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MISCELLANEOUS NEW SPECIES OF BRAZILIAN BROMELIACEAE

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ABSTRACT. Ten new species of Brazilian Bromeliaceae are described and illustrated: *Encholirium ascendens* Leme, *Dyckia lunaris* Leme, *Aechmea heterosepala* Leme, *Hohenbergia magnispina* Leme, *H. igatuensis* Leme, *Neoregelia ilhana* Leme, *N. paratiensis* Leme, *N. viridolineata* Leme, *Orthophytum elegans* Leme, and *O. jacaraciense* Leme.

RESUMO. São descritas e ilustradas 10 espécies novas de Bromeliaceae ocorrentes no Brasil, a saber: *Encholirium ascendens* Leme, *Dyckia lunaris* Leme, *Aechmea heterosepala* Leme, *Hohenbergia magnispina* Leme, *H. igatuensis* Leme, *Neoregelia ilhana* Leme, *N. paratiensis* Leme, *N. viridolineata* Leme, *Orthophytum elegans* Leme, and *O. jacaraciense* Leme.

Key words: Bromeliaceae, new species, Brazil

INTRODUCTION

At the country level, Brazil contains the greatest diversity of Bromeliaceae in the world (Leme 2003, Forzza 2005) with the presence of 80% of the genera (22% of which are endemic) and at least 50% of the known species. Recent studies in remnant patches of Atlantic forest, as well as in isolated inselbergs in Eastern Brazil, have brought to light interesting new species of Bromeliaceae, this, in spite of incessant historical environmental destruction that include activities such as wood extraction, anthropogenically induced fires, and agriculture. The fact that more intensive exploration is revealing new species for science highlights the large gap in our knowledge of the biodiversity of these Brazilian biomes and the importance of taxonomy and inventory as basic tools to understand biodiversity and promote conservation (Mayo et al. 2000, Leme & Siqueira-Filho 2007).

NEW SPECIES

Encholirium ascendens Leme, sp. nov. TYPE: Brazil—Minas Gerais: Porteirinha to Mato Verde, ca. 8 km from Porteirinha, 15°48′03″S 43°04′41″W, 714 m, 23 Jun 2008, *E. Leme 7451, C. C. Paula, T. Coser, R. Moura & O. Ribeiro* (Holotype: HB; Isotypes: RB, SEL, VIC). FIGURE 1.

A Encholirium belemii L.B. Sm. & Read, cui affinis, planta distincte altiore, bracteis floriferis apicem versus longe filiforme-caudatis, recurvatis, floribus pedicellis inconspicuis, 2–3 mm longis et sepalis petalisque brevioribus differt.

Plant rupicolous, clustering or solitary, flowering 2.4–3 m high. ***Leaves*** densely rosulate, strongly coriaceous, thick mainly toward the base, grayish-green throughout or reddish toward the apex; ***sheaths*** much broader than the blades; ***blades*** suberect-arcuate to spreading, narrowly triangular, attenuate toward the apex, apex long-caudate, ca. 70 cm long, 3–4 cm wide at the base (not including the spines), abaxially densely white-lepidote with trichomes arranged along the nerves, not obscuring the blades color, distinctly nerved, adaxially inconspicuously white lepidote to glabrescent, finely nerved, flat toward the base and canaliculate toward the apex, laxly spinose, spines subtriangular-uncinate with apex acicular, 2–2.7 mm apart, flat, coarsely white lepidote except for the base and the apex, greenish except for the castaneous apex, the basal ones distinctly retrorse-uncinate, 7–10 mm long, 4–6 mm wide at base, the upper ones distinctly antrorse-uncinate, 3–5 mm long, 1.5–3 mm wide at the base. ***Scape*** 110–160 cm long, 2–3.7 cm in diameter, terminal, erect, rigid, glabrous; ***scape bracts*** foliaceous to subfoliaceous, long attenuate-caudate, distinctly exceeding the internodes, subdensely (at the base) to laxly (at the apex) arranged, distinctly exposing the scape, laxly and coarsely spinose, spines antrorse-uncinate, white-lepidote mainly abaxially. ***Inflorescence*** paniculate, bipinnate, 100–125 cm long (including the terminal branch), 30–45 cm in diameter, erect, rachis stout, 1.2–2.5 cm in diameter, straight; ***primary bracts*** the basal ones subfoliaceous, with a subtriangular base and a long filiform-attenuate blade, suberect to reflexed, exceeding the stipes, laxly spinose, spines prevailingly antrorse-uncinate, 0.5–2.5 cm, the upper ones much reduced, narrowly triangular, attenuate, recurved, shorter than the stipes, inconspicuously spinulose to subentire; ***branches*** 5 to 13 in number (including the terminal one), cylindrical to subcylindrical, the lateral branches 27–55 cm long, suberect at the base and ascending toward the

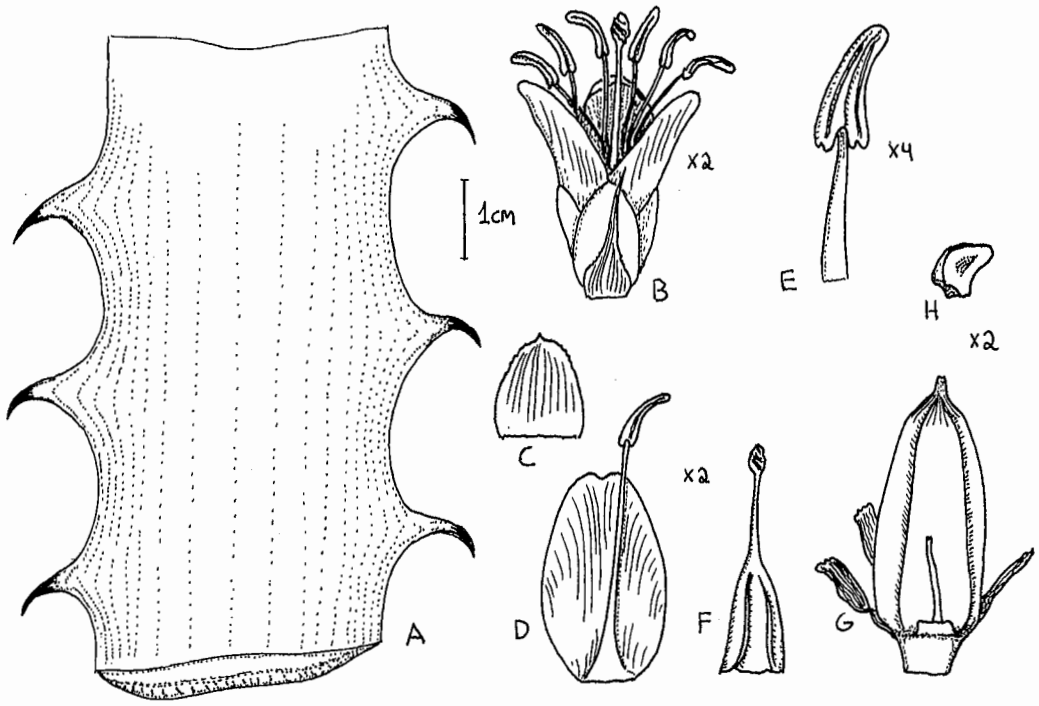

FIGURE 1. *Encholirium ascendens* Leme. **A.** Basal segment of leaf blade. **B.** Floral bract and flower. **C.** Sepal. **D.** Petal and stamen. **E.** Anther. **F.** Pistil. **G.** Capsule. **H.** Seed.

apex, becoming erect or nearly so at the apex, densely flowered, rachis straight, irregularly sulcate, 0.4–1 cm, stipes 10–14 × 0.9–1.3 cm, complanate, naked, the terminal branch resembling the lateral ones, erect, 75–87 cm long, many-flowered, bearing at the base 1 to 2 sparsely arranged flowers; ***floral bracts*** nerved, ecarinate, glabrous, with a suborbicular-triangular base, 2.5–3 × 3–3.5 mm, inconspicuously crenulate to entire, and a long filiform-caudate blade, ca. 7 mm long, recurved, exceeding the sepals. ***Flowers*** many, polystichously and densely arranged, concealing the scape in most part, ca. 20 mm long (including the stamens), subverticillate, subspreading, inconspicuously pedicellate, pedicels indistinct, stout, obconic, 2–3 mm long, ca. 3.5 mm in diameter at the apex; ***sepals*** symmetrical, broadly ovate, apex obtuse and apiculate, ecarinate, 6.5–7 × 6–7 mm, glabrous, slightly convex, distinctly nerved, remotely and irregularly crenulate-denticulate mainly near the apex, partially covering each other at the base; ***petals*** symmetrical, ovate, free, apex obtuse-emarginate, 12–13 × 7–8 mm, glabrous, entire, suberect toward the apex at anthesis, forming a campanulate corolla, exposing the stamens, partially covering each other at the base; ***stamens*** distinctly exceeding the petals; ***filaments*** subterete, subfree, ca. 15 × 1 mm; ***anthers*** sublinear, ca. 4 mm long, recurved at anthesis, base distinctly sagittate, apex obtuse, fixed near the base; ***pollen*** ellipsoid, sulcate, exine reticulate; ***ovary*** ca. 7 mm long; ***style*** ca. 5 mm long, slightly shorter than the anthers; ***stigma*** conduplicate-spiral, subcapitate, blades ca. 1.5 mm long, margins minutely crenulate. ***Capsules*** narrowly ovate, long beaked, castaneous, lustrous, 17–19 × 8–10 mm. ***Seeds*** subcuneate, castaneous, inconspicuously alate, ca. 3 × 2 mm.

Comments. The closest relative of *Encholirium ascendens* is the poorly known *E. belemii* which was originally collected in Minas Gerais state, close to the border of Espírito Santo state (Smith & Read 1989), along the road "BR 4" on calcareous rocks. The information provided in the protologue concerning its origin from the "border of Espírito Santo" was not observed on the holotype label at US or an isotype at NY. On the other hand, the existing highway "BR 040" connects Brasília, DF, with Rio de Janeiro, crossing most part of Minas Gerais.

As *Encholirium belemii* was described on the basis of an immature flowering specimen the inflorescence and flowers measure smaller than expected for a well-developed flowering specimen, some important differences can be observed when comparing it to new species described here.

