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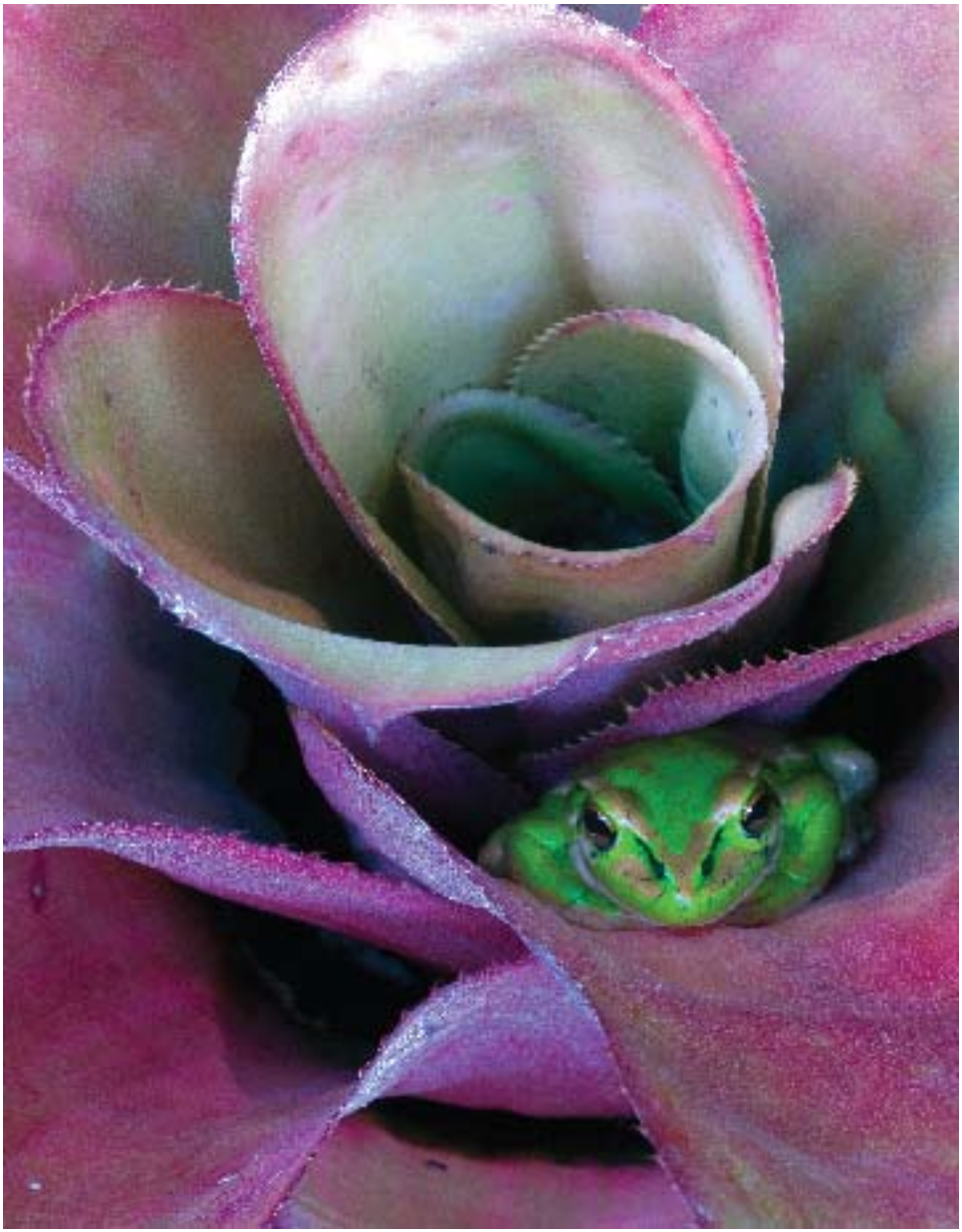

Journal of the Bromeliad Society

Volume 56(3): 97-144 May-June, 2006

Editor: Andrew Flower, PO Box 57-021 Mana, Porirua 5247, New Zealand
tel: +64 4 2399-659, fax: +64 4 2399-671, email: editor@bsi.org

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Cover photographs

Front—from a forthcoming article by Brian Chudleigh, *Litoria aurea* lurks in a garden bromeliad. [labelled Aechmea 'Pink Rocket,' but possibly not—Ed]
Rear—Bromeliads in the New Zealand garden of Brian and Cushla Chudleigh, article on page 129. Photographs by Brian Chudleigh.

Publication Information: The Journal is published bimonthly by the Bromeliad Society International. All scientific articles are peer reviewed, and author guidelines are available from the Editor.

Editorial

In This Issue

With the help of continuing generous donations from individual members and affiliated societies, we haved moved to a full-color Journal. We hope this will make the Journal more attractive to readers, and welcome your feedback. Your society really needs to increase its membership to keep the Journal viable, so please show it to your friends and colleagues and try to help us gain more members. Remember that we are currently providing new members with a year's worth of back issues free—two years for the price of one. You can't do better than that!

In the editorial section we have two letters. Herb Plever corrects a mis-named cryptanthus in our last issue, and Derek Butcher brings the first reaction to Pierre Ibisch's fine summary of the conservation issues facing us (Jan-Feb 2006). Where are we going with bromeliad conservation? Only one member has spoken up on the question—are we really that disinterested? We need feedback on where the Society should go, and suggestions on how to go about it, please.

Scientific

Four new species are described: Harry Luther and Karen Norton describe *Guzmania cinnabarina* from Panama (p.103); Elton Leme and Marlon Machado describe *Orthophytum conquistense* and *O. harleyi* (p.105); Renate Ehlers describes another Mexican species *Tillandsia comitanensis* (p. 116) . Eric Gouda brings us a species newly introduced to cultivation, *Vriesea cacuminis*, on p.120 and we have an overview of Uruguayan bromeliads from researcher Ana Helena Brito Berhouet (p.112.)

Cultivation

Geoff Lawn surveys bromeliads distinguished by their beautiful red-lined foliage in *Radial Reds Revisited* (p.123) and New Zealand photographer and plantsman Brian Chudleigh writes on his experiences growing tillandsias (p.129.) Brian's photos grace both covers on this issue.

General Interest

In her regular column our President Joyce Brehm tells us of the functions of the Cultivar Registrar, currently [Uncle] Derek Butcher. On a sadder note, we farewell BSI founding member Joyce Lorenze, page 136. Derek Butcher reviews a new book on the tillandsias of Northern Chile and Peru (p.137) and we introduce one of our new international BSI Directors, Renate Ehlers, on page 138. We have reports from Affiliated Society Shows: the Bromeliad Society of Central Florida Mothers Day Show on page 139, and Carol Wolfe reports on the May 2006 River Ridge Bromeliad Society Show, detailing their recovery from the effects of Hurricane Katrina.

Letters

The Cryptanthus shown on the back page of the latest issue of the Journal 56(2) was incorrectly identified as 'Strawberry Flambe'; it should be 'Strawberries Flambe', the name registered by the hybridizer Jim Irvin. When I bought the plant it looked like the one grown by Lyla Shepard with thin green and yellow leaves turning red in the center. But given a steady, strong fertilizer regimen and grown in good light (I grow it close to a bank of fluorescents) this plant grows wide leaves and turns strawberry red with yellow-green highlights in the center.

Cryptanthus "Strawberries Flambe" grown and photographed by Herb Plever.

Herb Plever (New York)

See Herb's article "The Fertilizer Revolution" in our Nov - Dec 1996 issue, 46(6), pages 252-260 - Ed.

On Conservation

It was a very thought provoking argument in the J. Brom. Soc 56(1): 2006 by Pierre Ibisch and this has prompted me to make a few comments.

What are we trying to conserve? We know that fragmentation of forests or reserves means changes in pollinators and increases in inter-species hybrids. These facts cannot be ignored. Are we trying to conserve the genetic pool that is Bromeliaceae? I believe this should be our aim but how do we do it? It seems that we are lucky in that with deforestation many bromeliads seem to benefit because of their robustness and adaptability compared to many other plant families. The downside is that very few bromeliads are edible and many are treated as *parasitos* by indigenous peoples.

It is interesting how CITES has not worked in saving animals from extinction and the same applies with plants. But I believe that the total ban on Orchids and Cactus has meant that species plants are prized more than man-made hybrids. This has not occurred in the Bromeliaceae because only a few are on CITES, so how do we promote the worth of clones of type specimens or those formally identified at the Bromeliad Identification Centre?

One way to conserve a species is by encouraging growing from seed. There is already a good avenue in the BSI Seed bank but it is slanted towards the growing of

man-made hybrids. Growers of this seed are not fully aware of the possibilities of hybridisation and yet many examples are shown on 'Auntie Margaret Queries' at the Florida Council website fcbs.org. If seed has come from a reliable source such as from the type specimen, or collected in the wild this information should be readily available. For example we are confidently growing *Tillandsia ericii* in Australia because we got the seed from type specimens at the time of their collection. But such information is not available in the Seed bank. In any event ALL growers of seed should check their progeny against the formal description of the named species if only because of accidental cross pollination.

I had thought that the best place to encourage artificial growing of species was in local botanic gardens. But here there are problems because of interference by Governments of the day. Bolivia is an example where FAN does a great job even with a volatile Government. One wonders where donations would actually go.

The only way to conserve is through financial incentives...

Another type of example is Martinique the home of *Aechmea serrata* where this plant is growing in a botanic garden but seed is never set and nobody bothers to find another clone to help survival. A check on the internet reveals that Martinique is known as the Island of flowers where the emphasis is on exotics with never a mention about endemics. There are some rare bromeliads in Jamaica but when you enquire from their botanic garden you are directed to herbarium specimens with the retort that nobody knows the whereabouts of a live specimen. Could these organisations be encouraged to conserve by way of grants?

The next sort of Botanic Gardens are those in affluent countries where they should be leading scientific research. Europe is known for this but they are restricted by inclement winters and fuel costs. Many of the American Botanic Gardens seem to promote hybrids purely because they have to encourage visitors to stay financially viable. Australian Botanic gardens are further hog-tied by having most of the terrestrial bromeliads summarily treated as weeds by the Australian Quarantine Service.

Another problem we have to face is general attitudes in developed countries. For example in the USA, Georgia treats *Tillandsia recurvata* as endangered but Florida advertises herbicides to rid gardeners of unwanted *T. recurvata*! If this happens within a country what chance is there between countries for such decision making.

In all, I think I know the problem and the only way to encourage all to conserve is through financial incentives. The hardest decision is how!

Derek Butcher (Adelaide)

Publications of Interest

Our Conservation Chair, Pierre Ibisch, has sent us news of the following article:

"*Bromeliad species of the Atlantic forest of north-east Brazil: losses of critical populations of endemic species*" José A. Siqueira Filho and Marcelo Tabarelli. Published online by Cambridge University Press 28Apr2006. http://journals.cambridge.org

Abstract: In this paper we examine the number of known populations of 86 bromeliad species recorded in the Atlantic forest of north-east Brazil, to test the following predictions: (1) the current number of populations of most bromeliad species inhabiting the Atlantic forest of north-east Brazil is critically low, (2) the number of extant populations of a particular species is associated with the ecological attributes of the species, and (3) habitat loss determines, at least in part, the current distribution and number of populations of each species. At present there are at least 535 bromeliad populations in this forest but 61.6% of species have <6 populations and 24.4% have only one known population. The mean number of populations per species was significantly lower among species endemic to this part of the Atlantic forest, species recorded in only one vegetation type, forest and inselberg species, and obligatory epiphytic and terrestrial species. We were unable to relocate 41 populations recorded between 1920 and 1996, and populations of 20 species have become locally extinct. For these bromeliads geographic range, habitat specificity and life form appear to determine which species are more vulnerable to extinction. The species that have <6 extant populations include 27 species that are endemic to this forest. These species need to be evaluated for inclusion on both the IUCN and Brazilian Red Lists. Some of these species will only survive if the fragments containing the last populations are declared as protected areas.

