

MISCELLANEOUS NEW TAXA OF BROMELIACEAE (XIII)

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ABSTRACT. Seven new taxa of Bromeliaceae are described: *Greigia atrocastanea* and *Werauhia boliviana* from Bolivia; *Guzmania breviscapa* from Colombia; *Aechmea manzanaresiana* and *Billbergia brachysiphon* var. *brevisflora* from Ecuador; *Greigia raporum* and *Greigia vilcabambae* from Peru. Also included is a new name and combination: *Aechmea confusa*. Miscellaneous New Taxa of Bromeliaceae (XII) appeared in Selbyana 19(1): 83–90. 1998.

BOLIVIA

Greigia atrocastanea H. Luther, sp. nov.

FIGURE 1.

TYPE: BOLIVIA. Dept. La Paz, Prov. Nor. Yungas: road from La Paz to Coroico, Cotapata, 3,100 m elev., 10 Aug 1991, E. Garcia 1977 (Holotype SEL; Isotype LPB).

A *Greigia stenolepis* L.B. Smith similis sed bracteis inflorescentiae peratratris, bracteis florigeris carinatis et margine foliis intagro in medio.

Plant a terrestrial, caulescent, stem ca. 2 cm in diameter, covered by living and dead leaves. **Leaves** densely imbricate along the stem, 75–85 cm long, spreading. **Leaf sheaths** narrowly elliptic, 8–10 × 3–4 cm, entire or irregularly serrate toward the leaf blade, coriaceous, nerved, concolorous with the blades or somewhat darker abaxially, appressed brown-lepidote. **Leaf blades** narrowly lanceolate, attenuate, pungent, 22–30 mm wide, somewhat channeled, basally serrate with retrorse to antrorse 1–3 mm long reddish spines, centrally entire, apically serrate with 0.5–1 mm long reddish spines, sparsely appressed brown-lepidote. **Scapes** 10–15 × 5 mm, flattened, dark-castaneous. **Scape bracts** elliptic to ovate, acute to attenuate, 40–65 × 10–40 mm, thin-coriaceous, entire, obtusely carinate to ecarinate, slightly nerved, dark-castaneous with a 1.0–0.5 mm wide pale margin, sparsely pale-punctate-lepidote. **Inflorescences** multiple, lateral, 5–7 × 6–7 cm, bipinnately compound at the base. **Primary bracts** like the upper scape bracts, concealing the 1- and 2-flowered lateral branches. **Branches** subsessile suboppositely 2-flowered or 1-flowered. **Floral bracts** narrowly elliptic somewhat asymmetrical, acute, 32–36 × 7–10 mm, thin-coriaceous, entire, carinate, dark-castaneous except for a narrow pale margin, sparsely punctate-lepidote. **Flowers** subsessile. **Sepals** free, elliptic, acute to attenuate, 23–25 mm long, coriaceous, carinate, somewhat nerved, sparsely dark-punctate-lepidote, dark-castaneous toward the apex. **Corolla** subspreading. **Petals** 30–33 mm long, naked, spatulate,

rose, the blades narrowly elliptic, acute and free, the claws adnate to each other and forming a tube. **Stamens** with the filaments basally connate for $\frac{3}{4}$ of their length and adnate to the petal tube. **Ovary** ellipsoid, 7–10 mm long.

Greigia atrocastanea may be distinguished from the Colombian *G. stenolepis* by the following characteristics: leaf sheaths concolorous with the blades or somewhat castaneous only abaxially (vs. conspicuously dark-castaneous over-all except at the extreme base); leaf blades serrate at the base and apex (vs. serrate along the entire length of the blade); bracts of the inflorescence mostly dark-castaneous except for a very thin pale margin (vs. castaneous only centrally); and the floral bracts are sharply carinate and thin (vs. ecarinate and thickened toward the apex).

Both *Greigia atrocastanea* and *G. stenolepis* have a cryptically compound inflorescence with 1- and 2-flowered nearly sessile branches.

Werauhia boliviana H. Luther, sp. nov.

FIGURE 2.

TYPE: BOLIVIA. Dept. La Paz: Prov. Franz Tamayo, about 15 km above the Hacienda Ubito on the trail to Buena Vista, 14°24' S, 68°27' W, 950 m elev., 13 July 1993. M. Kessler 3907 (Holotype: SEL; Isotype: LPB).

A *W. gigantea* (Martius ex Schultes f.) J.R. Grant similis sed foliis laminis abaxialis albilepidotis et sepalis longioribus differt.

Plant incompletely known, an epiphyte flowering to 1.3 m tall, 1.0 m in diameter (M. Kessler!). **Leaves** rosulate, 70 cm long, coriaceous, somewhat nerved. **Leaf sheaths** elliptic, 18 × 12 cm, dark-castaneous especially abaxially, densely brown-punctate-lepidote especially adaxially. **Leaf blades** linear, attenuate and pungent, 3–6 cm wide, pale-punctate-lepidote, subdensely so adaxially, very densely so abaxially and appearing whitish. **Scape** incompletely known, erect, at least 1 cm in diameter. **Scape bracts** incompletely known, the uppermost narrowly elliptic, attenuate, exceeding the inter-

