JOURNAL

OF THE BROMELIAD SOCIETY

Volume 57(3): 97-144 MAY-JUNE 2007

Journal of the Bromeliad Society

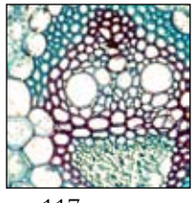
Volume 57(3): 97-144 May-June, 2007

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
Printed May, 2007 by Fidelity Press, Orlando, Florida, U.S.A.

 ISSN 0090-8738

CONTENTS


p. 110


p. 117


p. 140

100 **Affiliates News**

102 ***Puya pachyphylla* so. nov. (Bromeliaceae) and new synonyms of *Puya tuberosa* from Bolivia.** Roberto Vásquez Ch. & Pierre L. Ibisch

112 **A new rose-pink bracted Guzmania species from Northwestern Ecuador**. Harry Luther and Karen F. Norton.

115 **Leaf anatomy of the Mexican species of Greigia (Bromeliaceae).** Jacquelina Ceja Romero and Alicia Rojas Leal

119 ***Neoglaziovia variegata*: a fibre-producing Brazilian Bomeliad.** Cláudio Coelho de Paula and Elidio Armando Exposto Guarçoni

121 ***Aechmea sphaerocephala* Baker - a Species Threatened by Local Extinction.** Cláudio Coelho de Paula and Elidio Armando Exposto Guarçoni.

125 **Bromeliad Conservation Corner.** Pierre L. Ibisch and V. Porwollik.

127 **Protective Collection Program for Bromeliads.** Renate Ehlers.

131 **Proposed Conservation Code of Conduct for BSI Members.** Pierre L. Ibisch and V. Porwollik

133 **Lyman B. Smith - an Appreciation.** Herb Plever

135 **The XVII Bromeliad Conference in Caracas.**

136 **Wot's in the Conference Cauldron? WBC 2008.**

139 **Bromeliad Society of New Zealand Fiesta 2007.**

Covers

Front—Bromeliad Display by the Bromeliad Society of New Zealand, Fiesta 2007. Photograph by Birgit Rhode.

Back—Tillandsia display at the Munich Botanical Garden.

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. Authors are requested to delare any article they have already, or intend to, publish elsewhere.

Editorial Advisory Board: David H. Benzing, Gregory K. Brown, Jason Grant, Elton M.C. Leme, Thomas U. Lineham Jr., Harry E. Luther, Walter Till.

Editorial

In this Issue

Conservation Chair Pierre Ibisch has been reviewing the BSI policy on conservation, and in this issue our cultivation section has been replaced by an extended discussion and review of conservation matters. We will have to make up for this loss of the cultivation section in our next issue!

Sadly, the Alamo Bromeliad Society wound up late last year, and their members kindly voted to donate their remaining funds to the BSI color-fund. Their generosity paid for this issue's cover photo, and we thank them and wish them well.

Scientific

Roberto Vásquez Ch. & Pierre L. Ibisch introduce another new puya species from Bolivia, in an area they have been studying since 1994, and propose reducing a number of other populations in the area to synonymy with *Puya tuberosa*. Harry Luther and Karen Norton bring us another new guzmania in the *Guzmania squarrosa* group, this one *G. kareniae* from northwestern Ecuador.

A microscopic study by Jacquelina Ceja Romero and Alicia Rojas Leal examined leaf structure in three Mexican species of Greigia found little significant difference between them. The Greigia structure was very similar to studies of leaf structure in other *Bromelioidea* genera.

Cláudio Coelho de Paula and Elidio Armando Exposto Guarçoni report on an endemic fibre-producing bromeliad with some commercial potential in Brazil (p. 119) and also discuss habitat destruction thretening another Brazilian species, *Aechmea sphaerocephala*. Are these two sides of the "conservation coin"?

Conservation

Conservation Chair Pierre Iibisch and his assistant Vera Porwollik have put a lot of work into researching and developing a proposed strategy for the BSI to adopt, as well as a draft conservation code of conduct for us members. On page 125 they set out their overview of why a conservation strategy is needed, and suggest some directions it could take. Later, on page 131, they present a draft membership code. The problems of maintaing valuable species collections (*ex-situ conservation*) was discussed seriously by the German Bromeliad Society late last year, and on page 127 BSI International Director Renate Ehlers reports on that meeting, adding her own personal experiences and perspective as well. US member Phil Bunch adds another dimension to this discussion on page 130.

Francisco Oliva-Esteve advises that he has ceased using the Miami shipping company MBClatinamerican Inc., to distribute his book.
BROMELIAD SOCIETIES wishing to order , please do not order again through MBClatinamerica, order direct from Francisco (see ad. page 124)

We need interested members to let us know what they think about conservation, and whether they consider the proposals made in the Conservation Corner are appropriate and achievable for us. If not, why not, and your view on what would be preferable and how you recommend we go about it, please.

There is a draft Conservation Code of Conduct on pages 131-132. This code will be on the agenda at the BSI Board of Directors meeting on July 21 this year. The code may well be adopted by Directors at this meeting, or it might be held over pending further work: its up to you to tell us if you think there is room for improvement, or any points you think should not be adopted. If you do have anything to say, email us before July 14 so we can circulate your views to the directors prior to the meeting. email us at conservation@bsi.org or editor@bsi.org, mail to PO Box 57021 Mana, Porirua 5247, New Zealand, or fax +64 4239 9671.

General Interest

May 2007 is the tenth anniversary of Lyman B. Smith's death, and we bring you an abridged version of Herb Plever's appreciation first printed in the New York Bromeliad Society's *Bromeliana*. Dr Smith made an enormous contribution to bromeliad taxonomy, and this is reflected by 5 citations in this issue.

Two 2007 bromeliad shows are featured. The Bromeliad Conference in Caracas, Venezuela, attracted 2500 visitors, p. 135, and the New Zealand Society's Fiesta, p. 139, brings some nice photos to help compensate for the lost cultivation section this issue! Lynn Hudson updates plans for the WBC 2008 in Cairns, p.136 and has a bit of a skite about the local attractions (a "skite" is a loud proclamation of one's own wonderfulness).

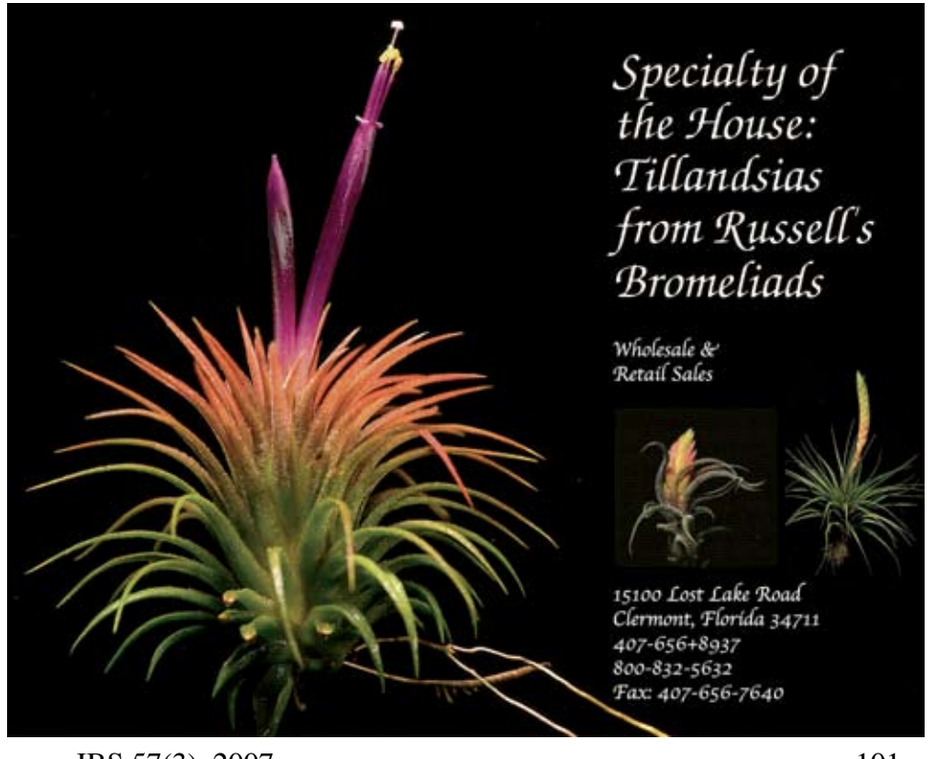
Affiliates News

The Gernman Bromeliad Society's journal *Die Bromelie* has a fresh new look this year with issue 2007(1), and an increased size to 52 pages. Also in Europe, the Dutch/Belgian Society is to be congratulated on organising the "First European Bromeliad Congress" this September at the Utrecht University Botanic Gardens (contact details on p.142).

During April the Greater New Orleans Bromeliad Society won 3 ribbons for their displays at a city-wide horticultural show. Their 2nd-placed educational exhibit, "Bromeliads... Exotic yet Easy," featured their members demonstrating mounting and separating techniques and discussing potting mixes. To entice the public, the exhibit was promoted by the slogan "Are you Smarter than a 5th grader or as knowledgable about Bromeliads as a senior citizen?"

Art Boe, longtome GNOBS member, demonstrates mounting techniques.

The Cryptanthus Society continues to publish their *Cryptanthus Society Journal*, a mine of information for those interested in the fascinating "earth stars." Well worth checking out if you have not done so already (contact details p. 114).



Puya pachyphylla sp. nov. (Bromeliaceae) and new synonyms of *Puya tuberosa* from Bolivia.

Roberto Vásquez Ch. & Pierre L. Ibisch

Abstract: *Puya pachyphylla* R. Vásquez & Ibisch is described and illustrated as a new species from Vallegrande, Santa Cruz, Bolivia. It differs significantly from *Puya tuberosa* Mez by the few, succulent, rigid and strongly spined leaves, and by the entire floral bracts, larger sepals and petals. The absence of significant morphological differences between *P. tuberosa*, *P. hromadnikii* Rauh, *P. vallo-grandensis* Rauh, *P. vallo-grandensis* var. *simplex* Rauh, *P. serranoensis* Rauh and *P. serranoensis* var. *brevispica* Rauh, and the fact that these species occur within the same geographical and ecological region, is the reason for our proposal to treat the latter as synonyms of *P. tuberosa*.

Figure 1. *Puya pachyphylla* R. Vásquez & Ibisch, sp. nov. in its habitat (type; photo R. Vásquez).

Resumen: Se describe e ilustra *Puya pachyphylla* R.Vásquez & Ibisch, una nueva especie de la provincia Vallegrande, Santa Cruz, Bolivia. Difiere claramente de Puya tuberosa Mez por sus hojas escasas en número, suculentas, rígidas y fuertemente armadas de espinas, brácteas florales enteras, y sus sépalos y pétalos más grandes. Por ausencia de diferencias morfológicas notables entre *P. tuberosa*, *P. Hromadnikii* Rauh, *P. vallo-grandensis* Rauh, *P. vallo-grandensis* var. *simplex* Rauh, *P. serranoensis* Rauh y *P. serranoensis* var. *brevispica* Rauh, y el hecho que estas especies cohabitan una misma área de distribución con condiciones ecológicas más o menos homogéneas, consideramos que las especies mencionadas son sinónimos de *Puya tuberosa*.

In the framework of our revision of the genus *Puya* in Bolivia we found that a puya collected by the first author, during a field trip to the provinces Florida, Vallegrande and Cordillera in the department of Santa Cruz, in October 2004, differed significantly from *Puya tuberosa* Mez and the other species of the corresponding complex proposed by Werner Rauh (1983,1985). According to Rauh, besides *P. tuberosa*, this complex would comprise *Puya minima* L.B. Sm., *P. hromadnikii* Rauh, *P. vallo-grandensis* Rauh, *P. serranoensis* Rauh (Rauh 1983), and the varieties *P. vallo-grandensis* var. *simplex* Rauh and *P. serranoensis* var. *brevispica* Rauh (Rauh 1985). Based on plants collected in the above mentioned provinces, among others, at the famous archaeological site of Samaipata

where we have been studying bromeliads since 1994, we now suggest some taxonomic changes, including the description of the following new species:

Puya pachyphylla R. Vásquez & Ibisch sp. nov. BOLIVIA. SANTA CRUZ: Prov. Vallegrande: 22 km from Vallegrande towards Santa Ana, 2,390 m, 18°34'S, 64°08'W, October 5, 2004, R. Vásquez 4938 (Holotype: LPB, Isotypes: USZ, herb. Vásquez). Fig. 1, 2, 3.

