

# JOURNAL

## OF THE BROMELIAD SOCIETY

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Front Cover: *Vriesea* 'Splendide Vista'  
Article on page 120



Back Cover: *Vriesea montana*. Article on  
page 102

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## Call For Nominations For BSI Directors

*Larry Giroux*

Periodically as determined by the BSI Bylaws, the BSI Nominations Chair asks BSI members to nominate BSI Officers to service on the BSI Board of Directors. If more than one candidate is nominated for a position, the BSI Board of Directors (which consists of the officers and directors of the society) vote on the nominees. Below is the list of BSI Officers' positions up for election or re-election. Instructions regarding who can be nominated and how to nominate follow.

(Recording) Secretary for the 2012-2014 term

Any new nominees for the (Recording) Secretary position will be running against the incumbent: Sara Donayre.

The following are excerpts from the BSI Bylaws concerning BSI Officers and their election.

1. Enumeration. The officers of this society shall be the President, the immediate Past President, the Vice-President, the Editor, the Membership Secretary, the Secretary, Webmaster and the Treasurer. They shall be elected by a majority vote of the Board of Directors (the board) at its annual meeting or as provided otherwise.

2. Eligibility requirements. Each candidate for office shall be a member in good standing of BSI and agree to remain in good standing during tenure if elected. Candidates for the offices of President and Vice-President shall have served at least one term as director.

3. Nomination and election.

a) The chairman of the Nominations Committee shall ascertain the individual membership status of the candidates from the membership secretary and make the nominations to the board 30 days before the annual meeting of the board. Any director may nominate from the floor at that meeting.

b) Elections shall be by ballot. If there is only one nominee for an office, a voice vote shall suffice.

4. Terms of office.

a) The President and Vice-President shall serve three years or until their successors are elected. Their tenures shall begin at the conclusion of the meeting at which elected. Neither may serve more than two terms in those offices.

b) The immediate Past President shall serve for a one-year term.

c) Other officers shall serve two year terms or until relieved by the board of their duties either at their own request or by the board for cause.

Who may nominate? Any voting member of the BSI. Who may be nominated? A nominee must have the following credentials: (1) be a voting member of BSI and agree to remain in good standing during tenure if elected. (2) for President or Vice-President--have served a least one term as a director. (3) agree to being nominated; and (4) agree to serve as an Officer if elected and to remain a member of the BSI for the duration of his/her term.

Procedure for nominating: (1) obtain the consent of the prospective nominee and verify compliance with the qualification criteria; (2) mail or email nominations to the Chairman of the Nominations Committee beginning January 1, 2012. Nominations must reach the Chair of the Nominations Committee by 30 days prior to the Annual Board Meeting held at the 2012 WBC in Orlando, FL September, 2012. Nominations by telephone will also be accepted, but must be confirmed in writing within two weeks; (3) supply with each nomination the full name, address, telephone number and e-mail address, if applicable, of the nominee, the position for which the nomination is being made, the local society affiliation, and a brief "bromeliad biography" of the nominee.

Please mail nominations to:

Larry Giroux, BSI Nominations Chair

3836 Hidden Acres Circle N

North Fort Myers, Florida 33903 USA

239-997-2237/ 239-850-4048 or email to: [nominations@bsi.org](mailto:nominations@bsi.org) or [DrLarry@comcast.net](mailto:DrLarry@comcast.net)

## Call For Nominations For BSI Officers

Larry Giroux

Each year as Directors' terms expire, the BSI Nominations Chair asks BSI members to nominate eligible BSI members to serve as BSI Board of Directors representatives from their respective regions. If more nominations are made than are open positions for a region, the BSI members in that region are asked to vote on the nominees. The first important step is to nominate people for the directors' open positions. Below is the list of open positions for the 2012-2015 three-year term (per a change in the Bylaws, terms for Directors and Officers begin at the end of the Annual Board Meeting). If you are a member of a district with an open position, please help your district by finding a willing person to be nominated for your district's open Directorship. Instructions regarding who can be nominated and how to nominate follow.

The regions for which Directors are up for re-election or there are new vacancies for the 2012-2014 term and the numbers of directors needed are as follows:

Australia	1 Director	South	1 Director
Northeast	1 Director	New Zealand	1 Director
California	1 Director		

In general if there are one or more new nominees, there will be an election between the new nominees and the incumbent (if there is an incumbent seeking a second term).

- Australian incumbent- Peter Tristram is running for a second term.
- California incumbent- Rodney Kline has served 2 terms and is not eligible to run this year.
- The New Zealand, Northeast and South positions are vacant and nominees are sought.

Nominations to serve on the BSI Board of Directors for the three-year 2012-2015 term will open January 1, 2012. Serving on the BSI Board is both fun and interesting. The Board makes decisions that influence the direction and activities of the BSI. Board meetings are held annually, usually sometime during the northern hemisphere's summer. Board members, except International Directors, are expected to attend these meetings and do so at their own expense. The cost need not be prohibitive because Board members can share hotel rooms. One of the Board's activities is to actively participate in the semiannual World Bromeliad Conferences. All BSI members are encouraged to participate in the nomination and election process for Board members.

Who may nominate? Any voting member of the BSI who resides in a region for which there is an opening may nominate a candidate for an opening in that region.

Who may be nominated? A nominee must have the following credentials: (1) be a voting member of BSI and have been a voting member for the three consecutive years prior to nomination; (2) reside in the region for which he/she has been nominated; (3) not have served two consecutive terms as a director immediately preceding nomination; (4) agree to being nominated; and (5) agree to serve as a director if elected and to remain a member of the BSI for the duration of his/her term.

Procedure for nominating: (1) obtain the consent of the prospective nominee and verify compliance with the qualification criteria; (2) mail or email nominations to the Chairman of the Nominations Committee between January 1, 2012 and March 15, 2012, inclusive. (Nominations must reach the Chair of the Nominations Committee by March 18, 2011.) Nominations by telephone will be accepted through March 15, 2012, but must be confirmed in writing within two weeks; (3) supply with each nomination the full name, address, telephone number and e-mail address, if applicable, of the nominee, the position for which the nomination is being made, the local society affiliation, and a brief "bromeliad biography" of the nominee.

Please mail nominations to:  
Larry Giroux, BSI Nominations Chair  
3836 Hidden Acres Circle N  
North Fort Myers, Florida 33903 USA  
239-997-2237/ 239-850-4048 or email to: [nominations@bsi.org](mailto:nominations@bsi.org) or [DrLarry@comcast.net](mailto:DrLarry@comcast.net)



## The correct name for *Guzmania fusispica*

Eric J. Gouda, University Utrecht Botanic Garden

**Summary:** The plant grown as *Guzmania fusispica* in many collections, especially in Botanic Gardens, has to change name to *G. osyana*. *G. recurvobracteata* becomes a synonym to *G. osyana* and *G. fusispica* to *G. bracteosa*.

In the Journal volume 35(6) on page 258, Harry Luther (1985) wrote that *Guzmania recurvobracteata* Rauh (1979:18) should be considered conspecific with *Guzmania fusispica* Mez & Sodiro (1905:112). It can have more or less spreading floral bract apices, at least that is what we now know as *G. fusispica*. Working on a presentation on CD (Gouda 2011) of the so called and well known Morren paintings from "La Belgique Horticole", I came along the image of *Caraguata osyana* E. Morren (1885) now named *Guzmania osyana* (E. Morren) Mez (1896) and also originating from Ecuador (you can find the presentation online at [http://botu07.bio.uu.nl/bcg/Belgique\\_Horticole/](http://botu07.bio.uu.nl/bcg/Belgique_Horticole/)). The same image was published earlier in the journal volume 59(6) on page 282 (Dijkgraaf 2009:282).



Figure 1. *Guzmania (Caraguata) osyana* E. Morren Belg. Hort. xxxv. 254, planche xvi (1885)

Mez kept those two species apart and in his description of *G. osyana* he says inflorescence densely digitate (also in his key in DC, Mez 1896) with inconspicuous primary bracts, which does not make sense looking at the Morren (1885) painting of this species and Morren's description. Apparently Mez confused *G. osyana* with something else.

In a personal communication with José Manzanares, he told me that he had searched for a *G. osyana* (different from *G. fusispica*) but he could not find such a plant in the type area, already indicating that it must be one and the same species. Also Harry Luther (2010) in his most recent Rebus, after checking with José, came to the conclusion that both taxa are conspecific.

A study of the type material of *Guzmania fusispica* Mez & Sodiro showed me that this species is not the same as what has been known as *G. fusispica* Hort. for all those years. The floral bracts in the type specimen are erect including the apices and at first glance it resembles the Caribbean species *Guzmania berteroniana* (Schult.f.) Mez (1896) in size and inflorescence. So *G. fusispica* is not conspecific with *G. osyana*. Further study proved that it is conspecific with *Guzmania bracteosa* André ex Mez (1896), both types are from the province Pichincha, Ecuador. Carl Mez did not mention any floral bract color, but in Smith & Downs (1977:1335) the floral bracts were mentioned to be nearly white, probably taken from the second collection sited, Naundorff s.n. This specimen which has been cultivated by Naundorff also originated from province Pichincha, Ecuador and slides were provided with the specimen, showing whitish bracts and is probably an alba form.