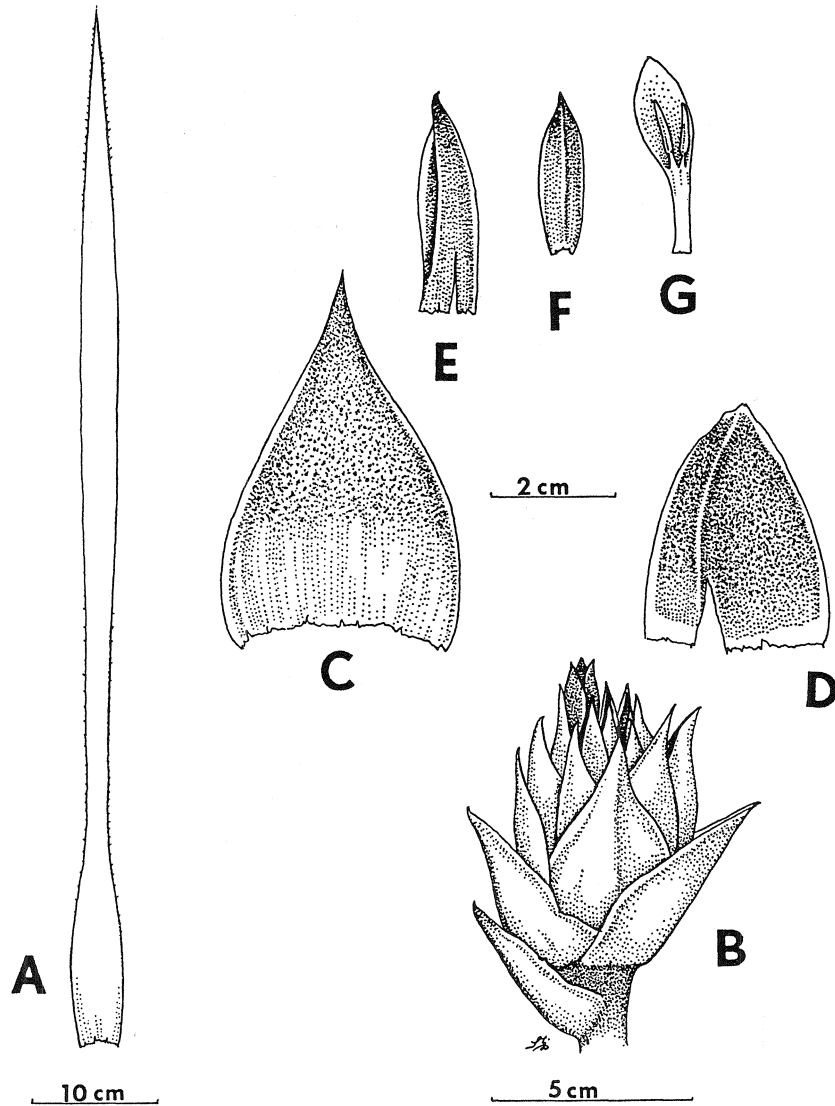


FIGURE 1. *Greigia atrocastanea*. A, leaf. B, inflorescence. C, upper scape bract. D, primary bract. E, floral bract. F, sepal. G, petal and a pair of stamens.

nodes. **Inflorescence** bipinnate with 21 branches (M. Kessler!). **Primary bracts** incompletely known, the lowermost like the upper scape bracts, equalling to slightly exceeding the sterile bases of the branches. **Branches** (only the two lowermost known) with an 8–10 cm long 2-bracteate sterile base, spreading at ca. 45° from the main axis, 20–26 cm long, 5- to 6-flowered with internodes 18–25 mm long. **Floral bracts** broadly elliptic, broadly acute to obtuse, 20–24 × 12–16 mm, obtusely carinate, somewhat nerved, coriaceous, subdensely brown-lepidote, turning secund with the flowers. **Flowers** incom-

pletely known, 7–10 mm pedicellate, distichous at first but becoming downwardly secund. **Sepals** elliptic, broadly acute, 33–35 × 10–12 mm, the adaxial pair obtusely carinate, coriaceous, slightly nerved. **Corolla** unknown. **Fruit** a slenderly ellipsoid, acute, 45 × 8 mm, dry capsule. **Seed coma** pale tan.

Although the type and only known collection of *Werauhia boliviana* is fragmentary and in fruit, it appears to be very similar to *W. gigantea* (syn. *Vriesea amazonica* (Baker) Mez). It differs from that species by having bicolorous leaf blades that are conspicuously pale-lepidote abaxially and ap-