Correspondence: Departamento de Botânica, Universidade Federal de Pernambuco, Recife, PE. 50670-901, Brazil. E-mail mtrelli@ufpe.br

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The Cactus and Succulent Journal 78(4) Jan-Feb 2006 has two articles on succulent bromeliads. Both include excellent, large photos.

Bromeliads in the desert: Hectia by Kenneth Quinn (p.26-29) reviews hectia species commonly found in cultivation, and list sources of plants. Photographs feature *Hectia glomerata* in habitat on limestone in the Tehuacán Valley, Mexico, and two other species.

Succulent and Xeromorphic Bromeliads of Brazil (p.31-35) by Pierre J. Braun & Eddie Esteves Pereira features *Orthophytum horridum, Dyckia paucispina* and *Bromelia estevesii.*

Guzmania cinnabarina, A new Species from Panama.

Harry E. Luther & Karen F. Norton[1]

The wet forests of Panama continue to yield showy new bromeliads. Many are from well-botanised localities as is the following guzmania.

Figure 1. *Guzmania cinnabarina* flowering at the Marie Selby Botanical Gardens. Photograph by P. Nelson

Guzmania cinnabarina H. Luther & K. Norton, sp. nov. TYPE: Panama; Cocle, ridge at El Cope, 900 m elev., 1997, *C. Skotak legit,* fl. in cult. SEL 99-186, 3 Jan. 2006, *H.E. Luther s.n.* (Holotype: PMA; Isotype: SEL).

A *G. membranacea* L.B. Smith, cui affinis, laminis foliorum latioribus, bracteis florigeris et sepalis longioribus et corolla perarcuata differt; a *G. stenostachys* L.B. Smith, cui similis, bracteis florigeris, sepalis et petalis longioribus differt.

Plant an epiphyte, flowering 35—50 cm tall. Leaves rosulate, spreading, densely appressed punctate-lepidote throughout, 30—45 cm long; sheaths broadly elliptic, 6—9 x 4—5 cm, somewhat castaneous, ferruginous-lepidote especially abaxially; blades ligulate, acute to attenuate, 25—40 mm wide, thin coriaceous, nerved, dark

1 Bromeliad Identification Center, Marie Selby Botanical Gardens
811 South Palm Avenue, Sarasota, FL 34236 USA

Figure 2. *Guzmania cinnabarina* flowering at the Marie Selby Botanical Gardens. Photograph by P. Nelson

green adaxially, purple-red abaxially. Scape erect, 6—20 cm x 5—8 mm, in most cases barely exserted above the leaf sheaths; scape bracts erect, densely imbricate; the lowest foliaceous, greenish; the upper like the floral bracts, bright red, elliptic with an attenuate, slightly spreading darker blade. Inflorescence erect, slenderly cylindric, 20-35 x 2—3 cm with the apex long attenuate and sterile; floral bracts elliptic, acute to attenuate, their apex somewhat spreading, 50—67 x 15—25 mm, thin, nerved, slightly lepidote, bright red; flowers opening during the day; sepals elliptic, acute, 20—23 mm long, free or barely connate at the base, very thin, nerved, sparsely dark brown stellate-lepidote; corolla semi-tubular, arcuate with the apical lobes slightly spreading; petals ligulate, broadly acute, 6—7 cm long, agglutinated at their base for 4—8mm, bright yellow.

PARATYPES: Panama; Panama, Cerro Jefe, 09°15′N, 79°30′W, 950 m elev., 14 March 1987, *G. McPhearson 10625* (MO); Cocle, El Cope, clone of the holotype, 10 Sept. 1998, *C. Skotak s.n.* (SEL); same local, clone of the holotype, 1 Feb. 2006, *H.E. Luther s.n.* (SEL).

Figure 3. A. Section of inflorescence; B. Floral bract; C. Flower; D. Sepal; E. Petal. Drawing by Sig Dalstrom

This beautiful new species seems most closely related to *Guzmania membranacea* L.B. Smith from Sucre Provence in northern Venezuela. *G. membranacea* is poorly known and not re-collected since the type collection in 1966. *G. cinnabarina* resembles this species by having a very slender inflorescence that is sterile toward the apex. The new species can be immediately distinguished due to its longer inflorescence (20—35 vs. 16—26 cm long) that is attenuate at its apex (vs. being merely shortly acute) and by having a slightly longer corolla that is distinctly arcuate with slightly spreading lobes (vs. tubular-erect with recoiling lobes). In addition, the scape of *G. cinnabarina* is mostly concealed by the foliage; in *G. membranacea* it is long and slender and conspicuous.

Guzmania stenostachya, recently recorded from Panama, has similar bract coloration, but has much shorter floral bracts (30—45 vs. 50—67 mm long), sepals (16 vs. 20—23 mm long) and petals (45 vs. 60—70 mm long).

Guzmania cinnabarina is a brilliantly colored ornamental, unfortunately rather slow growing, that hopefully will find its way into general cultivation.

Studies on Orthophytum - Part V

Two New Small Species in the "subcomplex disjuctum"

Elton M. C. Leme[1] & Marlon C. Machado[2]

In the complex of *Orthophytum* species with scapose inflorescence, the "subcomplex disjunctum" comprises the most varied and largest number of species (i. e., 30 taxa). It is distinguished by forming a distinct leaf rosette before and at anthesis, petals forming a tubular corolla toward base, except for the suberect apex, with the apex obtuse to acuminate, but not cucullate (Leme, 2004). Two dwarf members of the "subcomplex disjunctum" are the short-scapose *O. saxicola* (Ule) L. B. Sm. and *O. braunii* Leme, which are the closest relatives of the new species described below.

Orthophytum conquistense Leme & M.Machado, sp. nov. **Type**: Brazil. Bahia: Vitória da Conquista, ca. 6.5 km north of the city, along a secondary road ca. 2.4 km west of Br. 116, ca. 800 m elev., 27 Sept. 2003, *E. Leme 6019*, *M. Machado, R. F. Reis Jr., J. C. Falcon, C. Moreira, E. Silva & P. Walters.* (Holotype, HB).

Ab *O. saxicola* (Ule) L. B. Sm., cui affinis, foliis et bracteis primariis altitudinem scapi brevioribus, scapo 5.5-10 mm longo, floribus longioribus, sepalis vinosis vel rubris et petalis longioribus differt.

Plant saxicolous, stemless, 7-15 cm high at anthesis, propagating by slender basal rhizomes 4-5 cm long, ca. 0.3 cm in diameter, not producing any shoots from the inflorescence. **Leaves** 5 to 8 in number at anthesis, subdensely rosulate and forming a distinct rosette before anthesis and afterwards, at anthesis the upper leaves not distinguishable from the scape bracts due to the elongation of the stem; **Sheaths** inconspicuous; **Blades** narrowly lanceolate, apex slenderly caudate, 3.5-10 x 0.8-1.3 cm, ca. 1 mm thick near the base, subcoriaceous, suberect-arcuate, strongly canaliculate forming a semicircular U-shaped curve in cross-section, green to ferruginous colored, not lustrous, abaxially finely nerved, densely adpressed white-lepidote throughout with the trichomes obscuring leaf color, adaxially glabrous except for the subdensely to densely white-lepidote base, margins straight, subdensely to laxly spinose, spines narrowly triangular, flattened and green toward the base, acicular and yellowish toward the apex, distinctly retrorse-uncinate, 1.5-2.5 mm long, ca. 1 mm wide at the base, 4-8

1 Herbarium Bradeanum, C. Postal 15005, Rio de Janeiro, RJ, 20.031-970, Brazil
E-mail: leme@tj.rj.gov.br

2 Institut für Systematische Botanik, Universität Zürich
Zollikerstrasse 107, CH-8008 Zürich, Switzerland machado@systbot.unizh.ch

mm apart. **Scape** erect, green, subdensely to densely finely white-sublanate, smooth, terete, 5.5-10 cm long, 0.3 cm in diameter; **Scape bracts** foliaceous and not distinguishable from the leaves, suberect-arcuate to nearly spreading, gradually reduced in size toward the apex. **Inflorescence** inconspicuously bipinnate to simple, short and compact, subcapitate, ca. 2 cm long (excluding the petals), rachis not visible; **primary bracts** subfoliaceous, suberect to spreading, exceeding the flowers, margins subdensely spinulose, spines retrorse-uncinate, ca. 1 mm long, 2-3 mm apart; **flower fascicles** inconspicuous but densely disposed and slignly if at all segregated from the upper head of flowers, 1 to 2 in number, 1 to 2-flowered; **Floral bracts:** those of the flower fascicles broadly ovate to suborbicular, broadly acute and apiculate, carinate near the apex, membranaceous, distinctly shorter than the sepals, suberect, ferrugineous to red, finely nerved, sparsely white-lepidote, trichomes fimbriate, 8 x 6-7 mm, margins densely spinulose, spines acicular, ca. 0.5 mm long, prevailingly retrorse, those of the simple part of the inflorescence subfoliaceous to broadly ovate and long acuminate, suberect-arcuate, densely white-lepidote abaxially, laxly white lepidote to glabrous adaxially, green to bronze colored, margins subdensely spinulose, spines acicular, ca. 0.5 mm long, prevailingly retrorse. **Flowers** 4 to 8 in number, 21-24 mm long (with extended petals), sessile, subdensely arranged, odorless; **sepals** symmetrical, narrowly lanceolate, apex acuminate and shortly caudate, 11-14 x 3-4 mm, free, entire, wine colored to red, membranaceous, subdensely to sparsely white-floccose to sublanate, trichomes fimbriate, the posterior ones carinate, the anterior ones ecarinate; **petals** spathulate, rounded, 19-22 x 5-5.5 mm, free, erect at anthesis and forming a tubular corolla except for the suberect apex, white, bearing 2 inconspicuously appendages ca. 2 mm above the base, with more or less upwardly to irregularly orientated fimbriate margins, as well as 2 longitudinal callosities about equaling the filaments; **filaments** terete, greenish near the apex, 8-12 mm long, the antepetalous ones adnate to the petals for 4-5 mm, the antesepalous ones free; **anthers** greenish, ca. 2 mm long, laterally strongly complanate, base and apex obtuse, dorsifixed near the middle; **pollen** sulcate, ovate to oblong-ellipsoid, exine reticulate, lumina irregular, subrounded, decreasing in size toward the poles and the sulcus, and so the muri thicker; **stigma** simple-erect, 1.5-2 mm in diameter, greenish-white, blades obtuse, suberect; **ovary** ca. 4 mm long, ca. 5 mm in diameter at apex, subtrigonous, subdensely to densely white-lanate; epigynous tube ca. 0.5 mm long; placentation apical; ovules obtuse. **Fruits** unknown.

This delicate new species is very closely related to *O. saxicola*. However, *O. conquistense* differs from it by the leaves and primary bracts shorter than the 5.5-10 cm long scape, as well as by the comparatively longer flowers (21-24 mm vs. 18-20 mm), the wine to red colored sepals (vs. green), and the longer petals (19-22 mm vs. 13-14 mm long). The long scapose condition of *O. conquistense* and its colorful calyx greatly contrast with the usually compact structure and the paler color pattern of *O. saxicola*.

