



Novitates Rio Munis 2. A new species of *Begonia* section *Loasibegonia* (*Begoniaceae*) from the Monte Alen region, Equatorial Guinea

M.S.M. Sosef¹, N.S. Nguema Miyono²

Key words

Begonia
Begoniaceae
biodiversity
Equatorial Guinea
Monte Alen
Pleistocene refuge
taxonomy

Abstract A new, yellow-flowering species of *Begonia*, *B. aequatoguineensis*, is being described from the Monte Alen region in Equatorial Guinea. It belongs to the section *Loasibegonia* and supports the idea that the Monte Alen region harbours an exceptionally high biodiversity and possibly represents a former Pleistocene rain forest refuge.

Published on 16 April 2010

INTRODUCTION

This is the second contribution to a new series, *Novitates Rio Munis*, started by Leal (2007) to yield broader attention to the exceptional botanical diversity of Equatorial Guinea.

In 2006, the second author, who has a specific interest in the *Begonia*'s of Equatorial Guinea, collected material in the Monte Alen region of a small, yellow-flowering species of *Begonia* which he had never seen before and which he could not identify with the work of Sosef (1994). When he brought the material to Wageningen and showed it to the first author, it was soon recognized as a yet undescribed species.

The species can be easily recognized as a member of the section *Loasibegonia* A.DC. (Doorenbos et al. 1998), because of the rhizomatous nature of the plants, the inflorescence being reduced to a cincinnal monochasium, its 2 perianth segments in both male and female flowers, and the erect, narrowly elliptic fruits. Within that section, it seems most closely related to *B. atroglandulosa* Sosef and *B. minuta* Sosef (Sosef 1992), with which it shares the presence of minute, dark purple, glandular hairs. Both these species are small herbs as well, the first occurring in Gabon, western Congo (Brazzaville) and western Democratic Republic of Congo, the second a narrow endemic from southern Cameroon. The most striking distinguishing features of the new species are the narrow leaves with a bullate and hairy upper surface and a finely dentate margin (Fig. 1). The individual bullae are small and occur in compound groups, reminiscent of the situation in the regularly grown *B. staudtii* Warb. (Henthorne 2006) belonging to the same section.

After the full revision of the sections *Loasibegonia* and the closely related section *Scutobegonia* Warb. by Sosef (1994), four new species belonging to these two sections have now

been described in recent years (De Wilde 2002, Sosef & Leal 2002, De Wilde & Van Valkenburg 2005). Each one of these displays the feature of deep yellow perianth segments which is otherwise rare within the genus *Begonia*. These additions now bring the total number of species within the section *Loasibegonia* to 21 and that within the section *Scutobegonia* to 23.

The new species contributes to the already exceptionally high botanical diversity and endemism reported to be present in the Monte Alen – Monte Mitra region of Equatorial Guinea (Balinga et al. 2005, Senterre 2005, Leal 2005a, b, 2007). The new *Begonia* species therefore provides further support to the generally accepted idea that this high diversity is related to the fact that the Monte Alen – Monte Mitra region represents a Pleistocene rain forest refuge (Sosef 1994, Maley 1996, Leal 2005b). Especially so because *Begonia* species of the sections *Loasibegonia* and *Scutobegonia* are thought to represent indicator species for such refuge areas (Sosef 1994, 1996). The Monte Alen Pleistocene refuge region links up with the equally rich Crystal Mountains region in Gabon (De Wilde 1994, Bissiengou & Sosef 2008). This urges GOs as well as NGOs responsible for the conservation of the biodiversity resources of international importance within Equatorial Guinea, to come up with sound and effective park management plans. It has for example been suggested that the boundaries of the Monte Alen National Park should be redrawn, because it in fact includes only a minor part of the former refuge area (Nchanji et al. 2005). The fact that the new species is found just east of the Monte Alen National Park boundaries seems to confirm this idea.

DESCRIPTION

Begonia aequatoguineensis Sosef & Nguema, *spec. nov.*
— Fig. 1

Begonia atroglandulosa Sosef et *Begonia minuta* Sosef similis, sed differt foliis multo angustioribus, anguste ovatis vel anguste elliptico-ovatis, bullatis, supra pilosis et margine subtiliter dentatis. — Typus: N.S. Nguema Miyono 2089 (holo WAG; iso BATA, MA, MO), "Guinée Equatoriale, 2 km à l'Ouest de Mendung, 1°43'N 10°24'E, forêt dense montagnard, avec des grands cailloux, 21 Décembre 2002".

