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Authors: Josef Bogner, and Eduardo G. Gonçalves

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JOSEF BOGNER & EDUARDO G. GONÇALVES

Two new aroids from South America**Abstract**

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Two new species of *Araceae* from South America are described and illustrated. The one is *Anthurium ensifolium* from Bahia, eastern Brazil, which is tentatively placed in *A.* sect. *Urospadix* subsect. *Obscureviridia*. It seems close to *A. cleistanthum*, a poorly known species from Espírito Santo, Brazil, and also resembles *A. erskinei* from Bahia. The other is *Gorgonidium bulbostylum* from Andean Bolivia, which differs from all other species of the genus by the unusual aspect of the style that has an inflated, more or less ovoid apical portion. The stigma is also peculiar in being globose and conspicuously lobed, with lobes upwardly directed.

1. *Anthurium ensifolium*

Twelve years ago we received at the Munich Botanical Garden living material of an interesting *Anthurium* from the state of Bahia, Brazil, since when it has been in cultivation. The very narrow, coriaceous leaves and very short-peduncled inflorescences are characteristic for this species. Apparently related to *A. cleistanthum* G. M. Barroso, we recognize it as a new species. It is easy to grow and flowers nearly all around the year. Descriptive terminology follows Croat & Bunting (1979).

Anthurium ensifolium Bogner & E. G. Gonç., **sp. nova** – Fig. 1-2
Holotypus: Brazil, Bahia, Itapetinga, 1990, *Bogner 2450* (M; isotypus UB).

Ad sectione *Urospadicem* Schott pertinens. *Internodia* brevia, 4.5-5.5 cm diam.; *cataphylla* lanceolata, 5-7 cm longa, 0.6-0.8 cm lata, in fibras persistentes soluta; *petiolus* 3.4-4.5 cm longus, 0.3-0.5 cm diam., adaxiale canaliculatus, marginibus acutis; *lamina* coriacea, lineari-oblonga vel lineari-elliptica, 34-57 cm longa, 2-4.5 cm lata; nervis primariis lateralibus 24-26 utroque, arcuatis; *pedunculus* 2.5-3 cm longus, 0.4-0.8 cm diam.; *spatha* recta vix patens, coriacea lanceolata vel ovato-lanceolata 9.5-10 cm longa, 2.3-2.5 cm lata; *spadix* castaneus vel purpurascens, 7-9.2 cm longus, inferne 0.7-1.5 cm diam. sursum attenuatus.



Fig. 1. *Anthurium ensifolium* – habit of a cultivated individual at the Munich Botanical Garden.

Stem thick, *internodes* short, 4.5-5.5 cm diam.; *roots* more or less dense, whitish to greenish, smooth; *cataphylls* lanceolate, 5-7 cm long, 0.6-0.8 cm wide, persisting as a mass of fibres. *Leaves* erect to slightly spreading; *petiole* 3.4-4.5 cm long, 0.3-0.5 cm diam., adaxially shallowly canaliculate with acute margins, abaxially rounded, the surface minutely white-punctate in fresh material, medium to dark glossy green; *geniculum* slightly thicker than the petiole, clear glossy green, 0.5-1 cm long; *sheath* 1.4-2 cm long; *blade* coriaceous, linear-elliptic to linear-oblong, acute to shortly acuminate at apex, obtuse to acute at base, 34-57 cm long, 2-4.5 cm wide, broadest at middle or slightly below, margins very weakly undulate in dry material; *surface* mat, medium to dark green, sometimes slightly glaucous or velvety, lower face mat, slightly paler, densely white-punctate in living plants; both faces drying mat, yellowish brown;