So far this new species has only been found in a few sites near the town of Vitória da Conquista, southeastern Bahia. It grows as a rupicolous on low-lying outcrops of igneous conglomerate rock, which are found amidst high-altitude deciduous dry forest. However, on the clearings formed by the outcropping of the conglomerate rock grows a different kind of vegetation, more akin to the lowland caatinga shrubland, with sparse groups of low-growing plants forming dense thickets, including several species of Cactaceae such as *Cereus jamacaru* De Candolle, *Hylocereus setaceus* (Salm-Dyck) R.Bauer, *Melocactus ernestii* Vaupel, *Pereskia aculeata* Miller and *Pilosocereus pentaedrophorus* (J.F.Cels) Byles & G.D.Rowley subsp. *robustus* Zappi. *Orthopytum conquistense* often grows among or at the edge of these thickets. Other Bromeliaceae species occurring in the area include *Aechmea bromeliifolia* (Rudge) Baker and species of *Tillandsia*.

Figure 1. *Orthophytum conquistense* type flowering in cultivation. Photo by Elton Leme.

Paratypes: Brazil. Bahia: Vitória da Conquista, ca. 6.5 km north of the city, along a secondary road ca. 2.4 km west from Br. 116, ca. 800 m elev., 27 Sept. 2003, *E. Leme 6021*, *M. Machado, R. F. Reis Jr., J. C. Falcon, C. Moreira, E. Silva & P. Walters.* (HB, CEPEC); same locality, *E. Leme 6024 et al.* (HB, CEPEC); same locality, Sept. 2002, *M. Machado 277*, fl. cult. Nov. 2004, *E. Leme 5568* (HB); same locality Feb. 2006, *M. Machado 795, R. F. Reis Jr.* (HUEFS).

Figure 2. *Orthophytum harleyi* type flowering in cultivation. Photo by Elton Leme.

Orthophytum harleyi Leme & M. Machado, sp. nov. **Type**: Brazil. Bahia: Mun. Érico Cardoso, near the bridge over the river Paramirim, ca. 4km west of the town along the road to Mun. Paramirim, 17. Jan. 2004, leg. *M. Machado 180,* cult. *E. Leme 6173* (holotype, HB; isotype: CEPEC).

Species nova ab *O. braunii* Leme, cui affinis, foliis plus numerosis, laminis foliorum leviter canaliculatis usque ad planis, inflorescentia simplicissima, dense strobilifera et bracteis floriferis longioribus differt; ab *O. saxicola* (Ule) L. B. Sm., cui proxima, foliis plus numerosis, inflorescentia simplicissima, dense strobilifera, floribus distincte longioribus et petalis longioribus differt.

Plant saxicolous, stemless, 13-15 cm high, propagating by slender stolons ca. 6 cm long, ca. 0.5 cm in diameter. **Leaves** 25 to 35 in number, densely rosulate and forming a distinct rosette before and at anthesis; **Sheaths** inconspicuous; **Blades** narrowly triangular-attenuate, 10-11 cm long, 1.3-1.9 cm wide at the base, ca. 2 mm thick at the middle, fleshy-coriaceous, suberect-recurved to spreading-recurved, slightly channeled toward the apex to nearly flat near the base, densely and coarsely white-lepidote on both sides mainly toward the base, trichomes almost totally obscuring the greenish to reddish-brown color of the adaxial surface and totally obscuring the color of the abaxial surface, nerved mainly abaxially, apex attenuate-caudate, margins densely and coarsely white-lepidote, subdensely spinose, spines triangular, slightly retrorse-uncinate, 3-4 mm long, 1.5-2 mm wide at the base, 3-7 mm apart, base densely and coarsely white-lepidote, apex glabrous, yellowish-castaneous, acicular towards the apex. **Scape** erect, ca. 6.5 cm long, 0.6-0.8 cm in diameter, densely white-lanate, pale green but the color almost completely obscured by the trichomes; **Scape bracts** foliaceous, suberect-arcuate to nearly spreading, not completely covering the scape. **Inflorescence** simple, densely strobilate, cylindrical or nearly so, erect, ca. 25 to 35-flowered, 4.5-5.5 cm long (excluding the petals), 2.5-3 cm in diameter (excluding the floral bracts), apparently not producing vegetative shoots; **Floral bracts** the basal ones resembling the upper scape bracts, subfoliaceous, much exceeding the flowers the upper ones ovate-triangular, acuminate-caudate, ecarinate, exceeding the sepals, greenish toward the base, reddish-brown toward the apex, color in part obscured by a dense layer of coarse white trichomes on both sides, nerved, thinly coriaceous, 24-35 x 8-13 mm, strongly recurved, margins subdensely to densely spinulose, spines subtriangular-uncinate, prevailingly retrorse, 1-2 mm long. **Flowers** 28-34 mm long (with extended petals), sessile or nearly so, suberect, densely arranged; **Sepals** symmetrical, sublinear-lanceolate, apex acuminate, shortly caudate, 14-16 x 3-5 mm, free, entire, pale green, nerved, membranaceous mainly along the margins, white-lanate at the base, subdensely to densely white-floccose toward apex, trichomes shortly fimbriate, obtusely carinate to carinate; **petals** sublinear-spathulate, subobtuse and inconspicuously apiculate, 24-28 x 4-6 mm, free, erect at anthesis except for the suberect apex, white toward the apex, bearing 2 densely and irregularly scalloped and long lacerate, predominantly downwardly oriented appendages 2.5-3 mm above the base, as well as 2 conspicuous longitudinal callosities which nearly equal the filaments; **filaments** terete, the antesepalous ones free, 20-21 mm long, the antepetalous ones adnate to the petals for 12-13 mm, ca. 18 mm long; **anthers** 2-2.5 mm long, yellow, base obtuse, apex obtuse and shortly caudate, laterally flatened, fixed at 2/5 of its length above the base; **pollen** prevailing ellipsoidal, sulcate, exine heterobrochate; **stigma** simple-erect, ca. 1 mm in diameter, blades suborbicular, remotely crenulate; **ovary** 3-5 mm long, 4-5 mm in diameter, trigonous, white-lanate; ***epigynous tube*** ca. 0.5 mm long; ***placentation*** apical; ovules obtuse. **Fruits** distinctly enlarged from the ovary, globose, ca. 7 mm in diameter, white-lanate, greenish.

Orthophytum harleyi is morphologically close related to *O. braunii* (Leme, 1994), differing from it by its distinctly more numerous leaves (25-35 vs. 10-15 in number), leaf blades slightly canaliculate to nearly flat (vs. distinctly canaliculate), inflorescence simple and densely strobilate (vs. bipinnate and interrupted at base, and not forming a strobile), and by its longer floral bracts (24-35 mm vs. 15-20 mm long). On the other hand, this new species also resembles *O. saxicola* in the broad concept adopted by Smith & Downs (1979). However, *O. harleyi* can be distinguished from it by its more numerous leaves (25-35 vs. 10-20 in number), inflorescence simple and densely strobilate (vs. basally bipinnate, not forming a strobile, and sometimes interrupted at base), the distinctly longer flowers (28-34 mm vs. 18-20 mm long), as well as distinctly longer petals (24-28 mm vs. 13-14 mm long).

The first collection of this species seems to be the one listed below as paratype, made by the Kew botanists Raymond M. Harley and Nigel P. Taylor in 1988. The second author found the species again while on a field excursion to study species of Cactaceae, near or at the place where it was originally collected by Harley & Taylor. The differences from *O. saxicola* were promptly noticed, specially the densely strobilate inflorescence. *O. harleyi* grows in between shrubs or as rupicolous on granitic rock outcrops in the western slopes of the Serra das Almas, a mountain range forming the southern end of the Chapada Diamantina. An unusual characteristic observed in specimens kept in cultivation was the time of anthesis: flowers opened in late afternoon, staying open thorough the night and closing in the next day. This characteristic has never been observed in the genus.

Figure 3. *Orthophytum conquistense* and Orthophytum harleyi. Drawing by Elton Leme.

We dedicate this new species to Dr. Raymond M. Harley in recognition for his many outstanding contributions to our knowledge of the flora of Bahia.

Paratype: Brazil. Bahia: Água Quente (old name for Érico Cardoso), ca, 4 km from the city to Paramirim, ca. 700 m elev., 13º 26'S, 42º 12'W, 28 Nov. 1988, *R. M. Harley 27026* & *N. Taylor* (CEPEC, NY).

Acknowledgments

The authors thank the field support and companionship during expeditions kindly provided by Carlos Estevão Moreira, Edmundo Silva, Jeanette and Peter Walters, José Carlos Martinez Falcon, Raymundo Fernandes Reis Jr., and Rudolf Schulz.

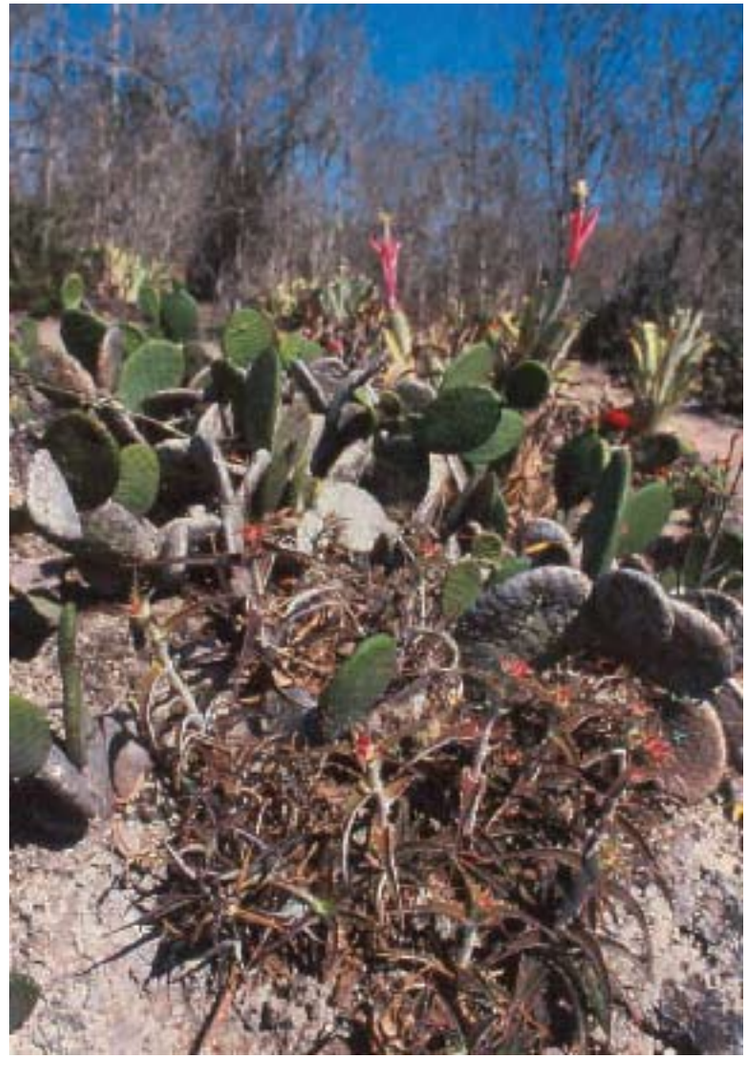


Figure 4. *Orthophytum conquistense* in full bloom in its native habitat. Photo by Elton Leme

Literature Cited

Leme, E. M. C. 1994. Novas Bromeliáceas Nativas do Brasil - XII. Pabstia 5 (1): 12-15.