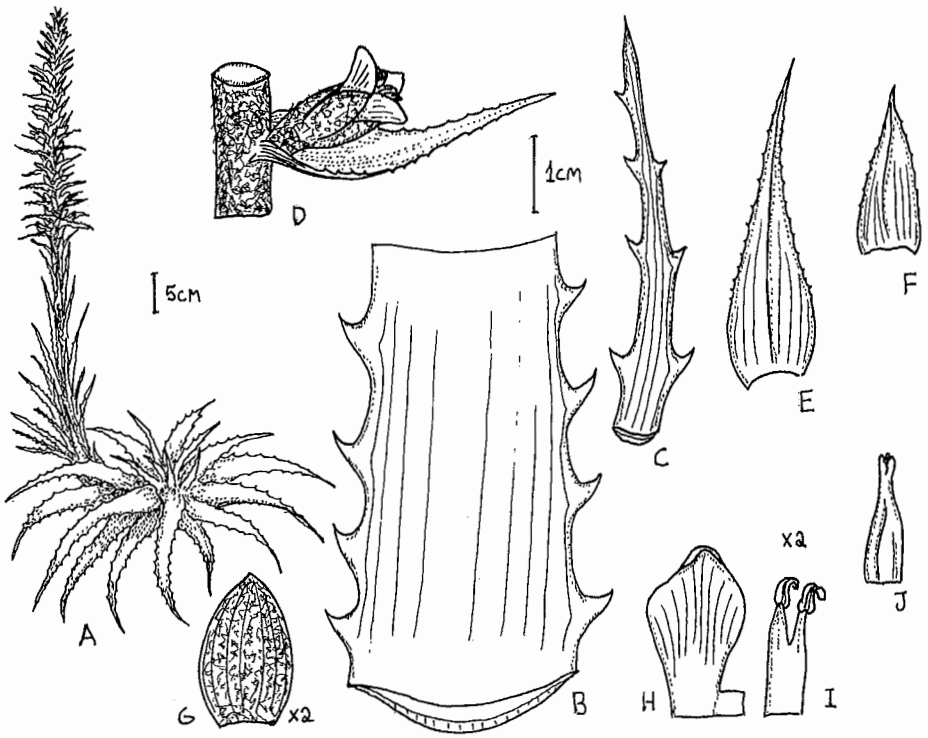

FIGURE 2. *Dyckia lunaris* Leme. **A.** Plant habit. **B.** Basal segment of leaf blade. **C.** Leaf blade apex. **D.** Basal floral bract and flower. **E.** Basal floral bract. **F.** Upper floral bract. **G.** Sepal. **H.** Petal. **I.** Stamen. **J.** Pistil.

Encholirium ascendens differs from *E. belemii* by the distinctly taller stature when in bloom (2.3–3 m high vs. ca. 1 m), floral bracts with long filiform-caudate blade (vs. shortly acuminate-caudate apex), recurved (apparently not recurved), flowers bearing inconspicuous and not distinct pedicels (vs. distinctly pedicellate even considering the immature flowers), pedicels 2–3 mm long (vs. ca. 8 mm long in immature flowers), shorter sepals (6.5–7 mm long vs. 10 mm), and by shorter petals (12–13 mm long vs. ca. 17 mm even when immature).

Encholirium belemii was considered a doubtful taxon by Forzza (2001) as the absence of preserved leaves and the immature status of the specimens did not allow a full characterization of the species. While characterizing a species based on an immature specimen is far from ideal, it is possible to recognize consistent diagnostic elements from the available type specimens, mainly the branched inflorescence, floral bracts, the distinctly pedicellate flowers, and sepal and petal conformation, distinguishing this taxon from all known others, as highlighted by Smith and Read (1989).

Etymology. The name of this new species refers to the suberect-ascending lateral branches of the inflorescence, which become erect or nearly so toward the apex.

Dyckia lunaris Leme, sp. nov. TYPE: Brazil—Goiás: Alto Paraíso, ca. 4 km from Vila São Jorge, Vale da Lua, ca. 1000 m, 22 Jul 2004, *E. Leme 6359* (Holotype: HB; Isotype: RB). FIGURE 2.

A Dyckia burle-marxii L.B. Sm. & R. W. Read, cui affinis, sed planta florente breviora, laminis foliorum distincte recurvatis, inflorescentia simplici, bracteis floriferis altitudinem petalorum superantibus, floribus longioribus et sepalis apice haud cucullatis, acutis vel fere differt.

Plant rupicolous, flowering 55–90 cm high, propagating by elongated basal shoots. ***Leaves*** ca. 30 in number, densely rosulate, strongly coriaceous and succulent, subulate near the apex; ***sheaths*** broader than the blades; ***blades*** narrowly triangular, nearly flat and inconspicuously if at all canaliculate, strongly recurved, 29–40 cm long, 2.7–3.4 cm wide at the base (excluding the spines), ca. 0.4 mm thick at the base, green throughout or green to yellowish-green toward the base and red toward the apex, opaque, distinctly nerved abaxially and inconspicuously white-lepidote with trichomes arranged in rows along the midnerves

not abscuring the leaf-color, adaxially glabrous, abaxial and abaxial surfaces not contrasting in color, apex long acuminate, terminating in a pungent spine, margins inconspicuously and sparsely white-lepidote to glabrous, laxly spinose, spines 6–9 mm long, 4–6 mm wide at the base, 10–40 mm apart, narrowly triangular, complanate, nearly straight to antrorsely uncinate, glabrous, greenish to reddish near the base, yellowish toward the apex; ***scape*** lateral, erect, 25–45 cm long, 8–11 mm in diameter, subdensely white-lanate to glabrescent, green; ***scape bracts*** foliaceous to subfoliaceous, strongly recurved to suberect, the basal ones yellowish-green toward the base and red toward the apex, densely nerved, glabrous, margins laxly spinose, spines distinctly antrorsely uncinate, the upper scape bracts stramineous at anthesis with a subtriangular-ovate base and a long acuminate-caudate apex, distinctly exceeding the internodes. ***Inflorescence*** erect, simple, 22–45 cm long, rachis 5–10 mm in diameter, straight, terete, greenish toward the base, pale reddish-orange toward the apex, subdensely to densely white-lanate but trichomes not at all obscuring the scape color; ***floral bracts*** distinctly nerved, stramineous at anthesis, glabrous to inconspicuously white-lepidote, spreading to suberect-ascending, ecarinate, subdensely and minutely spinulose, spines irregularly recurved, the basal floral bracts with an ovate base and a long acuminate-caudate apex, distinctly exceeding the petals, 30–55 × 10–14 mm, the upper ones subtriangular-ovate, acuminate, 12–30 × 7–10 mm, from equaling the sepals to exceeding the petals, margins remotely spinulose. ***Flowers*** 50 to 80 in number, subdensely to densely arranged, 19–23 mm long, spreading to suberect at anthesis, becoming erect afterwards, odorless, pedicels stout, distinct, orange, densely white-lanate, 3–7 mm long, 3–4 mm in diameter at the apex; ***sepals*** ecarinate, 10–11 × 5–6 mm, orange to reddish, densely white-lanate, trichomes obscuring in part sepal color, margins entire, bearing fimbriate trichomes, apex acute or nearly so, the adaxial sepals asymmetrical-curved, subtriangular-ovate, the abaxial sepal symmetric, ovate, distinctly convex; ***petals*** symmetrical, broadly obovate, apex rounded to cucullate, connate at the base for ca. 2 mm into a common tube with the filaments, 11–13 × 7 mm, ecarinate, orange, margins entire, dorsally subdensely but inconspicuously white-lepidote, suberect at anthesis and forming a campanulate corolla 8–10 mm in diameter; ***stamens*** distinctly shorter than the petals; ***filaments*** complanate, connate for 4–5 mm above the common tube with the petals, 6–7 × 1.5 mm, pale orange toward the apex; ***anthers*** ovate, ca. 3 mm long, strongly spirally recurved at anthesis, base sagittate, apex acute, fixed near the base; ***pollen*** narrowly ellipsoid, sulcate, exine reticulate, muri narrowed; ***pistil*** ca. 9 mm long, about equaling the anthers; ***stigma*** conduplicate-spiral, blades ca. 1.5 mm long, orange, margins minutely crenulate; ***style*** ca. 2 mm long; ***ovary*** narrowly subpyramidal, ca. 5.5 mm long, yellowish. ***Capsules*** broadly ellipsoid-ovate, 14–15 mm long, 9–10 mm in diameter, dark castaneous, lustrous, apex shortly beaked. ***Seeds*** flat, asymmetrical, subcuneate, base obtuse, 4–5 mm long, ca. 3 mm wide.

Paratypes. Brazil—Goiás: Alto Paraíso, ca. 4 km da Vila São Jorge, Vale da Lua, ca. 1000 m, 23 Aug 1998, *A. Miranda 933*, fl. cult. Jul 2004, *E. Leme 4395* (HB); ibidem, Sep 2000, *R.C. Forzza 1626*, fl. cult. Sep 2005, *E. Leme 4951* (RB).

Comments. *Dyckia lunaris* is closely related to *D. burle-marxii* but differs from it by the shorter stature when in bloom (55–90 cm high vs. 170 cm), leaf blades distinctly recurved (vs. suberect), inflorescence simple (vs. pseudosimple to distinctly compound), floral bracts exceeding the petals (vs. nearly equaling the sepals), flowers longer (long 19–23 mm vs. 17 mm), and by the sepals which are flat at the apex (vs. cucullate), and have an acute apex (vs. apex broadly rounded).

According to Smith and Read (1977), *Dyckia burle-marxii* was described on the basis of a specimen from Chapada Diamantina, Bahia state, which flowered in cultivation in the collection of the late Roberto Burle Marx. In fact, there was in front of Burle Marx's house a large clump of *D. burle-marxii* which probably provided the holotype. A selected specimen from this clump was kept in cultivation (*Leme 2355*) and flowered in April, 2003. It confirmed all floral characteristics mentioned in the protologue except for the apparently simple inflorescence, which in contrast is clearly compound in the holotype. On the other hand, the holotype of *D. burle-marxii* deposited in the Herbarium Bradeanum (HB) apparently represents the inflorescence with two stages of development (or the inflorescences of two specimens in different floral stage): one of it in fruit stage, bearing well developed capsules (including the lateral branches), and a terminal branch or a simple inflorescence of another specimen with open flowers and flowers buds.

Despite the need of further investigation on the natural variability of *D. burle-marxii* in its habitat, it is possible to consistently indicate the morphological differences mentioned above when comparing it to *D. lunaris*.

Etymology. The name of this new species is a reference to the place where it was collected, in

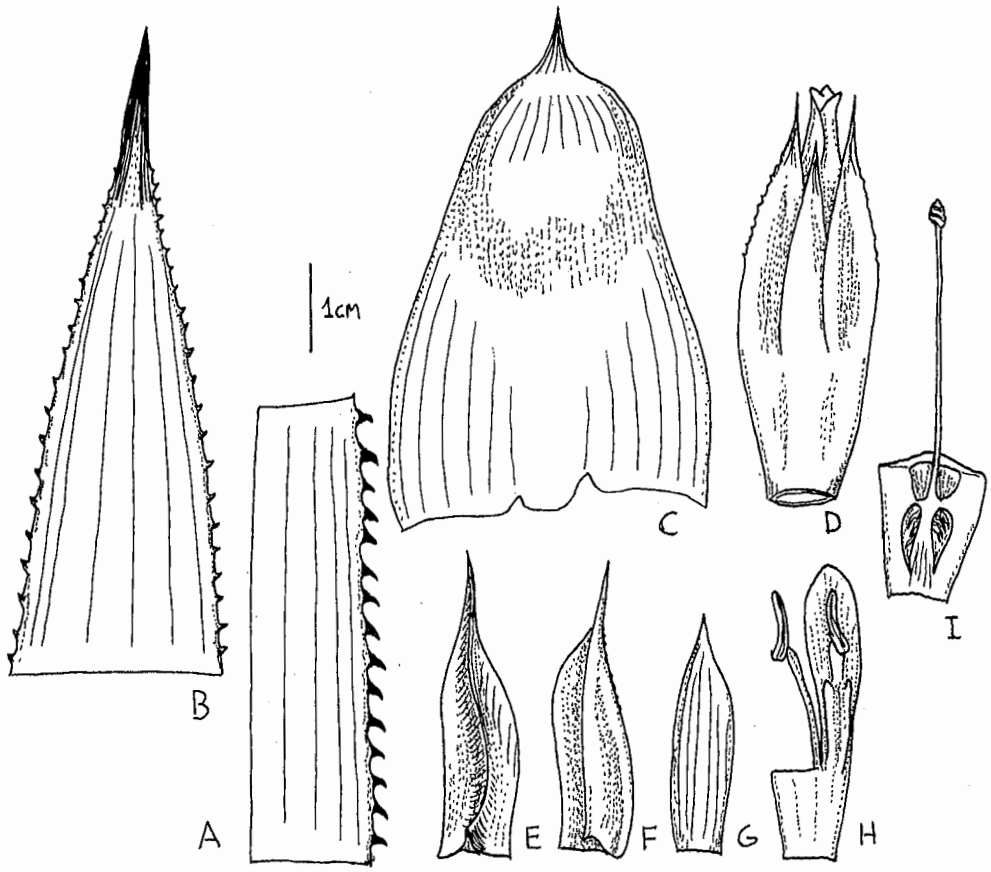

FIGURE 3. *Aechmea heterosepala* Leme. **A.** Margin of leaf blade. **B.** Leaf blade apex. **C.** Floral bract. **D.** Flower. **E.** Dorsal view of adaxial sepal. **F.** Side view of adaxial sepal. **G.** Abaxial sepal. **H.** Petal. **I.** Ovary cross-section.