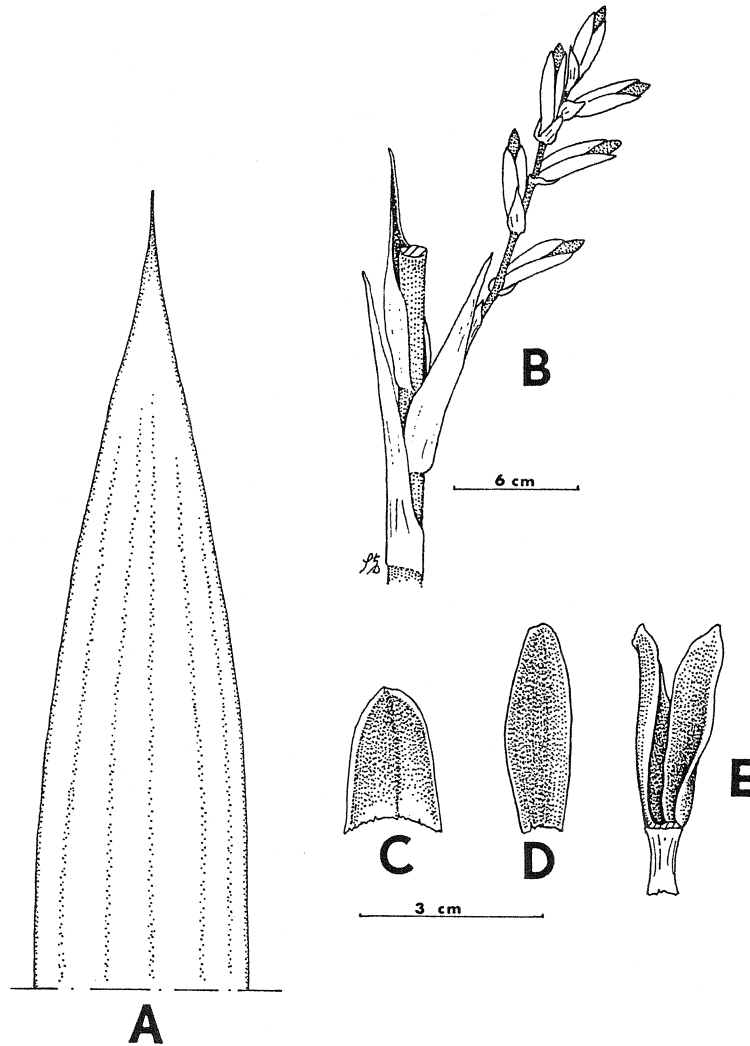


FIGURE 2. *Werauhia boliviana*. A, leaf apex. B, basal branch of inflorescence. C, floral bract. D, sepal. E, calyx and pedicel.

pearing whitish (not concolorous and glabrescent) and has longer sepals (33–35 vs. 20–25 mm long).

Further collections with good, fresh flowers are needed to confirm its placement in *Werauhia*.

COLOMBIA

Guzmania breviscapa H. Luther, sp. nov.

FIGURE 3.

TYPE: COLOMBIA. Chocó: vic. Quibdo, *J. Kent legit*, flowered in cultivation 23 Dec. 1993, *H.E. Luther s.n.* (Holotype: COL; Isotype: SEL).

A *G. devansayana* E. Morren affinis, sed foliis latoribus, bracteis florigeris sepalis petalisque longioribus differt.

Plant a clustering epiphyte, flowering 15–30 cm tall. **Leaves** densely rosulate, laxly spreading, 30 to 50 in number, 45–60 cm long. **Leaf sheaths** broadly elliptic, 5–10 × 4–7 cm, somewhat castaneous especially adaxially, nerved, dark punctate-lepidote especially adaxially. **Leaf blades** lanceolate, acute to attenuate, 25–40 mm wide, nerved, punctate-lepidote, dull grey-green to dark green tinged reddish-purple. **Scape** very short and inconspicuous, 6–10 × 1 cm, barely exerted beyond the leaf sheaths. **Scape bracts** densely imbricate, the lowest narrowly elliptic with narrowly triangular, green subfoliaceous blades; the upper elliptic, acute to attenuate, somewhat rugose, bright red; all somewhat pale-punctate. **Inflorescence** simple, ovoid, 6–8 × 5–

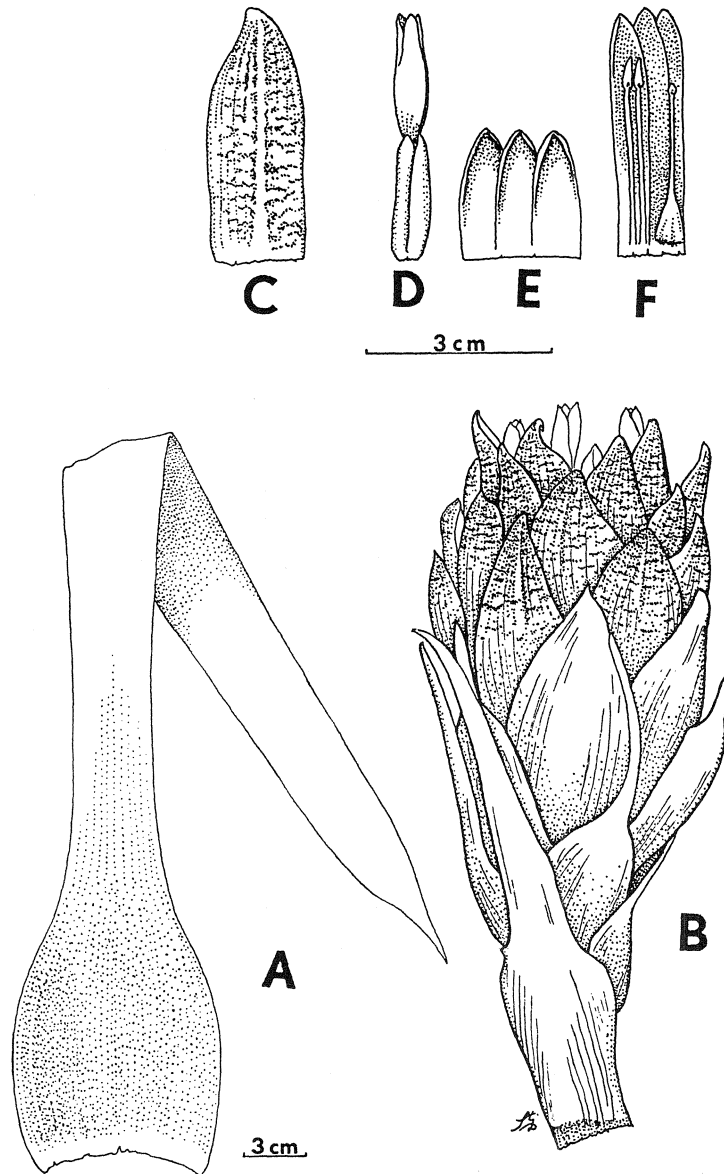


FIGURE 3. *Guzmania breviscapa*. A, leaf. B, inflorescence. C, floral bract. D, flower. E, calyx. F, corolla with pistil and two of six stamens.