_____. 2004. Studies on Orthophytum - Part I. J. Bromeliad Soc. 54 (1): 36-43.

Smith, L. B. & R. J. Downs. 1979. Bromelioideae (Bromeliaceae). Fl. Neotrop. Monogr. 14. The New York Botanical Garden, New York. Pp. 1.493-2.142.

Where to find Bromeliads in Uruguay

Anna Helena Brito Berhouet

Uruguay is the smallest country in South America with coasts on the Rio de la Plata and Atlantic Ocean and borders with Brazil (E and NE) and Argentina (W). The main use of the land is pasture for livestock (cattle and sheep) and husbandry (soybean, wheat, corn, sunflower and rice). Nevertheless, mainly in the north and northeast, there are still remote and isolated areas with interesting biota.

Three years ago we started a survey of species belonging to the Bromeliaceae family following the work done in Uruguay by Lyman B. Smith in 1972 based on the herbarium collected by Cornelio Osten in 1936. Our work consists in finding the specimens in nature, collecting the plants, flowers, fruits and seed, and also recording the flowering season, the host (plant or rock) and the habitat in which every species develops. We also take pictures and have a very important collection of the same plant at different times of the year. All this work is producing useful information and we want to share with the readers of Journal of the Bromeliad Society some of the impressions we already have which at the end will be displayed in a book that we plan to finish and publish in 2007.

In relation to Bromeliads, Uruguay is a secondary area, similar to Florida USA, in which the maximum altitude over sea level is 513 m and the climate is subtropical with 1,300 mm/year of rain that in terms of vegetation turn out mostly in grass; gramineas and small legumes for grazing and some areas with small trees and shrubs in the rocky hills, and in the rivers and banks of creeks.

Map courtesey of the C.I.A.

We have already verified the presence in their natural habitat of 21 different species from the original list and we are trying to find the missing ones. Another goal is to distinguish between indigenous species and exotic species introduced from neighbouring countries due to the continuous transit of ornamental plants by people currently moving from one to the other side of the border. We have noticed too, that we are in the border of the distribution area which is mainly located on the "Andean countries" on the Pacific side, and the "Guyanas Highlands" and "Mata atlántica" in Brasil on the Atlantic side.

The main genus present in the country is Tillandsia, epiphytic and saxicolous, 12 species. In second place Billbergia epiphytic and saxicolous three species; Dyckia

rupicolous, two species; Aechmea, epiphytic and terrestrial, two species; Bromelia, terrestrial, one species, and Ananas, terrestrial, which is tropical and is present through one species, *Ananas bracteatus*.

In regard to Tillandsia these are mostly epiphytic on trees but three species are saxicolous. The best known is *Tillandsia aeranthos* (Loiseleur) L. B. Smith that can be found all over the country, nearly always on treesbut sometimes on other substrates. It develops in gardens and parks as well as in natural stands in the narrow deep valleys up north, the sabanas; the galleries along river and creeks. It is so common mostly everybody will recognize it as *"clavel del aire"*. ["carnation of the air" – Ed] Another scattered species invades mostly senescent trees all over the country; it comes from Argentina and due to the abundance of seed with *coma* it flies all over the Uruguay riverside contributing to the aging process (even claimed to kill trees and branches). It is known as *"clavelito"* ["small carnation" –Ed] and corresponds to *Tillandsia recurvata* (L.) L., in the northern hemisphere "ball moss". This epiphyte has special preference for very old *Olea europeae* L. olive trees, and *Cedrus spp.* The botanical garden in Montevideo is completely invaded as well as all planted trees and electricity wires in the streets of "*El Prado*" residential area near the Botanical Garden. *Tillandsia usneoides* (L.) L. "Spanish moss" is found in the native forest all over the country but we found an outstanding population on old planted specimens of *Cupressus sp.* and *Cedrus sp.*

The most interesting species are fragmented populations restricted to small areas. *Tillandsia arequitae* (André) André ex Mez is an endangered species in Lavalleja which only grows in "*Cerro Arequita"* (riolites, acid efusive rock) hanging in long garlands down the north side of the cliff. This species is really threatened, considering that the only part of the world it can be found is a private reserve on one side of the hill. *Tillandsia xiphiodes* var. *minor* Hromadnik is also found in compact groups on sandstone pillars in "*Zapará, Tacuarembó"* in a very arid and exposed to winds and sun habitat. *Tillandsia xiphiodes* var. *xiphiodes* Kerr-Gawler, is found growing in compact groups of several plants in a beautifull landscaped habitat, sticking to rocky walls of steep riverbanks and waterfalls of *"Arroyo Laureles"* basin, very protected from wind in humid environment. These three saxicoles are covered with cinereous scales and have white flowers on flat short spikes.

We have noticed that many Tillandsia species prefer as host medium size old trees with abundant branching of *Prosopis spp.* L. *and Acacia caven* (Molina) Molina (Leguminosae, Mimosoideae. This zone is characterized for periods of heavy rains followed by long periods of serious drought. All these species are semi-xerophytic. *Tillandsia duratii* Visiani is found in this area on *Prosopis spp.* and *Acacia caven* on shallow black soil from meteorized basalt and sandy soil with good summer grassland, very poor in winter. Another three species are found attached to hosts adapted to halophyte soil *"blanqueales"* on this sabana of the Northwest along the *Uruguay* river: *T. ixiodes* Grisebach, *T. bandensis* Baker and *T. recurvifolia* Hooker with beautifull yellow, blue and white

flowers respectively. *Tillandsia ixioides* was found too in big balls of several plants on *Aspidosperma quebracho-blanco* (*Apocynaceae*) and also on the stipe of *Butia yatay.*

In the basin of Laguna Merim rivers in tree canopies we found two outstanding species: *T. geminiflora* Brongniart and *T. stricta* Solander, the first one with pink flowers and the second one with blue flowers and pink bracts that loose color, turning white in the flower development. Both species are very well known in Brasil.

Figure 1. *Bromelia antiacantha* Bertoll. known as "*banana do mato*"

Billbergia nutans var. *nutans* H. Wendland ex Regel is found up North in the frontier with Brazil growing on humus between the basalt rocks or hanging from branches in aged trees in shady, humid atmosphere, protected from winds in *"Quebradas"* of the "*Tacuarembó" and "Lunarejo"* basin. Dyckia species grow on very shallow rocky soil preferring the edge of the risk where erosion is more active. *Dyckia remotiflora* var. *remotiflora* Otto & Dietrich. is found in *Rocha* in the Southeast near the Brazilian border and *Maldonado* where it is noticed in summer by its very colorfull orange inflorescence and *D. remotiflora* var. *montevidensis* **(**K. Koch) L. B. Smith was found up North in *Rivera* and *Tacuarembó,* differing from the first one in the size, much bigger and the colour of the inflorescence which has yellow flowers.

Aechmea recurvata (Klotzsch) L. B. Smith is only found on *Erythrina cristagalli* L.

(Leguminosae, Papilionoideae) which is a beautiful tree with important branching and enormous crown that supports incredible population of epiphytes in the North and East, always on low lands, water covered at times, with grass and *Cortaderia selloana* (Schult.) Asch. & Graeb. as predominant vegetation. *Aechmea distichantha* Lem. has not been found yet in natural stands but is very abundant in groups growing in soil near the Brasilian border in the southeast. *Bromelia antiacantha* Bertoll. known as "*banana do mato*" which grows as terrestrial species is found in the southeast in natural stands by itself and in asociation to native shrubs in the "Laguna Negra" area. *Ananas bracteatus* was found in *Cerro Largo* introduced from Brazil in the XIX century to be used for fruit production although the fruit is not so sweet and good quality as *Ananas comosus.*

Figure 2. *Aechmea recurvata* (Klotzsch) L. B. Smith is only found on *Erythrina cristagalli*

We are still looking for and not yet been able to find some species mentioned for Uruguay by Smith such as *Tillandsia crocata* (E. Morren) Baker, found by Osten in Soriano, on *Prosopis sp. Tillandsia streptocarpa* Baker has not been found although is very common in central Brasil (*Minas Gerais, Bahía, Matto Grosso, Goiania*) and very similar to *T. duratii* Visiani which is found in Uruguay in *Salto* and *Artigas*. *Tillandsia capillaris* Ruiz & Pavón has been probably confused with *T. recurvata* (L.) L. as it is a species found over 2000 meters. We are still looking for *T. myosura* Grisenbach ex Baker and *T. loliaceae* Martius ex Schultes F. There are two *Billbergia* up north with the leaves wider and more succulent than *B. nutans* var. *nutans* one terrestrial and one epiphyte that we are still studying and waiting for the flowering season.

Tillandsia comitanensis:

a new Highland species from Chiapas, Mexico

Renate Ehlers[1] photographs by the author.

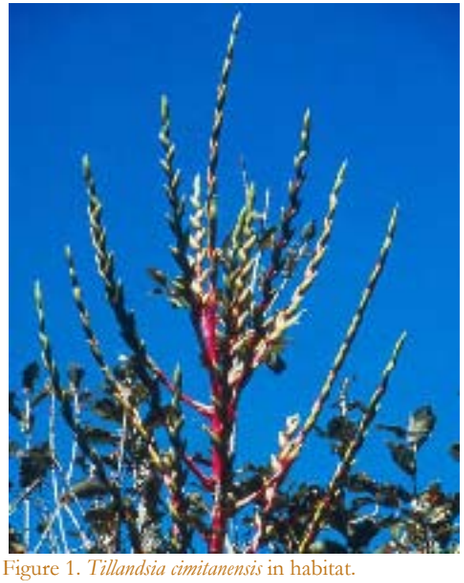


Figure 1. *Tillandsia cimitanensis* in habitat.

Figure 2. *Tillandsia comitanensis* in cultivation.

When I travelled with Klaus more than 20 years ago in Chiapas we first took photos of this plant. But as it was so big, and we thought it was *Tillandsia dasyliriifolia,* we never collected any plant for our collection at home. Also from other friends like the Brinkmanns from Berlin we got photos. But in November 2001 I travelled with Lydia and Gerhard Köhres through Chiapas, and as I was interested in the meantime to get as much knowledge as possible about the *T. limbata-T. dasyliriifolia* family I took 2 big plants to Germany. I became very excited when the plant was flowering because it did not fit either of the plants I thought it is related to. On my trip with Jürgen and Uli Lautner and Manfred Kretz in February 2003 I recollected the tillandsia. In our discussions Robert and Virginia Guess thought that this plant is *T. dasyliriifolia*. But I found too many different characters also to this species and as well to *T. limbata* and *T. makoyana*, so I described it and named it *Tillandsia comitanensis*.

Tillandsia comitanensis R. Ehlers, sp. Nov. ***Type***: Mexico, Estado Chiapas, km 130, between San Christobal de las Casas and Comitan, 2090 m s. m, 27. 11. 2001, leg.

1 Herrenberger Strasse 14, D-70563, Stuttgart, Germany.

R. Ehlers EM 011302 (Mexu, holo); km 167, between San Christobal de las Casas and Comitan, 1750 m, 11. 2. 2003, leg. R. Ehlers EM031002 (WU, para Estado Chiapas, road Copainala to Coapila, 1500 m s. m., 9. 2. 2003, leg. R. Ehlers EM 030805 (WU, para).

