Gorgonidium beckianum (Araceae), a new species from Bolivia

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Source: Willdenowia, 38(1) : 195-200

Published By: Botanic Garden and Botanical Museum Berlin (BGBM)

URL: https://doi.org/10.3372/wi.38.38114

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Abstract

Bogner, J.: *Gorgonidium beckianum (Araceae),* a new species from Bolivia. – Willdenowia 38: 195-200. – ISSN 0511-9618; © 2008 BGBM Berlin-Dahlem.
doi:10.3372/wi.38.38114 (available via http://dx.doi.org/)

A new *Gorgonidium* species from Bolivia, *G. beckianum,* is described and illustrated. It is characterized by its globular ovary, a subsessile, discoid stigma and shorter, slightly clavate and slender staminodes of the female flowers. *G. beckianum* is closely related to *G. vermicidum* and *G. striatum,* which mainly differ by an ovoid ovary, a distinct style and a star-like or subhemispheric stigma as well as by the shape of their staminodes.

Additional key words: aroids, *Spathicarpeae, Gorgonidium vermicidum, Gorgonidium striatum,* taxonomy.

Introduction

Years ago Dr Stephan Beck from the National Herbarium in La Paz (LPB), Bolivia, showed me herbarium specimens of several aroids, which he brought on loan to the Botanische Staatssammlung München (M). Included was an undescribed species of the South American genus *Gorgonidium* (Bogner & Nicolson 1988; Engler 1920; Mayo & al. 1997, 1998) of the small neotropical tribe *Spathicarpeae* (Gonçalves & al. 2007). It was represented by two collections, one flowering and one fruiting. The fruiting collection was easily identified as belonging to the same species, because of the ± sessile stigma, which is unique in the genus where all other species have a distinct style. The spadix of the specimen from LPB was highly attacked by a fungus. Since the flowering specimen was collected by a British collector, I asked for a loan and received a duplicate from the Kew herbarium (K), which is in much better condition and much less infected by a fungus. The species is described as new to science in the present contribution.

Gorgonidium beckianum Bogner, **sp. nov.**
Holotypus: Bolivia, Chuquisaca, Lampacillas (Padilla-Monteagudo), in dense scrub c. 2.5 m high on the lower slopes of a steep rocky hillside, 2400 m, leafless perennial, very foetid, spathe yellowish green, becoming purple below, leaves absent in flowering time, 19.11.1994 [flowering], *J. R. I. Wood 8796* (LPB; isotype: K).