¹ Netherlands Centre for Biodiversity Naturalis (section NHN), Biosystematics Group, Wageningen University, Generaal Foulkesweg 37, 6703 BL Wageningen, The Netherlands;
corresponding author e-mail: Marc.Sosef@wur.nl.

² Instituto Nacional de Desarrollo Forestal (INDEFOR), Facultad de Medio Ambiente, Avda. Hassan II s/n, BP. 661, Malabo, Guinea Ecuatorial;
e-mail: nsnguema@yahoo.fr

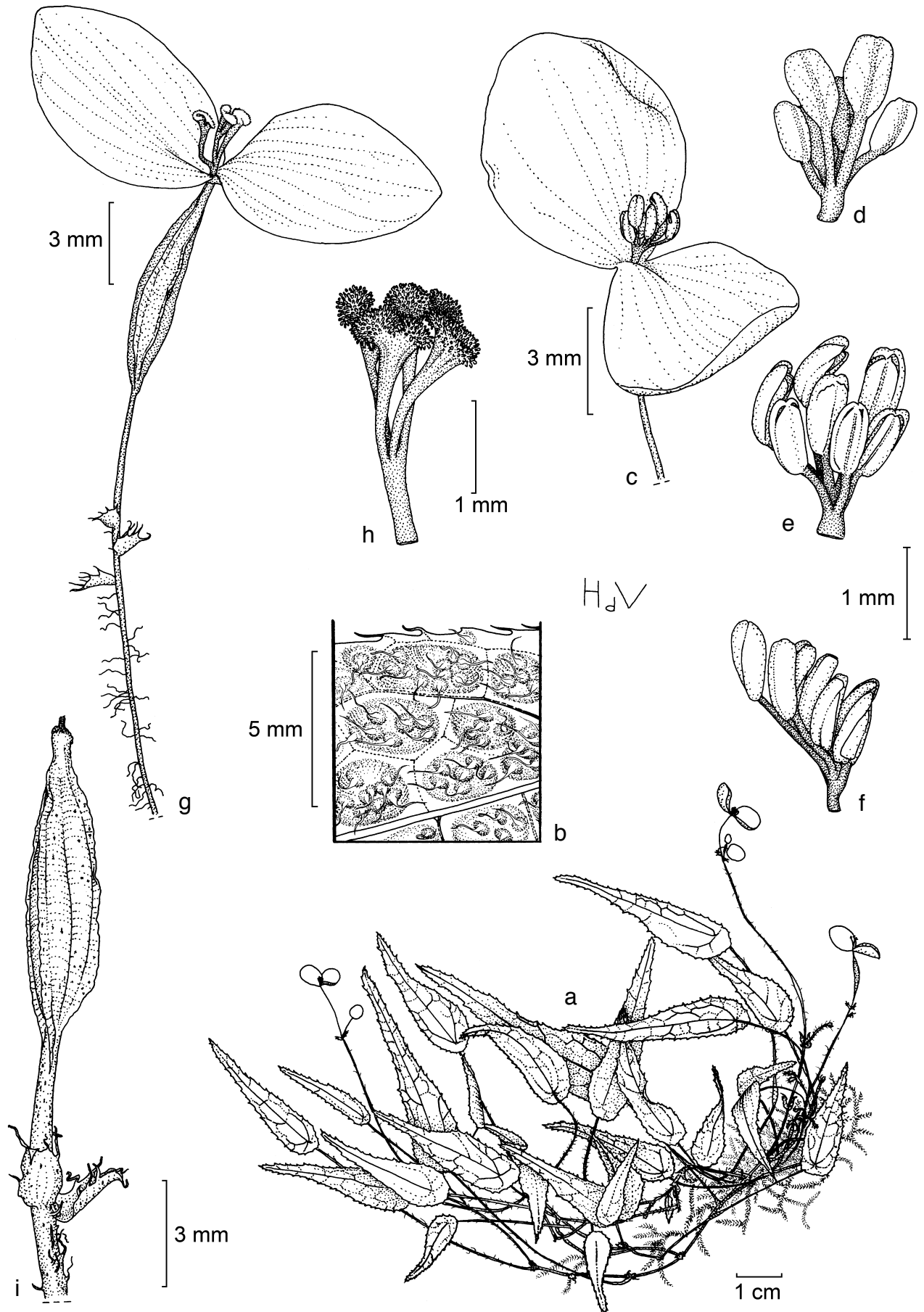


Fig. 1 *Begonia aequatoguineensis* Sosef & Nguema. a. Habit; b. detail of leaf surface; c. male flower; d. androecium, dorsal view; e. androecium, frontal view; f. androecium, side view; g. female flower; h. styles; i. fruit (all Nguema 2089). — Drawn by Hans de Vries.

Small rhizomatous herb up to c. 5 cm high, most parts hairy and scattered with two types of minute glandular hairs, one brownish and the other dark purple or black, the latter type especially abundant on the rhizome, petiole and peduncle. *Rhizome* slender, elongated, c. 1 mm diam (in sicco); *stipules* triangular to narrowly triangular or narrowly triangular-ovate, 2–3 mm long, with an acute to long acuminate apex and some cilia along the margin of the apical part. *Leaves* peltate; petiole inserted at 0.5–4 mm from the nearest margin, 12–48 mm long; leaf blade asymmetric or slightly so, narrowly ovate to very narrowly elliptic-ovate, 20–48 by 4–17 mm, with a long acuminate to attenuate apex, with 3–6 palmate main nerves; margin finely dentate, the teeth ending in a hair; upper surface concolorous, bullate with small bullae in compound groups, each topped with a hair, nerves not prominent; lower surface with slightly prominent main nerves (in sicco), all nerves set with patent hairs. *Inflorescence* axillary, a contracted, cincinnal