A *Tillandsia limbata* Schtdl., cui versimiliter affinis, rosula e minus foliis perrigidis coriaceisque, nervatis, pallide viridibus composita, vaginis foliorum inconspicuis, laminis foliorum late triangularibus, inflorescentia toto robustiora, rhachide per robusta internodiis minoribus, floribus majoribus rhachidem minus attingentibus, bracteis florigeris latioribus, suborbicularibus, sepalis multo latioribus (15 mm versus 8-9 mm), petalis erectis absque sinuum et stigmate laminis convolutis differì; a *Tillandsia. makoyana* foliis viridibus, brevioribus latioribusque, rachide minus geniculata, internodiis sepalibus brevioribus, floribus subsessilibus, bracteis florigeris non distinte nervatis, sepalis minoribus subtus non brunneopunctulatis, et petalis minoribus albis differì. **Typus**: Mexico, Estado Chiapas, km 130 inter urbes San Christobal de las Casas et Comitan, 2090 m s. m, 27. 11. 2001, leg. R. Ehlers EM 011302 (Mexu, holo); km 167 inter urbes San Christobal de las Casas et Comitan, 1750 m, 11. 2. 2003, leg. R. Ehlers EM031002 (WU, para Estado Chiapas, in via Copainala ad Coapila, 1500 m s. m., 9. 2. 2003, leg. R. Ehlers EM 030805 (WU, para).

Figure 3. Tillandsia comitanensis, inflorescence detail.

Plant stemless, 30–40 cm high, flowering to 90 cm, a more or less spreading rosette. **Leaves** many, 20 –40 cm long, light green, rigid, densely and finely appressed-cinereous-lepidote throughout, especially underneath, appearing green; **Sheaths** elliptic-ovate, 10-20 cm long, 7–10 cm wide, inconspicuous, adaxially castaneous, abaxially concolorous with the blade; **Blades** triangular, caudate-attenuate, 20-30 cm long, 5-7 cm wide above the sheat, abaxially nerved. **Scape** erect or little spreading, very stout, from slightly shorter than to exceeding the leaves, bright rose; **Scape-bracts** erect, the lower ones lanceolate, caudate, the sheats ca. 2 cm long, imbricate, internodes 2–3 cm, adpressed to the scape, leaving the rose, glabrous scape visible, the upper ones ovate, acute. **Inflorescence** pyramidal, laxely bipinnate, 20–40 cm long; 20–30 cm wide, surpassing the rosette, internodes between the branches 1–2 cm composed of 5–15 branches; **Primary bracts** like the upper scape-bracts, 1–2 cm long, enfolding the lower half or third of the sterile base of the axillary branch; **Branches** 10–25 cm long, spreading 25–45 °, composed of 7–20 laxly distichous, sessile flowers; **Rhachis** geniculate, stout, flattened next the

flowers, bright rose, glabrous, visible, internodes about 1–1.2 cm, about half as long as the sepals. **Flowers** erect and closely appressed to the rhachis, 1/2 - 1/3 contiguous with it; **Floral bracts** 5 mm shorter than the sepals to 1.8 -2 cm long, 1.6–1.8 cm wide, orbicular-ovate, nearly obtuse, shorter than the sepals, enfolding the base of the sepals and ¾ of the rhachis, green, glabrous, coriaceous with thin margins, adaxially slightly nerved, ecarinate; **Sepals** 20-25 mm long, 15 mm wide, broadly obovate, obtuse, nearly free, coriaceous, even, green, glabrous, adaxially slightly nerved; **Petals** tubular-erect, 4 cm long, 7–8 mm wide, 6 mm at the base, throat slightly open, the obtuse tips slightly spreading, greenish-white; **Stamens** and pistil exerted, filaments to 5 cm long in two sets of unequal length, thin, round-oval in cross section and equal in diameter for the entire length, whitish-green, concolorous with the petals, anthers 3–4 mm long, 1 mm wide, versatile fixed 1/3 from the base, style 4 cm long, white, stigma 2 x 2 mm, lobes erect, little spreading, green; **Ovary** 6 mm high, 3 mm at base.

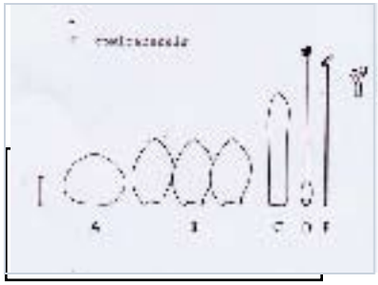


Figure 4, *Tillandsia comitanensis.*

The plant seems to be related to *Tillandsia limbata* Schlechtendal 1845 and to *Tillandsia makoyana* Baker:

From *Tillandsia limbata* Schlechtendal 1845 the plant differs: Rosette of fewer, very rigid and coriaceous thick leaves, nerved and light green, the sheaths inconspicuous, the blade broadly not narrowly triangular. Inflorescence stouter in all parts, rhachis very stout, flowers much bigger, erect with no sinus, internodes smaller, contiguous with the rhachis for ½ - 1/3 not 2/3, floral bracts wider, nearly orbicular, sepals much wider (15 mm not only 8-9mm,) petals bigger erect with no sinus, throat less open. The plant is monocarpic not polycarpic.

◀ Figure 5, left to right: *Tillandsia limbata, T. comitanensis, T. huamenulaensis.*

From Tillandsia makoyana Baker the plant differs: Plant green not grey, leaves shorter but wider, rhachis of the spikes less geniculate, internodes of the flowers not equaling the sepals but smaller, nearly no pedicels, floral bracts not prominently nerved, sepals smaller, not brown-punctulate inside, petals smaller, white with slightly open throat, not violet with closed throat .

Figure 6. *Tillandsia comitanensis* (left) and *T. makoyana* (right).

Geographical distribution: This tillandsia is widely spread through the highland of Chiapas but it always grows in the higher elevations: Estado Chiapas, Lagunas Montebello, April 1982, photo K. Ehlers; Estado Chiapas, Lagunas Montebello, photo. J. Brinkmann 8/28, 1993, Las Margaritas photo R. Ehlers s. n. Nov. 2001. Robert and Victoria Guess found it around Aguacatenango, Amatenango, Teopisca, Lagos de Montebello and Las Margaritas. They also have seen it in the Central Depression, but not in the same numbers. And they said that hundred of these plants come into San Cristóbal at Christmas.

The name refers to Comitan, the place where we found the plant for the first time. The plant is monocarpic.

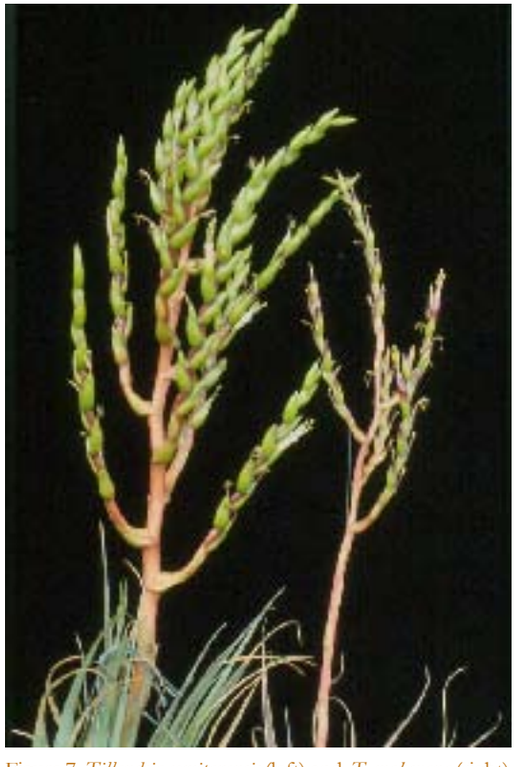


Figure 7. *Tillandsia comitanensis* (left) and *T. makoyana* (right) inflorescences.

Acknowledgments

My best thanks to Dr. Walter Till, University of Vienna, for his cooperation and advice and for the Latin diagnosis. And to my friends Virginia and Robert Guess, and Derek Butcher.

Introducing *Vriesea cacuminis* from Minas Gerais, Brazil

Eric J. Gouda[1] **photographs by the author.**

Figure 1. Vriesea cacuminins flowering in cultivation.

Vriesea cacuminis is an endemic species from Ibitipoca State Park, Minas Gerais State, Brazil, (mention it came from type-locality) where it grows on rocks outcrops in the domain of the Campos Rupestres (personal communication with Elton Leme). As far as I know it is only recently introduced in some collections in Europe, and our plant was collected in the type locality. Maybe not a very spectacular species concerning the rumbling inflorescence, but a very nice plant with a small compact rosette of stiffy-sub-coriaceous erect leaves. Perhaps it could be useful for crossings.

Using Smith & Downs (1977), it is difficult to key it out to the right name and you will end up between the very variable 176. *Vriesia friburgensis* and 177. *V. billbergioides*. The line (subkey III) *to Vriesea cacuminis* ends dead at couplet 47 on a choice between:

- Sepals 24 mm long, about equalling the oblong-elliptic floral bracts…
- Sepals not over 18 mm long, much exceeding the floral bracts…

Our specimen has Sepals of 24 mm long, but much exceeding the floral bracts!

1 University Utrecht Botanic Gardens, email e.j.Gouda@bio.uu.nl

The description given by Smith is only a few lines, but the line drawing of the outline of the inflorescence and 3 leaf-apexes is striking. A description of the plants grown at the Utrecht Botanic Gardens can be found below.

Vriesea cacuminis L. B. Sm. *Phytologia 16*: 79, pl. 1, figs. 25, 26. 1968.

Plant acaulescent, flowering ca. 40 cm tall, dense, with many leaves, forming a subtubulat to a funnelform rosette, lustrous-green. ***Leaves*** thin coriaceous, ca. 26 cm long, much shorter than the inflorescence; *sheaths* ample, merging into the blade, ovate, not inflated, ca. 13 x 8.5 cm , with membranaceous margins, subdensely lepidote to densely lepidote at base on both sides, small with appressed, pale-brown scales, concolorous with the blade, but becoming paler toward base and slightly purple-red inside; *blades* erect, strongly channeled, ligulate, ca. 14 x 5.5 cm, broadly rounded and revolute, apiculate, minutely lepidote, on both sides, transparent scales.

Figure 2. Vriesea cacuminis, detail.

Inflorescence once-branched, of ca. 9 branches, including peduncle ca. 50 cm long, subdense, sub fertile part ellipsoid, glabrous; *peduncle* stout, wholly covered by bracts or only partly exposed toward apex, strongly curved at apex, 30-35 cm long, 6-8 mm in diameter at base, glabrous, pale yellowish-green; *peduncle-bracts* erect, densely imbricate, coriaceous, upper part of the sheath inflated, apiculate, about twice as long as the internodes, glabrous, green with yellowish base; *axis* completely hidden by bracts and the branches, stout, curved, obtuse angled, glabrous, green; *primary-bracts*

erect, imbricate, chartaceous, apiculate, exceeding the stipe of the branches, yellow tinged red at base; *stipes* naked or the lower with one sterile bract, suberect or slightly curving, stout, ca. 2 cm long; *spikes* suberect to slightly spreading, subdensely to laxly and distichously 3- to 5-flowered, including stipe 7-8 cm long, 3 cm wide, fertile throughout ending in a small rudiment of the protruding rachis; *rachis* for most part exposed, slender, flexuous, excavate, tinged red near the bracts; *floral-bracts* suberect to the internode below it, not imbricate because of the flexuous rachis, coriaceous, even, bluntly carinate toward the apex, ovate to sub orbicular, apiculate, nearly straight, ca. 1.8 x 1.5 cm, about twice as long as the internodes, about half as long as the sepals, with thin margins, glabrous outside, yellowish and reddish at base. ***Flowers*** suberect to divergent, shortly pedicellate; *pedicels* obconic 5 mm long; *sepals* coriaceous to fleshy at base, even, symmetrical, narrowly obovate, rounded, nearly straight, ca. 2.4 x 0.8 cm, posterior and anterior ones all alike and ecarinate, evenly shortly connate, glabrous, yellow in upper half; *petals* fleshy, tubular-erect to slightly divergent at apex, ligulate, rounded or minutely emarginate, ca. 3.8 x 0.9 cm, evenly shortly connate, ca. for 5 mm fused at base, orange-yellow, ligules at the petal-claw present, entire, ovate and attached well above the base; *stamens* emerging from the throat of the corolla; *filaments* fleshy and complanate, ca. 3.2 cm long; *anthers* dorsifixed, linear, ca. 5 mm long; *pistil* exceeding the stamens; *ovary* ovoid, ca. 5 mm long, contracted into the style; *style* elongate, many times as long as the ovary.

