A NEW BEGONIA SPECIES FROM THE LOPÉ RESERVE (GABON)

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Summary

Begonia lopensis, a new species belonging to sect. *Scutobegonia*, is described. Differences with other related species are discussed, as well as its implications for the Pleistocene forest refuge theory.

Introduction

In March 2000, during fieldwork in the Réserve de la Lopé, central Gabon, a linear-leafed *Begonia* species, belonging to the section *Scutobegonia* Warb. was collected by the second author. At Libreville, the flowering material was presented to the first author, specialist in the section *Scutobegonia* (Sosef, 1994), who concluded that it did not fit any of the descriptions of the existent linear-leafed species. Before the decision to describe it as a new species could be made, fruiting material was needed to delimit it more specifically from the other species of the section. In December 2000, the site was revisited and from the same population material with ripe fruits was collected. After comparison of both these collections at the National Herbarium of The Netherlands, Wageningen University branch, sufficient differences with other taxa proved to be present, and it was decided to grant the material the status of a new species.

Earlier, J.J.F.E. de Wilde regarded the material as a dwarf form of *Begonia hirsutula* Hook.f. (De Wilde, 2002), but this appeared an unsatisfactory solution to the present authors, who discovered additional differences. Especially the combination of a slender and compact rhizome with short-petioled leaves gives the plant a completely different aspect, *B. hirsutula* being a coarser species with stout rhizomes and long-petioled leaves. Additional distinguishing characters were present in the form of the very narrow, linear leaves, the nerves of which are

glabrous on the lower leaf surface, and in the small fruit with a relatively long beak. It shares the latter character with the species recently described by J.J.F.E. de Wilde loc. cit. from southern Cameroon: *B. montis-elephantis* J.J. de Wilde. However, the elongated rhizome, fimbriate-laciniate stipules and wider leaves on long petioles and with sparsely hirsute nerves, render this species still sufficiently distinct. Our new species vaguely reminds of *B. wilksii* Sosef, which differs in having white flowers, a hairy ovary, hairy nerves on the lower leaf surface and denticulate leaf margins.

Implications for the Pleistocene forest refuge theory

Because they depend on a moist forest environment and they expand their area of distribution only very slowly, species of the section *Scutobegonia* Warb. and *Loasibegonia* A.DC. are regarded as indicators for stable forest conditions, i.e. Pleistocene forest refugia (Sosef, 1994). This newly discovered species is particularly interesting since it is found close to a savannah area. Presently, this species survives in a valley where humidity is high due to a nearby stream and the moisture percolating downhill (see ecology). Two other species, *Begonia hirsutula* Hook.f. and *Begonia clypeifolia* Hook.f., are present in the Réserve de la Lopé further to the north and are also located close to savannah. The presence of these *Begonia* species supports the idea that besides the larger postulated refuge areas, smaller forested areas existed in dryer Pleistocene conditions, so-called micro-refugia (Leal, in press). The concept of microrefugia was developed in response to the discrepancy between the distribution of refuge indicators and the current Pleistocene forest refuge theory. Recent publications (Maley, 1989; Sosef, 1994) show a major forest refuge area located in the nearby Massif du Chaillu, but certainly not in the much dryer Réserve de la Lopé. Considering the slow dispersal of the *Begonia* species, we assume that they can not have reached the Réserve de la Lopé from the Massif du Chaillu after the last Pleistocene glacial period and thus that they somehow survived inside the Réserve de la Lopé. Most likely this was inside small forest remnants, or microrefugia, that provided locally wet conditions such as described below.

Description

Begonia lopensis Sosef & M.E. Leal, **spec. nov.** Fig. 1

Diagnosis: *B. hirsutula* primo adspectu simile, sed parvior rhizomatis gracili et foliis glabris linearis brevi petiolo; fructus parvus rostro longo.

Type: M. Leal 173 (holo WAG; iso LBV, SEGC), 5 March 2000, Gabon, Lopé Reserve, Mikendi river, a few km West of the NSG forestry camp, alt. 500 m, 0°35.486 S, 11°40.685 E.