Puya pachyphylla R. Vásquez & Ibisch sp. nov. similis est *Puya tuberosa* Mez sed foliis paucis, suculentis, rigidis et valde spiniferis atque marginibus bractearum floralium integris et sepalis petalisque grandioribus differt.

Figure 2. Detail of inflorescence of *Puya pachyphylla* R. Vásquez & Ibisch, sp. nov. (type; photo R. Vásquez).

Plant flowering to 70 cm high. ***Stem*** bulbous, covered by the sheaths, 5 cm long, 4 cm in diameter. ***Leaves*** 6-9 in number, rigid, thick, persistent, rosulate, curved; ***sheaths*** broadly semilunate, to 2 cm high, 5 cm wide, light brown inside, dark castaneous, lustrous, glabrous outside, the upper margins serrate with short spines; ***blades*** oblong-triangular, long attenuate, filiform at the apex, 17-33 cm long, 2.5 cm wide at the base, dark green to purple red, gray lepidote on both surfaces, stronger beneath; margins serrate with strong, retrorse, black, 3-7 mm long spines, covered by white scales, 6-8 mm apart. ***Scape*** erect, 17-22 cm long, 5 mm in diameter, reddish purple, white lepidote; ***scape bracts*** erect, lanceolate, attenuate, sparsely white lepidote, to 45 mm long, 10 mm wide, dry chartaceous, longer than the internodes; margins entire. ***Inflorescence*** erect, to 30-45 cm long, 3-4 mm in diameter, purplish, white lepidote, simple or with 1-2 branches at the base; ***branches*** ascending in 45° angle in relation to the rachis, to 14-16 cm long; ***primary bracts*** lanceolate, attenuate, acuminate, to 30-37 mm long, 10 mm wide, chartaceous when dry, sparsely white lepidote; ***floral bracts*** lanceolate, chartaceous, long attenuate at the apex, to 12-25 mm long, 10 mm wide, much longer than the pedicels, the basal ones equaling the flowers, sparsely white lepidote outside. ***Pedicel*** gray, white lepidote, 4 mm long. ***Flowers*** ca. 120 in number, 25 mm long, spirally arranged, suberect to erect; ***sepals*** lanceolate, mucronate, pink, darker at the apex, densely white lepidote outside, 14 mm long, 5 mm wide; ***petals*** spathulate, white at the base, very dark purple in the exserted portion, 20 mm long, 9 mm wide, twisted together after anthesis; ***stamens*** included, to 13 mm long; ***filaments*** white; ***anthers*** 3 mm long, fixed above the middle, dark purple; ***pollen*** yellow. ***Ovary and style*** 9 mm long; ***stigma*** oblong, contorted,

dark purple. ***Capsule*** terminally dehiscent, conic, acute, dark brown, 10-12 mm long; ***seeds*** triangular, curved, 1.5-2.5 mm long, narrowly winged.

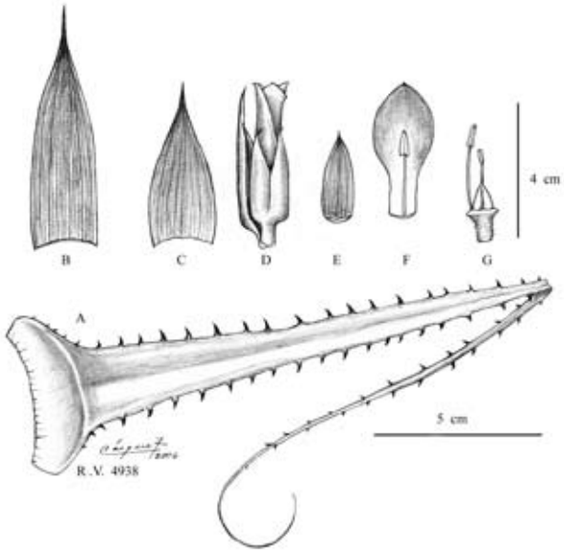


Figure 3. *Puya pachyphylla* R. Vásquez & Ibisch, sp. nov. A. leaf, B. primary bract, C. floral bract, D. flower, E. sepal, F petal, G.. gynoeceum and androeceum (drawing R. Vásquez 4938).

Puya pachyphylla, for its size and the superficially-resembling flowers, is similar to the taxa of the complex of *Puya tuberosa*, but it notably differs by the few, thick, rigid and strongly spined leaves as well as by other characters, such as the entire floral bracts, larger sepals and petals. The name is derived from the greek pachys = thick and phylla = leafed, referring to the thick and carnose leaves of this species.

Distribution, ecology and conservation: *Puya pachyphylla* has been exclusively recorded from higher elevations of the dry valleys which surround the village of Santa Ana in the province of Vallegrande, department of Santa Cruz, Bolivia. As with many other puyas, this species grows on stony and degraded summits and slopes covered by an open dry valley vegetation. It is sympatric with locally endemic cacti taxa such as *Lobivia* (*Echinopsis*) *arachnacantha* var. *vallegrandensis* Rausch and *Aylostera* (*Rebutia*) *ityacantha* Cárdenas. It has been found at an altitude of 2,300-2,400 m. Flowers were observed in October. National conservation value according to (Ibisch 1998): 32+8+8+4Ci = 52: vulnerable. The observed specimens were affected by rather severe grazing by sheep that could lead to reduced seed production.

Puya tuberosa Mez, in C. DC., Monogr. phan. 9: 483. 1896; emend. L.B. Sm., Contr. U.S. Natl. Herb. 29: 539. 1954.

P. bromadnikii Rauh, Trop. Subtrop. Pflanzenwelt 41: 5. 1983. Syn. nov.

P. vallo-grandensis Rauh, Trop. Subtrop. Pflanzenwelt 41: 9. 1983. Syn. nov.

P. vallo-grandensis var. *simplex* Rauh, Trop. Subtrop. Pflanzenwelt 52: 18, fig. 1985. Syn. nov.

P. serranoensis Rauh, Trop. Subtrop. Pflanzenwelt 41: 14. 1983. Syn. nov.

P. serranoensis var. *brevispica* Rauh, Trop. Subtrop. Pflanzenwelt 52: 15, fig. 1985. Syn. nov.

Table 1. Comparison of selected relevant characters of *Puya tuberosa*, *P. bromadnikii*, *P. vallo-grandensis* *P. serranoensis*, and *P. pachyphylla*.

	P. tuberosa (according to Mez 1896 and Smith & Downs 1974)	*P. bromadnikii* (according to Rauh 1983)	*P. vallo-grandensis* (according to Rauh 1983)	*P. serranoensis* (according to Rauh 1983)	*Puya pachyphylla*
Size	Flowering to <30 cm high	Flowering to 20-30 cm high	Flowering to 60 cm high	Flowering to 50 cm high	Flowering to <70 cm high
Leaves	15-20 (30)	Numerous	Numerous	Numerous	Only a few: 6-9
Sheaths	Suborbicular, dark maroon, forming a subglobose bulb, pale lepidote, 3 cm in diameter	Broadly ovate, 1 cm high, 2.5 cm wide, above white, castaneous below, margins entire	Rounded, 1.5 cm high, 2 cm wide, above white, castaneous below, at the tip white lepidote	Rounded, 2.5-3 cm high, 3-3.5 cm wide, above white, castaneous below	Broadly semilunate, to 2 cm high, 5 cm wide, light brown adaxially, dark castaneous, lustrous, glabrous abaxially, the margins serrate with short spines
Blades	Oblong (Mez: Narrowly) linear, flexuose, filiform, 15-18 cm long, x 2-3.5 mm wide, abaxially furfuraceous-lepidote, margins laxely serrulate with 1-2 mm long spines	Narrowly-triangular, attenuate, 13-25 cm long, 4-6 mm wide, abaxially white flocculose, adaxially sparsely lepidote, margins laxely serrulate with 2 mm long brownish spines	Acuminate, filiform, to 30 cm long, above sheath 5 mm wide, adaxially glabrous, abaxially densely covered with white scales, spines inconspicuous. greenish-white, 1 mm long	Acuminate, filiform, 30-60 cm long, above sheath 8-10(12) mm wide, brownish, adaxially glabrous, abaxially densely covered with white scales, spines minute	Oblong-triangular, long-attenuate, filiform at apex, 17-33 cm long, 25 mm wide, thick-succulent, dark green to purple red, gray lepidote on both surfaces, stronger beneath, margins with strong, retrorse, black, 5-7 mm long spines, covered by with white scales.
Scape	Erect, 5-20 cm long, thin, white flocculose (Mez: glabrous)	Erect, 10-15 cm long, 3 mm thick, white flocculose	Erect, 10-20 cm long, 5 mm thick, densely white flocculose	Erect, 30 cm long, 8 mm thick, white tomentose	Erect, to 17-22 cm long, white lepidote
Scape bracts	Ovate, attenuate long filiform blades; margins minutely serrate	Attenuate long filiform blades; margins minutely serrate	Attenuate long filiform blades; margins minutely serrate	Attenuate long filiform blades; sheaths minutely serrate	Lanceolate, attenuate; margins entire
Inflorescence	Simple or with few and short branches, to 7 cm long	Simple, to 10-15 cm long	Bipinnate, to 50 cm long, 7 cm wide	Bipinnate, to 30 cm long, 8 cm wide	30-45 cm long, simple or with 2 branches, to 14-16 cm long

Table 1. Continued from page 105.

	P. tuberosa (according to Mez 1896 and Smith & Downs 1974	*P. bromadnikii* (according to Rauh 1983)	*P. vallo-grandensis* (according to Rauh 1983)	P. serranoensis (according to Rauh 1983)	*Puya pachyphylla*
Primary bracts	Ovate, acuminate, 25-32 mm long; margins minutely serrate	-	Long-ovate, acuminate, to 30 mm long, margins minutely serrate	Ovate, acuminate	Lanceolate, attenuate, acuminate, to 30-37 mm long; margins entire
Floral bracts	Ovate, acuminate-mucronate, 8-18x4-8 mm, shorter than the flowers; margins minutely serrate	Long-ovate, long attenuate, 18x4 mm, shorter than the flowers, rose, margins minutely serrate	Ovate-elliptic, with a sharp green apex, margins minutely serrate	Ovate, acuminate-mucronate, 10-15x 5-6 mm, longer than the pedicels, margins irregularly serrate	Lanceolate, long attenuate towards the apex, 12-25x10 mm, equaling the flowers, margins entire
Flowers	To 20 mm long	To 20 mm long	To 22 mm long		To 25 mm long
Sepals	Lanceolate to oval-lanceolate, apex mucronate or rounded, 7-13 mm long	Long-triangular, acute (Note: according to photos they are rather mucronate), white flocculose	Long-ovate, apex mucronate, 5 mm long, 3 mm wide, bright red, abaxially densely white-lanate	Mucronate, 8-10 mm long, 5-6 mm wide, rose, flocculose	Oblong-lanceolate, mucronate, to 14x5 mm, densely white lepidote outside
Petals	Spathulate, acute or mucronate, dark green, bluish-green to dark purple at apex, 12-16 x 8-10 mm	Long-ovate, emerald-green, 15x 7 mm	Narrowly lanceolate, dark bottle-green, 15-17 mm long	Long-ovate, 16 mm long, metallic dark bluish-green, ±16 mm long	Spathulate, mucronate, very dark purple at the apex, 20x9 mm
Stamens	12 mm long; anthers 3-4 mm long, yellow; pollen yellow	Included	Included	Included	13 mm long, anthers 4 mm long, dark purple; pollen ?yellow
Locality	"Peruvia, loco ignoto"	Between Tarija and Sta. Anna (Tarija), 2,700 m	Between Loma Larga and Vallegrande (Santa Cruz), 2,000 m	Between Villa Serrano (Chuquisaca) and Río Grande (Santa Cruz), 2,200 m	22 km south of Vallegrande towards Santa Ana, 2,390 m