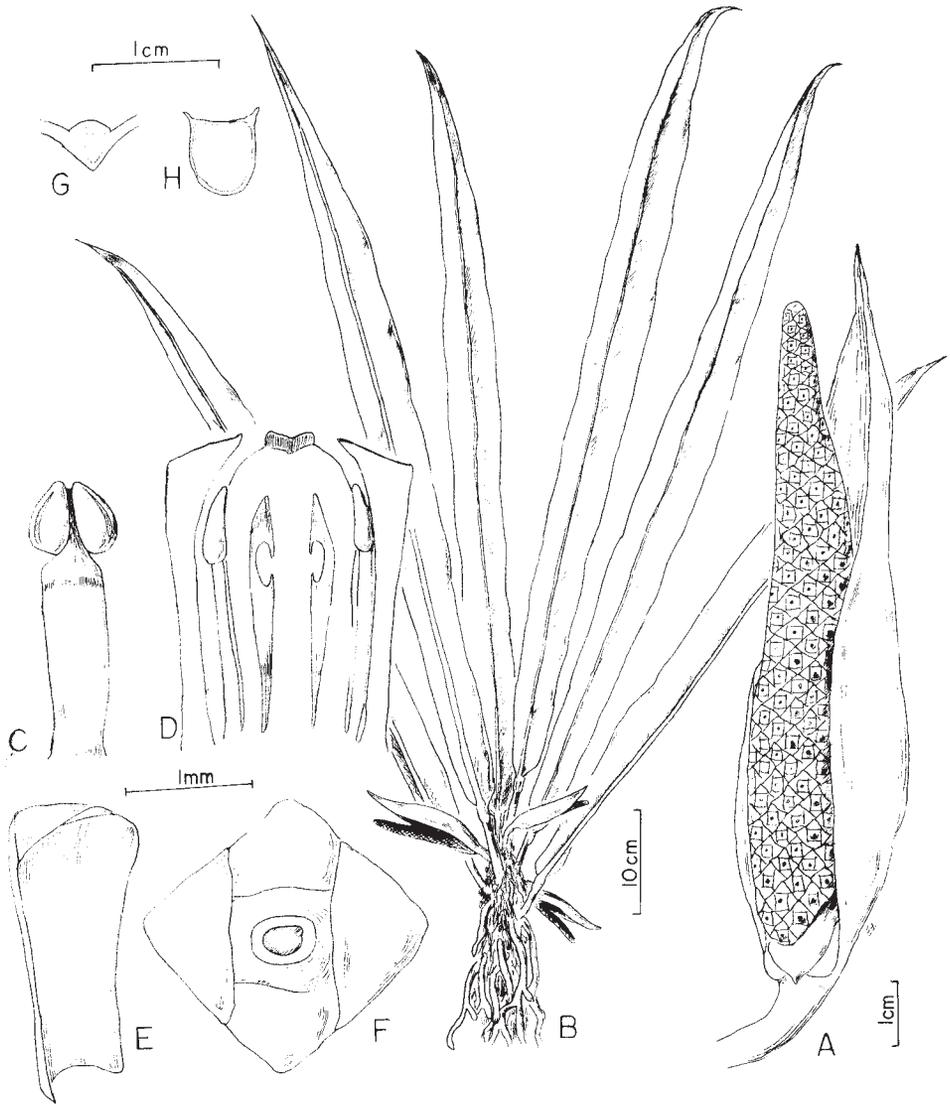


Fig. 2. *Anthurium ensifolium* – A: inflorescence; B: habit; C: stamen; D: flower, longitudinal section; E: tepal, side view; F: flower, upper view; G: cross section of midrib; H: cross section of petiole. – Drawn from *Bogner 2450* by E. G. Gonçalves.