At the Utrecht Botanic Gardens we have grown *G. osyana* from seeds from the clonotype (living plant that served to make the herbarium voucher, now the type specimen) of *G. recurvobracteata* collection Rauh 34472. Several other plants of garden origin flowered for us and most of them had quite narrow spikes with scarcely divergent floral bract apices, like the picture in the beautiful large book *Bromeliads* by F. Oliva-Esteve (2000:174). This does make it look slightly different from the Morren plate that has a much broader spike and recurving bract apices. Apparently it can produce this broader spike when the plant is fully grown, because we had this clonotype flowering with two rosettes, one smaller rosette with a narrow spike and the bigger plant with a broad one (fig. 2). Needless to say that *G. recurvobracteata* has to be considered synonymous to *G. osyana*.

Acknowledgements: I want to thank Bot. Museum Berlin-Dahlem for the loan of the type specimen of *G. fusispica* and Leo Dijkgraaf for supplying the many old images scanned from Belgique Horticole. The Smithsonian Institution for providing a picture of the specimen of *Guzmania fusispica*, Naundorff s.n. The Botanic Garden Heidelberg for providing material of the clonotype offspring.

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## Three Morphs, One Species

Kerstin Meisner<sup>1</sup> & Gerhard Zotz<sup>1,2</sup>

### Introduction

A certain degree of variation among individual metamers in respect to morphology, anatomy and physiology is the rule among plants. In most species, changes with size are gradual and rather subtle, but others perform an abrupt and substantial change in form and function (e.g. in leaf form, leaf size, phyllotaxy or internode length). More than a century ago Goebel (1898) described these two developmental pathways as “homoblastic” and “heteroblastic”, respectively [from Greek ‘blastos’, shoot]. Classic examples of heteroblastic taxa are European ivy, phyllodineous *Acacia* species, but also many bromeliads (figure 1) especially in the subfamily Tillandsioideae (Benzing, 2000). Heteroblastic changes can be modified by environmental stimuli, but they are not driven by them. We have recently reviewed the current knowledge of this interesting phenomenon (Zotz et al., 2011) and emphasize that it is important to distinguish ontogenetic changes due to heteroblasty from variation associated with the phase change from juvenile to reproductive individual as well as from ontogenetic drift, i.e. gradual changes in function associated with changes in plant size.



Figure 1. Heteroblastic change from atmospheric to tank form in *Vriesea heliconioides* (location Barro Colorado Island, Panama)

Although these ontogenetic changes can be quite conspicuous, we know rather little of heteroblasty in bromeliads. How widespread is it in the family? When exactly do these sudden changes occur in the lifetime of a plant? How variable is the timing of the switch? Has heteroblasty evolved many times independently within the family? What is the functional significance under current ecological conditions? The close resemblance of adults of many atmospheric *Tillandsias* with the early forms of heteroblastic species (also called “atmospherics” fig. 1a) has been interpreted as an indication of neoteny (Tomlinson, 1970)

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Figure 2. *Vriesea montana* (tank)

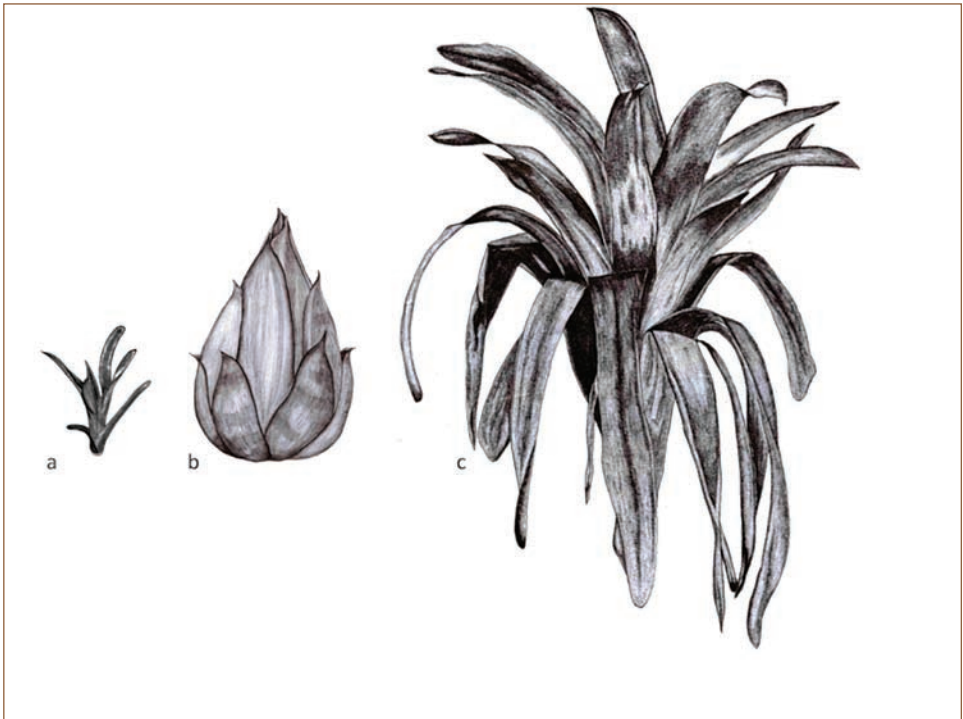


Figure 3. Habit sketches of *Werauhia lutheri* a) atmospheric, b) "gutta" and c) tank forming plants [Scale: 1 cm atmospheric and "gutta"; 6 cm tank plant]

and the connection with drought-tolerant atmospherics immediately suggested functional relevance, since juveniles are normally more susceptible to drought than larger conspecifics. However, experimental evidence remains sketchy and ambiguous (Adams and Martin, 1986a; Adams and Martin, 1986b; Schmidt and Zotz, 2001; Zotz, 2004), which motivated an on-going study, in which we are currently investigating physiological changes during ontogeny, *in situ* growth and development for a large number of bromeliads. During our field trips we observed that in a few heteroblastic species such as *Vriesea montana* and *Werauhia lutheri* there are not two, but three distinct morphs during ontogeny (figures 3 & 4).

## Methodology

### Study site

This research was carried out in the lower mountain rainforest 'Reserva Forestal Fortuna', Republic of Panama, Province of Chiriqui (8°45'N, 82°15'W, c. 1100 m a.s.l.). The study site was near the Centro de Investigaciones Tropicales Jorge L. Arauz. The forest at Fortuna has an open canopy with trees that are generally 20–30 m tall. The mean annual precipitation over the last 10 years was c. 5400 mm (personal communication, C.A. Espinosa). The forest has a very rich bromeliad flora. The 'Fortuna Checklist' (McPherson et al.) currently counts 44 species, but we identified at least 17 additional species plus a minimum of another 20 unidentified bromeliads.



*Vriesea montana* (L.B.Sm.) L.B.Sm. & Pittendr. [syn. *Vriesea nephrolepis*, *Werauhia nephrolepis*] and *Werauhia lutheri* S.Pierce & Aranda were investigated amongst others in regard to heteroblastic changes. Both species grow as epiphytes on host trees from as low as 50 cm up to the canopy. Included in that project are plants growing at heights of up to 2.5 m. The currently accepted names were taken from 'The Plant List' (2010).



Figure 4 . Ontogeny of *Werauhia lutheri* (from left to right, plant size (LL) in brackets): transition from atmospheric stage to "gutta" [2 cm], "gutta" [5 cm, 12 cm], transition from "gutta" to tank [28 cm] and flowering and fruiting stage of tank forming plants [c. 75 cm]

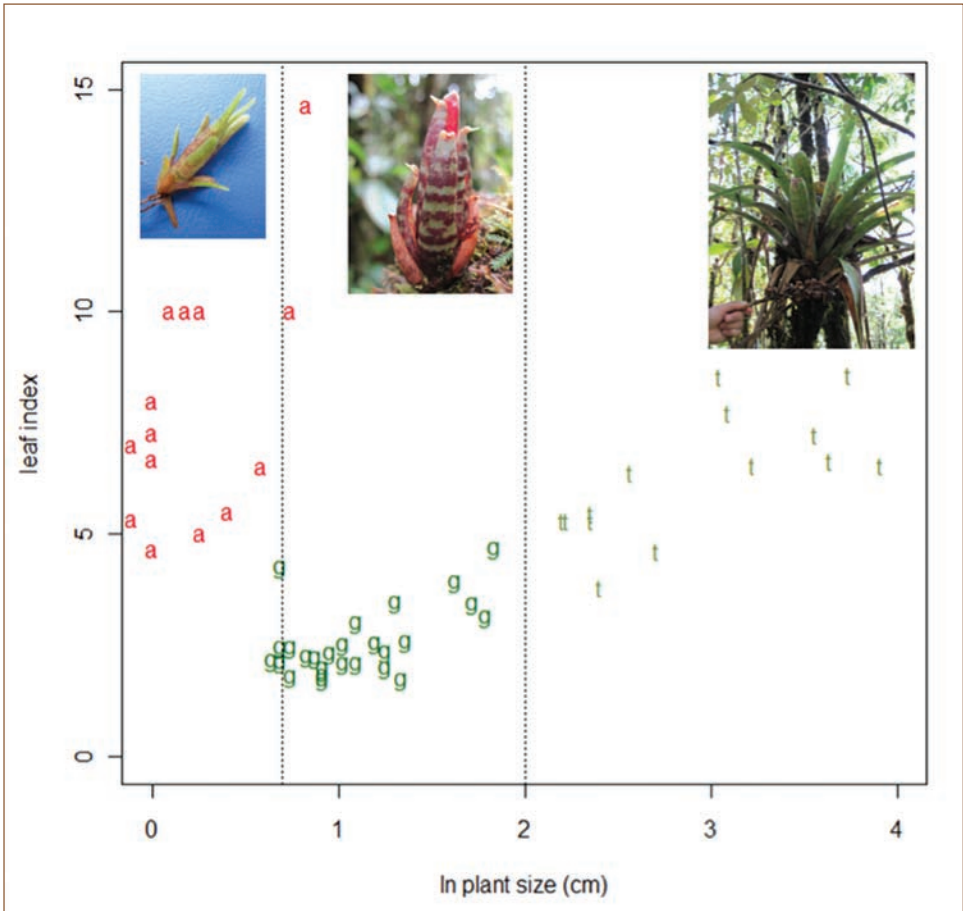


Figure 5. Leaf index as a function of plant size in *Vriesea montana*. (a) atmospheric [1.5 cm], (g) "gutta" form [3.5 cm] and (t) tank forming plant [50 cm] [photographs: plant size (LL) in brackets]

As suggested by Zotz et al. (2011) we quantified heteroblastic changes in these bromeliads using the leaf index, i.e. the quotient of leaf length and the width of the green leaf base. Each data point (figure 5) represents the longest leaf of one individual.