7 cm, 20- to 40-flowered. **Floral bracts** elliptic, acute to rounded and apiculate, 40–50 × 15–22 mm, thin-coriaceous, nerved, rugose, sparsely pale-lepidote, bright red. **Flowers** subsessile, more or less erect, 38–43 mm long, opening during the morning. **Sepals** elliptic, acute, 20 mm long, connate for 2–3 mm at the base, nerved, sparsely punctate-lepidote, pale green to white. **Corolla** semi-tubular, flaring slightly at the apex.

Petals elliptic, acute, 35–40 mm long, conglutinated in a tube for 15–20 mm, white.

This new species seems to be related to *G. devansayana* from the upper Amazon slopes of Peru and Ecuador. It differs by having broader leaves (25–40 vs. 12–15 mm wide), longer rugose floral bracts (4–5 vs. 3–4 cm long), longer sepals (20 vs. 15 mm long) and longer petals (35–40 vs. 32 mm long). In addition, *G. devan-*

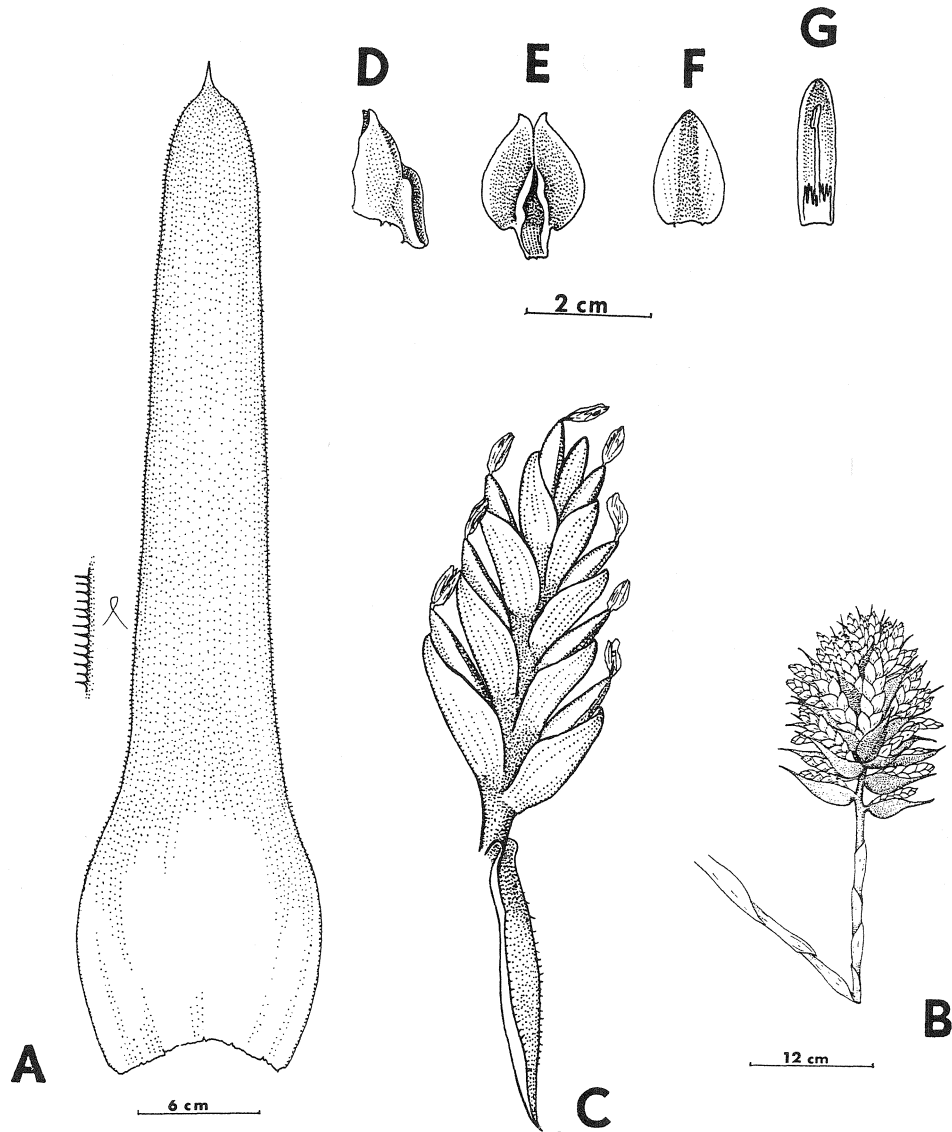


FIGURE 4. *Aechmea manzanaresiana*. A, leaf. B, inflorescence. C, branch of inflorescence. D and E, floral bract. F, sepal. G, petal.

sayana has a much longer, conspicuously exerted scape and leaves that are dark-red striate toward the base.