Vale da Lua (moon's valley), from the Latin "*lunaris*," meaning "related to the moon."

Aechmea heterosepala Leme, sp. nov. TYPE: Brazil—Bahia: Una, road São José to Una, km 9, 500–600 m, 7 Apr 1995, *E. Leme 3047*, *A. Amorim*, *P. Nahoum*, *L.A. Mattos-Silva* & *J.C. da Silva*, fl. cult. Sep 2005 (Holotype: HB; Isotype: CEPEC). FIGURE 3.

A Aechmea conifera L.B. Sm., cui affinis, laminis foliorum angustioribus, inflorescentia duplo vel subtriplo breviora, bracteis floriferis ovatis, angustioribus, apice haud subangulatis, floribus minoribus et sepalis angustioribus differt; A. serragrandensis Leme & J. A. Siqueira, cui proxima, sed laminis foliorum angustioribus, inflorescence breviora, bracteis floriferis apice acutis vel subacutis et spinescentibus, floribus minoribus, sepalis lateralibus minoribus, apice longe cuspidatis, petalis breviter connatis, antheris brevioribus et ovario minore differt.

Plant epiphytic or terrestrial, flowering ca. 40 cm tall. ***Leaves*** ca. 20 in number, strongly coriaceous, distinctly exceeding the inflorescence, forming a broadly crateriform rosette; ***sheaths*** narrowly elliptic, 18–24 × 9–12 cm, dark castaneous to blackish, densely pale-lepidote on both sides; ***blades*** sublinear-attenuate, acuminate and terminating in a castaneous, stout, rigid spine ca. 1.5 cm long, not narrowed toward the base, 70–100 cm long, 5–7 cm wide at the base, inconspicuously and sparsely white-lepidote, margins densely spinose, spines triangular, dark brown to blackish, 1–2.5 mm long, 1–2 mm wide at the base, 2–5 mm apart, retrorsely uncinate except for the prevailingly antrorse apical ones. ***Scape*** erect, ca. 12 cm long, ca. 1.5 cm in diameter, shorter than the leaf sheaths, densely lepidote, blackish; ***scape bracts*** the basal ones subfoliaceous, densely spinose, the upper ones narrowly subtriangular-lanceolate, narrowly acuminate-caudate, terminating in a long rigid dark spine, coriaceous, suberect to erect, distinctly exceeding the internodes and completely concealing the scape, blackish, densely white-lepidote, nerved, inconspicuously and densely spinose to entire, somewhat massed below the

inflorescence and inconspicuously involucral. ***Inflorescence*** simple, densely strobilate, broadly ellipsoid-ovate to subglobose, erect, 11–15 cm long, 8–10 cm in diameter, apex subrounded and bearing an inconspicuous coma of short apparently sterile bracts; ***floral bracts*** ovate, 55–75 × 37–45 mm, apex broadly acute to subacute and bearing a narrowly triangular rigid terminal spine 6–10 × 3 mm, entire or the basal ones remotely denticulate near the base, suberect, distinctly U-shaped canaliculate toward the apex, forming a distinct utricle around the flower, almost completely concealing the flowers, densely and inconspicuously white-lepidote toward the apex mainly abaxially, coriaceous, ecarinate, nerved, lustrous outside, dark castaneous at their basal 2/3, greenish-yellow at their apical 1/3, slightly to distinctly exceeding the sepals. ***Flowers*** ca. 100 in number, 50 mm long, sessile, polystichously and densely arranged, dorsiventrally strongly compressed; ***sepals*** narrowly sublanceolate, asymmetrical, coriaceous, densely white-lepidote centrally and toward the apex, lustrous, nerved mainly along the margins, dark castaneous toward the base, greenish at the apex, free, the adaxial ones ca. 35 × 8 mm (including the spinescent apex), cymbiform, sharply alate-carinate, keels minutely crenulate-spinulose toward the apex, decurrent on the ovary, apex cuspidate, subulate, pungent, 6–9 mm long, yellowish, the abaxial sepal shorter than the adaxial ones and enclosed by them, 29–30 × 6–7 mm, ecarinate, membranaceous, apex acuminate, softer in texture, calyx strongly complanate, ca. 16 mm wide near the base; ***petals*** narrowly spatulate, apex subacute, erect at anthesis, white, 32–35 × 6 mm, about equaling the sepals, connate at the base for 8–10 mm, unappendaged, bearing 2 conspicuous callosities equaling the base of the free portion of the filaments; ***stamens*** included; ***filaments*** the free portion complanate, inconspicuously if at all dilatated toward the apex, the antepetalous ones adnate to the petals for 18–20 mm, the antesepalous ones adnate to the petal tube only and free above it; ***anthers*** linear, base obtuse, apex obtusely apiculate, 7–8 mm long, fixed at 1/4 of their length above the middle; ***pollen*** globose, inconspicuously biporate, exine reticulate, lumina rounded, muri slightly thickened; ***stigma*** conduplicate-spiral, broadly ellipsoid to globose, blades white, margins shortly crenulate; ***ovary*** broadly obovate, strongly complanate, 15–20 × 13 mm, white toward the base, dark castaneous near the apex, glabrous; ovules caudate; epigynous tube crateriform, 4–5 × 5 mm. ***Fruits*** unknown.

Comments. This new species is clearly a close relative of *Aechmea conifera*, which is still poorly known due to its huge size and the fact that it grows on the thicker branches of canopy and emergent trees of the Atlantic Forest in the Uruçuca region (formerly Água Preta), Bahia State. However, an examination of the protologue and of a specimen recently collected in fruit from the type region [*E. Leme 6724 & J. L. Paixão* (HB)] led to the recognition of some unique morphological traits of *A. heterosepala*. This new taxon differs from *A. conifera* by the narrower leaf blades (5–7 cm wide vs. ca. 15 cm), the 2 to nearly 3 times shorter inflorescence (11–15 cm long vs. ca. 30 cm), floral bracts ovate (vs. broadly ovate to subquadrate) and narrower (3.7–4.5 cm wide vs. 5.5–6.5 cm), with apex not subangulate, smaller flowers (ca. 50 mm long vs. ca. 65 mm), and by the narrower sepals (6–8 mm wide vs. 9–13 mm). *Aechmea heterosepala* also presents morphological affinities with the recently discovered *A. serragrandensis*, but can be distinguished from it by the following characters: leaf blades narrower (5–7 cm wide vs. 10–12 cm), inflorescence nearly half as long (11–15 cm long vs. 20–25 cm), floral bracts with apex acute or subacute and spinescent (vs. acuminate), flowers smaller (ca. 50 mm long vs. 70–75 mm), adaxial sepals smaller (ca. 35 × 8 mm vs. 38–40 × 14–15 mm), with long cuspidate apex (vs. apex acuminate and mucronate), petals shorter connate at the base (connate for 8–10 mm vs. 17–18 mm), anthers shorter (7–8 mm long vs. ca. 11 mm), and by the smaller ovary (15–20 × 13 mm vs. 30–36 × 18–26 mm).

Aechmea heterosepala was found growing epiphytically or terrestrially in montane Atlantic forest of Bahia state, which is extremely rich in species diversity and high in endemism. Examples of the richness of the area are *Canistrum montanum* Leme, *Neoregelia kerryi* Leme and *Portea nana* Leme & H. Luther, which were originally collected in the same area.

Hohenbergia magnispina Leme, sp. nov. TYPE: Brazil—Bahia: Chapada Diamantina, Morro do Chapéu to Bonito, Aug 2003, *O. Ribeiro & H. Ribeiro s.n.*, fl. cult. Mar 2007, *E. Leme 5864* (Holotype: HB; Isotypes: RB, SEL). FIGURE 4.

Species nova a Hohenbergia vestita L.B. Sm., cui proxima, sed laminis foliorum marginibus spinis prominentibus, distincte longioribus et retrorsis, bracteis scapalibus internodia aequantibus vel brevioribus et ramis secundariis brevioribus differt; a H. estevesii E. Pereira & Mountinho, cui affinis, sed ramis primariis basalibus sessilibus ver fere, ramis secundariis brevioribus, floribus paucis, sepalis longioribus muticisque, antheris subduplo brevioribus et ovulis obtuse apiculatis differt.

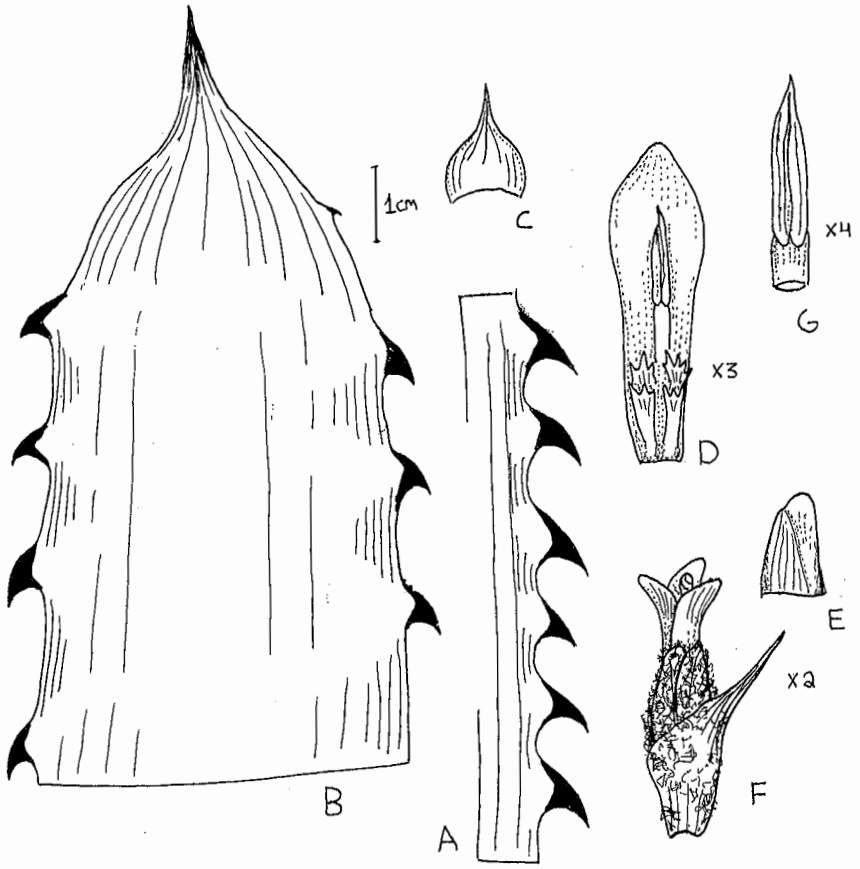

FIGURE 4. *Hohenbergia magnispina* Leme. **A.** Margin of leaf blade. **B.** Leaf blade apex. **C.** Floral bract. **D.** Basal floral bract and flower. **E.** Sepal. **F.** Petal. **G.** Anther.