Ontogenetic changes were documented in two different ways: a) by repeatedly observing individuals over the course of two years, and b) by studying the sequence of leaves on individual plants. Since leaf age increases towards the outer parts of the rosettes each plant holds a record of changes in leaf form.

To obtain some initial functional information of the different habits, we studied the water holding capacity and presence of trichomes. Five plants of *W. lutheri* (size range 4.4 - 19.2 cm longest leaf (LL)) and three of *V. montana* (size range 2.7 - 5.6 cm LL) were cleaned of any accumulated organic material, their fresh weight (FW) determined, and the internal cavity filled with water. The capacity for holding water was estimated as the weight difference of these filled plants and initial FW. Subsequently, plants were exposed to local environmen-



tal conditions, but protected from rain by a roof. Weight loss was determined after 24 h. Stomata counts were obtained by nail polish preparations of leaf surfaces.

## Results and Discussion

Seedlings still attached to old infructescences of mother plants form small, open rosettes of rather narrow leaves. This juvenile form, which never exceeded 2 cm, switches to a drop-like morph, which features almost 10-fold wider leaves. Due to its morphology, we dubbed it “*gutta*” form [from Latin: ‘drop’]. The “*gutta*” forms only superficially resemble pseudo-bulbous bromeliads like *Tillandsia bulbosa*, because these plants are soft with the thin leaves forming spoon-like cavities. The sudden change in leaf index (figure 5) is clear evidence for a heteroblastic transition between the atmospheric juvenile and the “*gutta*” form (Zotz et al., 2011). Increases in plant size of “*gutta*” plants coincide with small, but consistent changes in leaf shape. After reaching a size of about 9 cm in *Vriesea montana* and 20–30 cm in *Werauhia lutheri* leaves bend outward, which leads to plants with an open rosette form (= tank). Based on growth measurements of *Vriesea montana* and *Werauhia lutheri* over the course of 2 years on 122 individuals we estimate that it takes about 2 years for plants to change from juvenile to “*gutta*” form and another 13 years in the case of *W. lutheri* and 6 years in *V. montana* to change to tank form. We did not see any additional offshoots in the two species.



Figure 6. *Catopsis nitida*. Atmospheric and “*gutta*” form (left) and fruiting tank form (right)

In contrast to the transition from juvenile to “*gutta*” form, there is no sudden change in leaf index associated with the transition from the second to the third morph. Among tanks, the leaf index continued to increase with plant size with maximum values of 7–8 in the largest *W. lutheri* and 15 in the largest *V. montana* (data not shown), respectively. Interestingly, sudden changes in habit, but not in leaf form, have been described before for some tree species of New Zealand by Phillipson (1964) as “habit-heteroblasty”.

We observed similar developmental patterns in two additional species, in *Catopsis nitida* (figure 6) and an unknown, probably undescribed *Vriesea* species (H. Luther, pers. comm.).

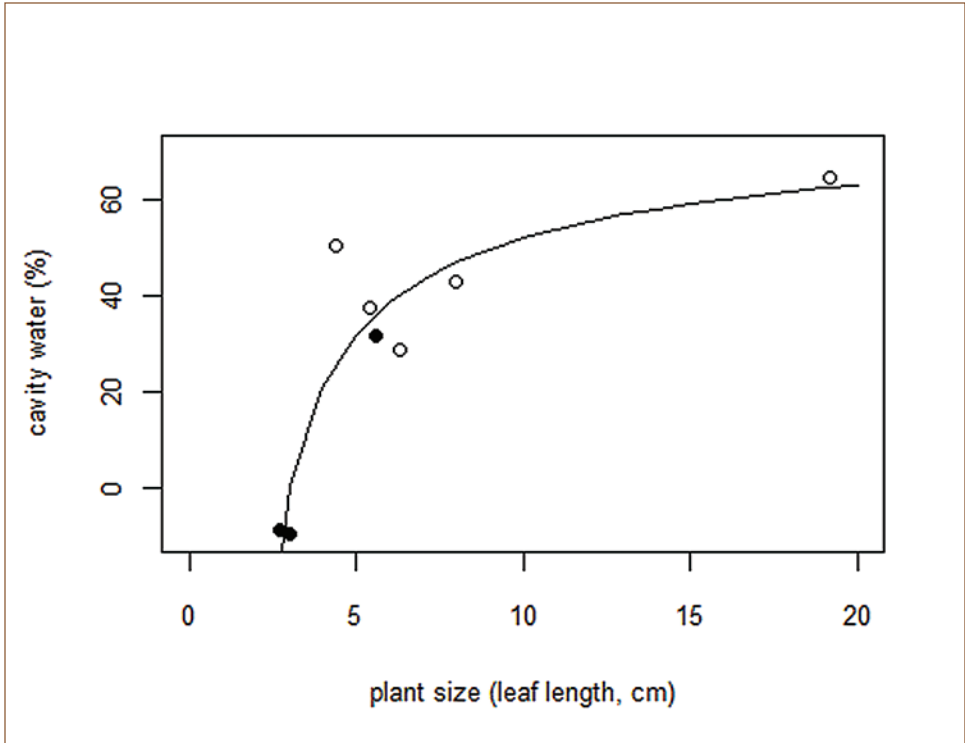


Figure 7. Relationship of plant size and remaining water in cavities of “gutta” plants after 24 h. Cavity water was determined indirectly by weighing the entire plants and subtracting initial FW, and expressed as the percentage of the initial maximum. Closed symbols are *Vriesea montana* and open symbols are *Werauhia lutheri*

We note that the proposed “gutta” form is not only an intermediate habit of the species described in this report, but strongly resembles the reproductive form of homoblastic species like *Tillandsia contorta* [syn. *Racinea contorta*]. It is tempting to suggest an evolutionary scenario similar to that proposed by Tomlinson (1970) for juvenile forms of heteroblastic tank species and atmospheric *Tillandsias*.

As a first step towards a functional understanding of the “gutta” habit we tested the hypothesis that the cavity may allow plants to store water similar to the open tank forms. We also checked the presence of trichomes on the upper leaf surfaces as a prerequisite for the uptake of the stored water. Indeed, individuals of both species have large numbers of trichomes on both leaf surfaces. Irrespective of size, the maximum amount of water in the internal cavity was equivalent to about 50 % of the water in the fully turgescient plant. Under natural conditions, about 50% of the water in the cavity was lost after 24 h, which suggests the availability for potential uptake of about two days in intermediate sized plants, but much less in smaller individuals (figure 7). In the smallest plants transpiratory water loss over 24 h was so large that their fresh weight decreased after one day. We do not know, however, whether the cavity is actually filled under natural conditions. Speaking against a potential role of the cavity in plant water relations is the observation of ant colonies in some “gutta” plants, which may indicate rather dry conditions.

In conclusion, we describe the existence of three different morphs in several epiphytic bromeliads as a special case of heteroblasty. Currently, we cannot offer a convincing functional explanation for these conspicuous ontogenetic changes, but ongoing and planned experiments will hopefully change this situation in the near future.

## Acknowledgments

Financial support of the Deutsche Forschungsgemeinschaft (GZ ZO 94/4-1) for our current studies on heteroblasty in bromeliads is acknowledged. We thank the Republic of Panama for making its natural resources available for our study.

Finally, we thank H. Luther (Gardens by the Bay, Singapore) and D. Caceres (Senckenberg Research Institute, Frankfurt, Germany) for help with species identification.