ECUADOR

Aechmea manzanaresiana H. Luther, sp. nov.
FIGURE 4.

TYPE: ECUADOR. Napo: new road Hollin-Loreto-Coca, 1,300 m elev., 27 Feb. 1988, *Luther, Kress and Roesel 1276* (Holotype: SEL; Isotype: QCA, QCNE).

Aechmea tessmannii Harms affinis similisque sed bracteis florigeris brevioribus et sepalis longioribus differt.

Plant an epiphyte, spreading by 10–20 × 2 cm stolons, flowering 40–70 cm tall. **Leaves** densely rosulate, erect to spreading, 30–65 cm long, 20 to 40 in number, green or reddish. **Leaf sheaths** broadly elliptic, 15–20 × 8–12 cm, entire, castaneous, brown-lepidote especially adaxially. **Leaf blades** ligulate, broadly acute to rounded with an attenuate, pungent apex, 4–8 cm wide, coriaceous, densely serrate with 2–4 mm long,

dark, straight to antrorse spines, densely appressed-lepidote especially abaxially. **Scape** erect, 30–50 × 1 cm, sparsely pale-lepidote, reddish. **Scape bracts** erect, laxly imbricate to remote, 3–4 × 1–2 cm, serrate, thin-coriaceous, pale-lepidote, orange to orange-red. **Inflorescence** bipinnate (rarely tripinnate at the base), conical to nearly ovoid, 20–30 × 10–20 cm, usually with the branches very densely arranged. **Primary bracts** elliptic, acute, laxly serrate, thin-coriaceous, sparsely pale-lepidote, 1–8 cm long, gradually decreasing in size toward the apex of the inflorescence, bright orange-red. **Branches** with a flattened, 5–40 mm long peduncle, spreading at 45–90° from the main axis at anthesis, 5–18 cm long, distichously 7- to 25-flowered; the rachis very broad and conspicuously excavated and winged next to each flower, orange-red, usually drying very dark. **Floral bracts** elliptic, acute, somewhat cucullate, 15–22 mm long, nerved, thin-coriaceous, bicarinate at the base, carinate at the apex, bright orange-red. **Flowers** sessile, spreading at 30–45° from the rachis at anthesis, 30–35 mm long. **Sepals** free, symmetrical, elliptic, broadly acute, 15–18 mm long, the adaxial pair carinate, the abaxial pair ecarinate, thin-coriaceous, even to slightly nerved, bright orange. **Corolla** erect, semitubular. **Petals** free, linear, obtuse, 25 mm long, each with a pair of fimbriate appendages 1–3 mm above the base, yellow-orange to orange. **Ovary** ellipsoid to ovoid, 6 × 5 mm, white to pale green; epigynous tube 2 mm deep; ovules apical, numerous. **Fruit** an ellipsoid blue berry.

PARATYPES. ECUADOR. Napo: new road Hollin–Loreto–Coca, 1,300 m elev., 27 Feb. 1988, Luther, Kress & Roesel 1276A (SEL); Entre el Rio Pucuno y el cacerrío de Guamani, carretera Hollin–Loreto–Coca, 00°46'S, 77°26'W, 1,200 m elev., 12 Dec. 1987, C.E. Cerón M. 2987 (MO, SEL.).

This new species is similar and probably closely related to *Aechmea tessmannii* Harms (widespread from Colombia to Peru) on account of its very broad spike rachis and symmetrical sepals. It differs by having shorter (15–22 vs. 18–25 mm long) floral bracts, longer (15–18 vs. 13–15 mm long) sepals and longer (25 vs. 20 mm long) petals. Because the spreading flowers much exceed the floral bracts in *A. manzanaresiana*, the outline of a branch is conspicuously “saw-toothed,” not nearly smooth as in *A. tessmannii*. In addition, most plants of *A. manzanaresiana*, at least in the field if not always in cultivation, have a much more densely branched inflorescence with shorter branches than *A. tessmannii*. The name honors José Manuel Manzanares of Quito, Ecuador, enthusiastic collector and photographer of Ecuadorian Bromeliaceae.

Aechmea manzanaresiana, in the traditional classification of Smith and Downs (1979), could be placed in subgenus *Platyaechmea*. Members of this subgenus have sessile flowers mostly distichously arranged with conspicuous, imbricate floral bracts that conceal at least the ovary and usually most of the flower at anthesis and a spike rachis that is flattened and often broad and excavated. *Platyaechmea* merges with subgenus *Aechmea* through species such as *A. brevicollis* L.B. Smith, *A. contracta* (Mart. ex Schl.f.) Baker, *A. abbreviata* L.B. Smith, *A. angustifolia* Poepp. and Endl., and *A. roeseliae* H. Luther. The majority of the species have an Amazonian distribution.

Because a number of species have been described since the last treatment of *Platyaechmea* (Smith & Downs 1979), a key to the species occurring in Ecuador is presented here.