Radial Reds Revisited

Geoff Lawn.

Since I wrote about Radial Reds in 1986 considerably more cultivars have been bred or developed among this select group admired for their beautiful red-lined foliage. Termed botanically as "vertical cyanic pin stripes", these longitudinal red lines have anthocyanin-laden epidermal cells extending from their leaf bases for various distances along the blades. Both upper and lower leaf surfaces are usually involved, as evident in *Tillandsia cyanea* and *Guzmania lingulata*, two species not normally considered striped. The purpose of these Pin stripes is not fully understood but it is believed to assist photosynthesis and possibly carbon gain.

Grown from imported seed, *Aechmea* 'Kiwi' is a New Zealand-raised form of *A. fasciata* with red striations, silver cross-bands and a paler pink inflorescence than usual. Probably the mutation evolved from a seedling meant to become var. *purpurea*. *Aechmea* 'Electrica Redline' is a tissue cultured mutant with red-lined foliage reverse from *A.* 'Electrica'. Unfortunately this sport is prone to distorted inflorescences. A sport from *A.* 'Foster's Favorite' is 'Red Ribbon', a rather soft, mossy green rosette and striated on the reverse, together with the pendant spike of ruby berries. *Cryptanthus* 'Ruby' is an attractive small star-like flat rosette with double crimson stripes per leaf and a central cluster of white flowers.

Aechmea 'Kiwi,' photo by Derek Butcher

Basic green comes alive when marked with red, and numerous similarly thin-lined neoregelia hybrids abound; each with subtle differences emanating possibly from only two or three common ancestors, namely *Neoregelia* 'Rosea Striata', *N. carolinae* and *N.* "*carolinae* hybrid" (unreg). *N.* 'Rosea Striata', renamed in the BSI's Bromeliad Cultivar Registry, is an enigma and was never defined (D.Butcher, pers. comm.). It was often listed as a form of *N. carolinae*, although one particular clone was identified as *N. farinosa* by the Bromeliad Identification Centre. Thus there is confusion amongst growers and uncertainty whether quoted parents in relevant crosses are accurate. *N.* 'Rosea Striata' may be an open rosette of

few but strap-like leaves lineated red with a pinkish red centre or more a smaller multi leaf-layered and compact rosette like *N. meyendorffii.*

◀ *Neoregelia* 'Red Lines' an unregistered cultivar of *N. carolineae.*

▼ *Neoregelia* 'Nina Rehak.'

Photos by Derek Butcher.

According to the Bromeliad Cultivar Registry, progeny bred from *N.* 'Rosea Striata' include *N.* 'Boldstreak', *N.* 'Eleganza', *N.* 'Electric Red', *N.* 'Royal Salute', *N.* 'Stardom', *N.* 'Sultan', *N.* 'Sultana', *N.* 'Sundowner', *N.* 'Sundowner Delight', *N.* 'Sundowner Queen', *N.* 'Triumph' and *N.* With Love'. Their cup colours range from mid-pink to

dark red and the shiny leaves are finely spined. Few are farinose (dusty leaf surface or leaf bracts) to any degree but one noted exception is *N.* 'Bird Rock' (unreg).

Neoregelia 'Allan Freeman'. Photo by Allan Freeman

Medium-sized, as are most cultivars featured here, *Neoregelia* 'Burbank' from Queensland's Burbank Nursery is considered a *N. carolinae* cultivar. Its wire-thin red lines upon bronze green leaves are complemented by scarlet scape bracts. *N.* 'Burbank' is parent to 'Fireworks', 'Jet Age' and 'Red Romance'. More complex crosses in this mould with known parentage include *N.* 'Champagne Romance', *N.* "Grace Darling' and *N.* 'September Eleven'. Crosses using *N. concentrica* created broader, leathery-leaved rosettes with some purple barring, fine lines and purplish red nests, such as *N.* 'Rob Roy', *N.* 'Rosa Delight', *N.* 'Rosa Deluxe' and *N.* 'Rosa Yvonne'. Red flecking and pink or red "fingernails" are extra features bred into some of these hybrids, although excellent culture and climate invariably show their full potential also. Others with unidentified *N. carolinae* cultivars or hybrids in their background which produce fine red lines include *N.* 'Jimmy Scott', *N.* 'Mary's Favorite', *N.* 'Nina Rehak' and *N.* 'Pin stripe' (unreg), all with cup colour. Out-crossing can produce unusual combinations as with *N.* 'Allan Freeman' ('Grace Darling' x 'Princess Grace') sporting red stripes overlaying a candy pink base colour.

A third group of neoregelias produce irregular random red to chocolate stripes of varying widths. *Neoregelia carolinae* produced a striking sport in its offspring, *N.* 'Peppermint Stick', a chocolate-striped rosette with carmine bracts. A frustrating, unstable plant for some growers, new pups often revert to all-green. Its sibling *N.* 'Peppermint Candy' is similar. *N.* 'Vulkan' x *carolinae* hybrid (unreg) , a dark sport of *N.* 'Amazing Grace, is more consistently wide-striped reddish-brown.

Aechmea 'Red Ribbon. Photo by Herb Plever. ▶

Neoregelia. 'Maya' ('Catherine Wilson' x *carolinae*) is a lime green rosette with central reddish brown stripes in medio-picta form, but no flushed centre. Raised by Shelldance Nursery from seed supplied by the BSI Seedbank is the unusual *N.* 'Shelldance' (reputedly *N.* 'Fairy Paint' F2) with wavy, bronze green tapering leaves edged brick red in strong light.

▲ *Neoregelia* 'Maya,' shown by Bob Stevens at the Bromeliad Society of Central Florida Mothers Day Show, 2005. Photo by Mike Andreas.

A race apart, variegates with albino tissues generally produce pink pigment overlaying the white rather than red, a seasonal colouring unless one lives in the tropics or sub-tropics where these stripes are more intense and permanent. However culture, particularly the duration and intensity of available light, plays a key part. *Aechmea* 'Foster's Favorite Favorite' is fairly reliable in temperate climates, especially the blackish-wine leaf Australian clone with the rosy-red margins. *A.* 'Purple Heart,' a variegated sport of *A.*'Mirlo', is a sure winner with red lines in medio-picta form, running along the burgundy leaves.

Many neoregelia variegates are capable of producing red stripes, more so those which have a dark foliage base colour. The celebrated *Neoregelia* 'Perfection' is another stunning bromeliad with brilliant central cherry red lengthwise bands overlaying the plum foliage in bright light. *N.* 'Kahala Dawn', *N.* 'Pemiento', *N.* 'Red Pride' and

N. 'Zoe' are similarly marked. *N.* 'Mixed Emotions' suffuses blood red all over the obverse, contrasting with irregular cream stripes beneath. *Werauhia* 'Edna Shiigi' is a median scarlet-streaked variegate which arose as a chance seedling from normally solid maroon *W. sanguinolenta.*

▼ *Neoregelia* 'Maya,' photographed by Herb Plever (New York).

At their flowering peak, red-lined foliage bromeliads are a joy to behold, particularly the neoregelias whose glowing hearts and out-spreading foliage rays of colour remind one of a summer sunrise. Growers can count on a few of these striped types to light up any bromeliad display or collection and their inflorescences are an extra bonus. Certainly a good specimen gives the impression of a red plant sporting green stripes and vice versa, a remarkable phenomenon in a predominantly green plant world.

References

Benzing, D. H. (1980). The Biology of the Bromeliads. Eureka, California, Mad River Press.

Lawn, G. (1986). "Radial Reds." Bromeliad Newsletter, Bromeliad Society of New South Wales(March, 2006).

Luther, H. (1988). "Misnamed Bromeliads, 1. Neoregelia carolinae "var. roseostriata"." J. Brom. Soc. 35(5): 209.

Some Experiences with Growing Tillandsias in New Zealand

Brian Chudleigh[1]

When my wife began buying tillandsias 7 or 8 years ago I thought "what a waste, spending good money on those boring plants". Those words have come back to haunt me, constantly! Plants have always interested me; for decades it was cacti and succulents and my interest in these plants was the prime cause of us abandoning Australia, where I was born, and moving to New Zealand in 1965. In those days there was no plant quarantine in New Zealand and almost no restrictions on what species of cacti you could import. This was paradise for us, but that was eventually to change! Ten years later plant quarantine came in to force, the resultant wrangling and costs put us off further importing.

What a waste, spending good money on those boring plants....

Our original tiny greenhouse, just 2.1 x 2.4 metres, overflowed with bromeliads in a matter of months. Tillandsias were not the first arrivals from the bromeliad family in to our garden, just an ever increasing slice of what was to become a flood of plants of numerous genera. Next came a lean-to greenhouse spread right across the rear of our rather large garage. Like the first structure, it was timber framed with 50% shade cloth tacked around the walls and the roof was of "Twinwall" sheeting, a double skinned clear plastic material. Not cheap, but it did help restrict the entry of insect and rodent pests. When this became filled to overflowing we bought a kitset aluminium and steel framed greenhouse with horticultural film stretched over it. We were told by an "experienced" grower that you cannot grow good bromeliads in plastic covered greenhouse, "They will not get sufficient air flow". "Rubbish", I thought. I made up some framing from aluminium extrusions and draped 50% shade cloth over it as the heat build-up was enormous, even with a door at each end plus a large roof vent. Conditions have proved perfect for all manner of bromeliads including a vast selection of tillandsias of all types—from the very soft, green-leafed *Tillandsia multicaulis* to the fluffy white *T. tectorum* and warmth and humidity-loving *T. dyeriana*.

The climate here in Katikati is probably vastly different from that where most readers will live. A typical very hot summer day will see temperatures reaching the high 20s °C. I cannot remember it ever exceeding 30 °C. Winters are mild and usually wet. Frosts of up to 2 or 3 degrees can occur on and off from May until well into September, with occasional frost of extra severity. Generally, though, our winters have become noticeably milder over the last 15 years. I have read that certain tillandsias, like *Tillandsia xerographica*, will not tolerate temperatures below 10 °C. Our plants endured temperatures around freezing on a number of occasions with no problems the first

1 35 Levley Lane, Katikati, New Zealand 3063. email b.chudleigh@xtra.co.nz

year or two, but later I began tacking frost cloth around the walls of wooden framed greenhouses and then began to install a small electric fan heater in each of the 2 largest greenhouses, more to protect some of the very cold sensitive aechmeas than for the sake of tillandsias, many of which have survived in the smallest greenhouse, minus any heating, without damage for as long as we have grown bromeliads. The heaters are run at their lowest setting, mainly to circulate air and protect plants from freezing. Even with heaters running, temperatures in both greenhouses often drop to around 3 °C on very cold nights.