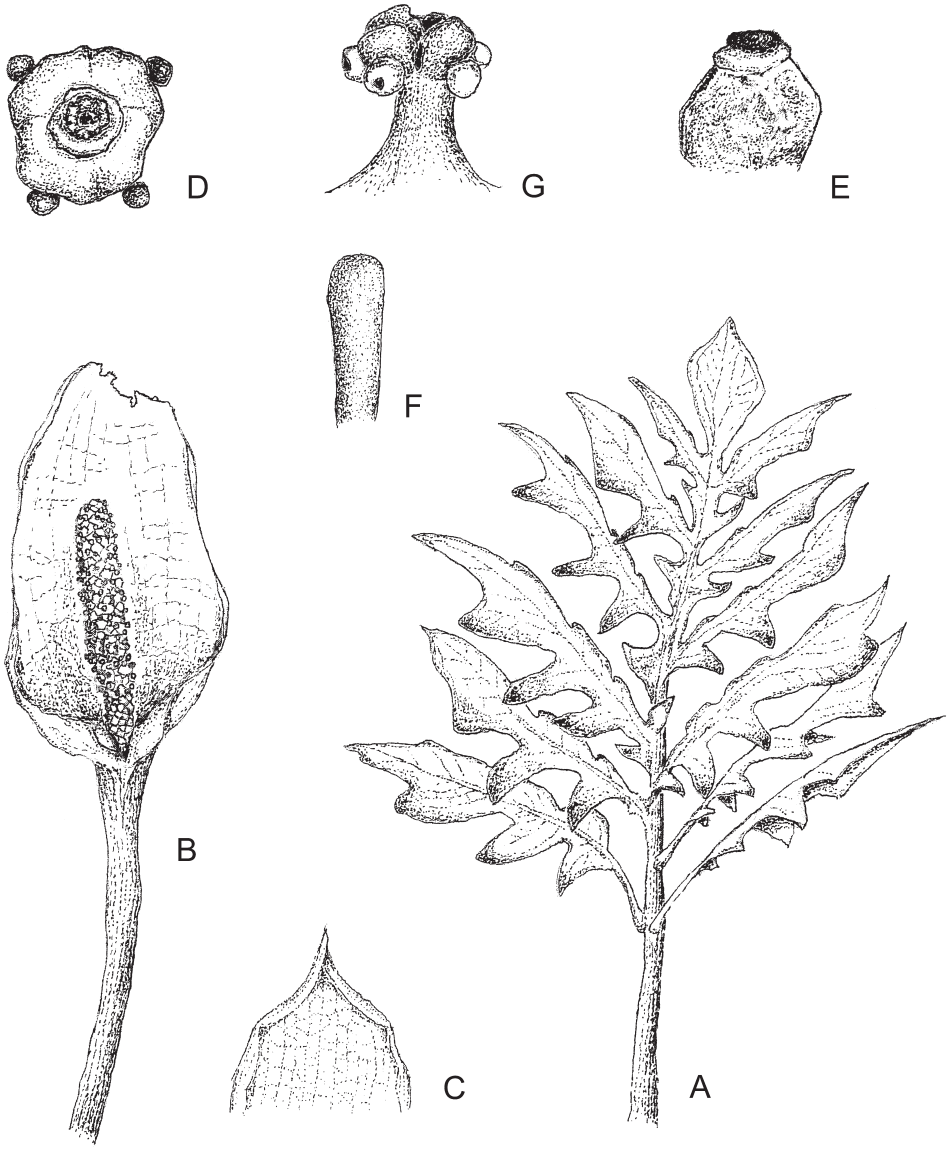

Fig. 1. *Gorgonidium beckianum* – A: leaf, 1/3 ×; B: inflorescence, 1/3 ×; C: apex of spathe, 1/3 ×; D: female flower (with four staminodes) seen from above, 10 ×; E: gynoecium, 10 ×; F: staminode in side view, 16 ×; G: synandrium in side view, 10 ×. – All from the type collection *J. R. I. Wood 8796* (A-B, D-E, G from the holotype at LPB, C, F from the isotype at K). – Drawing by K. Schuster.

Differt a speciebus ceteris stigmate subsessili discoideo; floribus femineis cum staminodiis gracilibus clavatis circumdatis; synandriis cum protuberationibus apicalibus subglobulosis.

Tuber unknown (not present). *Petiole* 7.5-10 cm long (incomplete) and 0.5-0.8 cm in diam., green. *Leaf blade* bipinnatifid, 21-26 cm long and 17-24 cm wide, green; rachis below 0.4-0.5 cm in diam. and 12-16 cm long, on each side with five lobed leaflets, the lower pair with a petiolule

Fig. 2. *Gorgonidium beckianum* – isotype *J. R. I. Wood 8796* at K. – Photograph by F. Höck.