1. Branches of inflorescence sessile
 - *A. tillandsioides* (Mart. ex Schult.f.) Baker
1. Branches of inflorescence pedunculate
 2. Primary bracts abruptly reduced in size toward the apex of the inflorescence.
 3. Floral bracts only slightly exceeding the ovary in length *A. chantinii* (Carr.) Baker
 3. Floral bracts much exceeding the ovary in length, about ½ as long as the sepals
 - *A. moorei* H. Luther
 2. Primary bracts gradually reduced in size toward the apex of the inflorescence.
 4. Spike rachis broad, 4–7 mm wide, excavated.
 5. Sepals asymmetrical.
 6. Floral bracts 12–20 mm long, the apex straight; sepals 10–14 mm long *A. retusa* L.B. Sm.
 6. Floral bracts 23–30 mm long, the apex cucullate; sepals 16–20 mm long *A. cucullata* H. Luther
 5. Sepals symmetrical.
 7. Sepals 13–15 mm long, exceeded by to slightly exceeding the floral bracts
 - *A. tessmannii* Harms
 7. Sepals 15–18 mm long, much exceeding the floral bracts.
 - *A. manzanaresiana* H. Luther
 4. Spike rachis narrow, 2–3 mm wide, angled but not excavated.
 8. Leaves conspicuously banded; floral bracts 25–30 mm long *A. zebrina* L.B. Sm.
 8. Leaves not banded, floral bracts 23–25 mm long
 - *A. romeroi* L.B. Sm.

It should be noted that sympatric species of *Aechmea* subgenus *Platyaechmea* in Amazonia appear to hybridize occasionally, making identification of some specimens problematic, if not impossible.

Billbergia brachysiphon var. **breviflora** H. Luther, var. nov.

TYPE: ECUADOR. Zamora-Chinchipec: near Zumbi, 900 m elev., Feb. 1993, *Dalström, Höijer & Wanntorp legit s.n.* Flowered in cultivation SEL 93-272, 20 Jan. 1998, *H.E. Luther s.n.* (Holotype: SEL; Isotype: QCA).

A. B. brachysiphon var. *paraensis* L.B. Smith, cui similis sed sepalis petalisque minoribus differt.

This variety differs from *Billbergia brachysiphon* var. *paraensis* from Amazonian Colombia and Brazil by having shorter, unequal sepals (4–6 mm vs. 12–15 mm long) and shorter yellow-green petals (48–50 mm vs. 70 mm long).

PERU

Aechmea confusa H. Luther, comb. et nom. nov.

TYPE: PERU. Prov. Loreto: Amazon lowland, cultivated, 1960. *Lee Moore A-120* (Holotype: US). Basionym: *Greigia amazonica* L.B. Smith, *Phytologia* 8: 226. 1962; not *Aechmea amazonica* Ule, *Verh. Bot. Ver. Brand.* 48: 136. 1907.

The type specimen is an odd caulescent (etiolated?) plant with a very small (45 × 40 mm) inflorescence. The inflorescence is clearly central with a short scape concealed by the inner leaf sheaths. The “outer bracts” are in reality primary bracts subtending two-flowered branches. The floral bracts are elliptic, somewhat asymmetrical, carinate and minutely serrulate. The petals (poorly preserved) appear to be free and have dried black.

Correspondence from Lee Moore (8 Dec. 1997) in response to questions concerning the origin of his collection reveals that his A-120 was from “either the Itaya or Nanay Rivers not far from Iquitos because that was all that was accessible to me at the time.” These general localities are close to the collection sites of a pair of more recently collected and cultivated specimens that appear to represent the same taxon: “near Iquitos” *S. and H.L. Smith s.n.* and “from the Napo River, Peru” *A. McCorry s.n.* Both of these collections are deposited at (SEL).

The two vouchers cited immediately above have much larger inflorescences (8–10 × 8–10 cm) than the type, with longer floral bracts (26–33 vs. 24–25 mm) and sepals (28–35 vs. 25 mm) with free unappendaged white petals. I consider them to be conspecific and more typical for the species.

Aechmea confusa is similar to the Ecuadorian *A. kentii* (H. Luther) L.B. Smith and M.A. Spencer (Basionym: *Streptocalyx kentii* H.Luther), but differs by having sessile to subsessile branches (vs. 6–18 mm pedunculate), longer flo-

ral bracts (24–33 vs. 12–22 mm long), longer sepals (25–35 vs. 19–21 mm long) and white (vs. purple) petals.

With the removal of this taxon from *Greigia* the remainder of the genus consists of cool-growing, mostly high elevation species distributed from Mexico to Chile and Bolivia.

Greigia raporum H. Luther, sp. nov. FIGURE 5.

TYPE: PERU. Dept. Junin/Cusco: Prov. Satipo/Convención, Cordillera Vilcabamba, Rio Ene slope, near summit of divide, 3,320 m elev., 11°39'36"S, 73°40'02"W, 14 June 1997, *B. Boyle, M. Arakaki and H. Beltrán 4373* (Holotype: USM).