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## Exploration in Guatemala and Belize for more parasitoids to use against *Metamasius callizona* in Florida

J. Howard Frank, Dennis Giardina, and Tim Andrus (with Jose Monzón in Guatemala and Erwin Williams in Belize)

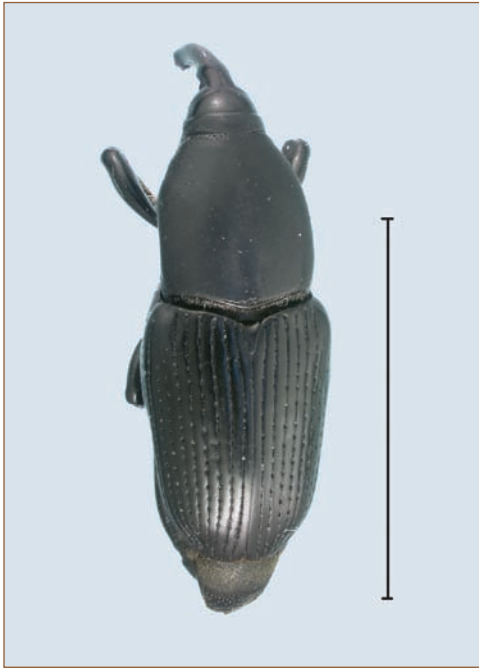


Figure 1. Adult *Metamasius callizona*, melanic form from Belize (lacking orange bands on the elytra). Scale bar = 10mm

*Metamasius callizona* is an invasive species of weevil whose larvae mine the stems of bromeliads and kill them. First detected in Florida in 1989, this species has spread to at least 23 counties in central and southern Florida, destroying native bromeliads. It has been especially destructive to *Tillandsia utriculata*. A species of parasitoid fly, *Lixadmontia franki*, was imported into quarantine in Florida, and stock has been released in Florida beginning in 2007 to combat the weevil. Results thus far are not encouraging. Surveys continued in Mexico and Central America during the 2000s to try to find additional species of parasitoids specialized to bromeliad-eating *Metamasius* weevils (Cave et al. 2004, Frank et al. 2007). Here we report on surveys in 2008-2010.

### Exploration in Guatemala, 6-17 November 2008

Three Florida-based collectors (Howard Frank, Dennis Giardina, Tim Andrus) arrived in Guatemala on 6 Nov. 2008, were met by a Guatemala-based collector (Jose Monzón) and driven with minimal delay to the Pacific slopes in Departamento de Suchitepéquez. Their operating base was rented rooms at Finca los Tarrales, the home of longtime BSI member Andy Berge and now a nature reserve. Collections of weevils in bromeliads were entirely from Finca los Tarrales (latitude 14.5167N, longitude 91.1333W, elevation 750 m) and Finca Panama (latitude 14.5000N, longitude 91.2000W, elevation 704 m) near to the town of Patulul. The bromeliads were mainly *Tillandsia polystachya*, with small numbers of *T. flabellata*, *T. fasciculata*, and *Catopsis* sp., attached to various hardwood trees (many of the trees at Finca Panama were rubber trees, *Hevea brasiliensis*). Two days of the visit were spent exploring areas closer to the coast, without success in terms of bromeliad populations or weevil larvae, although boat rentals allowed exploration of river banks that were heavily wooded. Success was measured in terms of the 91 weevil larvae, 3 pupae, and 2 adults secured alive, exported from Guatemala on 17 November, and transported by air and road to the Hayslip Biological Control Containment Facility at Ft. Pierce, Florida. The effort was 40 man-days (7-16 November for 4 collectors). Under the care of Dr. Ron Cave's assistants at Ft. Pierce, most of the larvae produced healthy adult *Metamasius rugipectus*, the same as the three adult specimens. Ten of the larvae proved to belong to another weevil genus which was never identified because all died. No parasitoids were produced from any of the larvae.



## Exploration in Guatemala, 31 October to 11 November 2009

The three Florida-based collectors (Frank, Giardina, Andrus) arrived in Guatemala on 31 October 2009, and were met by the Guatemala-based collector (Monzón). A start for the Caribbean coast was made that evening. The first base of operations was a small hotel in the village of El Corozal at the tail of the Lago de Izabal in Departamento de Izabal (latitude 15.6370N, longitude 88.9996W, elevation 7 m). Weevil-infested bromeliads were found in lakeside trees, and were approached by rented boat on two days, or in the grounds of Castillo San Felipe on another day. Almost all of those bromeliads were *Tillandsia cf. utriculata*, and trees supporting them were *Crescentia cujete* (calabash) *Rhizophora mangle* (red mangrove), and others. A journey by road along the north shore of the lake to its head on another day yielded nothing. The operational base was later moved to an almost empty tourist hotel along the unpaved coastal road leading north from the port city Puerto Barrios. Numerous bromeliads were discovered in roadside trees bordering pastures east of a small town named Los Andes (latitude 15.7406N, longitude 88.6578W, elevation 19



Figure 2. Dennis Giardina sampling weevils from bromeliads in a dead tree at Finca Panama in November 2008. He brought along climbing equipment for this purpose



Figure 3. Tim Andrus, in a small boat on Lago de Izabal in November 2009, examines an unhealthy bromeliad for the presence of weevils.

Remarkably few weevil larvae were detected in this bromeliad-rich lakeside habitat

m), and these yielded weevil larvae. The total catch was 46 larvae, 1 pupa, and five adults, exported from Guatemala on 11 November, and transported by air and road to the Hayslip Biological Control Containment Facility at Ft. Pierce, Florida. The effort was 40 man-days (1-10 November for 4 collectors). Under the care of Dr. Cave's assistants at Ft. Pierce, most of the larvae produced healthy adult *Metamasius rugipectus*, the same as the five adult specimens. It was extremely disappointing that no insect parasitoids were produced from any of the weevil larvae. The dense bromeliad populations on the shores of Lago de Izabal (Fig. 3) make it



Figure 4. *Tillandsia dasyliirifolia* growing in a tree beside Laguna Seca, Belize, October 2010

hard to explain the small number of weevils found: if there is so much food for weevils, why are there not more weevils unless parasitoids are holding the weevil population in check, and where were the parasitoids?

### Exploration in Belize, 29 October to 8 November 2010

The three Florida-based collectors (Frank, Giardina, Andrus) were accompanied by Erwin Williams, an undergraduate at the

University of Florida who is a Belizean citizen. Erwin has a wide circle of friends and acquaintances in Belize, which greatly facilitated our expedition. Our first encounter with *Metamasius* weevils was in bromeliads growing on mangrove trees bordering Laguna Seca adjacent to the village of Copper Bank in Corozal District (latitude 16.9936N, longitude 88.3695W, approximately at sea level). However, an entire afternoon of collecting yielded only five specimens. It was clear that we would have to discover a more productive area. The bromeliads present at that site included *Aechmea bracteata*, *Tillandsia bulbosa*, and *T. streptophylla*. The weevils were collected in *Tillandsia dasyliirifolia*. Our second encounter came at Middlesex in Stann Creek District on 1 Nov. They were in bromeliads fallen from old citrus trees alongside the Hummingbird Highway. For the next six days we concentrated on such trees along a stretch of this highway extending from Middlesex to Pomona (longitude 88.3695W, latitude 16.9936N, elevation 47 m). Citrus grove manager Mr. Billy Bowman (Emerald Grove) gave his verbal permission for us to enter his groves and collect weevils. Bromeliads encountered included *Aechmea bracteata*, *Catopsis* spp. (at least 3), *Tillandsia balbisiana*, *T. bulbosa*, *T. streptophylla*, and *T. variabilis*. Very nearly all of the weevils came from fallen *Tillandsia utriculata*. We collected 182 *Metamasius* weevils in this area. In total, 187 weevil specimens (117 larvae, 44 pupae, 26 adults) were collected in Belize and transported safely to quarantine at Ft. Pierce, Florida. All specimens collected in the adult stage or reared to the adult stage belong to a melanic (black) form of *Metamasius callizona*, the very species that we hope to control in Florida. Almost all the specimens came from *Tillandsia utriculata*, which is heavily damaged by *M. callizona* in Florida. The weevils collected were tended at Ft. Pierce by Dr. Teresa Cooper and helpers, but all larvae and pupae eventually produced healthy adults – no parasitoids were obtained.

## Conclusion

In Izabal (Guatemala) and in Belize we found luxuriant *Tillandsia utriculata* populations with few *Metamasius* weevils. Experience in Florida suggests that when *M. callizona* spreads to a location with luxuriant *T. utriculata* population, the weevil population builds up rapidly and nearly all the bromeliads are destroyed within a couple of years. The form of *T. utriculata* that we encountered in Belize is more colorful, having purplish stems, than



the Florida form. Might it be that Central American *T. utriculata* plants are somehow less attractive or more resistant to *Metamasius* weevils than is the Florida form of the plant? This is a possibility worth researching especially because parasitoids of these weevils have not been detected at low or even moderate elevations in Mexico, Belize or Guatemala. *Lixadmontia franki* has been detected only at high elevations in Honduras and Guatemala, so may not be well adapted to the higher temperatures (and sometimes low humidity) of lowland habitats.

## Acknowledgments

We are deeply grateful to the Tropical and Subtropical Agricultural Research program of USDA which funded the three expeditions documented here. Weevils were collected in and exported from Guatemala and Belize under national permits from those two countries. They were imported into quarantine in Florida under permit from USDA-APHIS-PPQ (Plant Protection and Quarantine). Juan Pablo Pinzón provided identifications for the two Belizean bromeliads of special interest, *T. dasyliriifolia* and *T. utriculata* (via Bruce Holst of the Marie Selby Botanical Gardens).