HERBARIUM SPECIMENS SEEN: CHUQUISACA: Prov. Tomina: 106 km from Monteagudo to Padilla, 2,410 m, 19º22¹92²S, 64º12¹79²W, October 4, 2006, R. Vásquez, J. Peters, N. Schütz & R. Lara 5185 (herb. Vásquez); entre el puente Santa Rosa (Río Grande) y Villa Serrano, 2200 m, 18º43'S, 64º18'W, October 5 2004, R. Vásquez, W. Krahn & R. Musch 4948 (herb. Vásquez); Municipio Villa Serrano, Comunidad Nuevo Mundo, Cerro Pan de Azucar, 18º59'S, 64º17'W, 2298 m, November 30 2005, Villalobos J., Paredes M. & Villalobos D. 472 (HSB). Prov. L. Calvo: Las Frias, ca. 3 km del pueblo de Las Frias, cima de la serranía Yahuañanca, 19º09'S, 63º51'W, 1552 m, December 26 2003, A. Carretero, et al. 1250 (HSB). Prov. Tomina: entre Padilla y Monteagudo, 2300 m, 19º21'S, 64º16'W, October 6 2004, R. Vásquez, W. Krahn & R. Musch 4950 (herb. Vásquez). SANTA CRUZ: Prov. Florida: Cuesta de Monos, November 1950, Cárdenas 4647 (LIL); ibid.: El Fuerte de Samaipata, Nov. 1954, Cárdenas 5198 (US); ibid. El Fuerte de Samaipata, al borde N de las ruinas, January 23 1994, R. Vásquez et al. 2164 (LPB); El Fuerte, 1890 m, 18º10'S, 63º49'W, February 5 1994, A. Jardim et al. 343 (USZ); ibid.: laderas cercanas al Fuerte de Samaipata, 1800 m, 18□ 07'S, 63□ 38'W, June 11 2000, R. Vásquez & J. Rivero 3751 (herb.

Vásquez); ibid.: 1 km antes del Fuerte de Samaipata, 1830 m, November 5 2000, R. Vásquez 3800 (herb. Vásquez); ibid.: Fuerte de Samaipata, al lado N de las ruinas, September 17 2001, R. Vásquez et al. 4255 (herb. Vásquez): ibid.: 1900 m, Samaipata, al pie de la roca de las ruinas, September 29 1981, St. G. Beck 7109 (LPB); ibid.: El Fuerte, Samaipata, 1800-200 m, ca. 63º50'S, 18º12'W, April 25 1994, P. Ibisch et al. 254.gv23 (USZ); ibid.: El Fuerte, Samaipata, 18º10'S, 63º49'W, 1890 m., February 5 1994, A. Jardím et al. 343 (USZ); ibid.: Tierras Nuevas, 1980 m, 18º29'S, 63º54'W, March 10 2001, R. Vásquez & D. Ric 3865a (herb. Vásquez); ibid.: El Fuerte, 18º10'S 63º49'W, 1770 m, March 11 2006, R. Vásquez, R. Schmidt & A. Osinaga 5077 (herb. Vásquez). Prov. Vallegrande: Cruz Grande bajo La Peña, 25 Km al S de Vallegrande, camino Vallegrande-Masicurí, 2300 m, 18º36'S, 64º15'W, October 20 1992, I.G. Vargas, J. Bettela & A. Bonazo 1735 (USZ); ibid.: Comunidad El Palmar, 10 km al E de la ciudad de Vallegrande, siguiendo el camino Vallegrande–Tierras Nuevas, 18º32'S, 63º55'W, 2600 m, November 5-7 1993, I.G. Vargas & A. Fuentes 3046 (USZ); ibid.: Huasacañada, 5 km al S de Vallegrande, 2050 m, 18º31'S, 64º06'W, October 20 1992, I.G. Vargas, J. Betella & A. Bonazo 1726 (USZ); ibid.: 18 km de Vallegrande a Masicurí, 2250 m, 18º35'S, 64º03'W, September 29 1993, P. & C. Ibisch 93.0861 (LPB); ibid.: entre Guadalupe y Kasamonte, 2200 m, November 28 1998, R. Vásquez & J. Rivero 2998 (herb. Vásquez); ibid.: Kasamonte, cruce de los caminos Masicuri-Citanos 2450 m, November 28 1998, R. Vásquez & J. Rivero 3001 (herb. Vásquez); entre Vallegrande y Loma Larga, 2400 m, November 28 1998, R. Vásquez & J. Rivero 3102 (herb. Vásquez); ibid.: entre Vallegrande y Pucara, 2400 m, October 5 2004, R. Vásquez, W. Krahn & R. Musch 4988 (herb. Vásquez); ibid.: 17 km del cruce de Trigal a Moro-Moro, 2530 m, 18º21'S, 64º10'W, October 15 2003, R. Vásquez, W. Krahn, R. Krahn & A. Osinaga 4843 (herb. Vásquez); ibid.: La Ladera, 7.5 km del cruce de Guadalupe a Postrervalle, 2330 m, 18º32'S, 64º02'W, October 16 2003, R. Vásquez, W. Krahn, R. Krahn & A. Osinaga 4848 (herb. Vásquez); ibid.: entre Loma Larga y el cruce a Masicurí, 18º35'S, 64º02'W, 2360 m, March 11 2006, R. Vásquez, R. Schmidt & A. Osinaga 5078 (herb. Vásquez); aprox. 15 km al S de Vallegrande, camino a Pucara, 2260 m, 18º34'S, 64º10'W, rock crevices, April 22 1987, G.S. & U. Varadarajan & J. Brandbyge 1455 (LPB).

Figure 4. Typical plant of small '*Puya hromadnikii*'-like *P. tuberosa* Mez with purely filiform leaves (plant from El Fuerte, Samaipata, Santa Cruz; photo P.L. Ibisch).

Figure 5. Plant of small *Puya tuberosa* Mez showing transition from filiform to triangular leaves (plant from El Fuerte, Samaipata, Santa Cruz; photo P.L. Ibisch).

As documented in the hitherto inedited manuscript *Plantae Samaipatenses*, the Bohemian botanist Thaddeus P. Haenke visited the region of Samaipata (Haenke 1800).

It is probable that during this trip to the archaeological site "El Fuerte" Haenke found and collected the small puya that was described by Carl Christian Mez as *Puya tuberosa* (Mez 1896). The type locality is imprecise, referring the plant to Peru. In this context, it is important to know that Bolivia was called Alto Perú before gaining its independence in 1825.

In 1950 the Bolivian botanist Martín Cárdenas collected a small puya close to Cuesta de Monos, near Samaipata, which was sent to Lyman B. Smith. Smith was the first to recognize that the plant from Samaipata was very similar to the type of *Puya tuberosa* that had not been found again since 1800. In 1954 Smith published an amendment clarifying that *Puya tuberosa* comes from the Bolivian territory and not from Peru (Smith 1954).

In Samaipata, for instance on the "El Fuerte" sandstone rock and its vicinities, there are two types of puyas to be observed: one is the small *Puya tuberosa* with filiform leaves (Fig. 4). It grows on very shallow soil, is caespitose, and has simple inflorescences. The other one grows on more profound soils, is larger and has broader and longer leaves (Fig. 5, Fig. 6). In a publication on the flora of the "El Fuerte" valley the plant was erroneously called *P. dyckioides* (Baker) Mez (Ibisch, Rojas et al. 1996). Observing the Samaipata plants we have come to the conclusion that it is actually the

Figure 6. Vigorous large plant of *Puya tuberosa* Mez with triangular leaves (plant from El Fuerte, Samaipata, Santa Cruz; photo P.L. Ibisch) and plant with smaller roset and filiform leaves (*P. vallo-grandensis*-like) from Samaipata, Santa Cruz; both with similar inflorescences (collected by Israel Vargas No. 6648 and 6643 respectively; living plants cultivated in FAN Living Plant Collection, Santa Cruz, Bolivia; photo P.L. Ibisch).

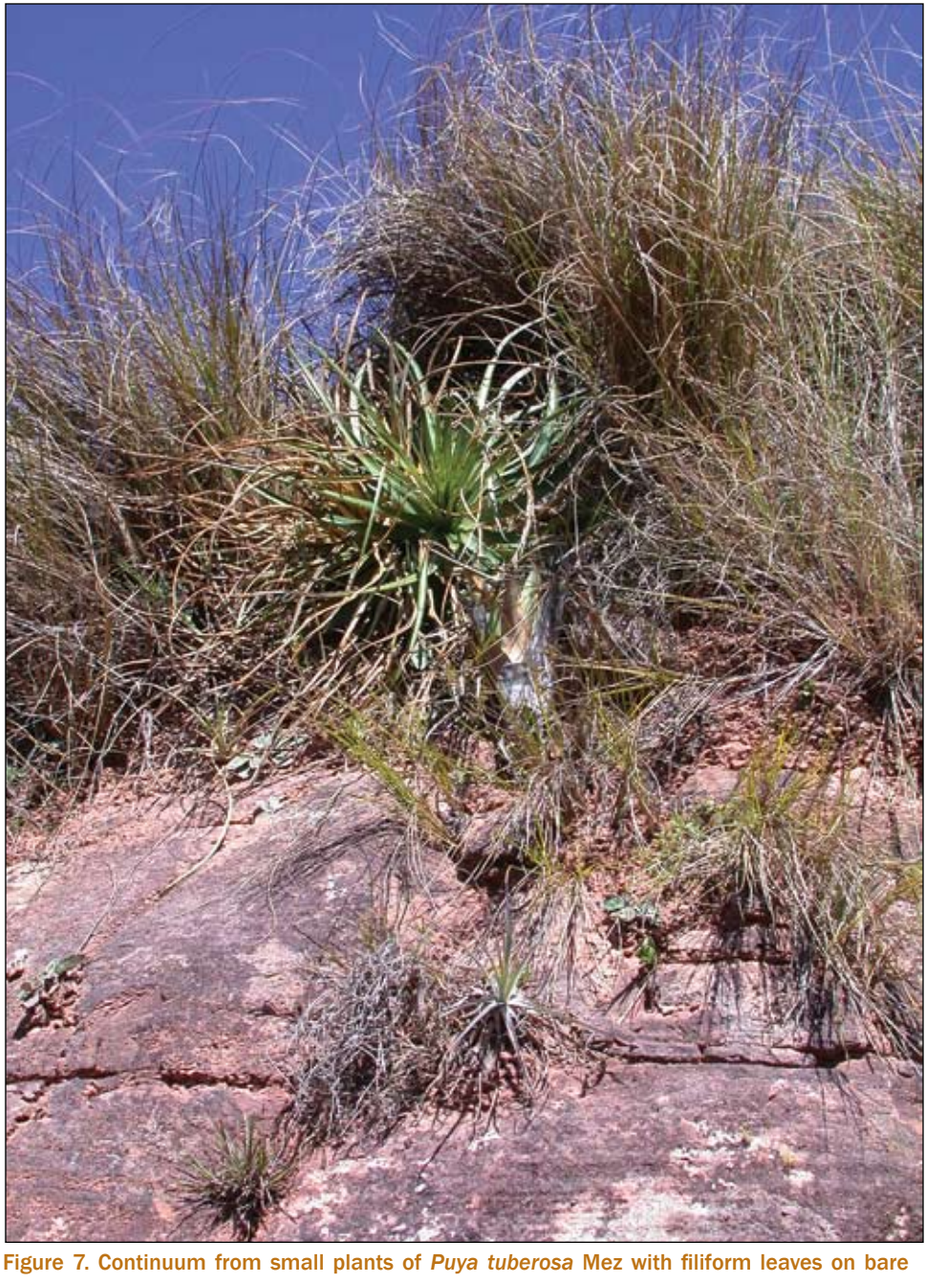


Figure 7. Continuum from small plants of *Puya tuberosa* Mez with filiform leaves on bare sandstone to larger plants with triangular leaves on more profound substrate (El Fuerte, Samaipata, Santa Cruz; photo P.L. Ibisch).

environment, which influences the morphology of the plants. Whenever the plants grow at richer and more humid sites, the plants are larger, have broader leaves (Fig. 7) and bipinnate inflorescences.