A. G. danielii similis sed bracteis florigeris sepalisque perpallidis (non castaneis) differt.

Plant a terrestrial, probably caulescent, stem at least 1 cm in diameter. **Leaves** 70–85 cm long. **Leaf sheaths** elliptic, 10–11 × 3–6 cm, entire, somewhat nerved, coriaceous, castaneous especially abaxially, brown lepidote. **Leaf blades** lanceolate, attenuate, pungent, 18–30 mm wide, channeled, basally entire to variably serrate, apically serrate with antrorse, 1–2 mm long spines, sparsely brown lepidote especially abaxially. **Scape** 10–25 × 10 mm, flattened, brown. **Scape bracts** elliptic to ovate, rounded to broadly acute, apiculate, 2–3 × 2–3 cm, thin-coriaceous, entire to variably serrate; the lowest carinate, the uppermost ecarinate; castaneous with a pale margin. **Inflorescences** multiple, lateral, simple, 3–5 × 1–5 cm, few-flowered. **Floral bracts** narrowly elliptic to linear, acute, 20–25 × 3–5 mm, very thin-coriaceous to membranaceous, apically carinate and castaneous, pale elsewhere, sparsely brown lepidote. **Flowers** with a slender, 2–3 mm long pedicel. **Sepals** free, elliptic to subtriangular, acute, 13–15 mm long, thin-coriaceous, somewhat nerved, carinate and castaneous apically, pale elsewhere. **Corolla** with slightly spreading petal blades. **Petals** 35 mm long, naked, spatulate, the blades elliptic and free, the claws adnate to each other and forming a tube; white drying black. **Stamens** with the filaments basally connate for 2/3 of their length and adnate to the petal tube. **Fruit** somewhat trigonous, 20 mm long, castaneous. **Seeds** stacked, disc-like.

PARATYPE: Type locality, 14 June 1997, *B. Boyle et al. 4371* (SEL).

Greigia raporum resembles *G. danielii* from Colombia but differs by having the floral bracts and sepals paler except at their carinate and castaneous apex (vs. castaneous over-all). In addition, the holotype has basally entire leaf blades although the paratype is variably serrate at the

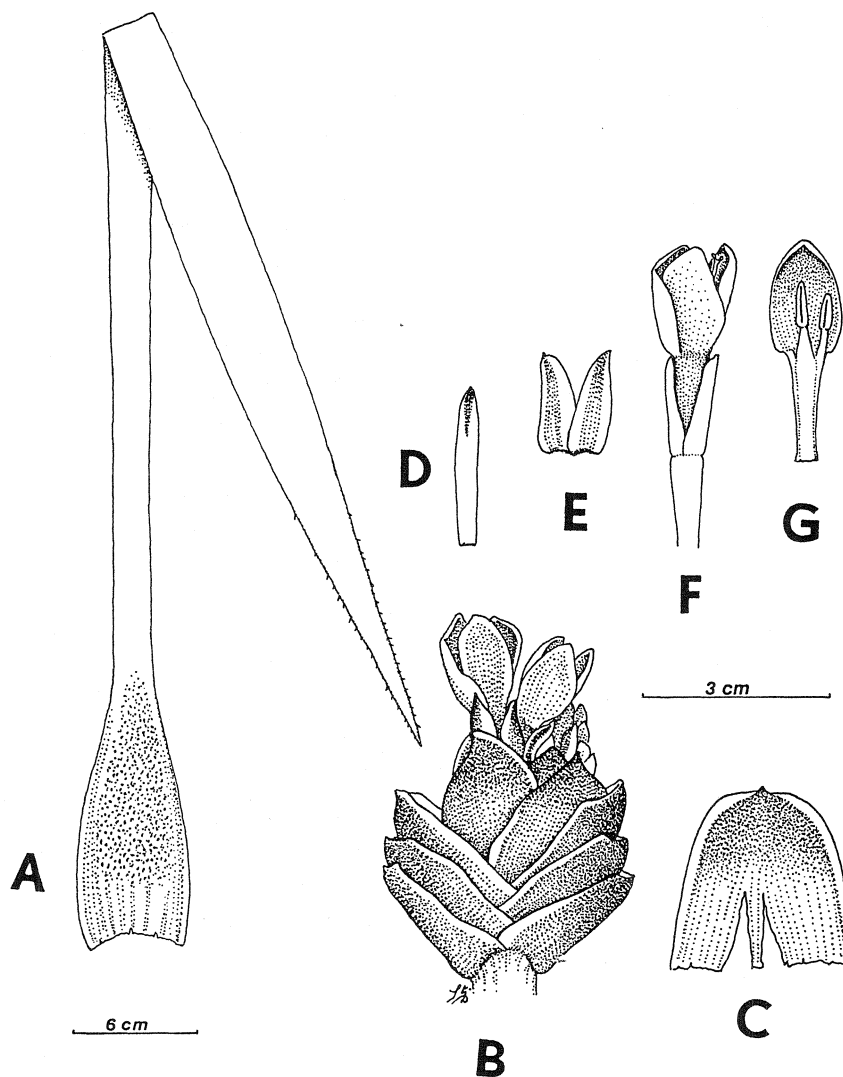


FIGURE 5. *Greigia raporum*. A, leaf. B, inflorescence. C, upper scape bract. D, floral bract. E, adaxial sepals. F, flower. G, petal and a pair of stamens.

base; the leaf blades of *G. daniellii* are basally conspicuously serrate.

The specific epithet commemorates Conservation International's RAP (Rapid Assessment Program) expeditions, during one of which this species was first collected.

Greigia vilcabambae H. Luther, sp. nov.

FIGURE 6.

TYPE: PERU. Dept. Junin, Prov. Satipo: Cordillera Vilcabamba, northern Cord. Vilcabamba, eastern slope, 11°33'35"S, 73°38'28"W, 2,090 m elev., 26 June 1997, B. Boyle, M. Arakaki and H. Beltrán 4826 (Holotype: USM).

A *G. cochabambae* H. Luther similis sed foliis laminis lanceolatis (non linearibus), indumento folio brunneo (non pallido) et bracteis scapis pro maxima parte ecarinatis (non carinatis) differt.