midrib slightly prominent above, obtuse to acutely keeled below; venation almost invisible on both faces in living plants, becoming strongly conspicuous after drying, primary lateral veins 24-26 per side in dry leaves, arising from midrib at an angle of 30-50° arcuate, slightly prominent on surface, more so on lower face; interprimary veins slightly less prominent than primaries; tertiary veins prominent on both faces in dried leaves, reticulate veins prominulous when dry; collective vein 3-4 mm from leaf margin. *Inflorescences* usually pendent, much shorter than the leaves; *peduncle* 2.5-3 cm long, 0.4-0.8 cm diam., 1.2-1.5 times shorter than the petioles; *spathe* erect, inserted at an angle of 40-45° on the peduncle, coriaceous, lanceolate, 9.5-10 cm long, 2.3-2.5 cm wide, broadest slightly above the base, sometimes almost at middle,

shortly acuminate at apex, obtuse at base, spathe margins meeting obtusely, outside semi-mat, medium green, densely white-punctate in fresh material, inside paler and less densely punctate; *spadix* brown to slightly purplish, stipitate for 5-6 mm, tapered, 7-9.2 cm long, 0.7-1.5 cm diam. at base, 4-5 mm diam. at apex, broadest near base; *flowers* rhomboidal, 1.5-2 mm long, 2.5-3 mm wide; 6-8 flowers visible in principal spiral, 6-7 flowers visible in alternate spiral; *tepals* mat; lateral tepals 0.6-1 mm wide, inner margins concave, outer margins 2-sided; *pistils* not emergent; *stigma* ellipsoid; *stamens* only partially covering the ovary, filaments not exerted, anthers 0.6-0.8 × 0.5-0.8 mm, thecae ovoid, 0.6-0.8 × 0.3-0.4 mm. *Infructescence* unknown.

Relationships. – *Anthurium ensifolium* is easily recognized by the linear, erect leaves, very short peduncles and wide coriaceous spathe that partially encloses the spadix, even after anthesis. Another interesting feature is that the whole inflorescence is not erect at anthesis, but rather perpendicular to the stem axis.

Anthurium ensifolium is tentatively included in *A.* sect. *Urospadix* subsect. *Obscureviridia* Engl. and seems closest to *A. cleistanthum* G. M. Barroso (1957) from Espírito Santo state. Both species have short-pedunculate inflorescences and proportionally wide spathes compared with other species of *A.* sect. *Urospadix*. However, *A. cleistanthum* has leaves that are up to four times longer than wide, whereas they are 12-15 times longer than wide in *A. ensifolium*. The leaves are also much more coriaceous in *A. ensifolium*. Also similar is *A. brachypodum* G. M. Barroso (1957: 98, t. 14, nom. illeg., non Sodiro 1901: 12), which has, however, much broader leaves (up to 7 times longer than broad) too.

Anthurium ensifolium also resembles *A. erskinei* Mayo, which occurs in the Chapada Diamantina mountains of central Bahia, above 1000 m (Mayo 1978). Both species have stiff coriaceous leaves, with primary, interprimary and reticulate veins that are inconspicuous in fresh leaves but become conspicuous after drying. However, *A. erskinei* has much broader leaves (1.75-3.4 times longer than wide) that are ovate, elliptic or obovate, but never linear-lanceolate. Another important difference is that the spathe in *A. erskinei* is usually perpendicular to the spadix after anthesis, whereas the spathe in *A. ensifolium* is kept almost parallel to the spadix, even after anthesis.

2. *Gorgonidium bulbostylum*

The neotropical genus *Gorgonidium* Schott has four recognized species, all restricted to the Andes, occurring in Peru, Bolivia and northern Argentina (Mayo & al. 1997), including one discovered only recently (Hettterscheid & al., in press). All species are geophytic, losing all aerial parts during the winter. The genus belongs to the tribe *Spathicarpeae* and is one of the few neotropical aroid genera that have been revised since 1920 (Bogner & Nicolson 1988). Like most geophytic aroids, complete collections are rare and most species are only known from less than ten specimens.

The single, incomplete collection from Bolivia on which this new species is based, was recognized by the authors as a new species in the spring of 2002, during a visit of the junior author (EGG) to the Munich Botanical Garden. Dissection of the flowers showed it to be a hitherto unknown *Gorgonidium*, so this species is here described as new.