Figure 8. Habit of *Puya tuberosa* Mez from the Chuquisaca dry valleys that formerly would have been considered as *P. serranoensis* Rauh (R. Vásquez, J. Peters, N. Schütz & R. Lara 5185; photo R. Vásquez).

Figure 9. Inflorescence of *Puya tuberosa* Mez from the Chuquisaca dry valleys (R. Vásquez et al. 5185; photo R. Vásquez).

Actually, in the region of occurrence of *Puya tuberosa*, *P. bromadnikii*, *P. vallo-grandensis*, *P. vallo-grandensis* var. simplex, *P. serranoensis* and *P. serranoensis* var. *brevispica* it is possible to find plants that are similar to one or the other, however, representing a morphological continuum with completely unclear species limits (compare Fig. 8, Fig. 9). Actually, Rauh decided to establish several new species on single specimens which do not differ very clearly. Thus we suggest that – until molecular studies shed more light on the species identities - *Puya tuberosa* should be understood as a morphologically more or less variable taxon which is distributed in the dry valleys of the Santa Cruz, Chuquisaca and Tarija departments.

Acknowledgements

We thank the editor Andrew Flower and an anonymous reviewer for very valuable comments and guidance.

References

Haenke, T. P. (1800). Plantae Samaipatenses (unpublished manuscript).

Ibisch, P. L. (1998). "Estado de conservación de las especies bolivianas del género Puya (Bromeliaceae) aplicando un nuevo método de evaluación (Valor Nacional de Conservación)." Revista Soc. Boliv. Bot. 2(1): 89-99.

Ibisch, P. L., N. Rojas, et al. (1996). "Un „lugar de encuentro": Flora de la zona arqueológica "El Fuerte", Samaipata (Prov. Florida, Dpto. Santa Cruz, Bolivia)." Ecología en Bolivia 28: 1-28.

Mez, C. (1896). Bromeliacae. C. Monogt. Phan. 9:483. de Candolle.

Rauh, W. (1983). Bromelienstudien. I. Neue und wenig bekannte Arten aus Peru und anderen Ländern (XII. Mitteilung). Tropische und subtropische Pflanzenwelt 41. Wiesbaden, Franz-Steiner-Verlag.

Rauh, W. (1985). Bromelienstudien. I. Neue und wenig bekannte Arten aus Peru und anderen Ländern (XII. Mitteilung). Tropische und subtropische Pflanzenwelt 52. Wiesbaden, Franz-Steiner-Verlag.

Smith, L. B. (1954). "Studies in the Bromeliaceae, XVII." Contr. U.S. Natl. Herb 29(11): 521-542.

Smith, L. B. and R. J. Downs (1974). Flora Neotropica Monograph No. 14 (Pitcairnioideae) (Bromeliaceae). New York, Hafner Press.

Address of the authors

Roberto Vásquez Ch.: Sociedad Boliviana de Botánica, Casilla 3822, Santa Cruz, Bolivia (rvasquez@cotas.com.bo); Prof. Dr. Pierre L. Ibisch, Naturschutz, Faculty of Forestry, University of Applied Sciences Eberswalde, Alfred-Möller-Str. 1, 16225 Eberswalde (pibisch@fh-eberswalde.de).

A new rose-pink bracted Guzmania species from Northwestern Ecuador.

Harry E. Luther and Karen F. Norton

Figure 1. *Guzmania kareniae*, Berg & Anderson EAB 94. Collected at Rio Crystal, Ecuador with John Anderson. Photo by Wally Berg.

A number of superficially similar species of Guzmania with long laminate primary bracts and congested fascicles of flowers have been lumped with *Guzmania squarrosa* (Mez & Sodiro) L.B. Smith & Pittendrigh. Features useful in separating some of the "satellite" taxa are often obscured or destroyed in dried, pressed specimens. The new species presented below differs from *G. squarrosa* s.s. by a combination of indumentum, pigmentation and flower morphology features.

Guzmania kareniae H. Luther & K. Norton, sp. nov.

TYPE: Ecuador. Imbabura: Cachacho road, 18 km E of Lita, 1100 m, cloud forest, 23 Feb. 1988, Luther, Kress & Roesel 1254 (Holoytpe: SEL; Isotype: QCNE).

A *G. squarrosa* (Mez & Sodiro) L.B. Smith & Pittendrigh, cui affinis, vaginis foliorum et vaginis bractearum primariarum percastaneis, sepals longioribus et petalis longioribus recurvatisque differt.

Plant an epiphyte, flowering .75 – 1 m tall. ***Leaves*** densely rosulate, spreading, coriaceous, 40 – 60 cm long; ***leaf sheaths*** elliptic, 8 – 12 x 6 – 10 cm, somewhat nerved, densely appressed brown-lepidote especially abaxially, dark castaneous at the base abaxially; ***leaf blades*** lingulate, broadly acute, apiculate, 3 – 4 cm wide, somewhat nerved, appressed pale punctate-lepidote, especially abaxially, light to dark green. ***Scape*** erect, 6 – 12 x 1 cm subdensely pale punctate-lepidote especially at the nodes; ***scape bracts*** erect to spreading, like the inner leaves but the uppermost becoming pink distally. ***Inflorescence*** erect, bipinnate, 30 – 50 x 40 – 65 cm with 15 to 25 hemispherical branches; ***primary bracts*** lingulate, spreading at 45° - 90° from the axis, thin- coriaceous, 6 – 35 cm long with an inflated, ovate, dark castaneous sheath, 5 – 6 x 3 – 6 cm and with an acute and apiculate blade 10 – 22 mm wide; all with three zones of color; proximally

Figure 2. *Guzmania kareniae*, J. Kent, "Pink A". Flowering at the Marie Selby Botanical Gardens. Photo by Karen Norton.

castaneous and green then bright pink or pink and yellow-green and most distally bright pink; all appressed pale punctate-lepidote throughout; ***branches*** polystichously arranged, 10 – 15 mm apart, each with a stout, flattened 2 – 4 mm peduncle, spreading at ca. 30° from the axis, 30 x 25 mm, 6 to 12 flowered; ***floral bracts*** elliptic, obtuse, cucculate, 17 – 20 mm long, very thin-coriaceous, pale punctate-lepidote, carinate, green-tinged brown to dark brown in life, tan to brown when dried. ***Flowers*** with a 4 – 5 mm long pedicel, opening during the day; ***sepals*** narrowly elliptic, acute, 15 – 16 mm long, connate 4 – 5 mm, very thin-coriaceous, nerved, the adaxial pair carinate, sparsely pale punctate-lepidote; ***corolla*** erect with spreading to recoiling lobes; ***petals*** lingulate, broadly acute, 33 – 37 mm long, agglutinated for 10 – 15 mm, bright yellow. ***Fruit*** a dry capsule to 25 mm long; ***seed coma*** tan.

Paratype: Ecuador. Imbabura. "Pink A", J .Kent legit., fl. in cult. Dec. 2002, H.E. Luther s.n. (SEL); same local. "Pink B", J. Kent legit., fl. in cult. Dec. 2002, H.E. Luther s.n. (SEL); ridge cloud forest near road to Rio Crystal, 750 m elev., 7 May 1993, Berg & Anderson EAB 94 (SEL); Ecuador, without local., 1983, A. Hirtz 1479 (SEL).

All collections of this new species are known (or suspected) to be from the mountain forests above the town of Lita. *Guzmania kareniae* has been collected by horticultural explorers many times in the past two decades and has been used in several showy hybrids grown in Europe and the United States. Material introduced into cultivation is nearly always identified as *Guzmania squarrosa* 'Pink' or "Pink Squarrosa". The clear green foliage and crisp pink coloration of the large primary bracts make this and its hybrids a spectacular ornamental.

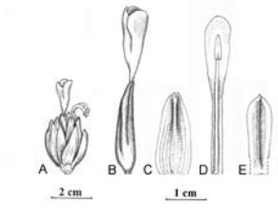


Figure 3. A. Lateral branch. B. Flower. C. Floral bract. D. Petal. E. Sepal. Illustration by Stig Dalström.

Guzmania kareniae can be distinguished from the nearly sympatric *Guzmania squarrosa* by having the indumentum of trichomes on the bracts and foliage appressed and inconspicuous (versus conspicuously "scurfy" on G. squarrosa) and corollas with widely spreading lobes (versus lobes erect and appressed, apically cucculate). Less dramatic differences are shorter sepals (15 – 16 vs. 15 – 20 mm) and longer petals (33 – 37 vs. 20 – 30 mm) for *G. kareniae* compared to *G. squarrosa*. The spreading corolla and shorter sepals also separate this from the other new " Pink Squarrosa", G. *kressii* H. Luther & K. Norton (2007) from Colombia. In addition, nearly all specimens of *G. squarrosa* that I have examined have reddish striate foliage, the leaf blades of *G. kareniae* are concolorous green.

This beautiful new bromeliad is named in honor of Mrs. Karen Melk, for her support of plant systematics at the Marie Selby Botanical Garden.

Literature cited

Luther, H.E. and K.F. Norton (2007). "*Guzmania kressii,* a New Species from Western Colombia" J. Brom. Soc. **57.**2: 55-57

Leaf Anatomy of the Mexican species of Greigia (Bromeliaceae)

Jacqueline Ceja Romero[1] and Alicia Rojas Leal[2]

Introduction

Greigia belongs to subfamily Bromelioideae and includes 28 species of mainly South American natives. Mexico has three endemic taxa (Smith 1959); *Greigia juareziana* L. B. Sm. and *G. oaxacana* L. B. Sm. native to Oaxaca State and *G. vanhyningii* L. B. Sm. restricted to Veracruz State (Espejo-Serna and López-Ferrari 1994).

Figure 1. Greigia species.

All three species are terrestrial and exhibit herbaceous (fig. 1) large to medium sized shoots bearing spirally arranged leaves bearing closely triangular blades with serrate margins. The scape is lateral, subsessile,simple or compound, capitate to subcapitate (fig. 2), and bears bisexual, sessile or subsessile flowers equipped with free sepals and fused fleshy petals. The filaments are fused (adnate) to the petals, the anthers basifixed, and the inferior ovary ripens into a berry.

Figure 2. Greigia species, scape.

Mexican species of Greigia inhabit oak and coniferous forests, between 2,100 and 2,700 m. Plants are uncommon in culture, but they have ornamental potential by their showy rosette with evergreen foliage. They have a sweet edible fruit with similar flavor to pineapple, locally named "piñuelas" or "piñuelillas" (Espejo-Serna and López-Ferrari 1998).

The goal of this work was to describe foliar anatomy of Mexican species of Greigia.

1 Universidad Autónoma Metropolitana Iztapalapa, División de Ciencias Biológicas y de la Salud, Departamento de Biología, A. P. 55-535, C.P. 09340 Iztapalapa, D.F., México.

2 Universidad Nacional Autónoma de México, Instituto de Biología, Departamento de Botánica, Apartado Postal 70-233, C.P. 04510, Coyoacán, D. F., México.

Method

Samples of each species were collected and segments of the middle part of the blades were fixed in FAA (Sass 1961; Table 1). Samples were dehydrated in an alcohol series, and embedded in paraffin. Sections 15 to 20 µm were cut with a rotatory microtome and stained with safranine-fast green. Epidermal peels were obtained using a 10 % solution of NaOH and NaCl and stained with safranine. For the cellular sizes the averages of 25 measurements are made. Vouchers are deposited in the Herbario Metropolitano of the Universidad Autonoma Metropolitana de Iztapalapa (UAMIZ).