monochasium consisting of 1 or 2 male and 1 terminal female flower; peduncle simple, 20–37 mm long; bracts 2 or 3, broadly ovate, 1–1.5 mm long, with a ciliate margin. *Male flower* erect; pedicel 9–15 mm long; perianth segments 2, circular to broadly elliptic, 5–8 by 4–6 mm, yellow, glabrous except for some minute glandular hairs; androecium a zygomorphic fascicle with 7–11 stamens in several rows like an amphitheatre; filaments fused at base into a short column of c. 0.5 mm, free parts 0.2–1 mm long; anthers c. 1 mm long, opening by 2 unilateral longitudinal slits. *Female flower*: similar to the male one but pedicel elongated in fruit up to 4 mm; styles 4, 1.7–2.2 mm long, fused at base, stigma terminal, semicircular, not coiled; ovary narrowly elliptic to oblong, 6–8 by 1–1.2 mm including the 1–2 mm long beak, 4-locular, with 4 very narrow ribbon-like wings all along. *Infructescence*: peduncle straight; fruit erect, narrowly elliptic to oblong, 5–10 by 1–1.5 mm including the 1.5–4 mm long beak, thin-walled.

Distribution — Only known from the type locality.

Ecology — In primary forest with many large rocks, growing on moss-covered rock faces; at c. 450 m altitude.

Acknowledgements The Moabi Foundation, the Université Libre de Bruxelles, the Commission Universitaire pour le Développement, the project Forêt Information (FORINFO), the Missouri Botanical Garden and the Instituto de Desarrollo Forestal (INDEFOR) are all thanked for contributing to the training and education of the second author, which started in fieldwork in Equatorial Guinea and ended with the analysis of all data in Europe. Dr. Roel Lemmens (PROTA, Wageningen) is thanked for translating the diagnosis into Latin. Hans de Vries prepared the fine drawing.