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Figure 5. *Tillandsia utriculata* in an old citrus grove near Pomona, Belize, November 2010

## Bromeliad Icons In Old Publications: Part 8

This article is a continuation of a series last published in JBS 61(2)

Leo Dijkgraaf



Figure 1. *Billbergia amoena* (Loddiges) Lindley. Published as *Pitcairnia discolor* Loiseleur. Drawing P. Bessa, engraving Barrois, *Herbier général de l'amateur* vol.5 plate 345 (1821)

The last country to be visited in my search for bromeliad icons is France. Encyclopedias and dictionaries were very popular in the 19th century and the *Encyclopédie Méthodique* was a very voluminous one. It was published both in Paris and Liège between 1782 and 1832. The 8 volumes and 5 supplements on botany were mainly edited by J.B. de Lamarck and J.L. Poiret. They were also the authors of *Tableau encyclopédique et méthodique des trois règnes de la nature Botanique* in 6 volumes (3 tomes) from 1791-1823; a total of 1000 monochrome engravings were made for this work, but none of a bromeliad. The plates were reissued in 1823 in 4 parts titled *Recueil de planches de botanique de l'Encyclopédie*. Some of the drawings for this encyclopedia were made by P.J. Redouté, who is known for his album *Les Liliacées*, published in Paris in 1804. The text for *Les Liliacées* was written by A.P. de Candolle and it contained some plates of bromeliads (*Pitcairnia*, *Bromelias* and *Ananas*). There has been an article in the BSI Journal on this publication (Read 1986).

A very ambitious lithographical work was *Florae Fluminensis icones* by José Mariano da Conceição Vellozo (or Velloso), a Brazilian friar in the Franciscan order. Vellozo collected and studied plants for 25 years; in 1790 he went to

Lisbon in Portugal to publish his flora. Initially 554 engravings were made in Venice (Italy) but due to political turmoil Vellozo had to go back to Brazil, taking along the drawings. After his death in 1811, they were found by friar Antonio de de Arrábida. The Brazilian emperor Pedro I commissioned the work to be published. The drawings, all of Brazilian plants, were sent to Paris and printed by E. Knecht of the firm founded by A. Senefelder (the inventor of the lithographic technique). The 3000 printed copies of a final total of 1640 plates, dated 1827, were shipped to Rio de Janeiro, but only a small number were distributed there in 1831, the bulk went to a paper factory. Bound in 11 volumes of large format (52x35 cm.), volume 3 contained 23 plates of Bromeliaceae. The monochrome illustrations are not detailed but give an idea of the morphology of the plants, though the species on some of them can not be determined. The incomplete text of *Florae Fluminensis* was printed in 1825 and distributed in 1829 in Brazil; a complete text was published in 1881.



Several works were published in Paris with the word “herbier” (herbal) in the title. *Herbier général de l'amateur* was founded by Jean Claude Mordant Delaunay and continued by Jean Louis Loiseleur-Deslongchamps, a physician who turned to botany. The 8 volumes published from 1816-1827 contained 574 coloured engravings, made after drawings by Pancrace Bessa. The work was re-issued by Drapiez in Brussels under the title *Herbier d'amateurs de fleurs* from 1828-1835. One of the illustrations (Figure 1) is a plant cultivated in 1820 in the glasshouse of mr. Noisette and labeled *Pitcairnia discolor* or “*Pitcairnia* green and blue”, referring to the colour of the petals. In England, Loddiges had received the same species from the West Indies in 1818 and described it as *Tillandsia amoena*; Lindley made the new combination *Billbergia amoena* in 1827.

*Nouvel herbier de l'amateur*, also edited by Loiseleur-Deslongchamps, was published in 9 parts from 1830-1831, bound in one volume, with 52 coloured engravings after drawings made by Lucie Deville, an apprentice of Bessa. A *Pitcairnia* sp. was the only bromeliad among them. Mrs. Deville contributed also, with many other artists, to *Herbier général de l'amateur, deuxième serie*, published in 6 volumes from 1839-1850 with 464 coloured plates. Volume 1 was edited by Loiseleur-Deslongchamps, volume 2-6 by Charles Antoine Lemaire. I have not seen this work but many drawings are reportedly identical to the drawings in *L'Horticulteur Universel, journal général des jardiniers et amateurs*, a journal edited by Charles Lemaire from 1839-1845, published in 6 volumes with 264 plates. Amongst the 8 bromeliads in *L'Horticulteur Universel* is one new species: *Pitcairnia densiflora* (Figure 2). The plant was cultivated in 1854 in the garden of the natural history museum in Paris and in the same year also in Naples (Italy). The collection site of this specimen was unknown; it is a terrestrial and saxicolous plant from southern Mexico (Vera Cruz and Guerrero states).



Figure 2. *Pitcairnia densiflora* Brongniart ex Lemaire. Lithography A. Duménit, *L'Horticulteur Universel* vol.6 page 228 (1845)

M. Rousselon was the editor of *Annales de flore et de pomone, ou journal des jardins et des champs*, published in three series from 1832-1848 in Paris. In total there were about 700



Figure 3. *Portea kermesina* K. Koch. Drawing A. Riocreux, lithography G. Severeys, *Revue Horticole* vol.42 page 230 (1870)

*Horticole* was J.L. Goffart of Brussels in the period 1894-1921 with 443 illustrations; however from 1847-1899, more of interest because that was the time when most of the plates of bromeliads were published in this journal, the company of Lemer cier in Paris was the leading supplier with 143 chromolithographs.

The illustration in *Revue Horticole* of *Portea kermesina* (Figure 3) is accompanied by a text that, apart from a short description of this already known species, relates mainly about the justification (in a taxonomical sense) of the genus *Portea* established by Brongniart and also about the person to which this genus is dedicated: Marius Porte, son of a wealthy merchant in Marseille. From 1834 to 1859 Porte stayed in Brazil and send many plants to Brongniart of the national history museum in Paris. The list of Brazilian plants include the bromeliads *Portea kermesina*, *Billbergia porteana*, *Billbergia morelii*, *Hohenbergia stellata*, *Canistrum aurantiacum* and *Aechmea miniata* (current names). From 1860 to 1865 Porte stayed in the Philippines and Singapore and many plants from Asia were sent by him to Paris.

coloured plates in this journal, some of bromeliads.

The remainder of this first part on bromeliad icons in old publications from France is dedicated to a very long-running journal (1829-1974), the well-known *Revue Horticole ou Journal des jardiniers et amateurs*, as the name was in the early years; at a later stage it had become *Revue Horticole, Journal d'Horticulture pratique*. The history of *Revue Horticole* is described fairly recently in an addendum to the French garden magazine *Jardins de France* (Lejeune 2006). *Revue Horticole* was founded in Paris by Poiteau and Vilmorin, editors of the almanac for gardeners *Le Bon Jardinier*. Among the names of other chief-editors through the years we find J. Decaisne, É.-A. Carrière, Éd. André and D. Bois. Colourplates appeared from 1843-1948, totalling about 2000; I counted 51 bromeliads. The very long list of illustrators is headed by Alfred Riocreux, who made 327 drawings for *Revue Horticole* between 1852 and 1877. Riocreux can be considered the counterpart in France of Walter Hood Fitch from England, not only as for the productivity but also for the quality of drawing. The most productive of the printers and engravers for *Revue*

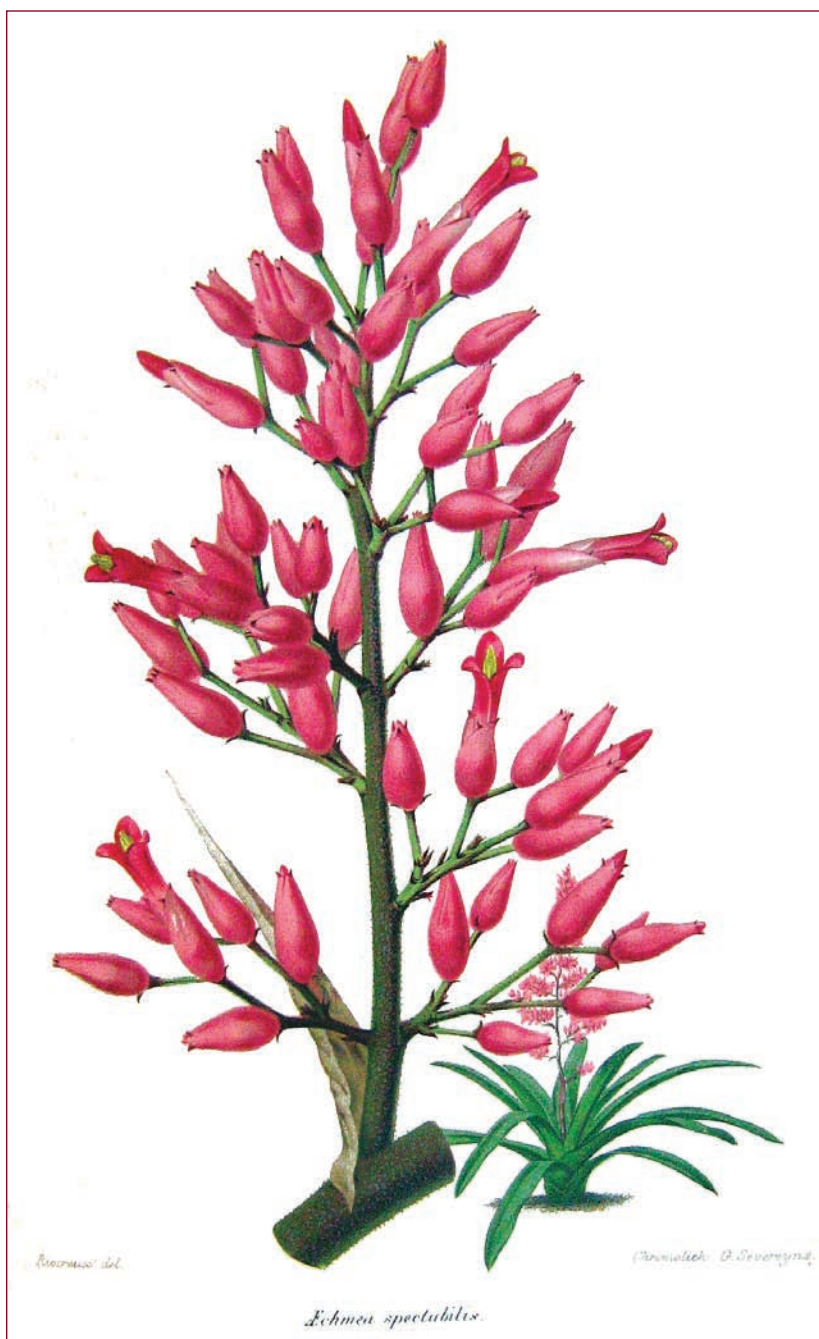


Figure 4. *Aechmea spectabilis* Brongniart ex Houlet. Drawing A. Riocreux, lithography G. Severeys, *Revue Horticole* vol.47 page 311 (1875)