***Gorgonidium bulbostylum* Bogner & E. G. Gonç., sp. nova** – Fig. 3-4

Holotypus: Bolivia, Tarija, Provincia Arce, entrando por la quebrada del Río Cabildo, en dirección a Charajas, 2350 m, bosque de *Podocarpus*, 21.1.1988, *Liberman, Pedrotti & Venanzoni 1857* (LPB; isotypus M).

Caudex ignotus. *Petiolus* 64 cm longus, ad basim 1.5 cm diam.; *lamina* bipinnatifida, 28 × 48 cm, lobis lateralibus primariis pinnatifidis, 4(-5?) utroque, lobulis triangularibus vel oblanceolatis. *Spatha* vittata, cymbiformis, 16 × 3.2 cm; *spadix* spatha brevior, c. 9 cm longus, inflorescentia

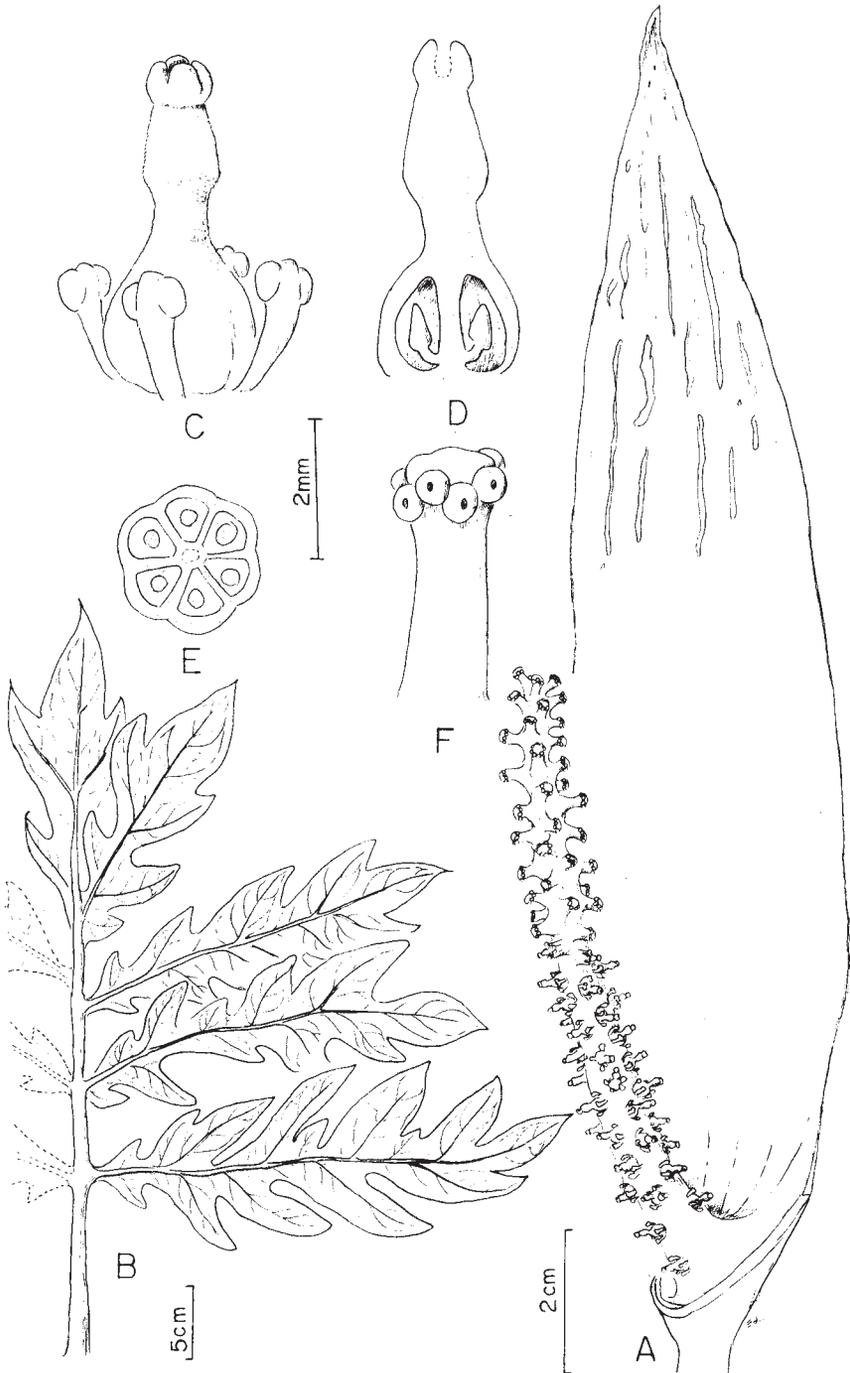


Fig. 3. *Gorgonidium bulbostylum* – A: spadix, spathe partially cut; B: leaf; C: female flower, side view; D: gynoecium, longitudinal section; E: ovary, cross section; F: synandrium, side view. – Drawn from Liberman & al. 1857 by E. G. Gonçalves.