Plant saxicolous, flowering ca. 90 cm tall. ***Leaves*** ca. 16 in number, thick-coriaceous, with the sheaths forming at the base a subtubular to narrowly ellipsoid bottle-like rosette; ***sheaths*** broadly elliptic-ovate, 19–25 × 12–13 cm, subdensely to densely brown-lepidote on both sides, castaneous toward the base; ***blades*** sublinear, not narrowed at the base, 18–40 × 3–5 cm, greenish to dark reddish-purple, abaxially subdensely to densely white-lepidote with the trichomes arranged in rows along the intercostal area, distinctly nerved, adaxially densely white-lepidote, apex acuminate and terminating in a narrowly triangular pungent spine ca. 1 cm long, the outer leaves reduced in size and reflexed, the inner ones suberect, margins subdensely to laxly spinose, spines triangular, prevailingly retrorsely uncinate, blackish toward the apex, 4–9 × 4–6 mm (including the apical ones), 10–40 mm apart. ***Scape*** erect, stout, ca. 65 cm long, 0.7–0.8 cm in diameter, dark reddish-purple, densely white lanate; ***scape bracts*** lanceolate, acuminate, 8–10 × 1.8–2 cm, pale colored, papyraceous, nerved, entire, erect, shorter to equaling the internodes, not completely covering the scape, densely white-lepidote with long fimbriate trichomes. ***Inflorescence*** narrowly paniculate, subcylindrical, tripinnate, ca. 24 cm long, ca. 8 cm in diameter at the base, erect, rachis 0.6–0.7 cm in diameter, densely white-lanate, dark reddish-purple; ***primary bracts*** resembling the upper scape-bracts, narrowly sublinear-lanceolate, acuminate, entire, pale rose but soon stramineous, sparsely white-sublanate, spreading, equaling (the upper ones) to exceeding (the remaining ones) the branches, 4–8.5 × 0.8–1.5 cm; ***primary branches*** spreading or nearly so, 3–4.5 cm long at early anthesis, sessile or nearly so, the basal to median ones sparsely arranged, bearing at the base 1 to 2 sessile, densely aggregated secondary branches, the apical ones densely arranged and resembling the secondary branches; ***secondary bracts*** resembling the floral bracts but larger, with a broadly ovate to suborbicular base, 13 × 13–15 mm, and a long spinescent apex 8–10 mm long, shorter than the branches, pale rose, finely nerved, entire, white-

lanate, ecarinate; ***secondary branches*** spreading or nearly so, sessile, ellipsoid-ovate (in early state) to subcylindrical, terete, acute, 2–3.5 × 1.3–1.5 cm, bearing 8 to 12 flowers; ***floral bracts*** subtriangular-orbicular, suberect toward the apex, exceeding the sepals, 14–17 × 10–11 mm (including the spinescent apex), thinly coriaceus, rose, subdensely white-lanate, distinctly nerved, entire, ecarinate, apex acute and long mucronate-spinescent, slightly pungent, mucro 5–6 mm long. ***Flowers*** 17–18 mm long, sessile, densely and polystichously arranged, suberect, odorless; ***sepals*** strongly asymmetrical with a rounded wing much exceeding the midnerve, ca. 7.5 × 4 mm (including the extended wing), without any noticeable mucro, subfree, densely white-lanate, entire, green, ecarinate; ***petals*** subspatulate-lanceolate, apex subacute to narrowly subobtuse, ca. 13.5 × 3.5 mm, free, lilac toward the apex, suberect at anthesis, bearing at the base 2 narrowly obovate appendages, ca. 5 × 1 mm, irregularly long laciniate at the apex; ***stamens*** included; ***filaments*** not at all dilated, the antepetalous ones adnate to the petals for ca. 3 mm, the antesepalous ones free; ***anthers*** sublinear, ca. 3.5 mm long, base sagittate, apex caudate, fixed slightly below the middle; ***pollen*** subglobose, biporate, psillate; ***ovary*** broadly obovate, ca. 3.5 mm long, ca. 5 mm wide at the apex, densely white-lanate, green, subtrigonous; placentation apical; ovules obtusely apiculate; epigynous tube inconspicuous; ***stigma*** conduplicate-spiral, ellipsoid, white, exceeding the anthers. ***Fruits*** unknown.

Comments. *Hohenbergia magnispina* is closely related to *H. vestita*, differing from it by its leaf blades with prominently developed marginal spines (4–9 mm long vs. 3–5 mm), which are retrorsely curved (vs. prevailingly antrorsely curved), scape bracts equaling to shorter than the internodes (vs. distinctly exceeding the internodes), and by the secondary branches shorter (2–3.5 cm long vs. ca. 5 cm). On the other hand, this new species shares morphological characteristics with *H. estevesii*, being distinguished by the basal primary branches sessile or nearly so (vs. bearing stipes 1–2 cm long), shorter secondary branches (2–3.5 cm long vs. 5–7 cm) bearing fewer flowers (8 to 12 in number vs. 25 to 35), longer sepals (ca. 7.5 mm long vs. ca. 5 mm), without any noticeable mucro (vs. minutely mucronulate), shorter anthers (ca. 3.5 mm long vs. ca. 6 mm) and by the obtusely apiculate ovules (vs. caudate).

This new species was found forming medium sized saxicolous groups of plants in the "Campos Rupestres" vegetation or grasslands on rocky soils that overlie quartzite and sandstone oucrops that form the high-altitude landscape of the Serra do Espinhaço range in Bahia. The difficulty in establishing morphological differences of regional *Hohenbergia* species typical of that environment is due to the convergence of shape and structure of leaves and leaf-rosette caused by the combination of rupicolous or saxicolous habit, oligotrophic conditions, similar sun exposure and water stress. Therefore, understanding the subtle set of morphological features that distinguish these species appears to be important in establishing the identity of the taxa involved.

Hohenbergia igatuensis Leme, sp. nov. TYPE: Brazil—Bahia: Chapada Diamantina, Igatu, May 2003, *O. Ribeiro & H. Ribeiro s.n.*, fl. cult. Mar 2007, *E.* Leme 5713 (Holotype: HB; Isotype: SEL). FIGURE 5.

Species nova a Hohenbergia edmundoi L.B. Sm. & Read, cui affinis, sed laminis foliorum marginibus spinis distincte longioribus, inflorescentia apice simplicissima, bracteis floriferis brevioribus et sepalis in alam membranaceam curvatam quam pars centralis manifeste altiorem productis differt.

Plant saxicolous, flowering ca. 80 cm tall. ***Leaves*** ca. 15 in number, coriaceous to thick-coriaceous, sheaths forming at the base an ellipsoid to broadly ellipsoid bottle-like rosette slightly constricted at the apex with suberect blades; ***sheaths*** broadly oblong-elliptic, 15–16 × 9–10 cm, subdensely to densely brown-lepidote on both sides, castaneous toward the base; ***blades*** sublinear, suberect at anthesis, not narrowed at the base, 13–22 × 4.3–4.7 cm, greenish to yellowish, abaxially subdensely white-lepidote near the base and glabrescent toward the apex, trichomes arranged in rows along the intercostal area, nerved, adaxially densely white-lepidote to sparsely white-lepidote with age, apex acuminate-caudate, darker, not pungent, margins densely spinose near the base, spines triangular to narrowly triangular, straight to suberect, antrorse, dark brown to blackish toward the apex, 4–7 × 3–5 mm, 2–5 mm apart, apical margins laxly spinose, spines triangular, dark brown to blackish, 1.5–4 × 1–3 mm, 10–20 mm apart, slightly to strongly uncinate-retrorse. ***Scape*** erect, stout, ca. 39 cm long, 0.8–0.9 cm in diameter, bright red, subdensely white-lanate but soon glabrous; ***scape bracts*** lanceolate, acuminate-caudate, 7–8 × 2 cm, the basal ones sparsely spinulose at the apex, the upper ones reddish-stramineous, papyraceous, finely nervate, entire, slightly imbricate, exceeding the internodes but not completely covering the scape, white-lepidote with fimbriate trichomes. ***Inflorescence*** narrowly paniculate, subcylindrical, tripinnate except for the simple apex, ca. 35 cm long, 10 cm in diameter at the base, erect, rachis 0.6–0.7 cm in diameter, sparsely white-sublanate to glabrescent with age, bright red; ***primary bracts***

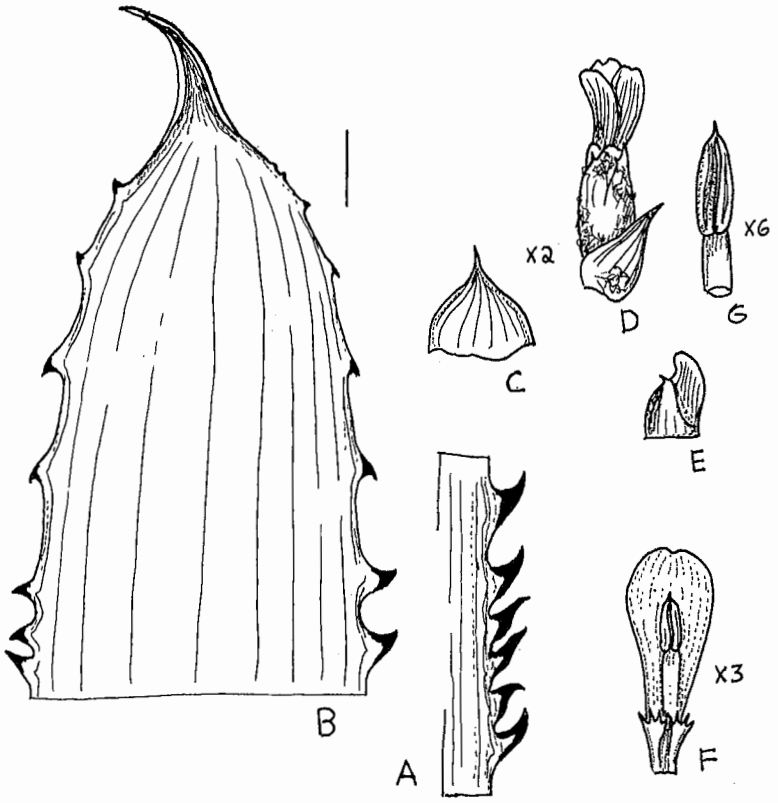

FIGURE 5. *Hohenbergia igatuensis* Leme. **A.** Margin of leaf blade. **B.** Leaf blade apex. **C.** Floral bract. **D.** Basal floral bract and flower. **E.** Sepal. **F.** Petal. **G.** Anther.