Results

Species studied have a similar leaf anatomy which is described next.

Surface view

Epidermal cells are rectangular, parallel to the longitudinal axis of the leaf, adaxial cells of 35 to 43 □ m length by 17-25 □ m wide, the abaxial cells differentiate in costal and intercostal, the former of 30-40 □ m length by 16-20 □ m wide and the second of 26-34 □ m length by 18-26 □ m wide. The anticlinal walls (abaxial and adaxial) are thin, in U or Ω shape, each cell with a central silica body (fig. 3). Stomata of tetracytic type are present only in the intercostal region on abaxial surface, guard cells of 31-35 □ m length (fig. 4); scanty to abundant scales (0.2-8 scales) are present in the intercostal region on abaxial surface, distributed in longitudinal and parallel rows. Scales of a single layer of randomly aligned cells, with a central region are not differentiated structurally from the peripheral cells (fig.5).

Cross section

Cuticle of 5-7 µm wide (thick) (adaxial and abaxial). Epidermis (abaxial and adaxial) of one layer of square cells with thick cell walls. There is a hypodermis of 1-2 layers of cells below the adaxial epidermis, with thickened lignified walls. Storage parenchyma (adaxial and abaxial) with isodiametric colorless large cells (fig. 6). Chlorenchyma (only adaxial) has smaller isodiametric cells than the storage parenchyma, it has many chloroplasts. Among vascular bundles there is a spongy parenchyma with lobate cells (fig. 7). Idioblasts with raphides in the storage parenchyma and chlorenchyma. Starch grains are present in the parenchymatic cells near to the vascular bundles, between chlorophyllous parenchyma and spongy parenchyma. Collateral vascular bundles (41-90) are located in the middle portion of the blade, with three order types. Those of first order of 179-213 µm length by 116-135 µm wide, those of second order of 111-125 µm length by 68-89 µm wide, those of third order of 72-84 µm length by 52-69 µm wide. A clerenchymatous sheath surrounds each vascular bundle. A cap of fibers is found in both ends as well as an external parenchymatic sheath (fig. 8). In the adaxial portion the caps of the bundles of first order have a length from 25 to 55 µm, those of second order of 30-49 µm and those of third order of 21-37 µm; in the abaxial portion the caps of the bundles of first order have a 44-72 µm length, those of second order of 81-122 µm and those of third order of 78-114 µm. Stomata abaxial occur at the same level of the other epidermal cells; guard cells with periclinal thickened cell walls. Subestomatal chamber present. Stalk cells are immersed in an inferior level of the epidermic cells (fig.9).

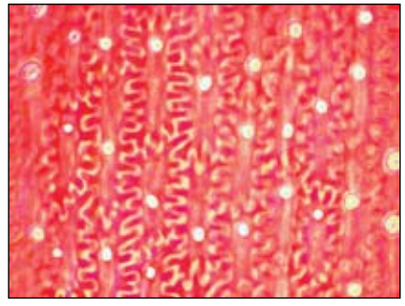


Figure 3.

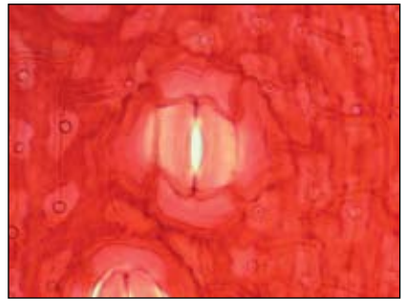


Figure 4.

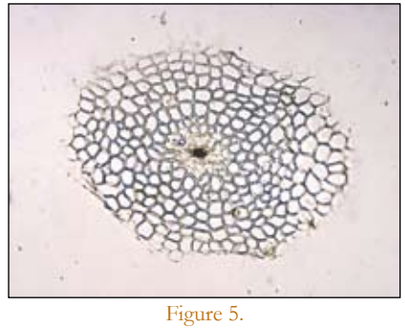


Figure 5.

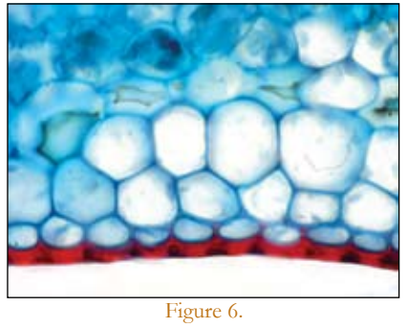


Figure 6.

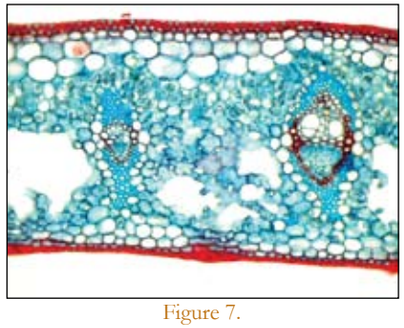


Figure 7.

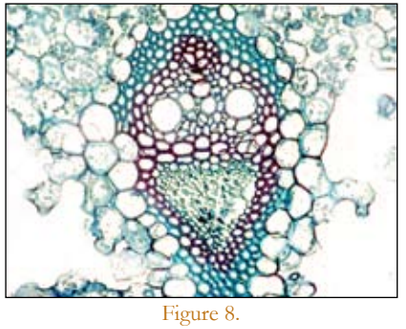


Figure 8.

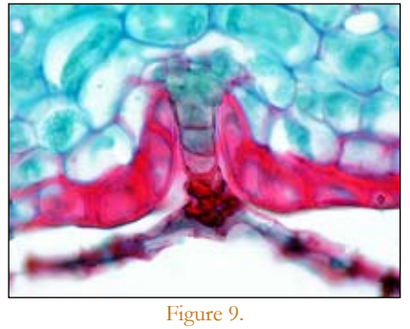


Figure 9.

Taxa	Colector	Locality
G. juareziana	A. Espejo 6688 UAMIZ42942	OAXACA: ca. 16 km después de la desv. a San Pedro Yólox, rumbo a la Esperanza. Carretera Oaxaca-Tuxtepec.
G. oaxacana	A. Espejo 6689 UAMIZ42957	OAXACA: ca. 16 km después de la desv. a San Pedro Yólox, rumbo a la Esperanza. Carretera Oaxaca-Tuxtepec.
G. juareziana	A. López-Ferrari 3096 UAMIZ 42947	OAXACA: 32 km después de Capulalpan y 21 después de La Trinidad, rumbo a Talea de Castro
G. juaeziana	A. López-Ferrari 3097 UAMIZ 42949	OAXACA: 32 km después de Calpulalpan y 21 después de La Trinidad, rumbo a Talea de Castro
G. vanhyningii	A. López-Ferrari 3110 UAMIZ 42958	VERACRUZ: 5.5 km sobre la brecha a Las Minas, a partir de la carretera Perote-Xalapa
G. juareziana	J. Ceja 1605 UAMIZ 42952	OAXACA: ca. 10 km después de Talea de Castro. Ca. 1 km después de la desv. a Santiago Lalopa, rumbo a Ixtlán.

Table 1. Species studied.

Conclusion

The three Mexican species of Greigia had similar anatomical characteristics, no diagnostic character was identified to distinguish among them. The species present an inner structure similar to those reported for other genera of the Bromeliodeae subfamily (Aoyama and Sajo 2003; Proença and Sajo 2004; Dutra da Cruz, Nogueira da Costa et al. 2005).

Acknowledgements

We thank Ana Rosa López Ferrari, Rosa Cerros Tlatilpa and Teresa Terrazas Salgado for the revision and valuable comments to manuscript.

Literature Cited

Aoyama, E. M. and M. G. Sajo (2003). "Estrutura foliar de Aechmea Ruiz & Pav. subgênero Lamprococcus (Beer) Baker e espécies relacionadas (Bromeliaceae)." Rev. Brasil Bot. 26(4): 461-473.

Dutra da Cruz, M. S., A. C. Nogueira da Costa, et al. (2005). "Leaf anatomy of Hohenbergia ramageana Mez. (Bromeliaceae) from Restinga Habitat in Rio Grande do Norte State, Brazil." J. Brom. Soc. 55(2): 88-89.

Espejo-Serna, A. and A. R. López-Ferrari (1994). Las monocotiledóneas mexicanas una sinopsis florística. Bromeliaceae, Burmanniaceae, Calochortaceae y Cannaceae. Mexico, Consejo Nacional de la Flora de México.

Espejo-Serna, A. and A. R. López-Ferrari (1998). "Current floristic and phytogeographic knowledge of Mexican Bromeliaceae." Rev. Biol. Trop. 46: 493-513.

Proença, S. L. and M. G. Sajo (2004). "Estrutura foliar de espécies de Aechmea Ruiz & Pav. (Bromeliaceae) do Estado de São Paulo, Brasil." Acta Bot. Brasil 18(2): 319-331.

Sass, J. E. (1961). Botanical microtechnique, 3rd. edition. Ames, The Iowa State University Press.

Smith, L. B. (1959). "Three new Greigia from Mexico." J. Brom. Soc. 9(4): 51-53.

Neoglaziovia variegata: a fiber-producing Brazilian Bromeliad

Cláudio Coelho de Paula[1] and Elidio Armando Exposto Guarçoni[2]

The genus *Neoglaziovia* belongs to the subfamily *Bromelioideae*. It is characterized as terrestrial or saxicolous, with well-developed rhizomes, slightly succulent, long and canaliculate narrow leaves, inflorescence simple and racemose, sepals and petal free and stamen enclosed. This genus is endemic in Brazil, occurring in the states of Minas Gerais, Bahia, Piauí, Ceará, Rio Grande do Norte, Paraíba, Alagoas, Sergipe and Pernambuco, in the caatinga biome (Smith and Downs 1979).

According to Smith & Downs (1979) this genus comprised two species, *Neoglaziovia variegata* and *N. concolor*, which differ for displaying glabrous leaves with transversal white bands and whitish leaves without bands respectively. Luther (Luther 2002) cites a third species of this genus, *Neoglaziovia burle-marxii* Leme.

Figure 1. Leaves with transverse white bands - *Neoglaziovia variegata*.

Neoglaziovia variegata (Arruda da Câmara) Mez is popularly known as 'caroá,' 'crauá' or 'macambira de corda'. It can be easily recognized by its many-spined leaves, thick from the accumulation of water in the leaf tissues, without tank formation, always green among small trees and dry bushes. Inflorescence is red, contrasting with the purple petals. It initiates flowering with the first rains. It grows in non-compact rocky soils, facilitating the development of rhizomes and roots. This species is frequent in the Caatinga, except in its most humid areas.

The 'caroá' fibers were known by the native Indians for their consistency and craft potential. They are of high quality, being three times as strong as jute (Agave sp.) The Araweté tribe cultivated these bromeliads and used the cordage to make their hunting

1 Prof. in the Department of General Biology – Universidade Federal de Viçosa (UFV) – UNIDADE DE PESQUISA E CONSERVAÇÃO DE BROMELIACEAE (UPCB), BRASIL - vidalia@ufv.br

2 HERBÁRIO SERRA DAS ARANHAS (HSA), BRASIL - herb.s.aranhas@bol.com.br

and defense tool, the bow and arrow. Indians of the kambiwá tribe used the 'caroá' fibers to make sacks, mats, hammocks, brooms, rugs, and baskets and several types of garment. These artifacts were, in general, for everyday use and primarily made by the women. Nowadays, Indian descendants and dwellers in the naturally occurring areas of this species make ropes, baskets, hats, rugs and craftwork. Their fibers have been utilized as raw material in small, exclusively textile industries, called 'caroá mills', in several areas in northeastern Brazil.

Figure 2. Fibre of *Neoglaziovia variegata*.

In popular medicine, the *Neoglaziovia variegata* fruit can be used to make tea for cough, bronchitis, the flu and pneumonia. Studies have been currently developed on a possible analgesic activity of this bromeliad.