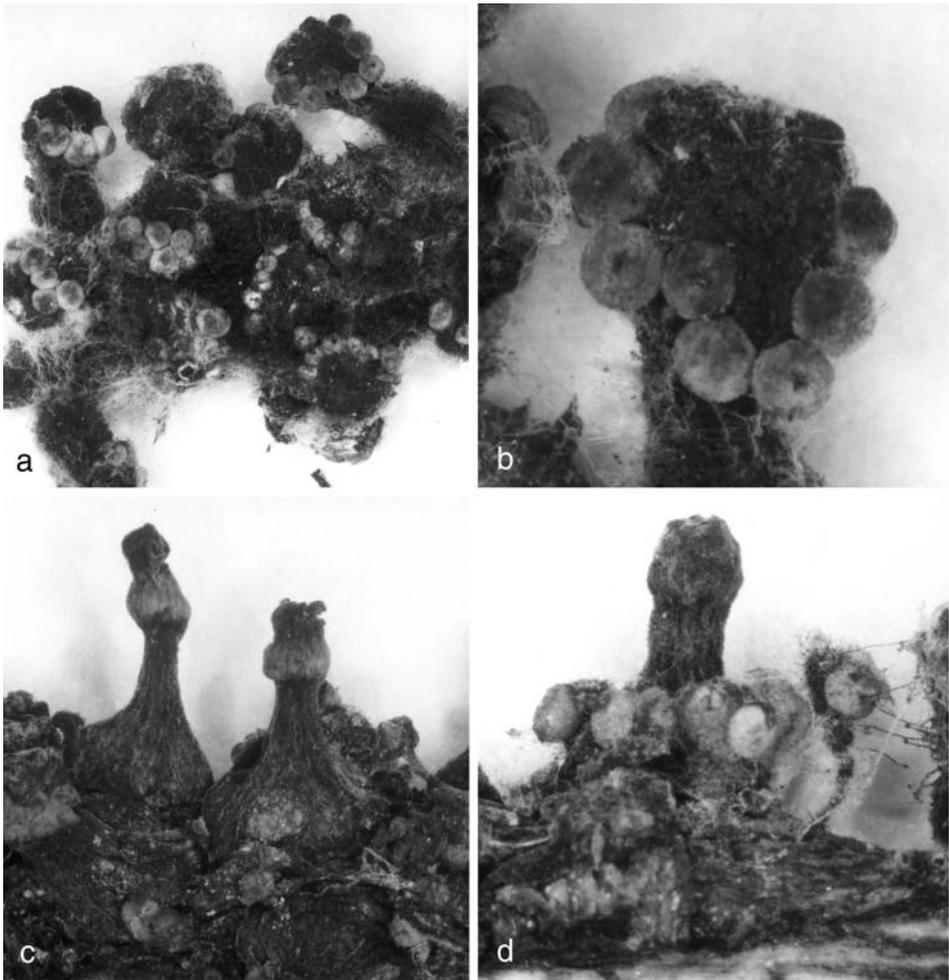


Fig. 4. *Gorgonidium bulbostylum*, details of the spadix – a: male zone with synandria; b: synandrium in detail, with typically globose thecae; c: female zone, female flowers with the typically bulb-like swollen style; d: bisexual flower between the male and female zone. – All from *Lieberman & al. 1857* (M), specimen attacked by mould; photographs by G. Gerlach.

mascula 4.5×0.8 cm, feminina 4.8×1.2 cm; synandria (4)5-6-andrica, filamentis connatis, connectivis inconspicuis, thecis rotundatis; pistillum 3-5 mm longum, staminodii 5-6 capitatis; ovarium 6-loculare, loculis uniovulatis, ovulis orthotropis; stylum ad apicem incrassatum, bulbiforme; stigma hemisphaericum, apice lobato, lobulis sursum spectantis.

Leaf solitary; petiole c. 64 cm long, 1.5 cm in diameter at the base and 0.8 cm at the apex; blade ovate in outline, bipinnatifid, c. 28×48 cm, primary lateral lobes 4(-5?) on each side, pinnatifid, elliptic to oblanceolate, $15-29 \times 5-15$ cm, lobules (minor lobes) triangular to elliptic or oblanceolate, sometimes falcate, $2-9 \times 1.5-2.5$ cm. *Inflorescence* solitary; peduncle 8×0.3 cm; *spathe* cymbiform, coriaceous, with yellowish longitudinal stripes, 16×3.2 cm; *spadix* sessile, c. 9 cm long; female zone 4.8×1.2 cm, obliquely adnate to the spathe, male zone 4.5×0.8 cm. *Flowers* unisexual, some bisexual flowers occurring only between the male and the female zones. *Male*

