting the right answer first time, but also increases your chances of not getting an answer! The less you enter, the more choices are returned from your search. This means, for example, you can search the Cultivar Register by just entering the genus and one of the parents. But beware, especially if you are a person who cannot spell and find it difficult to use a dictionary. Here the best method is to search on the first letters of the name. It is surprising how you can succeed just by using the first 2 letters!

If you do find an error, please let me know (registrar@bsi.org) because it can be easily fixed. There are no penciled notes as in a book or magazine!

Leaf Anatomy Of *Hohenbergia ramageana* Mez (Bromeliaceae) from Restinga Habitat in Rio Grande do Norte State, Brazil.

Maria Solange Dutra da Cruz[10], Ana Cláudia Nogueira da Costa & Roberto Lima Santos. Photographs by M. Solange Dutra da Cruz

Hohenbergia ramageana Mez (Bromeliaceae: Bromelioideae) is a phytotelm bromeliad species of saxicolous, epiphytic, and terrestrial habit occurring from Rio Grande do Norte to Minas Gerais and São Paulo states, eastern Brazil (Smith and Downs 1979). In eastern Rio Grande do Norte state, the authors observed terrestrial specimens of *H. ramageana*, growing in open, xeric habitats such as *restinga* and coastal tabuleiro scrub and in the remaining fragments of the Brazilian Atlantic Rainforest (FIGURE 35 on back cover). In these habitats *H. ramageana* and other phytotelm bromeliad species play a role as keystone resources for local fauna (Santos et al. 2003a, 2003b).

To investigate the leaf anatomy of Hohenbergia ramageana in these habitats, the authors collected wild specimens in a restinga habitat near Pitangui beach, in the Extremoz Municipality, a resort area about 24 km north of Natal, capital city of Rio Gande do Norte state. The area is characterized by a sandplain with restinga and dune vegetation (Santos 2003a). The climate is Köppen's type AS, with yearly mean temperature of 27°C and yearly mean relative humidity of 77% (Rocha Neto 2001)

For the anatomical study, both paradermic and cross sections were obtained from the midsection of the leafblade. Some sections were clarified with a 10% solution of sodium hypochloride and rinsed with distilled water. The sections were dyed with Astra-Saphranine Blue and Toluidine Blue following the protocols of Bukatsch (1972) and Sakai (1973) respectively, and mounted in glycerinated gelatin (Kaiser, 1880). Both fresh and dyed sections were observed under optical microscopy.

The microscopic analysis of the paradermic section of the abaxial surface revealed paracytic stomata and trichomes arranged in longitudinal rows (FIGURE 31). The mesophyll is differentiated with both palisade and regular parenchyma. The cross section of the leafblade shows a single adaxial layered epidermis covered with cuticle and a layer of palisade parenchyma without chloroplasts above the chlorenchyma (FIGURE 32). Trichomes were observed in the abaxial epidermis (FIGURE 33).

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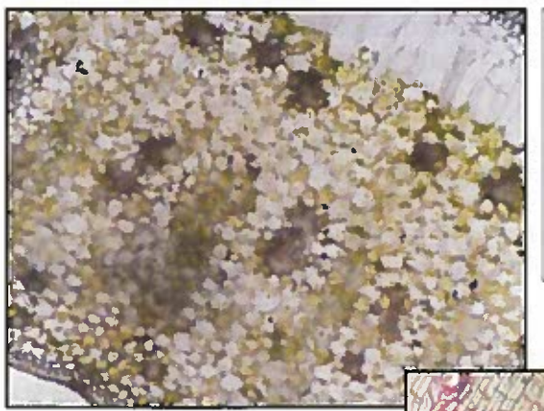

Figure 31. Paradermic section of the abaxial surface of the midsection of the leaf blade of *Hohenbergia ramageana* showing paracytic stomata and trichome scars arranged in longitudinal rows (magnification: 100x).

Figure 32. Freshly-cut cross section of the leaf blade of *Hohengerbia ramageana* showing adaxial and abaxial epidermis with palisade parenchyma, chlorenchyma and vascular bundles (magnification: 100x).