resembling the upper scape-bracts but slightly smaller, lanceolate, acuminate-caudate, entire, stramineous, white-lepidote with fimbriate trichomes, suberect to spreading, slightly exceeding to distinctly shorter than the branches but always exceeding the stipes, 10–75 × 5–10 mm; ***primary branches*** suberect to spreading, the basal to median ones 55–70 cm long, laxly arranged, stipes 15–20 cm long, 6–7 mm wide at the base, complanate, red, glabrescent, with 1 to 5 secondary branches subdensely to sparsely arranged, the upper primary branches resembling the secondary branches, shortly stipitate to sessile, laxly to subdensely arranged; ***secondary bracts*** resembling the floral bracts, pale rose, distinctly shorter than the secondary branches, ecarinate; ***secondary branches*** suberect to spreading, 20–30 × 10–14 mm, ellipsoid-ovate to nearly cylindrical, terete, subacute, 2–3 × 1.5–1.8 cm, bearing 6 to 10 flowers; ***floral bracts*** subtriangular-orbicular, suberect toward the apex, distinctly shorter to equaling the sepals, 6–7.5 × 7 mm, thinly coriaceous, green near the base, reddish-wine toward the apex, subdensely white lanate mainly at the base and toward the apical martins, nerved, entire, strongly convex, ecarinate, apex acute and long mucronate-spinescent, slightly pungent, mucro 2–2.5 mm long. ***Flowers*** 13–15 mm long, sessile, subdensely (basal ones) to densely (apical ones) and polystichously arranged, suberect, odorless; ***sepals*** strongly asymmetrical with a subrounded, curved wing much exceeding the apical mucron, ca. 5 × 3 mm (including the extended wing), bearing at the apex an inconspicuous mucro less than 0.5 mm long, subfree, sparsely white-lanate except for the densely white-lanate apex, soon glabrous, entire, green except for the purplish-wine apical portion, ecarinate; ***petals*** subspatulate, apex rounded and emarginate, ca. 10 × 4 mm, free, purple toward the apex, suberect at anthesis, bearing at the base 2 obovate appendages ca. 3 × 1 mm, irregularly long laciniate at the apex; ***stamens*** included; ***filaments*** not dilated, the antepetalous ones adnate to the petals for ca. 1 mm, the antesepalous ones free; ***anthers*** ellipsoid, ca. 2.5 mm long, base sagittate, apex apiculate, fixed near the middle; ***pollen*** broadly ellipsoid, biporate, exine psillate or inconspicuously perforate; ***ovary*** broadly obovate, 3.5–4 mm long, ca. 4 mm wide at the apex,

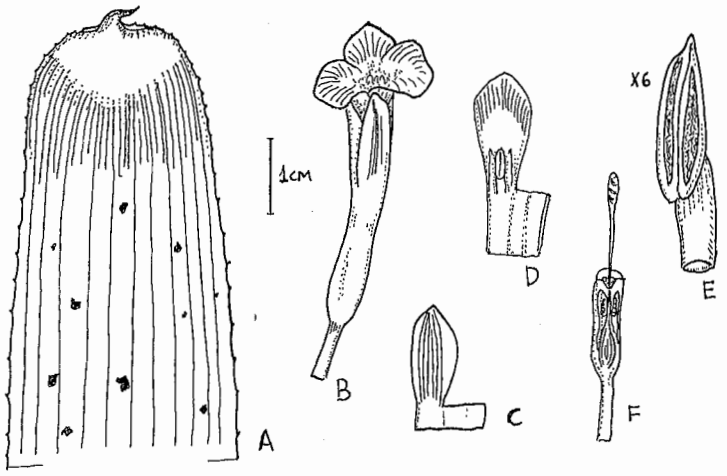

FIGURE 6. *Neoregelia ilhana* Leme. **A.** Leaf blade apex. **B.** Flower. **C.** Sepal. **D.** Petal. **E.** Anther. **F.** Ovary cross-section.

glabrous or nearly so, green, subterete to subtrigonous; placentation apical; ovules obtusely apiculate; epigynous tube inconspicuous; ***stigma*** conduplicate-spiral, white, shorter than the anthers, blades papillose. ***Fruits*** unknown.

Comments. *Hohenbergia igatuensis* is closely related to *H. edmundoi* L.B. Sm. & Read. However, it can be distinguished from *H. edmundoi* by the longer spines of the leaf blades (4–7 mm long vs. ca. 3 mm), the inflorescence terminating in a distinct simple spike (vs. apex densely bipinnate), shorter floral bracts (6–7.5 mm long vs. ca. 10 mm) and by the sepals bearing a curved membranaceous wing distinctly exceeding the midnerve (vs. lateral membranaceous wing not curved and only slightly exceeding the midnerve).

This new species has a habit similar to to *Hohenbergia magnispina* and other close relatives, and calls attention mainly by the yellowish color of its leaves when exposed to full sunlight.

Neoregelia ilhana Leme, sp. nov. TYPE: Brazil—Rio de Janeiro: Santa Maria Madalena, P. E. do Desengano, trilha para o Pico do Desengano, 21°53.47′S, 41°54.74′W, 1410 m, 6 Sep 2008, *E. Leme 7581* & *A. Ilha* (Holotype: HB). FIGURE 6.

A Neoregelia maculata L.B. Sm., cui affinis, laminis foliorum marginibus dense vel subdense et distincte spinosis, bracteis floriferis altitudinem sepalorum distincte brevioribus, floribus pedicellis duplo vel ultra longioribus et petalis prope apicem lilacinis differt; a N. amandae W. Weber, cui proxima, sed cataphyllis stolonum per anthesin deciduis, laminis foliorum longioribus latioribusque, inconspicue lepidotis vel glabrescentibus, bracteis floriferis altitudinem sepalorum distincte brevioribus et petalis latioribus apice subacutis, prope apicem lilacinis differt.

Plant epiphytic or terrestrial, stoloniferous, stolons 10–12 cm long, ca. 0.6–0.8 cm in diameter, bearing deciduous cataphylls. ***Leaves*** ca. 15 in number, suberect at anthesis, forming a narrowly funnelform rosette; ***sheaths*** elliptic to broadly elliptic, 8.5–9.5 × 45–6.8 cm, subdensely pale lepidote on both sides, purple toward the apex adaxially, pale green abaxially; ***blades*** linear, not narrowed at the base, 14–23 × 2.8–3.5 cm, inconspicuously and sparsely white-lepidote to glabrescent, finely nerved, green or sometimes irregularly and sparsely purple-spotted, thinly coriaceous in texture, apex obtuse, shortly and slenderly apiculate, white or nearly so or sometimes bearing a purple semicircular spot, margins subdensely to densely spinulose, spines triangular-uncinate, antrorse, 0.5–0.8 mm, 2–5 mm apart, pale castaneous; ***scape*** ca. 1.4 cm long, ca. 1 cm in diameter, inconspicuously and sparsely pale lepidote, white; ***scape bracts*** oblong-ovate, acute and apiculate, entire, inconspicuously pale lepidote, trichomes fimbriate, the upper ones not at all involucral. ***Inflorescence*** oblong-capitate, simple, umbellate, sunk in the center of the rosette, ca. 40 × 20 mm, densely flowered; ***floral bracts*** the outer ones sublinear, obtuse-emarginate to subacute and apiculate, entire or bearing sparsely and irregularly membranaceous teeth near the apex, sparsely and inconspicuously white-lepidote with fimbriate trichomes near the apex, membranaceous, hyaline, 25 × 5–9 mm, equaling to slightly exceeding the ovary, the inner ones 18 × 3–4 mm, slightly shorter than the ovary. ***Flowers*** ca. 18 in

number, 43–44 mm long (including the extended petals), with a weak fragrance, pedicels 8–10 mm long, 3–4 mm in diameter, slightly complanate, white, subdensely pale lepidote, trichomes fimbriate; ***sepals*** nearly symmetrical, subelliptic-obovate, acute and minutely apiculate, ca. 16 × 6 mm, connate at the base for 3.5–4 mm, entire, ecarinate, white near the base and purplish-wine toward the apex and centrally, glabrous; ***petals*** narrowly subspathulate, subacute, 22–23 × 6–7 mm, connate at the base for 7–8 mm, spreading-recurved at anthesis, the basal tube pale greenish-white, the baldes white except for the lilac apex, bearing 2 conspicuous longitudinal callosities slightly exceeding the anthers; ***filaments*** adnate to the petal tube and free above it; ***anthers*** elliptic, ca. 3.5 mm long, fixed at 2/5 of their length above the base, base acute, apex apiculate; ***pollen*** oblong-ellipsoid, biporate, exine reticulate, lumina subrounded, muri thickened; ***stigma*** conduplicate-spiral, cylindrical, white, margins fimbriate-lacerate; ***ovary*** subcylindrical, 12–15 mm long, 3.5–4 mm in diameter, terete, white, glabrous except for the pale lepidote basal portion with fimbriate trichomes; placentation apical; ovules many, obtuse; epigynous tube ca. 1.5 mm long. ***Fruits*** much enlarged from the ovary, oblong, white.

Comments. This new taxon is somewhat related to *Neoregelia maculata*, but differs from it by the leaf blades densely to subdensely and distinctly spinulose (vs. subentire), floral bracts distinctly exceeded by the sepals (vs. about equaling the center of the sepals), flowers with pedicels at least twice longer (8–10 mm long vs. ca. 4 mm), and by the petals with a lilac apex (vs. white throughout). On the other hand, *N. ilhana* exhibits some similarities when compared to *N. amandae*, differing by the following characters: stolons bearing deciduous cataphylls at anthesis (vs. bearing persistent cataphylls), leaf blades longer and broader (14–23 × 2.8–3.5 cm vs. 10–13 × 2–2.6 cm), inconspicuously lepidote or glabrescent (vs. distinctly lepidote and abaxially with trichomes forming inconspicuous transversal bands), floral bracts distinctly shorter than the sepals (vs. equaling the midpoint of the sepals), and petals broader (6–7 mm wide vs. ca. 4 mm) with the apex subacute (vs. acute-acuminate) and lilac (vs. white with a central green mark).

Neoregelia ilhana grows epiphytically in montane to high-montane Atlantic forest, densely covering the lower portion of the tree trunks, or it may be found thriving straight on the forest ground near tree trunks, apparently as an accidental habit due to its local growth profusion. Its populations are protected in the Desengano State Park, a large conservation unit in the northern region of Rio de Janeiro state, the home of many endemic and endangered species.

Etymology. *Neoregelia ilhana* honors one of its collectors, the President of the Instituto Estadual de Florestas do Rio de Janeiro, Andre Ilha, who is well known by his long-term activism in nature conservation, as well as by his fine alpinist skills.