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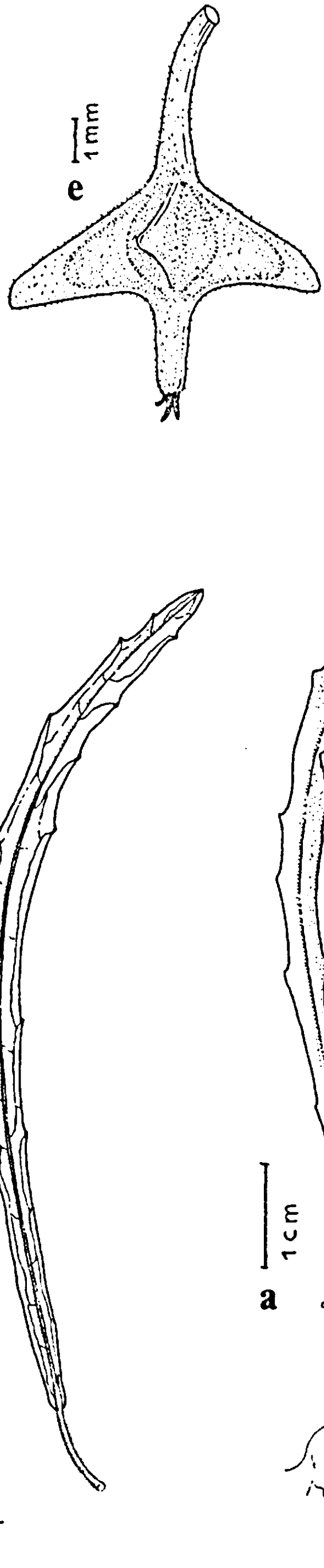
Figure 1. *Begonia lopensis* Sosef & M.E. Leal. - a: habitus; b: underside of the leaf; c: peltate leaf base; d: male flower; e: fruit. - a, b, c, e: *M.E. Leal 184*; d: *M.E. Leal 173*.


1mm
e
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c

Rhizome slender but compact, c. 1 mm thick in dried condition. *Stipules* narrowly triangular, entire. Leaves subpeltate; petiole inserted at c. 1 mm from the leaf margin, 0.2-1.2 cm long, sparsely hirsute and densely set with minute glandular hairs; leaf blade linear, 4-12 x 0.3-0.6 cm, with 3 palmate main nerves, apex blunt to rounded, attenuate at base; margin remotely and coarsely, bluntly serrate, glabrous or very sparsely ciliate; nerves: midrib prominent on the lower surface, glabrous, other primary and secondary nerves distinct and forming a reticulate pattern in dry condition. *Inflorescence* a strongly reduced cincinnal monochasium containing 1 male and 1 terminal female flower; peduncle 2-10 mm long; bracts 2-3, elliptic to narrowly so, c. 2 mm long. *Male flowers*: pedicel 10-21 mm long; perianth segments 2, broadly elliptic, 8-11 mm long, yellow, glabrous; androecium a zygomorphic fascicle with 12 stamens arranged in several rows like in an amphitheatre, anthers 1-2 mm long, opening with longitudinal slits. *Female flower*: similar to the male flower but on a 4-7 mm long pedicel; perianth segments 6-7 mm long; styles 3, 2.5-3 mm long, fused in the lower half, the top split into a half-circular shape, the arms bearing a stigmatic band which is spiralled for half a turn; ovary transversely rhomboid-elliptic to narrowly transversely rhomboid-elliptic, 2-3 mm long, 3-locular, from almost unwinged to distinctly winged, slightly enlarged in fruit; wings up to 2 mm wide; beak conspicuous, 1.5-2.0 mm long, more than half as long as the body of the ovary. *Infructescence*: peduncle recurved towards the substrate; fruit pendulous, 2.5-3.0 x 3-8 mm, dry.

Additional material: Leal 184 (SEGC, WAG), 7 December 2000, same locality as the type.

Distribution: Only known from the type locality. The locality is close to where the Mikendi river flows from the forested upland area into the savannah lowland area. The upland area is the eastern limit of the Ogooué cristallophyllian system, a jagged fold zone between the Monts de Cristal and Massif du Chaillu. The flatter lowland area is part of the Francevillian sedimentary basin.

Ecology: The species populates only exposed vertical rock faces at a valley bottom, rock faces higher up the slope remain bare. The species is able to survive because local environmental conditions seem to protect it from desiccation even during the driest period: the cold dry season in July. Humidity remains high not only because of a nearby stream, but more importantly because of cloud forest conditions. Through the condensation of water from the mist on the vegetation and the subsequent dripping from the leaves, a steady flow of moisture percolates through the clayey soil downhill, which gathers above the rock faces where the species population is situated. The impermeability of the rocks forces the moisture flow to surface and drip over the exposed rock faces, providing water for the population of *Begonia lopensis*.

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