Research has shown that 'carua' can be cultivated in association with the native vegetation. Thus, it is a plant with great potential for exploration in an agro forest system. The increasing worldwide search for natural fibers may stimulate its cultivation in naturally occurring regions without destroying the caatinga, generating income to the population of this semi arid area in Brazil.

Literature cited

Luther, H. (2002). An Alphabetical List of Bromeliad Binomials, 6th Edition. Sarasota, FL, Bromeliad Society International.

Smith, L. B. and R. J. Downs (1979). Flora Neotropica Monograph No. 14, Part 3 Bromelioideae (Bromeliaceae). New York, The New York Botanical Garden.

Aechmea sphaerocephala Baker - A Species Threatened by Local Extinction

Cláudio Coelho de Paula and Elidio Armando Exposto Guarçoni

The sandbanks are extensive areas of sandy plains along the Brazilian coast, occupying an area of about 3107.52 square miles (Lacerda 1984). Geologically, the sandbanks are related with the tertiary deposits of the Pliocene, known as Group Barriers, covered by quaternary sandy sediments (Fernandes and Bezerra 1990). The sedimentation of these coastal plains can be attributed to four factors: the variation of the sea level, the marine currents, the winds, and the processes of retention of sediments.

Figure 1. Aspect of the "Restinga" vegetation on coastal hills in the domain of the sandbank where *Aechmea.sphaerocephala* lives in Armação de Búzios – RJ

The term "sandbank" is used frequently to describe the coastal atmospheres, especially in the botanical sense, designating an arboreal-shrubby vegetation of open pattern characteristic of the Brazilian coast, known as "Restinga" vegetation (Suguio and Tessler 1984). This "Restinga" vegetation, formed under strong insolation associated with the wind, in well-drained soil, is directly exposed to the sea water and therefore has a characteristically low load and a xeromorphic aspect (figure 1).

Among the several vegetative families that live in the sandbank, Bromeliaceae deserve prominence. This is because of the bromeliad's economical-ornamental value making them vulnerable to predatory extractivism, and its ecological value since in the vegetational succession they act as pioneering plants. They are the first plants that install propitiating satisfactory conditions that are micro-environmental for the establishment of more demanding vegetation (Leme 1993).

The bromeliads of the sandbank are in general heliophytes, with predominance of the tank-dependent species, of the subfamily Bromelioideae. This predominance suggests a relatively recent occupation of the sandbanks by the bromeliads (Leme 1993). Among the several bromeliads species found in the sandbanks, one especially deserves prominence: *Aechmea sphaerocephala* Baker. This bromeliad, with restricted distribution to the states of Rio de Janeiro and Espírito Santo (Smith and Downs 1979; Araújo 2000), is suffering great decline of their populations in nature due to real estate speculation

Figure 2. Globose inflorescence in early anthesis, the characteristic that originated the namje of *Aechmea sphaerocephala*.

motivated by the attractions of the sea.

In 1898, Ule collected this species in the great area of sandbank today occupied by the Copacabana district in the city of Rio de Janeiro (Smith and Downs 1979). Today, this bromeliad is only observed in remaining fragments of sandbanks and in nearby Atlantic forest fragments, as in the municipal district of Armação dos Búzios (Paula, pers. obs.) and also the State Ecological Reservation of Jacarepiá and in Saquarema (Fontoura 2001) — both in the Lakes Region of Rio de Janeiro State. Araújo (2000) also mentioned its occurrence in Atlantic forest areas, with its limit of south occurrence in the area of Grumari, close to the city of Rio de Janeiro. For Espírito Santo state, Smith and Downs (1979) mention its occurrence in the municipal district of Itapemirim, in the south of this State. Pereira and Araújo (2000), in work accomplished in Espírito Santo sandbanks and Rio de Janeiro, only observed the occurrence of Aechmea sphaerocephala for the state of Rio de Janeiro.

Aechmea sphaerocephala is a large species of epiphytic, saxicolous or terrestrial habitat, propagating by short, stout stolons. The leaves are many, up to 6.56 ft long, green, brown-spotted toward the base, serrulated with thorns laxly distributed, forming a densely funnelform rosette. The scape is erect and covered by red or rose scape-bracts. The inflorescence is simple, globose to ovoid, with flowers bearing free sepals ending in a short stout spine, as well as greenish, and blue, ligulate petals. According to Fontoura (2001), this species blooms in June and October and the fruits have zoocoric dispersion, serving as an alimentary resource for animals of the sandbank.

In the region of Armação de Búzios, *Aechmea sphaerocephala* is scarce in the more conserved "Restinga" fragments, in general located in the rocky "Costões". The remaining local populations are critically threatened where they live in regions subject to deforestation and construction. The Reservation of Tauá, a private small protected area, preserves four individuals originating from areas where the native vegetation was suppressed.

Recently, *Aechmea sphaerocephala* was included in the Revision of the Red List of the Threatened Brazilian Flora of Extinction (www.biodiversitas.org.br) in the vulnerable category, having a high extinction risk in the near future. Its inclusion in the list is due to its restricted distribution, the fragmentation of its habitat and continuous decrease of the populations in the native areas.

Acknowledgements

The authors thank the environmentalist Tereza Kolontai of the Tauá Reservation for supporting the research in the sandbank and to the Center for Research and Conservation of Bromeliaceae – UPCB/UFV.

Literature Cited

Araújo, D. S. (2000). Análise florística e fitogeográfica das restingas do Estado do Rio de Janeiro. p. 176. UFRJ. Rio de Janeiro, Universidade Federal do Rio de Janeiro. PhD.

Fernandes, A. and P. Bezerra (1990). Estudo fitogeográfico do Brasil. Fortaleza, Stylus Comunicações.

Fontoura, T. (2001). "Bromeliaceae e outras epífitas – estratificação e recursos disponíveis para animais na Reserva Ecológica Estadual de Jacarépiá, Rio de Janeiro." Bromelia 6: 33-39.

Lacerda, L. D. (1984). Restinga: origem, estrutura, processos. Anais do Simpósio Sobre Restingas Brasileiras. L. D. Lacerda, D. S. Araújo, R. Cerqueira and B. Turcq. Niterói, CEUFF.

Leme, E. M. C. (1993). Bromélias na natureza. Rio de Janeiro, Marigo Comunicação Visual.

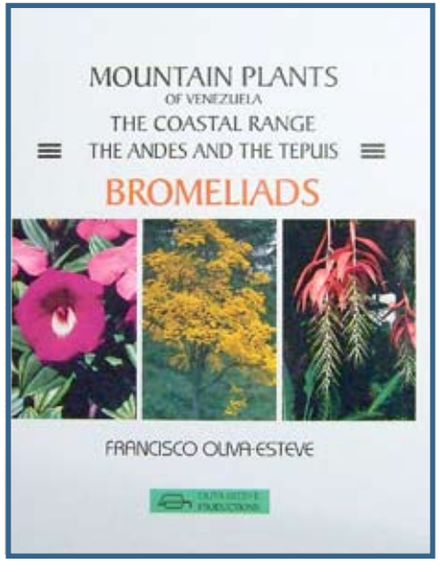
Pereira, O. J. and D. S. Araújo (2000). Análise florística das restingas dos estados do Espírito santo e Rio de Janeiro. Ecologia de restingas e lagoas costeiras. F. A. Esteves and L. D. Lacerda. Rio de Janeiro, NUPEM?UFRJ, Macaé.

Smith, L. B. and R. J. Downs (1979). Flora Neotropica Monograph No. 14, Part 3 Bromelioideae (Bromeliaceae). New York, The New York Botanical Garden.

Suguio, K. and M. G. Tessler (1984). Planícies de cordões litorâneos quaternários do Brasil: origem e nomenclatura. Restinga: origem, estrutura, processos. L. D. Lacerda and D. S. Araújo. Niterói, CEUFF.

MOUNTAIN PLANTS
OF VENEZUELA
THE COASTAL RANGE, THE ANDES AND TEPUIS
BROMELIADS

By Francisco Oliva-Esteve



First in a 4-book series on Tropical Plants and New World Bromeliads. This book of mountain plants of the Neotropics, the Andes and the Highland mesas commonly named Tepuis, (an Amerindian word for mountain) treats the northern, western and southermost area of Venezuela, which is also known as The Guayana Shield or Lost World. It contains 113 families of cone-bearing (Gymnospermae) and flowering plants (Angiospermae) including 23 genera of Bromeliads with 163 species out of which 36 are described and illustrated. This book represents the culmination of 6 years of work with many species described and pictured with spectacular habitats, and photographs showing natural vegetation.

Generally speaking, it is a compendium of a good number of bromeliads, flowering trees, palms, heliconias, orchids, minor plants, and xerophytic species, with 1300 photos, line maps, color drawings, and aerial-photographs. This full color-illustrated book is available in English and Spanish.

Book Characteristics:
Hard cover----------2 mm thick carton with flat transparent plastic paper.
Size----------24.5x 31 cm (9 ¾¨ X 13¨)
Pages----------364
Photos---------- 1300
Paper----------150 gms. Hight quality coated paper from Finland.
1SBN: Spanish: 958-33-9328-2, 1SBN: English: 958-33-0749-0

Mountain Plants of Venezuela The Coastal Range, The Andes Tepuis and BROMELIADS, is priced $119 plus shipping and handling.

Benjamin Oliva
17414 Cascades Hill Ct.
Orlando, Fl 32820
e-mail: bromeliabooks@hotmail.com

Or: Francisco Oliva
Apartado 17-284
Caracas, Venezuela 1015-A
e-mail: franciscooliva@cantv.net
Telephone: 58-212-(573)4640

Conservation

Bromeliad Conservation Corner: Need for Strategy and Action

Pierre L. Ibisch (Conservation Chair) & Vera Porwollik, Eberswalde

The current BSI board of directors is willing to enhance the society's involvement in conservation of bromeliads and their habitats.

As the conservation status of Neotropical ecosystems and specific bromeliad populations is continuously worsening, more and more members are recognizing the importance of getting engaged in conservation. After my introductory article (J.BromeliadSoc. 56(1), Derek Butcher was the first to resume the discussion (J.Bromeliad .Soc. 56(3), 100-101). He mentioned several challenges related to bromeliad conservation, such as varying levels of awareness of the problem, the reproduction of species from seed (in order to reduce pressure from wild populations) or an improved management of ex-situ collections. He made an important claim when he said that orchid and cactus growers prefer botanical species and not man-made hybrids – a situation that he says is different in bromeliads.

Definitely, we need more bromeliad lovers to support conservation of the botanical species rather than man-made hybrids.

Below, on page 127, Renate Ehlers reports from Europe on typical problems of collections of well-documented plants representing clones from type collections or other original material from the native range of species. The continued maintenance of scientifically valuable collections depends on individuals: around the world, the institutionalization of special collections is poor. Knowledge attached to the collections is lost due to staff and owner changes. The situation is even worse when plant material is transferred from one grower or gardener to another because information regarding the origin and history of the material can be lost. We have observed this problem even when prestigious gardens were involved.

Although in specific cases some clones might persist ex situ, in private or in public collections – while the wild populations go extinct in the wild – this does not mean an effective long-term survival of the species. The threats related to genetic impoverishment and manipulation (through deliberate or unintentional hybridization) should not be underestimated. Whilst there is a clear need for action, and obvious opportunities, the operative capacity of societies maintained by voluntary and honorary members tends to be insufficient.

We are updating the BSI's conservation strategy in order to show the way towards a more effective contribution to biodiversity conservation. In this context it is crucial

to realistically acknowledge the real organisational strengths and weaknesses, as well as the external opportunities and threats in order to come up with a viable and implementable proposal.

One of the important steps towards more active conservation engagement of the membership is the provision of more information on conservation issues. Therefore, we are going to establish a conservation corner on the BSI website. Here, information on the conservation status of bromeliads, relevant legislation concerning trade and species protection is going to be published. If you have any idea or contributions to the conservation corner, both in the web or in the journal, please let us know by writing to P. Ibisch, University of Applied Sciences, Alfred-Moeller Str. 1, Eberswalde, Brandenberg 16225, Germany or email conservation@bsi.org; webmaster@bsi.org.