Neoregelia paratiensis Leme, sp. nov. TYPE: Brazil—Rio de Janeiro: Parati, near São Paulo state border, ca. 300 m, Nov 1986, *E. Leme 1059, R. Menescal & R. Bello* (Holotype: HB; Isotype: RB). FIGURE 7.

A Neoregelia hoehneana L.B. Sm., cui affinis, sed stolonibus distincte brevioribus, laminis foliorum marginibus integris, petalis prope apicem lilacinis apice acuminatis et ovario cylindrico differt.

Plant epiphytic, stolonifeous, stolons 6–7 cm long, 0.3–0.4 cm in diameter, bearing deciduous cataphylls and soon naked. ***Leaves*** 12 to 14 in number, suberect at anthesis, forming at the base an ellipsoid rosette; ***sheaths*** elliptic, 7.5–8 × 4.5 cm, densely pale brown lepidote on both sides, dark wine-purple mainly toward the apex adaxially, greenish-purplish-castaneous abaxially; ***blades*** linear, at the base slightly if at all narrowed and bearing a narrow U-shaped channel, 7.5–9 × 2.3–2.6 cm, adaxially inconspicuously and sparsely to subdensely white-lepidote to glabrescent, green or yellowish-green, sometimes with irregularly sized and arranged wine spots mainly toward the apex, abaxially densely white-lepidote with the trichomes disposed along the intercostal area, slightly obscuring the leaf color and contrasting with the adaxial surface, thin in texture, apex broadly acute to obtuse and slenderly apiculate, apiculus suberect-incurved, soon drying and stramineous, forming a narrow dark purplish-wine semicircular ring surrounding the apical stramineous segment, margins entire; ***scape*** ca. 2 cm long, 0.5–0.6 cm in diameter, inconspicuously and sparsely pale brown-lepidote, white; ***scape bracts*** the basal ones ovate, acute and slenderly apiculate, entire or nearly so, inconspicuously and sparsely brown lepidote, membranaceous, hyaline, the upper ones involucral and resembling the outer floral bracts. ***Inflorescence*** oblong, simple, umbellate, sunk in the center of the rosette, ca. 35 mm long, 15–17 mm in diameter, densely flowered; ***floral bracts*** the outer ones suboblong, obtuse-emarginate and minutely apiculate, remotely crenulate-denticulate near the apex but appearing entire, sparsely and inconspicuously pale brown-lepidote mainly near the apex with fimbriate trichomes, membranaceous, hyaline except for the greenish apex, ca. 30 × 15 mm, equaling 2/3

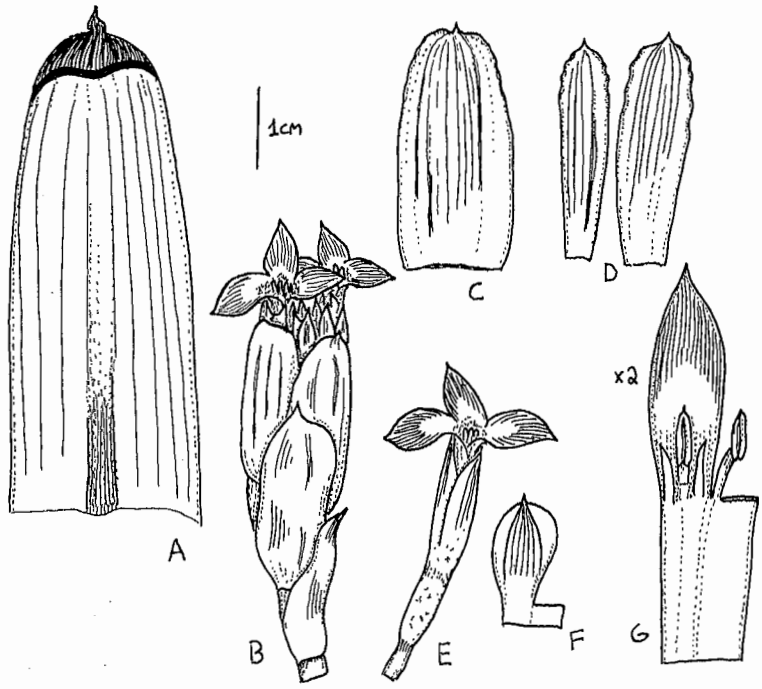

FIGURE 7. *Neoregelia paratiensis* Leme. **A.** Leaf. **B.** Inflorescence. **C.** Outer floral bract. **D.** Inner floral bracts. **E.** Flower. **F.** Sepal. **G.** Petal.

of the sepals length, the inner ones resembling the outer floral bracts but sublinear-subspatulate, 28–30 × 5–9 mm, slightly shorter than the sepals. ***Flowers*** ca. 10 in number, ca. 41 mm long (including the extended petals), with a weak citric fragrance, pedicels 5–7 mm long, 1.5–2 mm in diameter, slightly complanate, white, subdensely pale brown-lepidote, trichomes fimbriate; ***sepals*** obovate, obtuse and distinctly apiculate, apiculus ca. 1 mm long, distinctly asymmetrical with a rounded wing equaling the length of the midnerve, ca. 17 × 9 mm, connate at the base for ca. 3.5 mm, entire, ecarinate, green toward the apex and hyaline along the margins and at the base, membranceous, sparsely pale brown-lepidote near the apex inside, sparsely pale brown-lepidote at the base to glabrous outside; ***petals*** narrowly sublinear-subspatulate, acuminate, 26 × 4–4.5 mm, connate at base for 10–11 mm, spreading at anthesis, the basal 2/3 white, the apical 1/3 lilac-blue, bearing 2 conspicuous longitudinal callosities slightly shorter than the anthers; ***filaments*** the antipetalous ones adnate to the petals for 12–13 mm, the antisepalous ones adnate to the petal tube and free above it; ***anthers*** sublinear, ca. 3.5 mm long, fixed at 1/3 of their length above the base, base obtuse-sagittate, apex acute and apiculate; ***pollen*** subglobose, biporate, pores small, exine reticulate, lumina polygonal, muri slightly thickened; ***stigma*** conduplicate-spiral, subcylindrical, white, margins shortly fimbriate-lacerate, papillose; ***ovary*** cylindrical, 10–11 mm long, 3–4 mm in diameter, terete, white, sparsely pale brown-lepidote with fimbriate trichomes; placentation subapical; ovules many, apiculate; epigynous tube ca. 1.5 mm long. ***Fruits*** unknown.

Comments. *Neoregelia paratiensis* is very closely related to *N. hoehneana*, with which it was confused for many years due to its small size and stoloniferous habit. However, a closer look reveals consistent morphological differences, such as stolons many times shorter (6–7 cm long vs. 28–32 cm), leaf blades entire (vs. sparsely spinulose), petals lilac near the apex (vs. white) with acuminate apex (vs. obtuse and apiculate), and the cylindrical ovary (vs. ellipsoid).

This new species is a typical inhabitant of the coastal Atlantic forest, in the southernmost limit of Rio de Janeiro State, in Parati, close to São Paulo State, where it forms large clumps hanging in the forest canopy.

Neoregelia viridolineata Leme, sp. nov. TYPE: Brazil—Bahia: Nova Canaã, Serra da Boa Vista (Oricana), Aug. 2001, *E. Leme 5286*, fl. cult. Jan 2003 (Holotype: HB; Isotype: RB). FIGURE 8.

A Neoregelia kerryi Leme, cui affinis, laminis foliorum latioribus, viridibus et longitudinaliter

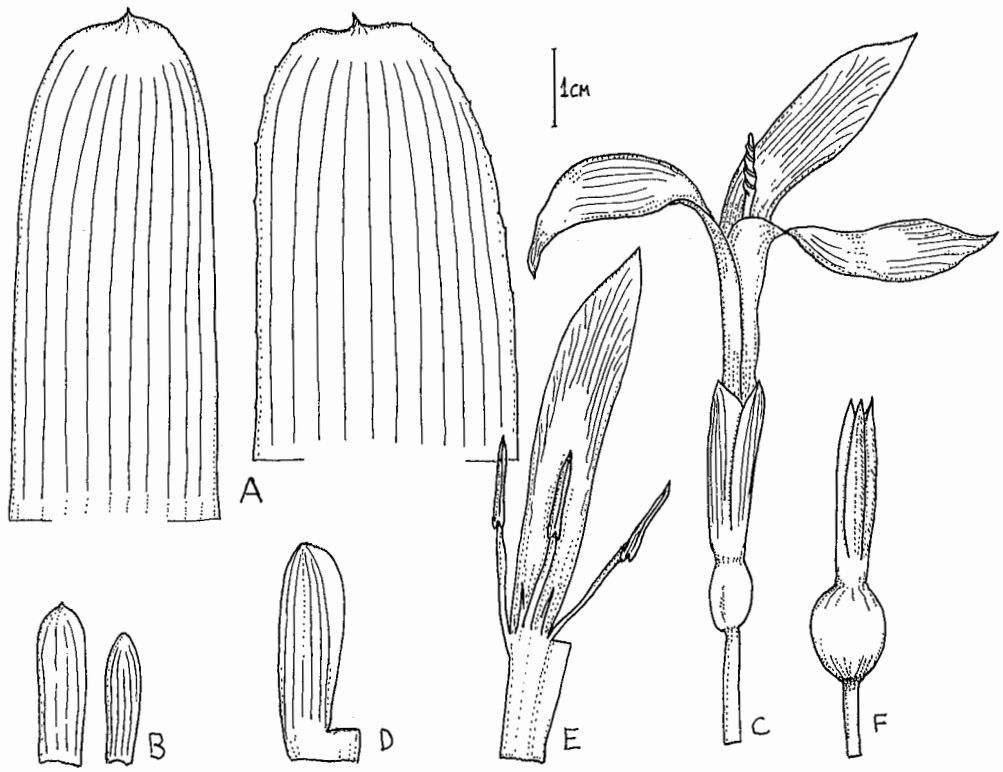

FIGURE 8. *Neoregelia viridolineata* Leme. **A.** Leaf apex. **B.** Floral bracts. **C.** Flower. **D.** Sepal. **E.** Petal. **F.** Fruit.

nervato-lineatis, nervis atroviridibus, floribus longioribus, sepalis leviter asymmetricis, latioribusque, petalis longioribus, antheris longioribus et fructus viride differt.