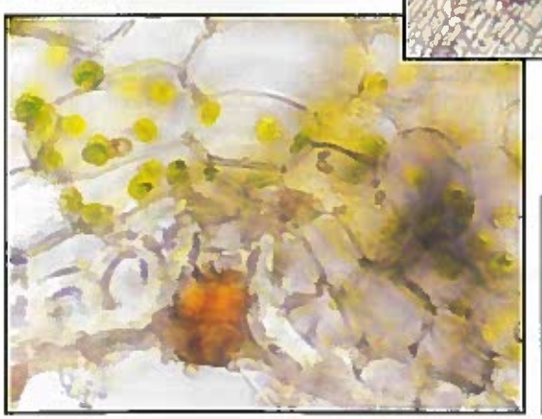

Figure 33. Fresh cross section of *Hohenbergia ramageana* abaxial epidermis showing detail of trichome and adjacent chlorenchyma (magnification: 400x).

Events Calendar

AUSTRALIA

September 8-11, 2005. *CENTRAL COAST NSW BROMELIAD SOCIETY SHOW*, Held in conjunction with the Flora Festival which is a very big show featuring all things horticultural. Central Coast New South Wales Bromeliad Society. Kariong. For more information, contact fayhagen@tac.com.au.

Oct. 14-17, 2005. *BROMELIADS XIII - AUSTRALIAN CONFERENCE*. The Bromeliad Society of Queensland, Inc. Brisbane, Australia. The conference will include lectures, tours, sales, displays, and an auction and show. For more information, contact Bromeliads XIII Conference Committee, c/o Bromeliad Society of Queensland Inc., PO Box 565, Fortitude Valley, Queensland, 4006 Australia. E-mail: secretary@bsq.org.au. Web site: http://www.bsq.org.au/conference.html.

November 5-6, 2005. *BROMELIAD BONANZA SPRING SHOW*. Bromeliad Society of Queensland. Mt Coot-tha (Brisbane) Botanical Gardens Auditorium. Oct 5, 8-4; Oct. 6, 9-3. Over 500 varieties/hybrids available for sale. Entry: Adults $3.00 children under 14 years free. Show will include talks,displays etc. Refereshments available. For more information, contact Beryl Batchelor. E-mail: berylbatchelor@dodo.com.au or phone (Aust 07 3390 2214).

UNITED STATES

October 14-16, 2005. *CALOOSAHATCHEE BROMELIAD SOCIETY 2005 STANDARD BSI SHOW & SALE*. Terry Park, 3410 Palm Beach Blvd., Ft. Myers, Fl. Oct. 14, registration and exhibit entry; Oct. 15, open to public 9-5; Oct. 16, 10-4. For more information, contact Diane Molnar at (239) 549-3404 or capebrom@aol.com and Brian Weber at (941) 355-2847 or brianweber1b@aol.com respectively.

October 22, 2005. *FLORIDA EXTRAVAGANZA*. Florida Council of Bromeliad Societies. Sarasota Garden Club, 1131 Blvd. of the Arts, Sarasota, Florida. A banquet and rare plant auction to benefit the FCBS will follow at the Helmsley Sandcastle, 1540 Ben Franklin Dr., Lido Beach, Sarasota, Florida. Free Admission. A special room rate of $79-$99 is available. Call 941-388-2181. Proceeds to benefit the FCBS. For more information, contact Inez & Len Dolatowski - ldolatow@tampabay.rr.com.

November 18-20, 2005. *INDEPENDENT PLANT BREEDER'S CONFERENCE*. A conference to inform independent plant breeders how to successfully bring their hybrids to market. University of Florida, Institute of Food and Agricultural Sciences, Offices of Conferences & Institutes. Ft. Lauderdale Marriott North, Ft. Lauderdale, FL, USA. For more information, contact www.conference.ifas.uf.edu/ipbc.

June 6-11, 2006. *WORLD BROMELIAD CONFERENCE*, Large show and sale, judged competion, lectures, social events, and more. Bromeliad Society International and the San Diego Bromeliad Society. Town and Country Resort Hotel, Mission Valley, San Diego, California, USA. Hotel rates are $124 per night. The rate is good for any three days during the Conference. For more information, contact BSI Membership Secretary, 1608 Cardenas Dr. NE, Albuquerque, NM 87110, USA. E-mail: membership@bsi.org; www.bsi.org.