The stunning natural hybrid *Tillandsia* X *correalei* combining the beauty of *T. hondurensis* with the size of its other parent, possibly, *T. fasciculata.*

We grow epiphytic tillandsias glued to pieces of driftwood. The wood of choice is Pohutukawa, *Metrosideros excelsa*. It is rock-hard and impervious to water. Softer woods absorb water and eventually become green from algae. The driftwood with plant is then attached by a wire hook to treefern logs which we have sunk in the ground or from the heavy galvanised steel mesh shelves we installed in the all plastic greenhouse. The treefern logs make an ideal support for the plants [photograph on back cover - Ed]. Silver-white, hard leafed species which require high light and heat levels are fixed at the tops of the logs, softer, green-leafed epiphytic species requiring low light and heat do very well fixed low down.

Larger soft, green-leafed plants like *Tillandsia multicaulis*, *T. suei, T. guatemalensis* and *T.* 'Sentry' we grow potted and keep them on the lowest level in the greenhouses where temperatures are lowest on hot days. We tend to think of tillandsias as being small plants but there are a few that are absolute giants. I have a *T. australis* which is more than a match for *Alcantarea imperialis* in size; a massive meter plus in diameter. These large, green leafed varieties may be boring-looking plants to be hidden away in the back of the collection for much of their lives but when flowering they become highlights of the collection. Most have extremely long-lasting and brightly coloured flower heads. The only plant to get really special treatment is *T. dyeriana.* I thought it was overkill but last winter Cushla brought our little plant into our house every night for 3 or 4 months where it spent the nights in a cupboard built around our hot water cylinder. I never took the temperature but I doubt if the temperature inside the cupboard ever drops below 20 degrees C. The plant thrived and we were amazed how rapidly it came in to flower. It certainly likes the greenhouse now its home. It arrived as a moth-eaten plant with tatty, plain green leaves. The one new offset it has produced is still bright,

glossy green but it is well sprinkled with brown spots.

When the weather is warm enough, usually from October on, I begin watering the tillandsias every 2 or 3 days. Both big greenhouses heat up rapidly on sunny days and it is not unusual for daytime temperatures to reach mid 20s C even in winter. From November on, greenhouse temperatures can climb to mid 30s C or more, especially high up, close to the roof where it can go to the wrong side of 40 °C. I have had the flower spikes of tillandsias cooked by the heat on several occasions when they have reached too close to the roof. Once the really warm days begin watering is done every couple of days, usually early in the morning so the plants are dried out by sundown. I begin regular weekly feeding of the Tillandsias with a half strength, low nitrogen fertilizer from October through until the weather cools in April. I do not keep our tillandsias completely dry through the winter as is often recommended: our greenhouses can be quite warm on sunny winter days, and many tillandsias continue to grow and flower through the coldest months. I will also continue to fertilize late and start early in seasons when weather dictates.

Some tillandsias, like *Tillandsia ionantha, T. stricta*, and *T.tenuifolia* look superb when grown as huge clumps. Bunches of these make a spectacular sight producing masses of flowers. Others, like *T. capitata, T. chiapensis*, and *T.* x *correlii* can look a real mess a year or so after flowering, even when the dead flower heads are removed. These latter ones I like to grow as single heads. I remove offsets when about one third the size of the mother plant. First generation offsets are often only produced in ones or twos and if left to grow large before removal a 2nd generation of offsets will usually be very weak or the mother plant too weak to produce any more offspring. By removing the first offsets while the mother plant is still vigorous I find the she can produce a 2nd generation 3, 4 or even 5 vigorous offsets.

Grass pups rooting in the cup of Tillandsia viridiflora [after removal from the base-Ed]

A number of tillandsias produce tiny grass pups around the base which can be difficult to grow on to specimen plants. We find that the pups can be successfully established after removal by dropping them in to the water filled cups of large bromeliads. Once they have developed a decent roost system they can be potted up and grown-on quite successfully. We do not have much problem here with insect pests. The main

▲ The local Tree Weta, a 5cm long foliage muncher with a taste for tillandsias.

been described and a wealth of hybrids are coming in to cultivation, many of these quite superb. Nature plays her own tricks, the stunning natural hybrid *Tillandsia* x *correalii* combining the beauty of *T. hondurensis* with the size of its other possible parent, *T. fasciculata*. *Tillandsia ionantha* in its multitude of forms really caught my wife's interest, and we now have around 80 of them scattered around our collection. *Tillandsia andrieuxii* and T. *erubescens* with their bright red or pink hanging flower heads are both superb. The latter is highly variable, some with flower heads only 7-8cm long, others dangling down for 25cm. The bright green flowers of *T. erubescens* and deep purple of *T. andrieuxii* add further charm to their appearance. *Tillandsia hondurensis* is compact and attractive even without its flowers. *Tillandsia bulbosa* with its smooth, glossy, and twisted green leaves says it likes a lot more shade than other bulbous species. A dull plant it may be, but once it produces its nuisance is the local Tree Weta, a 5cm long foliage muncher with a taste for tillandsias. It is especially partial to the flowers and on a number of occasions eagerly anticipated flowering on new Tillandsias has been nipped in the bud so-to-speak when one of these nocturnal browsers has beaten us to it. I built all our greenhouses in a manner which I thought would totally exclude an insect half the size of these pests but they regularly turn up in all our greenhouses. We regularly patrol the greenhouses at night armed with a torch trying to limit the damage they cause.

It is hard to recommend any one plant or even small group of plants as being "must have" tillandsias, there are just too many. About 700 species have

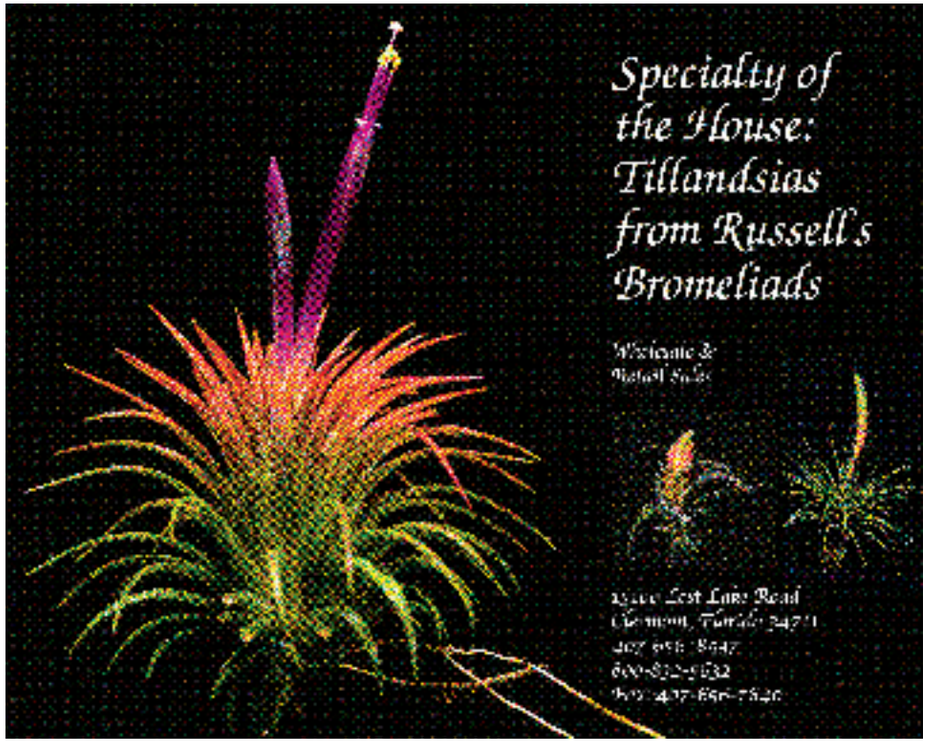
▼ *Tillandsia erubescens*

Tillandsia ionantha imported from Guatemala as "Rubra'

▶

brilliant red flower head it becomes a focal point in our greenhouse. *Tillandsia seleriana* is another bulbous species, much larger than *T. bulbosa* with leaves pointing upwards and curling inwards. The whole plant has a velvety appearance and in strong light flushes reddish at flowering. *Tillandsia funckiana* is another inauspicious plant until it flowers: thin trailing stems with a dense covering of fine glaucous leaves, it produces large candle-like flowers of the brightest scarlet. *Tillandsia plumosa* is a cute little plant, much like a mini *T. tectorum* with thin leaves covered in very long, feathery trichomes. The tiny, tubular green flowers protrude from the tip of an attractive frosty-red flower scape. In years past *T. suei* was regularly sold in New Zealand as *T. parryi*—a large, very soft leafed plant it needs good light but not midday sun to develop good colour to the flower scape. Too often we saw plants in full flower with the scape little brighter in colour than the leaves. We see nice plants of a *T. meridonalis* x *stricta* hybrid in some New Zealand collections. It combines the best characteristics of both its parents and is a good plant to grow on into a large cluster. *Tillandsia stricta* is also one of the best:: sometimes quite silvery and hard-leafed, or it can be soft and green, while some forms turn quite purplish and dark when grown in very high light conditions.

▼ *Tillandsia seleriana*



Bromeliad Society International Membership Rates

United States Membership (includes bulk mail rate—first class add $10 per year)

	1 Year	2 Years	3 Years
Individual	$30	$58	$85
Dual	$35	$68	$100
Society	$30	$58	$85
Institution	$30	$58	$85
Commercial	$60		
Fellowship	$45		
1st class mail	+$10	+$20	+$30

International Membership (includes Airmail delivery)

	1 Year	2 Years	3 Years
Individual	$40	$78	$115
Dual	$45	$88	$130
Society	$40	$78	$115
Institution	$40	$78	$115
Commercial	$70		
Fellowship	$55		

Life Membership (*one time only fee*) $800.

Payment by check or money order payable to The Bromeliad Society International, USA members US Banks and US funds only. International members US funds only; US domestic checks, international money order, or foreign bank cheques. Credit card payments and sign-ups/renewals may be made online at www.bsi.org. Please send mail transactions to: Dan Kinnard, BSI Membership Secretary, 6901 Kellyn Ln, Vista, CA 92084-1243, USA.

Did You Know?

Joyce Brehm, BSI President

The Cultivar Registration Chair, Derek Butcher, accepts applications and reports new cultivars.

Derek accepts new cultivar registrations by mail to 25 Crace Road, Fulham 5024, South Australia, Australia, and online at the Society website www.bsi.org. Any new cultivar you make you should register so that we can keep the records clean and clear. All new registered hybrids must include a picture of the plant, fully grown and if possible, blooming.

Derek works with Michael Andreas, Florida Director of the Bromeliad Society International, to maintain the registry on the BSI web site. Michael also maintains this information on the original data base contained on the Florida Council of Bromeliad Societies (FCBS) web site. You may link to the hybrid (cultivar) and species descriptions, and pictures (where available) from either site. The site is searchable and you should be able to find cultivars, including hybrids, by name.

If you have questions as to how to register a new hybrid or search the web site contact Mr. Butcher at cultivar@bsi.org or the postal mail address above and he can direct you. Remember that we are international so anyone can apply. The only restriction is that Cultivar names must be in Anglicised words.'

Joyce W. Lorenz 1918 – 2006

Joyce W. Shaw was born in Lawrence, Michigan on May 6, 1918. Her father was an educator being a teacher, principal and then Superintendent of the schools in Alma, Michigan. Her mother was a housewife who devoted her time to raising Joyce and her sister. Joyce played the cello and participated in the local high school symphony orchestra. Her cello was a special small instrument made just for her since she was only 4'11" feet high. Joyce graduated from Grand Rapids Junior College in Michigan. She specialized in learning secretarial work, but she did take a pre-med course in college because she wanted to be a medical secretary and assistant. Joyce worked many years for a doctor, and then switched over to becoming a secretary for a lawyer.