REFERENCES

- Balinga MPB, Issembe YA, Sunderland TCH, Nzabi T, Obiang D, Nyangadouma R. 2005. Quantitative vegetation assessment of the Monte Mitra forest using 1 hectare biodiversity plots (BDP's). In: T. Sunderland (ed.), A biodiversity assessment of the Monte Mitra forest, Monte Alen National Park, Equatorial Guinea: 57–69. Smithsonian Institution, Washington D.C.
- Bissiengou P, Sosef MSM. 2008. Novitates Gabonenses 69. A new endemic species of and a new combination in *Campylospermum* (Ochnaceae). *Blumea* 53: 627–631.
- De Wilde JJFE. 1994. Cristal Mountains, Gabon. In: Davis SD, Heywood VH, Hamilton AC (eds), Centres of plant diversity. Vol. 1: Europe, Africa, South West Asia and the Middle East: 169–170. IUCN Publications Unit, Cambridge.
- De Wilde JJFE. 2002. *Begonia montis-elephantis*. A new species in section *Scutobegonia* from Cameroon. *Wageningen University Papers* 2001-2: 259–266.
- De Wilde JJFE, Van Valkenburg JLCH. 2005. Novitates Gabonenses 57. *Begonia sosefiana* (Begoniaceae): a new species in section *Loasibegonia* from Gabon. *Blumea* 50: 467–471.
- Doorenbos J, Sosef MSM, De Wilde JJFE. 1998. The sections of *Begonia*, including descriptions, keys and species lists. (Studies in Begoniaceae VI). *Wageningen Agricultural University Papers* 98-2.
- Henthorne C. 2006. *Begonia staudtii*: hidden treasure of Africa. *The Begonian* 73: 86–88.
- Leal M. 2005a. An assessment of the patterns of plant diversity and endemism of Monte Mitra using standardised transect methods. In: Sunderland T (ed), A biodiversity assessment of the Monte Mitra forest, Monte Alen National Park, Equatorial Guinea: 50–56. Smithsonian Institution, Washington D.C.
- Leal ME. 2005b. The biodiversity of Monte Mitra. Missouri Botanical Garden, St. Louis.
- Leal ME. 2007. Novitates Rio Munis 1. A new endemic *Scaphopetalum* (Malvaceae) from Mount Mitra, Equatorial Guinea. *Blumea* 52: 137–138.
- Maley J. 1996. Le cadre paléoenvironnemental des refuges forestiers africains: quelques données et hypothèses. In: Van der Maesen LJG, Van der Burgt XM, Van Medenbach de Rooy JM (eds), The biodiversity of African plants. Proceedings XIVth AETFAT Congress, 22–27 August 1994, Wageningen, The Netherlands: 519–535. Kluwer Academic Publishers, Dordrecht.
- Nchanji AC, Sunderland TCH, Leal M, Gonwouo NL. 2005. Management issues concerning the Monte Alen landscape and the wider Rio Muni region. In: Sunderland T (ed), A biodiversity assessment of the Monte Mitra forest, Monte Alen National Park, Equatorial Guinea: 70–79. Smithsonian Institution, Washington D.C.
- Senterre B. 2005. Recherches méthodologiques pour la typologie de la végétation et la phytogéographie des forêts denses d'Afrique tropicale. Thèse doctorat, Laboratoire de Botanique Systématique et de Phytosociologie, Faculté des Sciences, ULB, Brussels.
- Sosef MSM. 1992. Novitates Gabonenses 8: Seven new *Begonia* species from Gabon. In: De Wilde JJFE (ed), Studies in Begoniaceae III. *Wageningen Agricultural University Papers* 91-4: 83–116. (Also as *Belmontia* n.s. 24, no 147).
- Sosef MSM. 1994. Studies in Begoniaceae 5. Refuge begonias. Taxonomy, phylogeny and historical biogeography of *Begonia* sect. *Loasibegonia* and sect. *Scutobegonia* in relation to glacial rain forest refuges in Africa. *Wageningen Agricultural University Papers* 94-1. (Also as *Belmontia* n.s. 26).
- Sosef MSM. 1996. Begonias and African rain forest refuges: general aspects and recent progress. In: Van der Maesen LJG, Van der Burgt XM, Van Medenbach de Rooy JM (eds), The biodiversity of African plants. Proceedings XIVth AETFAT Congress, 22–27 August 1994, Wageningen, The Netherlands: 602–611. Kluwer Academic Publishers, Dordrecht.
- Sosef MSM, Leal ME. 2002. Novitates Gabonenses 41. A new *Begonia* species from the Lopé Reserve (Gabon). In: De Wilde JJFE (ed), Studies in Begoniaceae VII. *Wageningen University Papers* 2001-2: 267–271.