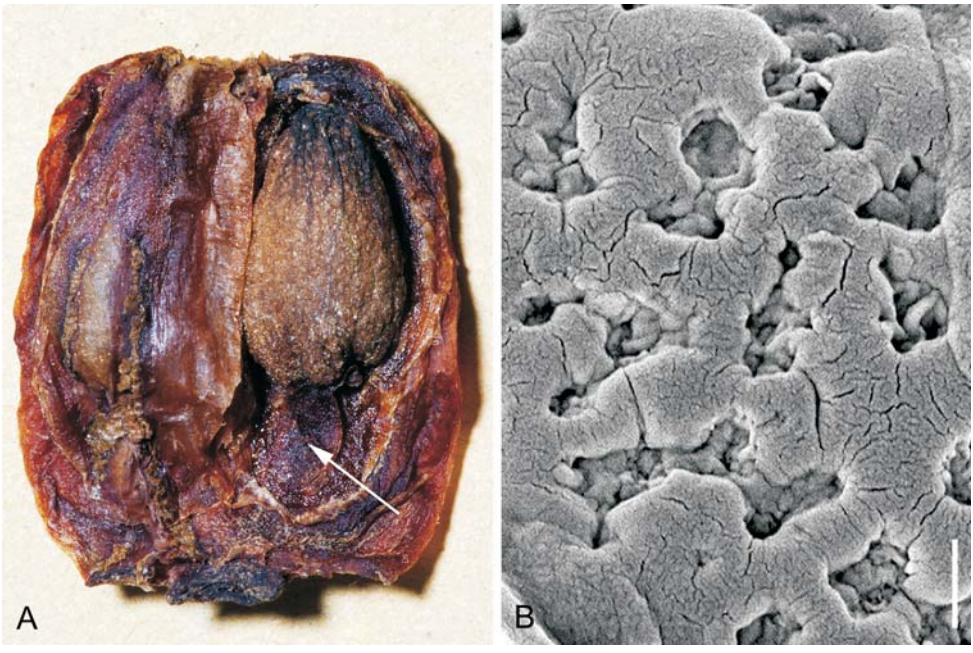

Fig. 3. *Gorgonidium beckianum* – A: berry, one locule opened to show the single ovoid, orthotropous seed with the funicle (arrow) still attached to the axile placenta; photograph from *Kessler & al. 4823* (LPB) by G. Gerlach; B: exine of pollen grain, fissures in reticulum artificial by preparation; SEM micrograph by H. Halbritter.

1-1.5 cm long and 0.3-0.4 cm in diam., the following ones ± sessile on the rachis, the uppermost ones decurrent on the rachis; leaflets (6-)7-14 cm long with two to four lateral subtriangular lobes on each side and incisions down to 0.3-0.5 cm (c. 0.1 cm in uppermost ones) from the rachis, sinus roundish to oblong; leaflets becoming smaller towards distal part of the blade, lower pair of leaflets 12-14 cm long, second and third pair of leaflets 11-14 cm long and also with usually two lobes on each side, lobes 2.5-4.5 cm wide; uppermost pair of leaflets 7-12 cm long and usually with only one lobe on each side, terminal leaflet 7-12 cm long and 3-4 cm wide with acute apex; from the second pair onwards rhachis with triangular, 0.8-1.8 cm long lobes; venation reticulate, each lobe of the leaflets with one primary lateral vein and thinner second and third order veins, forming one or two collective veins in a distance of (0.4-)0.5-1.5(-2) mm along the margin; inner collective veins stronger than the outer ones, usually ending in the margin after running a certain distance along it. *Peduncle* 13-18 cm long and 0.5-0.8 cm in diam., green. *Spathe* boat-shaped, 12-15 cm long and 5-7 cm wide in the lower half, inside the lower two thirds purple and upper third with light (probably yellow) coloured irregular stripes and becoming nearly light coloured in the apical part (yellowish green, becoming purple below according to the collector's note), apex acute to slightly cuspidate. *Spadix* shorter than spathe, 8-9.5 cm long and 1.3-1.5 cm in diam., fertile to the blunt apex; *female zone* 1.8-2 cm long and c. 1.3 cm in diam.; *male zone* 6.5-7.5 cm long and 1.3-1.5 cm in diam. *Flowers* unisexual, naked. *Female flowers* surrounded by usually four slender, slightly clavate staminodes always shorter than the ovary, c. 1.5 mm long and c. 0.4 mm in diam., with rounded apex; ovary ± globular (to broadly ovoid), (1.8-)2-2.5 mm in diam., upper part probably purplish, with 4-6 locules and with one orthotropous ovule in each locule, placentation axile; style very short to nearly absent, light coloured; stigma ± discoid, 0.8-0.9 mm in diam., dark coloured (probably purplish). *Male flowers* with its stamens completely connate into a long-stipitate, 3-4 mm long, conical synandrium, stipe 0.6-0.8(-1) mm in diam., thecae in