Figure 5. *Tillandsia umbellata* André. Drawing E. Godard, lithography G. Severeys, *Revue Horticole* vol.58 page 60 (1886)

Colombia where it grows as an epiphyte on large trees at 1200-1800 meter altitude. The plate in *Revue Horticole* (Figure 6) was made after a plant grown from seed in 1881. Morren had described this species in 1884 in *Revue Horticole* and named it in honor of André. It was also illustrated in 1888 on plate 7014 in *Curtis's Botanical Magazine*; that specimen originated from the nursery of Mr. Bruant in Poitiers (France).

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Read, R.W. (1986). Icones Bromeliacearum I. J. Bromeliad Soc. 36(3):120-124.

*Aechmea spectabilis* was a new species, although it was mentioned two years earlier by Éd. Morren, but without a description or illustration. The drawing of the plate in *Revue Horticole* (Figure 4, previous page) is by Riocreux, the lithography by G. Severeys, made from a plant donated by the collector Lüddeemann in 1860. It is a large epiphyte from Colombia and Venezuela, height and length of the leaves are 1 meter. The article with the plate relates that the plant was cultivated by Jean Jules Linden in Belgium, who imported it - very unlikely - from Guatemala.

*Tillandsia umbellata* was also new and collected in 1882 by Hugo Poortman, who traveled in charge of Édouard André. It was found in a forest between the Pacific coast and the Cordillera del Cisne near Lojas in Ecuador. This species is endemic to that region. The plant illustrated (Figure 5) was flowering in the glasshouse of Alfred Mame. The species name indicates the way the flowers are arranged in the shape of a parasol.

*Guzmania andreana* was discovered by André near Nariño in the Andes of





Figure 6. *Guzmania andreana* (E. Morren) Mez. Published as *Caraguata andreana* E. Morren. Drawing E. Godard, lithography G. Severeys, *Revue Horticole* vol.58 page 276 (1886)

## 2011 Bromeliad Society of South Florida Show

Alan Herndon

Our 33rd Annual Show and Sale was held on April 15-17 at Fairchild Tropical Botanic Garden (FTBG). Despite successive winters with temperatures reaching lows we have not seen since the 1990's, 30 of our members were able to enter 279 plants for competition along with 36 others for 'Exhibit Only'. Judging took place on Friday, April 15 (with the Show, as well as a Sale, open to the public on April 16 & 17).

Our show is always *Neoregelia* heavy because that genus is one of the most frequently grown in southern Florida. *Neoregelia* also provides blooming plants at the time of the show more reliably than many other genera. This year, probably due to the relatively cold temperatures in December 2010, we had more blooming *Vriesea* than usual. Best Blooming Bromeliad, in fact, was won with *Vriesea* 'Splendide Vista' (front cover) exhibited by Dr. Jeffrey Block. In all, 19 different genera of bromeliads were entered in the horticultural sections. The Sweepstakes Award for best overall set of entries was won by our most decorated member in recent years: Josefa Leon.



Figure 1. Best Non-blooming *Neoregelia*: *Neoregelia* 'Margaret' exhibited by Jose Donayre

Several of our members specialize in the Artistic Division so we always have some spectacular entries in the Decorative Container and Artistic Arrangement sections. The award for Best Artistic Entry was won by Josefa Leon with an Artistic Arrangement featuring *Tillandsia kegeliana* mounted on a very unusual base. In case you don't recognize it, that is a huge bracket (or shelf) fungus (locally grown, I might add) that the plants are sitting on.



Figure 2. Best Artistic: an Artistic Arrangement featuring *Tillandsia kegeliana* exhibited by Josefa Leon

One of the features of our show for the past several years has been a Bromeliad Art Show run in parallel with the plant show. This show, run by dedicated BSSF member Sharon Biddix-Maessen, has the primary purpose of giving students in art magnet programs at Miami-Dade County Public Schools the opportunity to show their work in a public, judged exhibition. These artworks are registered separately from the plant show and judged by a team of local artists. BSSF members donate living plants for the students to work with and prizes for the top winners. FTBG has been very generous in donating passes to the families of the students whose works are entered.

In addition to the student art work, this show also includes work by local adult artists. The top award in the adult section this year was awarded to a fantastically life-like painting of a *Cryptanthus* from BSSF member Urszula Dudek. Fortunately for me, the *Cryptanthus* experts have examined the painting and determined that it represents *Cryptanthus* 'Very Sweet Tooth' (see *Cryptanthus Society Journal* 26(2). Apr-Jun 2011 for a brief portrait of Urszula and her work).

There are additional photos from the show on the following pages, and if you would like to see more photos from our 2011 show, visit our facebook pages at:

<http://www.facebook.com/groups/BromeliadSSF/>

<http://ja-jp.facebook.com/pages/Bromeliad-Society-of-South-Florida/84661684279>





Figure 4. Best Blooming Neoregelia: *Neoregelia* 'Wild Rabbit' exhibited by Mike Michalski



Figure 4. Bronze Award Non-blooming Tillandsia: *Tillandsia nowackii* exhibited by Joy Parrish





Figure 5. Best Blooming Aechmea: *Aechmea pittieri* exhibited by Jose Donayre



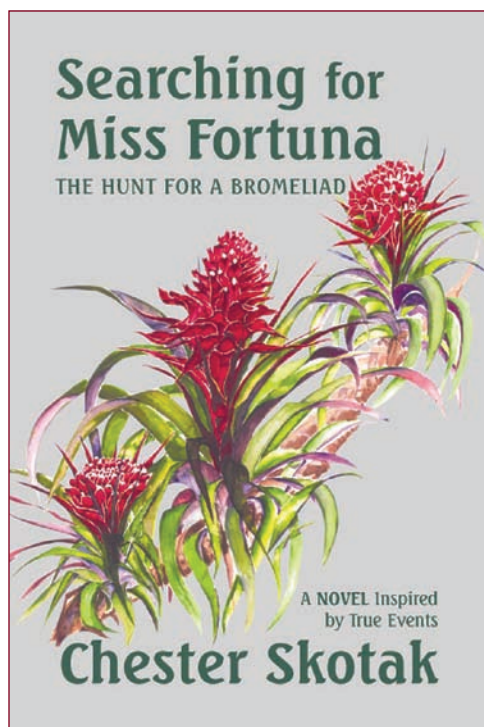
Figure 6. Best Non-blooming Aechmea: *Aechmea pineliana* 'Mello' exhibited by Dr. Karl Green



Figure 7. Best Non-blooming Cryptanthus: *Cryptanthus* 'Evon' exhibited by Jeri Parrish

## Book Review: *Searching for Miss Fortuna*

Scott E. Hyndman



### *Searching for Miss Fortuna - The Hunt for a Bromeliad*

Chester Skotak.

Reliance Media, 8.5" x 5.5", 383 pages, English. First edition 2007, soft cover \$19.95 available from bsi.org. ISBN 978-0-9776534-5-4

As I write this review of *Searching for Miss Fortuna*, a novel by Chester Skotak, I am sitting in a plane on the tarmac of the Juan Santamaria International Airport, San Jose, Costa Rica, bound for home in Florida after two weeks of adventure inspired by this novel. After reading and rereading the novel numerous times, I felt compelled to go meet the author and explore Costa Rica, one of the beautifully fascinating countries featured in the book. Why would anyone feel so urged to go meet an author of a book so compulsively read for several months? The label "stalker" comes to mind, but I assure you that is not why I undertook the trip. After an aborted attempt of going plant exploring in Costa

Rica decades ago, and always wishing to try to remake the trip someday, *Searching for Miss Fortuna* compelled me to follow my dreams.

The first page of the novel, described by the author as "fiction inspired by true events," immediately drew me into this fascinating tale of plant exploration, obsessions, humor, and humanity, told by a cast of characters fitting of an adventure story into the twilight zone. Prior to this novel, I had read other books describing obsessed plant collecting like Susan Orlean's *The Orchid Thief*, books describing grand tropical adventure like Eric Hansen's *Stranger in the Forest*, and books of inspired plant exploration like Mulford and Racine Foster's *Brazil, Orchid of the Tropics*, but I had never delved into a truly gripping, page-turning adventure novel about plant exploration that read so much like nonfiction.