Plant epiphytic, propagating by short basal stolons, 4–7 cm long, 0.6–0.7 cm in diameter. ***Leaves*** 5 to 10 in number, subchartaceous, forming a subtubular to narrowly funnelform rosette; ***sheaths*** elliptic to narrowly elliptic, erect or nearly so, 11–16 × 5–6.5 cm, subdensely brown-lepidote on both sides, greenish toward the base and wine-purple near the apex adaxially, completely greenish abaxially or with irregular wine-purple spots, distinctly nerved near the margins, the outer ones bearing a narrow central channel near the apex; ***blades*** suberect to suberect arcuate, linear, 16–56 × 2.8–4.2 cm, slightly if at all narrowed near the base, inconspicuously and sparsely white-lepidote mainly adaxially to glabrous, green with distinctly darker green longitudinal nerves, apex rounded to obtuse and minutely apiculate, often without any darker colored spot, margins laxly and inconspicuously spinulose, spines less than 0.3 mm long, to subentire, the outer blades bearing a narrow central channel near the base. ***Scape*** 30–35 mm long, ca. 6 mm in diameter, white, inconspicuously brown-lepidote to glabrous; ***scape bracts*** ovate, acute and apiculate, 20–27 × 8–10 mm, distinctly shorter than the inflorescence, entire, white except for the purplish-wine apex, membranaceous, glabrescent, the upper ones from equaling the pedicels to the middle of the ovary. ***Inflorescence*** simple, umbellate, deeply sunken in the rosette, shorter than the leaf sheaths, cylindrical, 55–70 mm long (not including the petals), 13–20 mm in diameter; ***floral bracts*** sublinear, apex acute to subacute, ecarinate, glabrescent, membranaceous, nerved, greenish-white toward the base, wine-purple at the apex, 13–20 × 2–7 mm, the outer ones from slightly shorter than the pedicels to equaling the ovary, the inner ones much reduced, shorter than the pedicels, with incurved apex. ***Flowers*** 4 to 7 in number, 90–105 mm long (including the petals), fragrant, pedicels terete, 9–22 × 2–3 mm, sparsely and inconspicuously lepidote to glabrous; ***sepals*** slightly asymmetrical, sublinear, apex broadly acute and inconspicuously apiculate to obtuse, 26–30 × 6–8 mm, connate for 3–4 mm, membranaceous, ecarinate, finely nerved, green with irregular wine spots toward the apex to wine colored toward the apex except for the paler margins, glabrous; ***petals*** narrowly sublinear-

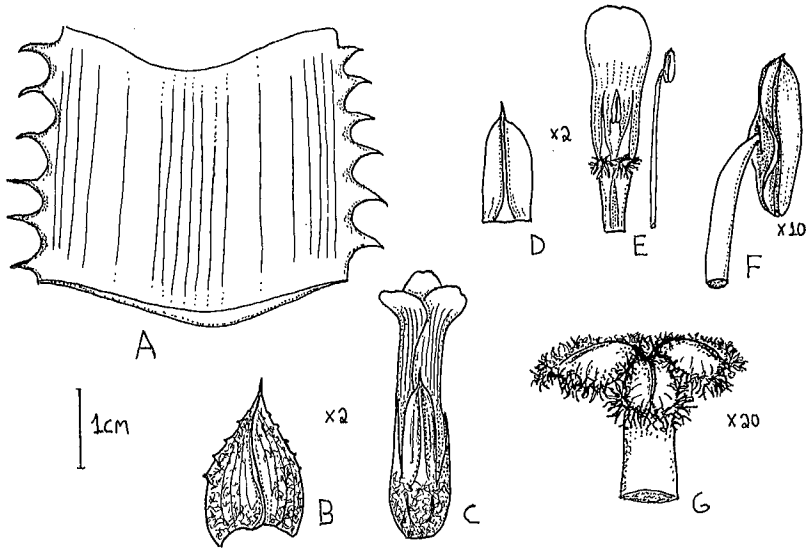

FIGURE 9. *Orthophytum elegans* Leme. **A.** Basal segment of leaf blade. **B.** Floral bract. **C.** Flower. **D.** Sepal. **E.** Stamen and petal. **F.** Anther. **G.** Stigma.

lanceolate, apex acuminate, 70–86 × 7–10 mm, suberect-recurved at anthesis, connate at the base for 10–12 mm, white in its basal half, lilac-purple in the apical half, bearing 2 inconspicuous longitudinal callosities for ca. 7–8 mm above the basal tube; ***filaments*** the antesepalous ones adnate to the petals tube and free above it, the antepetalous ones adnate to the petals for 18–21 mm and free for 7–11 mm; ***anthers*** 9–12 mm long, base sagittate, apex distinctly apiculate-caudate, dorsifixed ca. 2 mm above the base; ***pollen*** subglobose, biporate, pores small, exine minutely reticulate, lumina rounded, muri thickened; ***stigma*** cylindrical, 10–12 mm long, white, margins densely lacerate-papillose; ***ovary*** ellipsoid, subterete, 7–10 × 5–6 mm, whitish toward the base and greenish near the apex, glabrous; epigynous tube lacking; placentation apical; ovules obtuse. ***Fruits*** globose, ca. 11 × 9 mm, green, persistent calyx pale green with irregular red spots toward the apex.

Paratypes. Brazil—Bahia: Ibicuí, Serra da Boa Vista, 13 Jul 2003, *E. Silva s.n.*, cult. *E. Leme 5802* (HB); Iguaí, near the border of Dário Meira, Serra dos Índios, nascente do Rio dos Índios, Faz. Recanto Alagoano, 872 m, 14°32.04′S, 40°05.31′W, 26 May 2007, *E. Leme 7043*, *R.F. Reis Jr.*, *J.C. Falcon*, *A. Soares*, *C. Rizerio* & *L. Del Grande*, fl. Cult. Apr 2008 (HB).

Comments. *Neoregelia viridolineata* can be recognized by its larger size when compared with its closest relative *N. kerryi*, as well as by the green leaf blades with distinctly darker green longitudinal nerves, which inspired its name. Besides the mentioned differences, this new taxon can be distinguished from *N. kerryi* by its broader leaf blades (2.8–4.2 cm wide vs. 1.5–2.5 cm), longer flowers (90–105 mm long vs. ca. 80 mm), sepals slightly asymmetrical (vs. symmetrical) and broader (6–8 mm wide vs. 4–5 mm), longer petals (70–80 mm long vs. 62–65 mm), longer anthers (9–12 mm long vs. 6–7 mm), and by the green fruits (vs. white).

This new species is a typical inhabitant of the high montane Atlantic forest, where it thrives epiphytically in the median portion of the tree trunks, sharing the habitat with other endemic bromeliad species, such as *Aechmea laevigata* Leme, *A. viridostigma* Leme & H. Luther, *Neoregelia silvomontana* Leme & J. A. Siqueira, *Ronnbergia silvana* Leme, and *Vriesea blackburniana* Leme, to name few of the most recently published endemic taxa.

Orthophytum elegans Leme, sp. nov. TYPE: Brazil—Minas Gerais: Uruçuaí to Coronel Murta, near Coronel Murta, 16°37.98′S, 42°10.88′W, 310 m, 20 Jun 2008, *E. Leme 7425*, *C.C. Paula*, *T. Coser*, *R. Moura* & *O. Ribeiro*, fl. cult. Dec 2008 (Holotype: HB; Isotype: RB). FIGURE 9.

A Orthophytum glabrum (Mez) Mez, cui affinis, sed laminis foliorum opacis marginibus spinis brevioribus, fasciculis brevioribus, sepalis subobblongis, brevioribus et petalis rotundatis et inconspicue emarginatis differt; a O. disjunctum L.B. Sm., cui proxima, sed foliis per anthesin duplo plus numerosis, laminis foliorum marginibus spinis

longioribus et sepalis suboblongis late acutis et mucronulatis differt.

Plant terrestrial, stemless, 60–70 cm high at anthesis, propagating by basal rhizomes, shoots originating from the inflorescence not seen. ***Leaves*** ca. 16 in number at anthesis and ca. 25 in number when sterile, subspreading-recurved, densely rosulate and forming a distinct rosette before anthesis and afterwards, at anthesis the upper leaves not distinguishable from the scape bracts due to the elongation of the stem; ***sheaths*** inconspicuous; ***blades*** narrowly triangular, apex long acuminate-caudate, spinescent, 19–21 cm long, ca. 4 cm wide at the base, strongly coriaceous, not at all succulent, 1.5–2 mm thick near the base, distinctly channeled mainly under water stress, green to reddish-bronze colored, not lustrous, abaxially densely adpressed white-lepidote, trichomes persistent and completely obscuring the leaf color, distinctly nerved, adaxially densely white-lepidote mainly near the base and glabrescent to glabrous toward the apex, contrasting with the abaxial surface, margins straight to slightly recurved, densely to subdensely spinose, spines narrowly triangular, flattened, straight to slightly retrorse (basal ones) to slightly antrorse (upper ones), yellowish-castaneous toward the apex, densely white-lepidote to glabrescent, 3–5 mm long, 1.5–2.5 mm wide at the base, 3–10 mm apart. ***Scape*** erect, green, densely to subdensely white-lanate, 40–47 cm long, 0.7–1.5 cm in diameter; ***scape bracts*** foliaceous, the basal to median ones not distinguishable from the leaves, spreading-recurved, the upper ones much reduced in size, lanceolate, acuminate-spinescent, pungent, strongly reflexed, 4–8 × 1–1.8 cm. ***Inflorescence*** bipinnate, cylindrical, erect, 12–13 cm long, fascicles laxly (toward the base) to densely (near the apex) arranged, 1–2.5 cm apart, forming an inconspicuous head of ca. 3 fascicles at the extreme apex, rachis 0.5–0.6 cm in diameter, straight, smooth or inconspicuously sulcate, terete to slightly angulose near the apex, green, white-sublanate to glabrous; ***primary bracts*** subfoliaceous and resembling the scape bracts, lanceolate to ovate-lanceolate, acuminate, spinescent, pungent, strongly reflexed, slightly canaliculate, distinctly (basal ones) to slightly (upper ones) exceeding the fascicles, green, abaxially densely white-lepidote and finely nerved, adaxially glabrous toward the apex, 1.5–3.5 × 0.8–1 cm, subdensely to laxly spinulose, spines triangular, 0.5–1.3 mm long, 2–4 mm apart, straight to antrorse; ***fascicles*** ca. 8 in number, polystichously disposed, suberect, sessile, subglobose-strobilate, densely rosulate, ca. 1.5 cm long (excluding the petals), 1.5–2 cm in diameter (including the floral bracts), 7– to 10–flowered; ***floral bracts*** broadly ovate to ovate-triangular, acuminate and apiculate, pungent, thinly coriaceous, strongly recurved, carinate, V-shaped, slightly shorter than the sepals, dark green, finely nerved, subdensely to sparsely white-lanate, 9–10.5 × 7 mm, margins subdensely spinulose, spines ca. 0.5 mm long, retrorse. ***Flowers*** 17–19 mm long (including the petals extended), sessile, densely arranged, odorless; ***sepals*** slightly asymmetrical, suboblong, 7.5–8 × 3 mm, free, entire, green, thin in texture, sparsely white-floccose, apex broadly acute and mucronulate, mucron slightly pungent, ca. 1 mm long, the posterior ones alate-carinate with the keels decurrent on the ovary; ***petals*** spatulate, rounded and inconspicuously emarginate, 14–15 × 4–4.5 mm, free, erect at anthesis except for the suberect to subspreading apical portion, greenish except for the white apex, bearing 2 densely fimbriate, downwardly oriented appendages ca. 4 mm above the base, as well as 2 conspicuous longitudinal callosities about equaling the anthers; ***filaments*** terete, whitish toward the base, greenish near the apex, the antepetalous ones ca. 8 mm long, adnate to the petals for ca. 6 mm, the antesepalous ones ca. 10 mm long, free; ***anthers*** sublinear, greenish, ca. 2 mm long, laterally complanate, base obtuse, apex obtuse and remotely apiculate, dorsifixed near the middle; ***pollen*** irregularly ellipsoid, sulcate, exine microreticulate, muri thickened; ***stigma*** simple-erect, ca. 1 mm in diameter, white toward the apex and greenish at the base, blades suborbicular, spreading-recurved mainly toward the margins, margins densely papillose; ***ovary*** 3–3.5 mm long, ca. 4.5 mm long in diameter at the apex, subtrigonous, densely white-lanate, greenish-white; epigynous tube inconspicuous; placentation apical; ovules obtuse, numerous. ***Fruits*** unknown.