Joyce and I met over a cup of coffee, November 1941 at a USO in Klamazoo. We were married after the war on January 13, 1946. We had two children David and Carol and one grandson, Sean Martin. Joyce worked occasionally as a secretary after the children were raised. Joyce was also active in several charitable organizations dealing with mental health and persons with disabilities. However, Joyce was not a plant person. She was interested in seeing beautiful gardens and enjoyed the beauty of plants and plant arrangements. Whenever I attended various plant meetings and participated in plant shows and conventions, Joyce almost always went with me contributing what she could inh the way of helping such as writing labels, serving helpers coffee, baking cookies for the workers etc. Contact with all the plant people and association with plants at home every day – some of it must have rubbed off onto Joyce, because she took plant classes at the Huntington Botanical Garden and Library and became a Garden Docent. She also enjoyed cooking and entertaining at home.

When the group decided to form the Bromeliad Society on September 17, 1950, Joyce went with me to the organizational meeting at the Overtons' residence in Glendale, California. She was one of the 21 people present at the meeting and became a founder and charter member of the Bromeliad Society. She was delighted when Mulford Foster made his surprise appearance at the organizational meeting. She was later honored by being made a Life Member of the Society. She was Treasurer of the Bromeliad Society from 1978 to 1982.

If they are growing bromeliads in the heavenly paradise, I am sure that Joyce is telling them how I am growing mine here on earth!

Elmer J. Lorenz

Book review

Derek Butcher, Cultivar Registrar

Tillandsia del Norte de Chile y del Extremo Sur de Peru, Raquel Pinto, photographs by Arturo Kirberg, 2005, 22cm, 136 pages, soft cover, Spanish, I.S.B.N.956-299-730-8. Cost US $50 plus postage US $20. Contact Raquel Pinto, Dalmacia 3251, Iquique, Chile or raquelpinto@vtr.net

If you are interested in seeing how Tillandsias can live under the harshest of conditions or seeing environment that nature sometimes provides, then this is the book for you. I come from the driest State (South Australia) in the driest Continent (except Antarctica!) and thought I knew about dry conditions, but we do not get sea-mist! This was an eye-opener with fantastic photographs by Arturo Kirberg – over 200 of them! 14 maps and charts help you forget that it is written in Spanish. As can be expected, only 9 species of Tillandsia survive in this area and all know how to fight for survival. Under Tillandsia usneoides I was surprised to find 'Petalos amarillos' instead of 'Petalos verde' and I had discovered at least one place where the cultivar 'Spanish Gold' can be found.

There are chapters on climate, associated fauna and flora, trichomes, and GPS references.

But what really epitomises plant survival is the photograph on page 41. ▼

Photograph by Raquel Pinto near the road Tacna Moquegua looking to theeast. At the farthest hills in the distance (at right of the photo) are the tillandsia lomas of Lomas Arrojadero, South of Perú.

Renate Ehlers: New International Director

We welcome our new International Director, Renate Ehlers, who has been elected an International Director of the BSI for the period 2006-2008.

Renate is recognized internationally as a specialist in the study of tillandsia species, and lists her research interests as the systematic biology of Tillandsia and investigation of the habitats of bromeliads, especially tillandsias. For 30 years she has travelled, in former years with her late husband Klaus, to many countries in South-America, like Brazil, Bolivia, Peru, Ecuador, Guatemala and Mexico. She has visited Mexico about 20 times: the last trip was in February 2006, going to Veracruz, Oaxaca and Guerrero with 4 friends, who are also very much interested in botany and bromeliads. In the photograph[1] above, Renate is in Mexico in 2005 with her friends Juergen and Uli Lautner, Manfred Kretz and *Tillandsia beutelspacherii*.

Renate has been a life member of the BSI for more than 20 years, has attended four World Conferences and was the keynote speaker at the Australian Conference in Adelaide, 1995. She has published numerous new species, and contributed many articles to the *Journal of The Bromeliad Society* and *Die Bromelie*, the Journal of Deutsche Bromelien-Gesellschaft e.V. (the German Bromeliad Society.)

Tillandsia ehlersiana W. Rauh was named for Renate and Klaus Ehlers who collected the plant in Mexico in 1983. See Werner Rauh, "*Tillandsia ehlersiana*: a remarkable new species from Chiapas, Mexico" in the BSI Journal 34(4) July-August 1984.

1 The original color photograph has a mass of very bright yellow flowers in the background that overpower the foreground subjects, hence the reduction to monochrome.

Mother's Day Bromeliad Show

Orlando Florida, May 2006

Carolyn Schoenau, Affiliated Shows Chair. Photos by Michael Andreas

The show was sponsored by the Bromeliad Society of Central Florida. There were 17 exhibitors, placing 79 entries in the horticulture sections and 5 in the artistic. Ribbons awarded were 44 award of merirt 34 blue, and 6 red.

Best of Show, Artistic.

Won by John Boardman of St. Cloud, Florida, with *Bilbergia* 'Hallelujah' in a burgundy ceramic pot with black gravel top-dressing.

Best of Show, Horticulture

Won by John Boardman with *Neoregelia* 'Linda Cathcart'

RIVER RIDGE BROMELIAD SOCIETY SHOW & SALE

May 20-21, 2006

Carol Wolfe

Tom Wolfe, my husband, had been invited to Judge the River Ridge Bromeliad Society's show the weekend of May 20 & 21, 2006. We were also invited to be a bromeliad vendor so we brought a van load of bromeliads from Florida. Driving into New Orleans on May 19, 2006 was a sight to behold as we began to see downed trees, power lines, houses, shrubs, and scattered debris welcoming us to the city. Similar to a war zone, windows had been blown out of homes and buildings, roofs and shingles missing, piles of splintered wood and trash, while white FEMA trailers parked neatly every few feet on vacant lots, in front of occupied and abandoned houses and apartment buildings. Complete shopping centers were abandoned and car lots were empty. In one abandoned shopping center, the Sam's Club sign had withstood the storm but the store had not. The metal beams with remnants of insulations blowing in the wind were the only remaining evidence of the store. Boats were left on the side of the interstate when the storm surge receded. Appliances and floating debris, above the road during the storm, has settled comfortably along the roadside.

seeing the devastation firsthand made us realize what a catastrophic event had occurred.

Although we had watched the storm on TV from day one and prayed for the safety of our friends, seeing the devastation firsthand made us realize what a catastrophic event had occurred. According to news reports, Katrina was America's deadliest natural disaster since the Florida hurricane of 1928, which killed 2,500 people in the Everglades. Katrina killed more than 1200 people and estimated 400,000 plus people were displaced from their homes. The effect in Florida of higher gas prices and triple premiums for homeowners insurance was a drop in the bucket compared to the magnitude of what Katrina's victims went through.

As we rode along the interstate, the question in our mind, "Could they really be having a bromeliad show so soon after the storm?" As we arrived at the mall, Show Chairman, Bryan Windham waved us to the loading dock and helped us unload. The membership sales tables had some sale plants but the rows of tables for the show plants, covered with their white tablecloths, were still sitting bare.

As the day progressed, many people told us their stories of flight from the traffic jammed city, their battle to get back home afterwards, and the unbelievable living conditions many still find themselves in months after the storm. This was just the beginning of a weekend of hearing victims' stories of surviving this ferocious storm.

Best of Show, *Orthophytum navioides* exhibited by Luana Schexnayder

Around 4:00 PM, I began to notice some bromeliads on the show tables and by the time the mall closed at 9:00 PM, the tables were filling up with beautifully colored bromeliads. I was intrigued with seeing the members bringing in their best bromeliads to share with the public knowing what a sacrifice it must be in light of all they had been through this last year.

It was a small show as far as number of entries but the quality of the plants was excellent. On Saturday morning, the BSI Bromeliad Judges begin arriving and after coffee and a continental breakfast, divided into teams and went to work judging these plants. As the morning passed and I observed the Judges huddled over the bromeliads, writing notes, having discussions, and scrutinizing the plants. How do you judge bromeliads that survived one of the worst storms in history? Could the Judges possibly know what these bromeliads had been through? Did the scraps on the leaves come from hours of beating, relentless winds during the storm? Or the small dark splotches because the growers were away for weeks and no human being to give a drink of water? Or weeks without electricity to run a cool fan? Or was it from too much water – in the house, on floors, on walls, in cars, or wet roots for weeks?

On Sunday afternoon, as I browsed through the show for one last look before closing, it occurred to me that each one of these plants have a story – after all they rode out one of the worst storms in history, abandoned and left for weeks with no care, if only….bromeliads could talk…stories of the furious wind, storm surges, broken dykes, a city changed forever...what a story they might tell us! But some of them survived and here they are in all their glory an impressive array of beauty, displayed and ready to dazzle the public, to be judged & discussed, photographed, adored, touched, and admired!

Congratulations to the Show Chairman and members of the River Ridge Bromeliad Society for a great show! "You and your bromeliads" are real survivors!

This article is dedicated to the BSI members who have suffered much from the devastation of Katrina and Rita, yet strong in courage and faith, they rebuild their lives, homes, and bromeliad collections amidst challenging circumstances.

EVENTS CALENDAR

Australia

October 14-15, 2006. Bromeliad Society of Australia Spring Show. Venue: Burwood R.S.L. Club, Shaftesbury Road, Burwood NSW.

October 28-29, 2006. Bromeliad Society of New South Wales Spring Show. Wellbank Street, Concord.

November 11-12, 2006 Bromeliad Society of Queensland 2006 Bromeliad Bonanza--combined show and sale of bromeliads. Venue: Mt Coot-tha (Brisbane) Botanic Gardens Auditorium. Saturday (11th) 8am-4pm Sunday (12th) 9am-3pm. Entry $3 adults, children under 14 free. Enquiries Bob Reilly (phone 07 3870 8029).

November 18-19, 2006 Hunter District Bromeliad Society Annual Show. Venue: WEsley Church, Beaumont Street, Hamilton.

June 2008, BSI World Conference in Cairns (Australia.) Enquiries to Lynn Hudson, 47 Boden Street, Edge Hill QLD 4870 or lynnie@ledanet.com.au

New Zealand

October 9-15, 2006. Bromeliad Society of New Zealand Spring display and plant sale. Venue: Milford Shopping Mall, Auckland. Contact Alan Cliffe (09) 479-1451.

United States

August 19-20 Seminole Bromeliad and Tropical Plant Society Fall tropical plant sales. Venue: Garden Club of Sanford 9:00 AM to 4:00 PM. Enquiries to Sudi Hipsley 352-728-5002 or Bud Martin 321-363-7351

September 8-10, 2006. Southwest Bromeliad Guild Show. Corpus Christi, Texas, USA.

September 16-17, 2006. Bromeliad Society of Houston Fall Bromeliad Sale. Houston Arboretum & Nature Center, 4501 Woodway, Houston, TX USA. Sep 16, 9-5, Sep 17, 11-4. For more information, contact bromeliadsocietyhouston.com or 713-858-3047.

September 30, 2006. Florida Council of Bromeliad Societies' Extravaganza, Sale, banquet, and rare plant auction. Miccousukee Resort and Gaming Convention Center, Miami, FL USA. For more information, contact www.fcbs.org.

The BSI thanks Kent's Bromeliads for their generous donation to the 2006 World Conference Scientific Seminars and donation of bromeliads for the San Diego Bromeliad Society auctions supporting the 2006 World Conference.