What is unique about *Searching for Miss Fortuna* is the intertwining narration by the author of not one, but two tales of adventure involving two protagonists, both searching for treasure. One character, only known by the name John, invites the narrator on a search for an enigmatic antique bathtub worth a fortune and thought to exist somewhere in a ghost town along a river in the lowland jungle near the northeastern border of Costa Rica and Nicaragua. The other adventure, as described by the narrator during the search for the bathtub, with a character only referred to as *The Man from Florida*, involves a hilariously funny account of an obsessive search through Panama for a prized bromeliad, the *Guzmania* from Fortuna. These two independent adventures draw the reader into a skillfully written panorama of characters moving through a continuum of enthralling events that seems so far fetched at

times that one wonders what “true events” could have possibly inspired such fiction.

Unlike the Susan Orlean’s account of obsessed, zany, real-life plant fanatics, Chester Skotak’s *Searching for Miss Fortuna* uses a diverse lineup of individuals, each unique in his past, present, and future presence that creates storylines and dialogues in circumstances leading to stranger-than-fiction occurrences. Besides the two colorful main characters of the story, there is a panoply of interestingly described cast members that includes an Indian always on the run from the law for smuggled wild plants, a drunken boat captain with a haunting past, a botanic garden director teetering on the edge of insanity, and a Brazilian party animal whose zeal for finding new plants is only eclipsed by his desire to try the newest dish at his favorite restaurant. The book’s characters tell their stories in very imaginative and creative ways that will hold your attention and make you wonder what could possibly happen next.

*Searching for Miss Fortuna* is not a book for the *Harry Potter* crowd, or for those expecting an easy read without a dictionary at hand. The novel is also not for those easily offended or worried about political correctness. Skotak sets no limits and it works. If you are looking for a hilarious and adventurous romp with characters described in a style that is unconventional and new, then I would highly recommend your reading this unique novel.

.....



2011 Bromeliad Society of South Florida Show: Bronze Award Non-blooming Neoregelia: *Neoregelia melanodonta* exhibited by Dr. Karl Green. Article on Page 122



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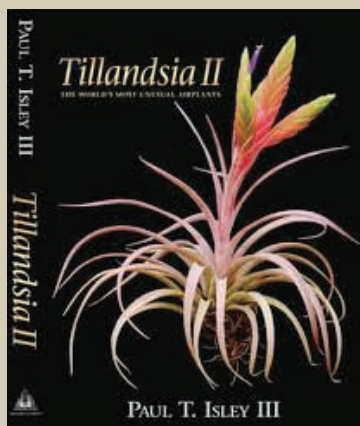
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## Growing pattern-leaf *Vriesea* outdoors in Auckland, New Zealand

Andrew Maloy



Figure 1. Pattern-leaf *Vriesea* at Kiwi Bromeliads nursery in Whenuapai, Auckland

Auckland lies on latitude 36.5 degrees south which in the northern hemisphere is similar to cities like Malaga in Spain and Monterey in California. But, as a relatively small group of islands, New Zealand's summer climate is greatly influenced by the expanse of the Pacific Ocean, so Auckland is much cooler in summer than its northern hemisphere counterparts. In mid-summer (February) we average a daily high of 23.7°C (74.7°F) and a low of 15.8°C (60.4°F), while in mid-winter (July) the average daily high is 14.5°C (58.1°F) with a low of 7.1°C (44.8°F). Many parts of the Auckland region, particularly around the inner city suburbs, are relatively frost free but towards the west and south and away from the coast light winter frosts are not uncommon. There night temperatures can drop as low as -4°C (24.8°F) in some winters. Annual rainfall in Auckland is around 1250 mm, with an average of 65-70 mm during summer months increasing to 140-150 mm a month in winter.

Low levels of ozone in the atmosphere, little pollution and the pattern of the earth's orbit around the sun result in New Zealand being exposed to high levels of ultra-violet light. The UV index in Auckland during summer is often 12 or above. Anything higher than 10 is considered extreme in terms of skin damage, but from a bromeliad enthusiast's point of view, high UV appears to contribute to the great colours we achieve in many of our plants.

Through years of growing and breeding pattern-leaf *Vriesea* for outdoor use we have

learned a lot about what conditions these exotic looking beauties can tolerate and how to grow good specimens. The main factors affecting colour and leaf pattern intensity in *Vriesea* appear to be genetics, age, light, temperature and nutrition.

## Genetics

Parents obviously pass on characteristics to the offspring. For example, *V. hieroglyphica* has shiny, recurved leaves with dark patterns while *V. gigantea* has upright leaves with grey, non-reflective foliage. *V. fosteriana* has broad recurved leaves, and the plant we know here as *V. platynema* 'Variegata' has dark red tips. Other species have a range of colour traits, such as white bases to the leaves, and spots or flushes of colour above or below the leaves. In some cases we can be fairly confident what the results of a cross between two parents will be, but often it is a shot in the dark.



Figure 3. *Vriesea* hybrids exposed to some direct sun each day

## Age

Good things take time and the same applies to foliage *Vriesea*. As a plant matures the colour and patterning intensifies. It usually takes two to three years for a new hybrid to show its colour potential but as it grows larger and older the colour and patterning will only get better. Once they reach 2-3 years old, pattern-leaf *Vrieseas* are not as slow growing as you might think, in our gardens they can double or treble their size in 12 months.

## Light

Over the years we have learned that most pattern-leaf *Vriesea* can stand more sun than we previously thought possible. While they do grow well in shade (even heavy shade) they are equally as successful in quite bright light with the added benefit of more intense colouration. So, as a general rule, colour and patterns will be brighter and more intense in good light than in shade. But too much sun, for too long, can fade colours and may even cause yellowing and leaf burn. Of course beauty is in the eye of the beholder - I've seen *vrieseas* that look faded from excess sun but other people find them quite attractive. As a guide, partial shade with exposure to sun for part of the day seems best for most varieties, but each garden will have its own local variations. Genetics also plays some part here, in that a variety bred from a shade-loving species, such as *V. hieroglyphica*, may be less sun tolerant than others. Depending on the other parents involved though, it may have increased sun tolerance.



## Temperature

We used to think pattern-leaf *Vriesea* grew best in warm conditions, but as time goes by we hear reports of how they have survived relatively cool temperatures. We have had reports of them surviving short periods at several degrees below freezing (in Motueka, South Island, NZ) without damage, but I recommend you take that as the exception rather than the rule. Under the shelter of taller trees and shrubs, where frost crystals are not going to form on the foliage, they have been known to tolerate light frosts ( $-2^{\circ}\text{C}$ ) without the need for frost cloth covers. In more exposed areas a single or double covering of frost cloth usually provides sufficient protection. Some of our hybrids have survived a series of light frosts unscathed while *Alcantarea imperialis*, *vireya rhododendrons*, *Agave attenuata* and other sub-tropical plants growing nearby showed significant damage. Some even seem to respond to cold by colouring up (mostly red and pink tints) in much the same way as do some NZ native plants like *Coprosma* 'Karo Red'.



Figure 3. Pattern-leaf *Vriesea* hybrids growing outdoors at Peter and Jocelyn Coyle's Totara Waters garden in Whenuapai, west Auckland; assessed by the NZ Gardens Trust as a Garden of National Significance

## Nutrition

As a rough guide once planted in reasonable garden soil these *Vriesea* need little, if any, extra feeding. If the foliage looks exceptionally pale or growth is very slow, we feed sparingly with a general garden fertiliser, preferably one containing relatively high levels of K



Figure 4. *Vriesea* 'Dark Knight' in Kevin Kilsby's miniature tropical paradise, Mt Albert, Auckland

(potassium). Excessive N (nitrogen) compared to K will lead to greener foliage with a loss of colour intensity, but as the N is used up or leached from the soil the colours will return. So the rule is do not overfeed. If you do apply fertiliser, do it during a period of active growth such as spring and early summer when there's plenty of moisture in the soil. In containers we use a good quality potting mix (composted granulated pine bark) and feed with a 6-8 month slow release fertiliser in spring and occasional liquid feed if necessary.

### Cool Broms Conference



The Bromeliad Society of NZ extends a warm invitation to all BSI members and interested parties to attend our Cool Broms conference in Auckland, March 15-18 2013. Come and see great bromeliads and unique NZ raised hybrids. Listen to expert local and international speakers and most of all have fun! Register your interest now by emailing: [coolbroms@bsnz.org](mailto:coolbroms@bsnz.org) or check out [www.bsnz.org](http://www.bsnz.org) for conference news.

### Credits

Andrew Maloy

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Email: [info@kiwibromeliads.co.nz](mailto:info@kiwibromeliads.co.nz)



Figure 5. *Vriesea* 'Kiwi Vulcan' bred by Andrew Maloy



## *Dyckia* 'Leopoldo Witeck'

Geoff Lawn, BSI Cultivar Registrar

In August, 2009 a Brazilian plant hunting group made another regular excursion in uphill near Santa Maria, Rio Grande do Sul State to explore for hippeastrums, cacti, bromeliads, orchids and palm trees. This botanical party was led by forestry engineer and conservation consultant Professor Leopoldo Witeck Neto (from nearby Federal University of Santa Maria), some of his biology students and accompanied by biologist Lucas Coelho from Belo Horizonte, Minas Gerais State.

At one point, the group came across a very rare find in the open mountain terrain near a rocky outcrop. Everyone got excited to see a large (about 60cms. diameter) single highly variegated *Dyckia* rosette with creamy yellow and green stripes, next to a clump of green-leaved *Dyckias* which were common in the area and thought to be *Dyckia maritima*. Lucas confirmed this variegate was not vegetatively attached to other *Dyckias* close by, which indicates it was a chance mutation from seed.