We propose updating the BSI Conservation Code of Conduct as an important instrument for internal and external communication. We are suggesting some minor changes in order to update the document taking into account the development of international legislation (see page 131). We suggest that this document be sent to any new member after application. We also propose that any commercial bromeliad seller that publishes in the BSI Journal or participates in BSI events shall formally accept this Code of Conduct. Please provide your input for an update of the Code of Conduct that should be re-approved by the board of directors in the near future.

Protective Collection Program for Bromeliads

Renate Ehlers, BSI International Director

Is there any possibility that type-plants and well-documented rare plants will survive as long as possible in cultivation in the future?At the conference in Frankfurt of the German Bromeliad Society in September 2006, this was one of the most important points of discussion.

Juergen Lautner from the Goettingen Botanical Garden pointed out that he thinks it very important that bromeliad collections that have been developed over a long period of time, and are well-documented or type-material of new plants, should be protected. This applies especially to tillandsias that have been imported to Europe and collected over a period of many years for Botanical Gardens and private collections. As many native locations and habitats are endangered or already destroyed, it would be very important to find a place where these plants will survive for as long a time as possible. Much unique material is cultivated in Germany, and also in Austria (like the important collection of Lotte and Helmut Hromatnik, who also want to join the project), in quite a number of collections. Most of the friends who own these collections are now close to the age of retirement, or even now cannot take care of their plants like in former times. And also some of the very active gardeners who are now responsible for bromeliads in Botanical Gardens, like Mr. Esser of the Munich Botanical Garden or Juergen Lautner in Goettingen, will be working there for only a few more years.

There was a long discussion of what could be done. Our president, Andreas Boeker, reported that the board already discussed the problem. As tillandsias are not easy to cultivate, a lot of know-how is needed, there must be a place to cultivate different classes of plants under different conditions, and last but not least, there must be the means and money, not only for the short term, but also for the long term.

A committee was set up to work out the many important points:

- Where do we find a place?
- Who can run such an organisation?
- Who is in charge of the people working there?
- What about finances?
- What are the expenses?
- Is public funding available, and can we get it?
- Are there any private sponsors?
- What must be taken into account if we distribute private collections?

The conclusion was: it will be very difficult for a small Society with only few mem-

bers to find a way to protect and cultivate endangered, unique and well-documented species. As tillandsias and bromeliads are of no economic or pharmaceutical value, it will not be easy to find a Bill Gates as a sponsor. But also we should consider if there is some international help and co-operation. The world has become so small, why not look for international co-operation and solutions?

My personal comment and history:

For many years I have tried to find a way to cultivate very rare and valuable plants in the best possible manner and for as long as possible. Many years ago, my husband Klaus and I had discussions with Professor Werner Rauh, who also was aware of the problem. We discussed if there would be a possibility of persuading some important Botanical Gardens in various parts of the world to co-operate. As the conditions the bromeliads need are very different, we thought it might be a solution, if different Gardens around the world could take care of groups of plants. For example, Selby Gardens in Sarasota could be responsible for the tillandsias of low and warm habitats, while a garden like Munich could cultivate plants of higher elevations and others could join the program.

Prof. Rauh thought that the Palmengarten in Frankfurt could be part of this program (He gave many of his own plants to them). And it was thanks to him that the famous collection of A. Blass from Munich was brought to Frankfurt for cultivation when Mr. Blass died. The gardener, Mr. Piepenbring, was very interested and skilful. There was a new greenhouse for the bromeliad collection, but it had no windows to be opened! The temperature became too high and many of the most interesting plants suffered and died. Some years later we had another discussion with Werner Rauh about conservation of rare plants and trying to get type-collections cultivated successful for a long time. From the Palmengarten-experience we had learned that there are so many critical points to consider. Many more than we thought before.

In 2006 we had our annual general meeting in Frankfurt at the Palmengarten. Needless to say we visited the bromeliad collection to see what happened to the plants. It was a bit disappointing to see the plants, many still alive and healthy but a lot of labels had been lost. A very interesting species - resembling Tillandsia churinensis - was in full bloom but it was impossible to get any information about the origin of this little treasure.

I am very pleased that our Society now is going to try again to find a solution for the problem. And I myself will be very glad to help in any way I can. Furthermore, I will give my own rare plants, and all the type-material I collected over the years to this project.

The deforestation process in coastal Brazil. Photo by Elton Leme.

Since I have been travelling to the countries of origin for over 30 years, I already know that many of the plants can no longer be found at the habitats. For example T. klausii: the rocks at the type-location in Chiapas are now under the water of a reservoir. I have been there with my friends Juergen and Uli Lautner and Manfred Kretz. We tried very hard to find the plant in the area, but in vain. No more rocks, no more plants, - they are gone for ever. The new tillandsia has been collected only once. The few plants from the type-collection are still alive. As they grow quite well, and after flowering, there will be some pups that I could distribute them to many friends, gardens and collectors in Europe, Australia and the U.S. And all of them do well and flower. So, at least this species will live in the collections, but not in its homeland.

But also in many areas where we have been, in Mexico, Brazil and Ecuador, where bromeliads were once abundant, no more plants can be found. The land is being cultivated, sugarcane, coffee, and corn are growing for hundreds and hundreds of miles. And also the climate has already changed. In Chiapas and Oaxaca , where large parts of the forests have been cut, it has now became much hotter and dryer, and many, many plants which we saw in former times, have already disappeared.

So this is a one more reason why we should try to save and keep alive the treasures we have!

Member Comment

The question of conservation by species collections was raised on the BROM-L internet discussion list by BSI Cultivar Registrar Derek Butcher, and California member Phil Bunch gave the following thoughtful reply - Ed.

Your point about growing species in collections as a conservation measure is interesting. I have seen this argued from several points of view.

Some hold that the production of species bromeliads in numbers sufficient to reduce market demand among collectors reduces collection pressure on populations in habitat. This seems to be a reasonable argument.

A related position is that plants should be collected from areas where habitat is being clear cut or converted to non-conservation uses and placed on the market. I think this also is seen as reducing demand for plants collected from habitats that are not in danger of destruction. This approach is appealing to collectors and plant dealers but is a nightmare for agencies charged with conservation of species in the wild. The question raised is: How does one know that out of thousands of plants being shipped, any given plant or group of plants was collected from a location where habitat destructions was actually occurring or was immanent? Controlling such activities would require an expensive permitting process and chain-of-custody documentation.

This approach... is a nightmare for agencies charged with conservation of species in the wild.

I have also seen an argument made that where habitat destruction is the primary threat to species, collections may serve as an "ark" preserving genetic material for eventual reintroduction into habitat. This is problematic in that it may be difficult to maintain a representative and adequate genetic profile in cultivation. When introduced into even the best conservation oriented collections plants continue to be subject to selection. In this case, selection may cause the plants to adapt to horticultural environments. As this occurs, will adaptations critical to survival and vigorous growth in habitat be lost? An additional risk is the introduction of viral infections into rare genetic material. This approach seems to be applicable only in the most desperate situations...

Anyway, thanks for raising this important issue.

Phil Bunch

Proposed Conservation Code Of Conduct for BSI Members.

Pierre L. Ibisch (Conservation Chair) & Vera Porwollik, Eberswalde

I. Collection of wild plants

A. General conduct: Obey international, national, and local regulations including the following:

1. The Convention on Biological Diversity (CBD) and especially the recognition on the CBD's reference to the access and fair benefit sharing with the countries of origin of biological organisms.
2. The Convention on International Trade in Endangered Species of Fauna and Flora (CITES).
3. Other national and regional laws pertaining to particular parcels of land, cultivation, import, export, and to protection of species.
4. Local customs of land and plant ownership.

B. Professional courtesies:

1. Obtain all necessary permits (collecting, export, and import).
2. Contact local organizations, institutions, and/or professionals. Your intentions are likely to be of interest to them, and they can be helpful to you.

C. Responsibilities in the field:

1. Never jeopardize natural populations. Collect only a small percentage of the plants present. If the site shows signs of previous heavy collections, or other signs of demage, seek another locality.
2. When possible, collect seeds or offsets rather than entire plants. When collecting whole plants, choose small ones and leave the large ones for seed production.
3. Make careful field notes. Include precise locality, elevation, host plants or rock (if epiphytic), plant associations, date, and your field number. If possible, assess population density and range. Take photographs of the habitat.
4. Make herbarium specimens whenever possible, especially when collecting in remote locations or when you find something unusual (it is not necessary to know the identity of your specimens). Collect at least two specimens: one for the national herbarium of the host country (often this is a condition for obtaining a collecting permit), and one for the M.B. Foster Bromeliad Identification Center at the Mary Selby Botanical Gardens.
5. Do not collect more plants than you can care for, either during the field trip or when you return home. Do not collect plants that you will not be able to grow under the conditions you can provide for them (e.g do not collect in a cloud forest if you cannot cool your growing facility. If you encounter a population or species which appears to be endagered, or if you come across information regarding its possible preservation or destruction, please report it to the Conservation Committee chaiperson.

II. Maintenance of collections (private, public, and commercial)

A. Propagate rare and documented plants and contribute to their survival by distributing them to other enthusiasts. Remember the proverb: To keep a plant, give it away.

B. **Keep rare and scientifically valuable plants clearly and correctly labeled**. Also keep records of their performance under your conditions of cultivation.

C. Share your knowledge with others, but **DO NOT** casually disclose specific locations of rare and desirable plants. Not every enthusiast is a scrupuluous collector.

D. Ensure that your valuable plants will survive you. A botanical garden is often an excellent beneficiary, as is your local bromeliad society.

E. Buy plants from reputable nurserymen. Do not patronize a supplier who trades in illegally obtained plants in large quantities.

III. Recommendations for bromeliad socities and clubs

A. Endorse the precepts of this Code of Conduct as a guide for responsible and conscientious behavior.

B. Discourage the advertising of wild-collected plants of rare species for sale in your publications.

C. Publicize national and international regulations on the export, import, and sale of wild plants.

D. Sponsor or support measures to support measures to protect the habitats of rare or threatened species.

E. Assist your members in making arrangements for the continued survival of their plants when they lose interest or can no longer care for them.

IV. Recommendation for show committees and judges

A. Include in the show schedule some classes for species raised from seed by the exhibitor.

B. Include in the schedule some recognition for rare or undescribed species. Rare plants must not be collected in such a way as to jeopardize the population. This practice is necessarily a matter of honor with the collector.

C. Include good cultivation in judging criteria.

D. Restrict competition to plants that have been grown in cultivation for at least one year.

LYMAN B. SMITH - an appreciation

Herb Plever

In every field of human endeavor, there are only a few people whose contributions to the advancement of that field are so important that progress in that pursuit would be inconceivable without their work. Such was the contribution to the Bromeliads of Dr. Lyman B. Smith who died on May 4, 1997 at the age of 92.

After receiving a degree in taxonomy at Harvard, Dr. Smith spent some 60 years studying the Bromeliaceae as a member of the staffs of the Gray Herbarium at Harvard and later at the Department of Botany at the Smithsonian Institution, and in many field trips to Brazil, Columbia, Venezuela, Costa Rica, Argentina and Cuba.

During that time, taxonomists had to rely on the incomplete, outdated keys published by Mez in 1935. But interest in bromeliads had flowered in the 1940s and 1950s as a result of the collecting explorations by the late Mulford Foster, who discovered or rediscovered hundreds of bromeliad species which were then described and identified by his good friend Lyman B. Smith. Mulford was often accompanied by his wife Racine who pressed and preserved the specimens for Lyman's analysis and, ultimately, for deposit with one of the herbariums.

Dr. Smith published hundreds of titles and descriptions of bromeliad species in books and plant journals. This work culminated with the publication of his reorganization of the family in the monumental three volume Monograph 14 of the Bromeliaceae in Flora Neotropica Smith from 1974 to 1979.