Paratypes. Brazil—Minas Gerais: Uruçuaí to Coronel Murta, ca. 20 km before Coronel Murta, 16°38′91″S 42°10′42″W, 336 m, 20 Jun 2008, *E. Leme 7418*, *C.C. Paula*, *T. Coser*, *R. Moura* & *O. Ribeiro*, fl. cult. Dec 2008 (SEL); ibidem, *E. Leme 7420*, *C.C. Paula*, *T. Coser*, *R. Moura* & *O. Ribeiro*, fl. cult. Dec 2008 (RB).

Comments. *Orthophytum glabrum* is the regional closest relative of *O. elegans*. The distinct habit of this new species, forming large compact populations on shallow soil protected by shrubby vegetation in the Caatinga-Cerrado domain, contrast with *O. glabrum* which grows in sun-exposed rock oucrops in the Campos Rupestre domain. In addition, this new species differs from it by the following features: leaf blades not lustrous, margins with shorter spines (3–5 mm vs. ca. 8 mm long), fascicles shorter (ca. 1.5 cm. long vs. 2–3 cm), sepals suboblong (vs.

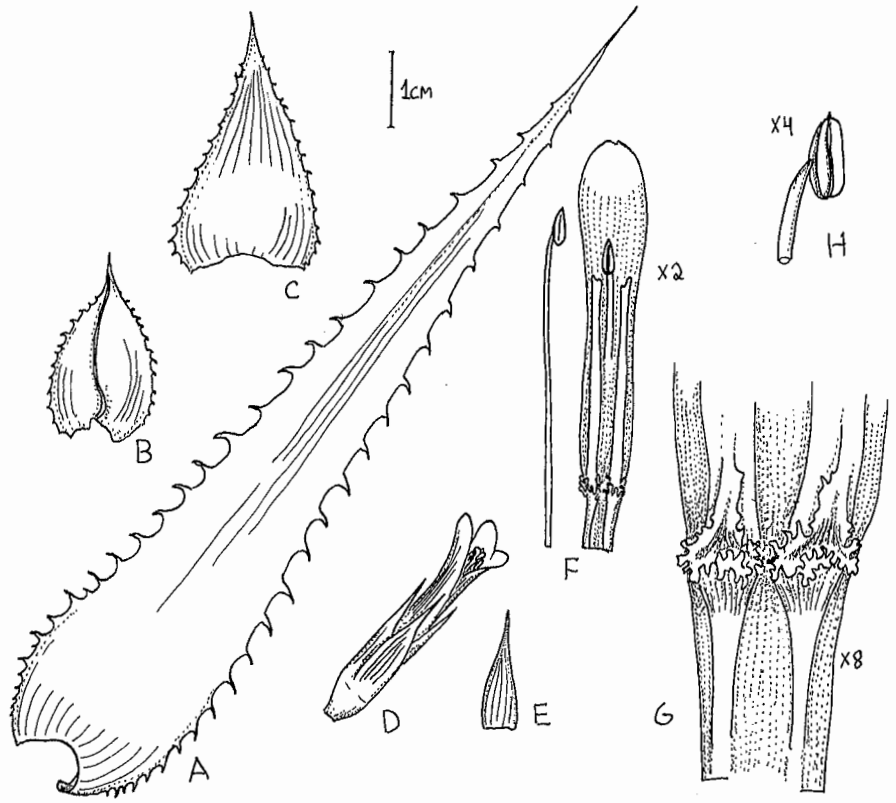

FIGURE 10. *Orthophytum jacaraciense* Leme. **A.** Leaf. **B.** Floral bract of the lateral fascicle. **C.** Floral bract of the terminal fascicle. **D.** Flower. **E.** Sepal. **F.** Stamen and petal. **G.** Petal appendages. **H.** Anther.

ovate-triangular), shorter (7.5–8 mm long vs. ca. 10 mm) and petals rounded and inconspicuously emarginate (vs. acute).

It is also possible to recognize some morphological resemblance of *Orthophytum elegans* with *O. disjunctum*, which is an endemic taxon of the so called "Pernambuco Centre of Endemism," covering the Norheastern states of Alagoas, Pernambuco and Paraiba (Leme & Siqueira-Filho 2007). However, the new species can be distinguished by the leaves twice as numerous at anthesis (ca. 16 in number vs. 7 to 8), leaf blades with longer marginal spines (3–5 mm long vs. 1.5–3.5 mm), and by the sepals suboblong, broadly acute and mucronulate (vs. narrowly lanceolate, acuminate-caudate).

Orthophytum jacaraciense Leme, sp. nov. TYPE: Brazil—Bahia: Jacaraci, em morro de areia branca, ca. 1000 m, Dec 2006, *Raymundo Reis Jr.* s.n., fl. cult. Oct 2008, *E. Leme 6987* (Holotype: HB). FIGURE 10.

A Orthophytum maracasense L.B. Sm., cui similis, sed laminis foliorum brevioribus et angustioribus, apicem versus utrinque glabris, marginibus spinis dense vel subdense dispositis et petalis longioribus, altitudinem bractearum distincte superantibus differt; a O. macroflorum Leme & M. Machado, cui affinis, laminis foliorum minoribus, floribus brevioribus, sepalis brevioribus et petalis brevioribus et apice per anthesin suberectis differt.

Plant terrestrial, stemless, 20–22 cm high at anthesis. ***Leaves*** ca. 5 in number (at anthesis), sparsely rosulate, forming a distinct rosette before anthesis and a inconspicuous rosette at anthesis, upper leaves not distinguishable from the scape bracts due to the elongation of the stem; ***sheaths*** inconspicuous; ***blades*** narrowly lanceolate, acuminate-caudate, 10–12.5 cm long, ca. 2 cm wide and ca. 3 mm thick at the base, strongly coriaceous, suberect-arcuate to nearly spreading, nearly flat near the the base to channeled toward the apex, yellowish-green or sometimes reddish toward the apex, not lustrous, finely nerved abaxially, subdensely white-lepidote at base mainly adaxially and glabrous toward the apex on both sides, margins straight, subdensely to densely spinose, spines narrowly triangular, flattened toward the base, pale castaneous toward

the apex, apex acicular, prevailingly retrorse-uncinate, 2–3 mm long, 1.5–2 mm wide at the base, 3–7 mm apart. ***Scape*** erect, light green, finely and sparsely white-lanate to glabrescent, smooth, terete, ca. 12 cm long, 0.6–0.7 cm in diameter; ***scape bracts*** foliaceous and not distinguishable from the leaves to subfoliaceous, spreading-arcuate, slightly decreasing in size toward the apex. ***Inflorescence*** bipinnate, cylindrical, erect, ca. 6.5 cm long, fascicles laxly arranged at the base and densely arranged near the apex, 0.5–1.5 cm apart, rachis 0.5–0.6 cm in diameter, smooth, light green, glabrous, nearly straight, terete; ***primary bracts*** spreading-arcuate to reflexed, nearly flat, the basal ones subfoliaceous and resembling the upper scape bracts, 3 times longer than the fascicles but gradually reduced in size toward the inflorescence apex, the upper ones narrowly ovate-triangular, long acuminate, 4–5 × 1.5–1.6 cm, twice longer than the fascicles, light green to yellowish-green and sometimes reddish toward the apex, finely nerved abaxially, glabrous, densely to subdensely spinulose, spines narrowly triangular, 1–2 mm long, 1–1.5 mm wide at the base, 2–7 mm apart, slightly retrorse-uncinate; ***fascicles*** the lateral ones ca. 3 in number, polystichously disposed, suberect, sessile, laxly head-like rosulate, 2.5 × 3.5–4 cm (including the floral bracts and sepals), 2– to 3–flowered, the terminal one subcylindrical, densely rosulate, ca. 3 cm long, ca. 8–flowered; ***floral bracts*** ovate to ovate-subtriangular or broadly subtriangular, acuminate, slightly pungent, thinly coriaceous, equaling to exceeding the sepals but strongly suberect-recurved and mostly exposing them, yellowish-green, finely nerved, glabrous, margins densely spinulose, spines 0.7–1 mm long, retrorse-uncinate, greenish except for the pale castaneous apex, those of the fascicle carinate, 21–22 × 12–13 mm, those of the terminal fascicle ecarinate, 30–32 × 18 mm. ***Flowers*** 34–36 mm long (with extended petals), sessile, subdensely arranged, odorless; ***sepals*** narrowly lanceolate, apex acuminate-caudate, ca. 17 × 5 mm, free, entire, green, thin in texture mainly toward the margins, glabrous, the posterior ones carinate with keels decurrent on the ovary, symmetrical, the anterior one ecarinate; ***petals*** narrowly sublinear-spatulate, obtuse to obtuse-emarginate, slightly cucullate, 27–28 × 4–5 mm, free, erect at anthesis and forming a tubular corolla except for the suberect apex, pale green except for the white apex, bearing at the base 2 thick, spreading to upwardly-prevailing scalloped appendages ca. 4 mm above the base, as well as 2 conspicuous longitudinal callosities slightly shorter than the filaments; ***filaments*** terete, greenish, 20–22 mm long, the antepetalous ones adnate to the petals for ca. 13 mm, the antesepalous ones free; ***anthers*** 2–2.5 mm long, laterally strongly complanate, base obtuse, apex obtuse and inconspicuously apiculate, dorsifixed near the middle; ***pollen*** ellipsoid, sulcate, exine microreticulate, lumina polygonal, muri thickened; ***stigma*** conduplicate, ca. 2 mm in diameter, white, blades obovate, obtuse, suberect, finely and shortly scalloped-lacerate; ***ovary*** ca. 5 mm long, ca. 7 mm in diameter at the apex, trigonous, glabrous; epigynous tube inconspicuous; placentation apical; ovules numerous, obtuse. ***Fruits*** unknown.

Comments. *Orthophytum jacaraciense* exhibits morphological affinity with *O. maracasense*, being distinguished by the smaller leaf blades (10–12.5 × 2 cm vs. ca. 30 × 3 cm), glabrous toward the apex and on both sides (vs. densely white-lepidote abaxially), margins with spines densely or subdensely arranged (3–7 mm apart vs. 10–20 mm apart), and by the longer petals (27–28 mm vs. ca. 20 mm long) and distinctly exceeding the floral bracts (vs. shorter than the floral bracts). Also, it seems somewhat related to *O. macroflorum*, differing by the smaller leaf blades (10–12.5 × 2 cm vs. 35–48 × 3.5–4 cm), shorter flowers (34–36 mm vs. 50–65 cm long), shorter sepals (ca. 17 mm vs. 29–37 mm long), and by the distinctly shorter petals (27–28 mm vs. 43–57 mm long) with suberect apex at anthesis (vs. strongly recurved at anthesis).

This new species has a peculiar habit, living in somewhat sun-exposed sites, at the border of the shrubby vegetation on interior dunes composed of white sandy soils formed by the decomposition of quartzite rocks. The collection locality of the type specimen is over 900 m elevation and situated about 400 km from the Atlantic coast.

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