subapical position, apex of synandrium with roundish protuberances (outgrowths) or sometimes these inconspicuous; thecae globular, c. 0.4 mm in diam., dehiscing by an apical pore; pollen grains inaperturate, ellipsoid, 27-28 × 12-13 µm, exine reticulate to foveolate (Fig. 3B). *Infructescence* with persistent, c. 10.5 cm long spathe, purple inside. *Berries* large, deep red (purple), with sessile stigma remnant, ± globular (to somewhat broadly ovoid), c. 2 cm long and 1-2 cm in diam. (depending on the number of seeds), each locule with one large seed attached to the lower part of the axile placenta, funicle curved and 2-2.5 mm in diam. (Fig. 3A). *Seed* ovoid, 1-1.1 cm long and 0.6-0.7 cm in diam.; testa rough, ± rugulose-warty.

Eponymy. – *Gorgonidium beckianum* is named after Dr Stephan Beck from the National Herbarium in La Paz, Bolivia, who collected many plants including aroids in Bolivia and established a large herbarium with over 30 000 collection numbers, of which a duplicate set is deposited in the Botanische Staatssammlung in München (M).

Distribution. – The species is so far known only from the Chuquisaca department in Bolivia.

Additional material examined. – Bolivia, Depto. Chusquisaca, Prov. Jaime Mendoza, 8 km al N de Sopachuy 19°33'S, 64°27"W, 1900 m, bosque semideciduo disturbado de 8 m de altura; frutos rojos, 25.6.1995 [fruiting], *M. Kessler, J. Gonzales, K. Bach & S. Hohnwald 4823* (LPB).

Ecology. – *Gorgonidium beckianum* grows in dense scrubs to 2.5 m high on slopes of rocky hillsides or in disturbed small and semideciduous forests to 8 m high at an altitude of 1900-2400 m. The inflorescence has a very strong foetid odour at anthesis (after collector's note). The plants are without leaves at flowering and fruiting. The inflorescence appears at least in November, fruiting takes place at least in June.

Relationship. – *Gorgonidium beckianum* is closely related to *G. vermicidum* (Speg.) Bogner & Nicolson and *G. striatum* Hetterscheid & al. The new species mainly differs from *G. vermicidum* by the globular (instead of ovoid) ovary, the subsessile, discoid stigma (instead of a distinct attenuate style with a star-like stigma) and the slender, clavate staminodes of the female flowers. In both species the staminodes surrounding the gynoecium are shorter than the ovary. *G. striatum,* in contrast, has quite slender, clavate staminodes much longer than the ovary and also differs by an ovoid ovary, a long and slender style and a small subhemispheric stigma.

Unpublished molecular phylogenetic analyses of several *Gorgonidium* species (Cusimano, pers. comm.) revealed that the three mentioned species are closely related to each other.

Acknowledgements

I like to thank very much Mrs N. Cusimano, Ludwig-Maximillians-Universität München, for information from her unpublished molecular phylogenetic analyses, Dr H. Halbritter, Wien, for SEM micrographs of the pollen, Ms K. Schuster, München, for the drawings, Dr G. Gerlach, München, for the photograph of the berry, Dr H. Roessler, München, for the translation of the diagnosis into Latin, the Herbarium, Royal Botanic Gardens, Kew (K), for the loan of a herbarium specimen and especially Dr S. Beck, La Paz, for the providing me material of aroids from Bolivia on loan.

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