But so large a family as the Bromeliaceae with over 3,000 species cannot be neatly contained in an artificial botanical key. The varied populations add to the complexity (and gray hairs). One taxonomist could not do field studies on every (or even most) species populations. Live material for most plants was not available, and reliance had to be given to the dried herbarium specimens in various herbaria around the world. Often the dried specimens were poor or incomplete.

Thus, after the last monograph volume was published, 53 years after he began his studies, Dr. Smith knew that it was only the beginning and together with his colleague Dr. Robert W. Read, they commenced the work of revising the Monograph. In 1987 they published a 121-page Supplement to the Bromeliad Monograph to include new taxa, nomenclatural changes, emendations and synonymies. Lyman continued to work every day even after he retired from the Smithsonian as Senior Botanist Emeritus, up to a few years before his death.

Other taxonomists (Werner Rauh, Amy Jean Gilmartin, Sue Gardner Sills, Walter Till, Harry Luther, Renata Ehlers, Herbert Lehmann, Elton C. Leme, Jason R. Grant, etc.) have made important revisions and will continue to revise the identification keys, but none of this work could have proceeded without the foundation created by Lyman B. Smith.

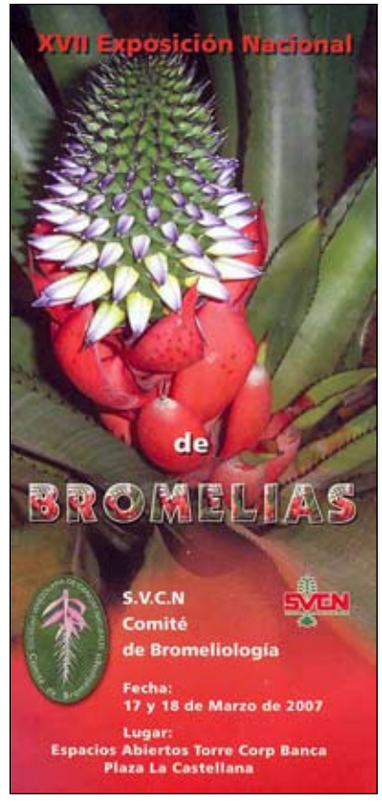
Sadly, I am the last of the old time members who can recall the special educational role that Lyman played during the formative years of our New York Bromeliad Society in 1963 to 1968. We were totally ignorant about bromeliad identification. He came up from Washington, D.C. in March 1963 to regale us with his travels and adventures on extensive field trips in Brazil.

Occasionally, Lyman would dine with us at the Chinese restaurant we used to eat

The XVII Bromeliad Conference in Caracas

Francisco Oliva-esteve.

The conference was held March 17-18, 2007 in The Venezuelan National Society of Sciences, organized by The Venezuelan Committee of Bromeliology in Caracas, Venezuela. Among the very well organized bromeliad stands these were the major winners:



1) First inflorescence award was given to Mrs. Cury Bottome with her species (not a hybrid) *Tillandsia fendleri* "Alba" with bracts totaly white. This unusual bromeliad has an extrange habit, because whilst in The Andes it bears a distintive colorful intense pink bracts, but in the Coastal Range near Caracas it presents white bracts; a strange phenomenon which could be considered a matter for study.

2) The first foliage award plant was won by Señora Milagros Ochoa with her beautiful *Alcantarea imperialis*

3) First Bromeliad plant award was given to the Caracas Botanical Garden with *Bromelia flammingii* I. Ramirez & Carnevali; this species was previously named as *Bromelia cata-cuyagua* because it was collected between the two hamlets of Cata and Cuyagua located in the coast, but Ramirez and Carnevali decided to re-name it (It was never published as *Bromelia cata-cuyagua*).

The event was a success being attended by aprox. 2500 people including professionals, amateurs and admirers.

Wot's in the Conference Cauldron? WBC 2008

Lynn Hudson

It is just 12 months away – time to do some serious planning. Registrations are still coming in, the total count at 30th April being an amazing 187 Delegates registered.

Beat the next rate increase and get the Early Bird Rate before 30th June 2007. The Registration Form is downloadable from the website under 'Forums' at www.bromeliadsdownunder.com with how to complete details.

There are lots of plans and jobs being done, keeping us busy. The Bumper Stickers with the logo and "Crikey we likey, even the spiky" have already been popular at $3 each. Hat badges and mugs have been designed and ordered – you will love them. You will "just have to have" a mug as once seen, they are irresistible.

Australia is currently gripped by drought but Cairns has been lucky, we have had plenty of "liquid gold" and the whole area is lush and green, just Paradise to feed your soul. "Down Under Tours" run a wide range of tours all around our beautiful area catering for large busloads to 1 & 2 person trips. They have offered all delegates 10% discount on all of their scheduled tours and they are aligned with all Barrier Reef cruise operators. Their range of both land and water options are amazing, there is something to suit everyone and both full and half day trips. For those on the Internet the address is www.downundertours.com

I continually skite of the beauty of Cairns area and you will understand my enthusiasm when you arrive and enjoy our tropical colours and gardens. Whilst we have many wonderful gardens we do not have bromeliad nurseries in this area – they are located further down the coast, both in the outskirts of Brisbane and Sydney. Should you desire to visit these nurseries and require information, do not hesitate to contact me.

Brisbane has a sub tropical climate well suited to bromeliad growing with some winter heating, whereas further south the growers need to provide more heating and protection. Travellers by air will usually enter and exit Australia through Brisbane or Sydney. Both of these cities run daily "Explorer Buses", traversing the area with an informative highlights commentary.

The majority of charges in Australia include all taxes and charges, they are seldom additional but if so, it is clearly advertised. Tipping is not necessary but some customers

leave tips in appreciation of good service in restaurants and hotels.

The conference venue, Cairns International Hotel has reduced their room rate to $205 AUD per night. This is expensive, and I have requested some cheaper accommodation from other hotels situated close to the venue hotel. They have advised me rates will be available soon - late May/June. These details will be put onto the website www.bromeliadsdownunder.com as soon as I am advised.

After the event do not wish that you had taken the small step to spoil yourself – you deserve to be spoiled! Decide now to attend, you will have a great time, you will see old friends, make new ones and take away so many wonderful memories to nurture and enjoy forever.

2007 BROMELIAD EXTRAVAGANZA

presented by

The Florida Council of Bromeliad Societies

hosted by

The Bromeliad Society of Broward County

SATURDAY, SEPTEMBER 29th, 2007



Plant Sales, Seminars, Raffle and Evening Banquet followed by Rare Plant Auction! The keynote speaker will be Chester Skotak

Hilton Ft. Lauderdale Airport Hotel , 1870 Griffin Road

Dania Beach, FL. 33004 ph 954-920-3300 fax 954-920-3348

Room rates: Single or Double $89.00

Rates in effect until September 14, 2007

This Extravaganza and others which may follow will be the only major Bromeliad events in the continental U.S. as the 2008 World Bromeliad Conference will be held June 24-29, 2008 in Cairns, Queensland, Australia. Don't miss the audio-visual presentation on this event, planned for Saturday. Call 954-925-5112 or email jcadonayre@bellsouth.net for more info.

Bromeliad Society of New Zealand Fiesta 2007

David Anderson, BSI Director. Photographs by Birgit Rhode.

Because Alexandra Park was unavailable to us this year we had to find an alternative venue for our annual Fiesta. After the spaciousness of the former venue, the Mt Eden War Memorial Hall challenged us to be more ordered and organised in the confines of the smaller area. It turned out to be a superb venue and its central location in Auckland city was ideal.

The display was fantastic being very artistically arranged by two of our members. A large number of highly coloured and varied plants had been loaned and every plant was incorporated into the large display, which featured in the foyer.

Aechmea pectinata.

The annual competition with its 27 classes produced some beautiful plants. In the artistic and bromeliad arrangement etc classes there were some stunning and imaginative entries.

Overall, the number of exhibitors and entries were down on previous years. Perhaps this was a reflection of the long cold winter that continued through until Christmas time! The Show Champion was awarded to *Tillandsia streptophylla* exhibited by Peter Coyle.

Numerous members had sale plants on offer and did a brisk trade over both days. Buyers queued at the checkouts and everyone was happy.

On Saturday, we enjoyed a musical interlude. Two instrumentalists played entertaining music outside the entrance to entice passers-by into the hall. However the wind kept blowing off their sombreros!

The whole weekend reflected teamwork, friendship and camaraderie. In every respect, it was deemed a great success and hopefully we will make this our base for future years.

Best Nidularium: *Nidularium* Rusty, named by Keith Green in 2003. This plant circulated for years in New Zealand with the label *N. rutilans* X 'Lubbersianum'.

Best Neoregelia: Peter Coyle's *Neoregelia* Medallion. Known formerly as "*Neoregelia carolinae* Medallion"

Champion of the Show: *Tillandsia streptophylla* grown by Peter Coyle. The same species, exhibited by the late Brian Chudleigh, was the 2006 Fiesta Show Champion (see 56(2) P.69).

EVENTS CALENDAR

Australia

September 6-9, 2007. Central Coast Bromelid Society Show, Mt. Penang Parklands at Kariong, N.S.W.

September 8-9th, Illawarra Bromeliad Society Spring Show, Corrimal

September 21-23, 2007 14th Australian Bromeliad Conference. Rydges resort Hotel, Port Macquarie. Enquiries to 47 Boden Street, Edge Hill QLD 4870 or lynnie@ledanet.com.au

October 13-14, 2007 Bromeliad Society of Australia Spring Show, Burwood RSL Club.

October 27-28, 2007. Bromeliad Society of NSW Spring Show, Wellbank Street, Concord.

November 10-11, 2007. Bromeliad Society of Queensland "Bromeliad Bonanza" at Mt Coot-tha Gardens Auditorium. Contact Bob Reilly, tel. 3870-8029.

June 24-29, 2008, BSI World Conference in Cairns (Australia.) Enquiries to Lynn Hudson, 47 Boden Street, Edge Hill QLD 4870 or lynnie@ledanet.com.au

Europe

September 14-16, 2007. The First European Bromeliad Congress. Utrecht University Botanic Gardens. Organised by the German and Dutch/Belgium Bromeliad Societies. Contact E.J.Gouda@uu.nl

New Zealand

October 9-15, 2007. Bromeliad Society of New Zealand Spring Display & Plant Sale. Milford Shopping Mall, Auckland. Contact Alan Cliffe 09-479-1451.

United States of America

August 4-5, 2007. South Bay Bromeliad Associates Bromeliad Show and Plant Sale. Rainforest Flora Nursery, 19121 Hawthorne Blvd., Torrance CA 90503. Enquiries to Bryan Chan, (818) 366-1858. Sat. noon-4:30pm, Sun. 10:00 am to 4:30pm.

August 18-19, 2007. Seminole Bromeliad and Tropical Plant Society & Florioda east Coast Bromeliad Society Show and Sale. The garden Club of Sanford, 17-92 and Fairmont drive. Contact 321-363-7351.

August 31-Sept. 2, 2007. 10th International Cryptanthus Show and Southwest Bromeliad Guild Show, Beaumont Texas. Contact 239-997-2237 or 409-753-3652.

September 7-9 2007. 33rd Annual Southwest Bromeliad Guild Show & 10th International Cryptanthus Show. MCM Elegante Hotel, Beaumont5 TX. Contact SteveandLarry@comcast.net or 239-997-2237

September 29, 2007. Florida Council of Bromeliad Societies 2007 Bromeliad Extravaganza. Hosted by Bromeliad Society of Broward County (see advertisement on page 90).

November 30-Dec. 2, 2007. Caloosahatchee Bromeliad Society Sale and Show. Terry Park, 3410 Palm Beach Blvd (SR80), Fort Myers. Contact Steve Hoppin at SteveandLarry@comcast.net or 239-997-2237.

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.

Tillandsia display at the Munich Botanic Garden. See article "Protective Collection Program for Bromeliads" by Renate Ehlers, inside on page 127.