

First white-flowered species of *Sertifera* (Orchidaceae) discovered in Colombia

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Abstract: A new species of *Sertifera* is described and illustrated based on Colombian material. The novelty resembles *Sertifera colombiana*, but it is characterized by glandular leaf sheaths, larger, white flowers, ovate to oblong-ovate sepals, ligulate-lanceolate petals and apically triangular lip. This is the first report of a white-flowered representative of the genus.

Key words: biodiversity, Colombia, new species, Orchidaceae, Putumayo, taxonomy

1. Introduction

The Neotropical genus *Sertifera* was described in the 19th century by Lindley and Reichenbach (1876) who noticed similarity of its habit to *Sobralia* Ruiz & Pav. and flowers – to *Elleanthus* C. Presl species. Simultaneously with the genus characteristic, the authors provided descriptions of two species: *S. purpurea* Lindl. & Rchb. f. and *S. virgata* Rchb. f., but the latter was recognized as a member of the *Elleanthus* genus by Schweinfurth (1938).

The systematic position of *Sertifera* remains unresolved. While in most classification systems (Dressler 1981, 1993; Burns-Balogh & Funk 1986; Pridgeon *et al.* 2005) the genus was placed within Sobraliinae, Szlachetko (1995) transferred it to the newly created subtribe Elleanthinae based on gynostemium morphology. Within the same subtribe, the latter author classified *Adeneleuterophora* Barb. Rodr., *Elleanthus*, *Epilyna* Schltr. and *Evelyna* Poepp. & Endl. (Szlachetko & Margońska 2002; Dudek & Szlachetko 2010).

Despite this disagreement regarding the taxonomic position of *Sertifera*, its generic separateness was confirmed in both morphological (e.g. Dressler 1981, 1993; Szlachetko 1995; Szlachetko & Baranow 2014) and molecular (Chase *et al.* 2003; Neubig *et al.* 2011) studies. Representatives of the genus grow as caespitose plants and produce fleshy, pubescent roots. Distichous,

plicate, somewhat leathery leaves are distributed along a slender, erect stem. The inflorescence is axillary, subracemose, secund, or subcapitate, with the peduncle usually strongly compressed. The characteristic lip is basally saccate and it enfolds the gynostemium in the natural position. The transverse plate-like ridge holds both sides together and divides the lip into two chambers and gives a very characteristic appearance. Gynostemium is slender, elongate and gently sigmoid with a prominent, terete column part that is alate only near the apex (Szlachetko & Margońska 2002).

Representatives of *Sertifera* are distributed along the northern Andes and their occurrence was reported from Ecuador, Colombia and Venezuela. Plants are usually found in dwarf or scrub forests and páramo between 2000 and 3200 m alt. (Dressler & Pridgeon 2005; Szlachetko & Baranow 2014). Almost all known species of *Sertifera* were reported from Colombia (Ortiz Valdivieso & Uribe Vélez 2007; Szlachetko & Baranow 2014). Except *S. major* Schltr., which is known from submontane regions of the country, populations of national representatives were found above 2000 m of elevation. All species are characterized by purple or rose flowers. In closely related *Elleanthus* s.l., white flowers are produced by several species which currently are considered as representatives of *Adeneleuterophora* Barb. Rodr. In *Sobralia*, another genus allied to *Sertifera*, albino mutants of species that normally produce

pink or purple flowers were occasionally observed but, so far, no research on this anomaly has been conducted and the field reports of such plants are rare.

During the studies conducted in the Colombian Department of Putumayo, near the Ecuadorian border, a distinctive, white-flowered species of *Sertifera* was found and it is described here as new based on flower morphology and vegetative characters. The photo of the new entity appeared also in the gallery of national orchids by Ortiz Valdivieso & Uribe Vélez (2007).

2. Material and methods

Specimens of *Sertifera* deposited in herbaria AMES, AAU, COL, F, GB, K, NY, P, RENZ, US and W were examined according to standard procedures. Each

studied specimen was photographed and the data from the label were taken. The leaf form as well as the inflorescence type and flower arrangement were studied, first to define sectional affiliation of each specimen. The details of the inflorescence, e.g. the form of the floral bracts and ovaries were observed under a stereoscopic microscope. The perianth parts and the gynostemium morphology were studied after softening flowers in boiling water. The examined specimens were compared with type material, diagnoses and original illustrations of *Sertifera* representatives.

3. Results and discussion

Sertifera albiflora Szlach., Kolan. & R. Medina, *sp. nov.* Figs. 1-4.