Errata

The Neoregelia pictured in JBS 55(1): 44, fig. 28, Bromeliads in Afghanistan *Neoregelia johannis*, not *N. cruenta*.

The correct spelling of Figure 29 (Back Cover) is *Cryptanthus* 'Anne Collings', not 'Anne Collins', as published.

In an article by Ana Paula Gelli de Faria and Tania Wendt, JBS 54(6): 279-284. 2004, a table was inadvertantly left out in the final printing. It is included here. Also, p. 280, paragraph 3, sentence 2 should read: "White flowers and other characters related to the intracalyx morphology such as patent to slightly recurved petals and absence of petal appendages also demonstrate the affinity of *Aechmea turbinocalyx* with other species of subgenus *Aechmea* such as *A. amorimii* Leme, *A. floribunda* Martius ex Schultes f., *A. lanata* (L.B. Sm.) L.B. Sm. & Spencer and *A. lingulata* (L.) Baker." Contact the editor for an Adobe PDF file of the full, corrected version of this article.

TABLE 1. Morphological characters of *Aechmea turbinocalyx* and *Aechmea* (*Streptocalyx*) *currani*, according to their original descriptions in Mez (1892) and L. B. Smith (1931).

	Mez (1892) *Aechmea turbinocalyx*	Smith (1931) *Aechmea* (*Streptocalyx*) *currani*
Plant length	ca. 40 cm.	ca. 40 cm.
Leaves	Sparsely lepidote abaxially, 40 x 2 cm, sheaths pale, narrow-ovate, blades linear, margins unarmed throughout, short acute - long acuminate pungent apex.	Densely minutely lepidote abaxially, 60 x 2 - 2.5 cm, sheaths pale, elliptical, blades narrow ligulate, margins remote denticulate, broadly acute apex, apiculate.
Scape	Slender, subglabrous (?)*.	Erect, slender, sparsely furfuraceous.
Scape bracts	Narrow elliptical, acute apex, minutely lepidote, margins entire.	Lanceolate, membranaceous, margins entire.
Inflorescence	Axis much passed by the leaves, lax spike, simple, cylindrical, 5.5 x 2.8 cm.	Panicle bipinnate, pyramidal, 11 cm long, sparsely furfuraceous, soon glabrous, sublax spike in the branches, cylindrical, polistichous flowers.
Floral bracts	Ovate-lanceolate, long acute apex, subglabrous, submembranaceous, not enfolding the flowers, equaling the sepals (but see text).	Ovate-acuminate, membranaceous, sub equaling the ovary.
Sepals	Greenish (?)*, strongly convolute to the left, with a truncate apex, twisted to the same side, subglabrous, free, 8 mm long, strongly asymmetric, with a horizontal and not pungent apiculus.	Free, asymmetric, apiculate, 8 mm long.
Petals	Not known at all, free, two long ligules.	Free, eligulate, narrow elliptic blades.
Stamens and ovary	Completely unknown, eaten by insects.	Stamens included, the second series long adnate to the petals. Ovary cylindrical, much sulcate, placentation apical, epigynous tube evident, ovules numerous, obtuse.

* The questions marks are notes from the author in the original description.

Dear Editor...

Aloha from Hawaii. I am a member of the Bromeliad Society and have been for many, many years. Along with my late father, Jack M. Roth, was fortunate to have been able to do quite a bit of plant collecting in Mexico, Central and South America. The attached photo is *Tillandsia rothii*, named after my father, on the right side of the photo. It is in full bloom and thought perhaps you might be able to use the "odd" photo for some reason or another. A further note, the flowering plant on the left side of the T. rothii is a cultivar of Mr. John Arden of Vista, Ca. It is one of his crosses, using T. rothii and I'm not sure the other parentage. These two bromeliads have been blooming in my garden fot the past several years, keiki after keiki. Hope it proves interesting to someone in your fine organization.

Photograph by Vern Magnuson.

Figure 34. *Tillandsia rothii.*

Sincerely, Vern Magnuson

Kailua Kona, Hawaii

[5] BSI Secretary

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[5] BSI Secretary

Figure 35. Sun versus shade, epiphytic versus terrestrial...these differences invoke changes to a plants anatomy which allow the plant to take advantage of the particular situation. See inside for an article on the anatomy of *Hohenbergia ramageana* Mez (foreground) in Pitangui restinga.