flowers with a synandrium of (4)5-6 stamens, filaments completely connate, 2-2.5 × 1.5 mm, thecae sessile, situated near the apex, globose, 0.4-0.5 × 0.5 mm, dehiscent by a median pore; *pollen grains* ellipsoid (to slightly ovoid), 37 × 20 µm, inaperturate, exine nearly psilate; connective inconspicuous, flat to very slightly rounded. *Female flowers* with pistils 3-5 mm long, surrounded by 5-6 strongly capitate staminodes, 1.5-2 × 0.5 mm, with vestigial thecae; ovary broadly ovoid, 2-2.5 × 1-1.5 mm (broader than tall), with six locules, each locule with a single ovoid orthotropous ovule, funicle short, slightly curved; style as long as or, sometimes, longer than the ovary, 2-2.8 × 0.8-1 mm, upper part of the style with a bulb-like swelling; stigma rounded, 6-lobed, lobes upright. *Bisexual flowers* with fully developed thecae, some stamens fused. *Infructescence* unknown.

Relationships. – *Gorgonidium bulbostylum* is so far known only from the type locality, in southern Andean Bolivia. It differs from other species of the genus by the style, which is inflated and more or less ovoid in the apical portion, and by the stigma, which is globose and conspicuously lobed, with the lobes upwardly directed. This kind of stigma is only known in species of other genera, such as *Taccarum peregrinum* Schott. In the other species of *Gorgonidium* the stigmas are either planar and lobed (*G. vermicidum*) or subhemispheric and inconspicuously lobed (*G. mirabile* and *G. vargasii*).

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Addresses of the authors:

Josef Bogner, Augsburgger Straße 43a, D-86368 Gersthofen, Germany.

Eduardo G. Gonçalves, Laboratório de Fitoquímica, Depto. de Botânica - IB, Universidade de São Paulo, Caixa Postal 11461, CEP 05422-970, São Paulo-SP, Brazil; e-mail: edgon@hotmail.com.