Plant a terrestrial, caulescent, the stem to 0.8 m × 15–20 mm, completely covered by living or dead leaves which conceal the lateral inflorescences. **Leaves** densely imbricate along the stem, laxly spreading, 95–123 cm long. **Leaf sheaths** broadly elliptic to ovate, 30 × 25–45 mm, entire, coriaceous, nerved, brown-lepidote, somewhat darker than the blades. **Leaf blades** very narrowly lanceolate, long attenuate, 15–25 mm wide, variably serrate with 0.5–1 mm long

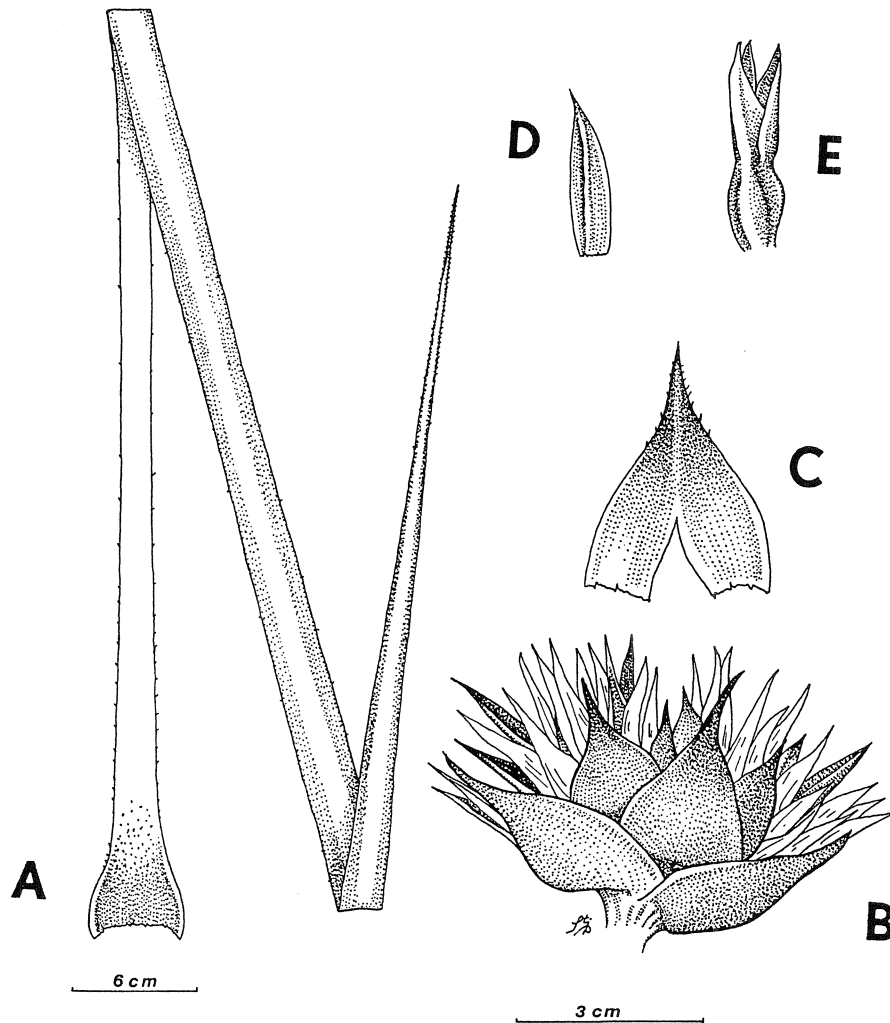


FIGURE 6. *Greigia vilcabambae*. A, leaf. B, inflorescence. C, upper scape bract. D, floral bract. E, flower.

dark spines, the spines most densely arranged at the leaf apex; somewhat channeled, thin-coriaceous, the central zone of the leaf blade drying pale, very sparsely brown-lepidote. **Scape** 25 × 5 mm, flattened, drying castaneous. **Scape bracts** ovate to triangular with an attenuate apex, 30–45 mm long, apically laxly serrate with dark spines, thin-coriaceous, even to slightly nerved, ecarinate to somewhat carinate apically, glabrous, drying tan. **Inflorescences** multiple, lateral, simple, 5 × 7 cm. **Floral bracts** elliptic, acute to attenuate, pungent, 25–30 × 4–8 mm, thin-coriaceous, somewhat nerved, carinate, drying tan. **Flowers** incompletely known, 1–2 mm pedicellate. **Sepals** free, subtriangular, acute, 20 × 5 mm, thin-coriaceous, nerved, drying tan. **Corolla** unknown. **Fruit** somewhat

compressed and trigonous, 15 × 8 mm, sparsely brown lepidote, drying castaneous. **Seeds** stacked, disc-like.

This new species seems most similar to *G. cochabambae* H. Luther from Bolivia but differs by leaf shape (leaf blades narrowly lanceolate vs. linear), leaf indumentum (trichomes small, sparse and brown vs. coarse and pale) and by having the upper scape bracts largely ecarinate (vs. mostly carinate). As the only collection is fragmentary and in early fruit, its reproductive structures are poorly known.

LITERATURE CITED

- SMITH L.B. AND R.J. DOWNS. 1979. Bromelioideae (Bromeliaceae) *In* Flora Neotropica, Monograph 14, part 3: 1774–75.