Figure 1. *Dyckia* 'Leopoldo Witeck', photo Lucas Coelho

As BSI Cultivar Registrar I was duly notified, together with details and photos, that Lucas Coelho wanted to name this *Dyckia* variegate after his friend and mentor Leopoldo Witeck. This honour is in recognition of Professor Witeck's field work and conservation activities in the Santa Maria region, such as propagating endangered native species, as for example, the rare Brazilian palm tree *Thritrinax braziliensis*. In 2008 Leopoldo Witeck discovered the new local species orchid *Cyrtopodium witeckii* also named in his honour. See the following: <http://sucuri.cpd.ufsm.br/noticias/files/arq/25531.pdf>

Since this variegate's exciting discovery 2 years ago, recent news is that the variegated rosette has not flowered but has produced one variegated pup. Blooming photos are needed for registration, although there are exceptions with long-term cycle cultivars. The Bromeliad Cultivar Register is primarily an aid to identify cultivars circulating in horticulture, but a single new unflowered variegate or two in one collection does not meet that requirement yet.

The cultivar name *D. 'Leopoldo Witeck'* stands alone to identify this clone but does not link it to a particular species. According to the Pitcairnioideae Monograph (Smith & Downs 1977) *D. maritima* inhabits open rocky or turfy ground, mostly near the sea, 30-50m alt. in Santa Catarina and Rio Grande do Sul States. Specialist *Dyckia* grower and consultant in Brazil, Constantino Gastaldi, states that the true *D. maritima* has a restricted range in Rio Grande do Sul State of Torres, Passo de Torres and surroundings, close to the Atlantic Ocean.

Constantino advises also that the variegate 'Leopoldo Witeck' is more likely *D. aff. maritima* as he is aware of at least 3 clones of green-leaved *D. aff. maritima* at Pedra do Segredo, Cacapava, which is near Santa Maria, about 300kms inland from the Atlantic coast. Whether these clones of *D. aff. maritima* represent new species, only field botanists can decide. It seems the beautiful and possibly more unknown *Dyckia* species in Brazil habitats need further studies to determine their botanical status.



Figure 2. *Dyckia* 'Leopoldo Witeck' in habitat, photo Lucas Coelho



Figure 3. *Dyckia* aff. *maritima* in cultivation, photo Constantino Gastaldi



## New Bigeneric Genus: *x Enchotia*

Geoff Lawn, BSI Cultivar Registrar



Figure 1. *x Enchotia* 'Ruby' spike

In August, 2011 the nothogenus *x Enchotia* (*Encholirium x Hechtia*) was first recorded in the BSI's Bromeliad Cultivar Register under ICBN Rules (Vienna Code 2006). Its breeder is Ray Lemieux, employee at Tropiflora Nursery in Sarasota, Florida who created this cross in February, 2006 and he also coined this new bigeneric genus name *x Enchotia*.

Seed Parent: *Encholirium horridum* L.B. Smith. Contr. Gray Herb. 129:32, pl-3, figs. 1-3, 1940.

Pollen Parent: *Hechtia rosea* E. Morren ex Baker. Handb. Bromel. 140. 1889.

Tropiflora Nursery owner Dennis Cathcart named this bigeneric cultivar 'Ruby' in honour of Sydney, Australia grower Ruby Ryde who has grown, wild-collected and promoted terrestrial bromeliads for over 30 years.

Photographs here are all by Dennis Cathcart of *x Enchotia* 'Ruby' featured blooming for the first time at Tropiflora Nursery, Sarasota, Florida in March, 2011.



Figure 2. *x Enchotia* 'Ruby', blooming plant



## New Cultivar: x *Enchotia* 'Ruby'

Geoff Lawn, BSI Cultivar Registrar



Figure 1. x *Enchotia* 'Ruby' with breeder Ray Lemieux

It took Florida breeder Ray Lemieux "only" 5 years of cultivation (2006-2011) from seed to produce the first blooming new bigeneric x *Enchotia* 'Ruby' (*Encholirium horridum* x *Hechtia rosea*). Considering that both parents are heavily spined, the several dozen seedlings showed a surprising outcome: the majority were spineless, or nearly so, with a few small random spurs. A second and third repeat of the cross using different clonal forms of the same parental species produced similar mixed results. So the smooth edged clones share the grex name of 'Ruby' whilst the prickly forms are collectively called x *Enchotia* 'Ruby Star', both of which grexes may exhibit slight clonal variances at maturity. This phenomenon of spineless progeny from prickly parents has become rather common in, for example, *Aechmea fasciata* cultivars or hybrids, but is less seen in the Pitcairnioideae sub-family genera. Noted smooth-edged exceptions are *Dyckia* 'Naked Lady' (*encholirioides x brevifolia*), *Dyckia hebdingii* hybrids and some *Encholirium* crosses (personal comment from Dennis Cathcart).

Under good growing conditions x *Enchotia* 'Ruby' is a large terrestrial, the mature rosette reaching 1.5 metres diameter and nearly 1 metre tall. The arching bronze green foliage comprises about 150 smooth leaves each 6cms. wide tapering to a point and to 110cms. long. The erect inflorescence stem, 5cms. thick at its base, rises to 1.75 metres average height above the rosette crown.. The massive red-stemmed raceme has up to 32 branches with ruby sepals and suffused red/pink/cream petals, indicative of its hybrid genes. The spike is initiated mid-Winter and blooming lasts about 8 weeks over Spring. When the inflorescence is spent and preferably removed, basal pups emerge slowly between lower leaf axils, or are visible from the main stem if lower leaves are stripped to allow more light and encourage offsets.

x *Enchotia* 'Ruby' is destined to mound into tight clumps if not divided, just as with its pollen parent *Hechtia rosea*, now classified as synonymous with former *H. macdougallii* L. B. Smith. This tough Mexican species hails from Oaxaca State and is dioecious, meaning male and female flowers are on separate, individual plants, as are all Hechtias. The seed parent *Encholirium horridum*, a lithophyte from Espirito State, Brazil is mostly monocarpic (rarely or never offsets).

Undoubtedly, x *Enchotia* 'Ruby' will become a staple, sun-loving feature xerophyte planted in the garden landscape, adaptable to tropical, sub-tropical and temperate climates, but also can be grown in extra large soil-filled containers for full sunlight positions.

*Guzmania fosteriana*

Harry E. Luther



Figure 1. *Guzmania fosteriana*

*Guzmania fosteriana* was discovered in eastern Ecuador by Mulford Foster in 1948. The original specimen had a simple (unbranched) inflorescence but often vigorous cultivated specimens may be branched. These sorts of differences are often seen when comparing plants from the wild with those from horticulture. The pictured plant was collected by the author and photographed at the Marie Selby Botanical Gardens by Dr. Phil Nelson.

## Events Calendar

### AUSTRALIA / NEW ZEALAND:

**OCTOBER 29-30, 2011.** Bromeliad Society of New South Wales Spring Show, Concord Senior Citizens Centre, 9-11 Wellbank Street Concord.

**MARCH 15-18, 2013.** Cool Broms Conference, Auckland, NZ. Info by emailing [coolbroms@bsnz.org](mailto:coolbroms@bsnz.org) or check out [www.bsnz.org](http://www.bsnz.org) for conference news.

### UNITED STATES OF AMERICA:

**NOVEMBER 4-6, 2011.** Florida East Coast Bromeliad Society hosting the Florida Extravaganza at the Plaza Spa and Resort in Daytona Beach. The Cryptanthus Society's International Show will be held at the same venue on the same dates.

**SEPTEMBER 24 - OCTOBER 1, 2012.** 20th World Bromeliad Conference, Caribe Royale Hotel, Orlando, Florida. Contact [bbout@aol.com](mailto:bbout@aol.com)



Orlandiana'12 is only one short year away – have you made your reservations?

Registration information and hotel rates can be found on the web site, [www.bsi.org](http://www.bsi.org). Check the site often for conference updates.

The Florida Council is planning an outstanding event at a beautiful resort, so make plans now!

In case you haven't heard, Harry Luther has accepted an invitation to speak and will present a seminar on Bromeliad Diversity. Dean Fairchild is Seminar Chairman and promises educational and informative sessions – don't miss them!

It's almost time to choose a site for WBC 2014

## CONFERENCE CORNER

and we would like your input! Where would you like to go for the next WBC?

There is more to this decision than you might think: can the local club support the effort, does the immediate area have supplemental tours and entertainment for significant others? Are there enough vendors in the area and enough local interest in bromeliads to support a sale?

As a point of reference, WBC 2010 returned nearly \$6,000 to the New Orleans Treasury and the Plant Sale reported gross sales of \$100,000. Could your affiliated society use a shot of cash? It's worth thinking about!

If you or your club would like to learn more about what it takes to host a conference, just e-mail: [vicepresident@bsi.org](mailto:vicepresident@bsi.org).

Bonnie Boutwell, BSI Vice President



The BSI Seed Fund is currently in need of a chairman. Many thanks to Harvey Beltz for his years of service keeping the seed fund alive. The seed fund is an important and valuable offering to members, and a service that benefits the whole community.

Looking for a bromeliad lover willing to volunteer free time to manage the BSI Seed Fund. If you have an interest, please contact Jay Thurrott ([president@bsi.org](mailto:president@bsi.org)) for further details.

# The Bromeliad Society International

The purpose of this nonprofit corporation is to promote and maintain public and scientific interest in the research, development, preservation, and distribution of bromeliads, both natural and hybrid, throughout the world. You are invited to join.

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