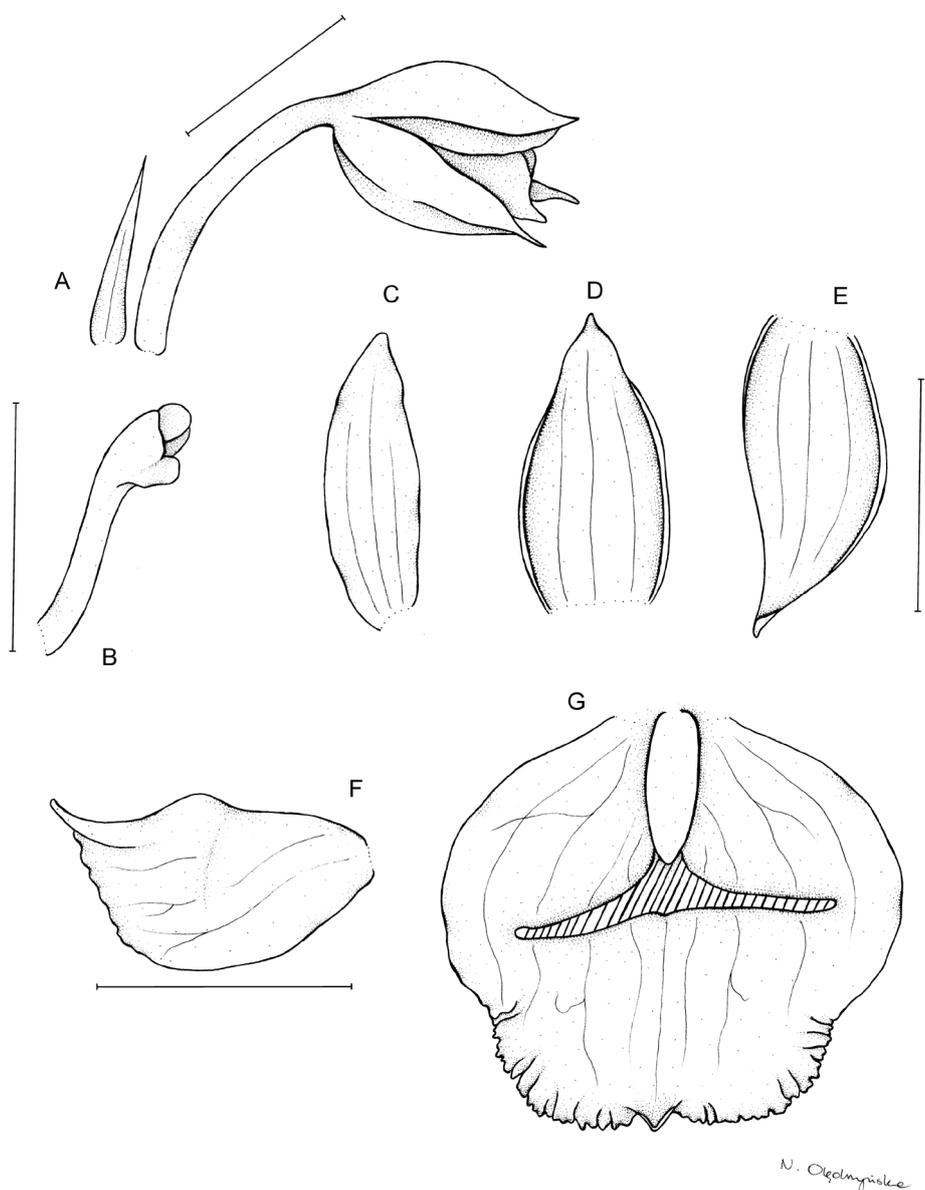


Fig. 1. *Sertifera albiflora* Szlach. & al. – dissected perianth (drawn by N. Ołędryńska from the holotype)

Explanations: A – flower and floral bract, B – gynostemium, C – petal, D – dorsal sepal, E – lateral sepal, F – lip, side view, G – lip, flattened. Scale bars = 5 mm

Species of the section Sertifera, unique in the genus by having pure white flowers, similar somewhat to Sertifera colombiana Schltr., but characterized by glandular leaf sheaths, larger; white flowers, ovate to oblong-ovate sepals, ligulate-lanceolate petals and apically triangular lip.

Type: Colombia. Dept. Putumayo: La Cabaña. Alt. 1600-1700 m. Flowering in cultivation in March 2013. *Cult. R. Medina 583* (Holotype: HPUJ!, UGDA! – drawings & photos).

E t y m o l o g y : In reference to the flower colour.

Plant caespitose. Stem – up to about 57 cm tall, erect.

Leaves – arranged along upper half of the stem, 4.5-6 cm long, 1.5-2 cm wide, blade – elliptic-lanceolate, acute, plicate, leaf-sheaths – densely glandular, reddish. Inflorescence – lateral, up to about 4 cm long, rachis – ca 1 cm long, densely 8-10-flowered. Flowers – globose, white. Ovary – 10-14 mm long, slender, smooth, green. Floral bract – 5-6 mm long, subulate-lanceolate, acute, green. Dorsal sepal – 6.5-7.5 mm long, 2.5-4 mm wide, concave, ovate to oblong-ovate, acute, 3-nerved. Lateral sepals – 7-8 mm long, 3-4 mm wide, concave, obliquely ovate to elliptic-ovate, acute, concave, 3-nerved, slightly keeled outside. Petals – 6.5-7 mm long, 2-3 mm wide,



Fig. 2. *Sertifera albiflora* Szlach. & al. – habit and inflorescence details (photograph by R. Medina Trejo)
 Explanations: A – inflorescence, B – leaf sheath, C – flower, D – fragment of inflorescence

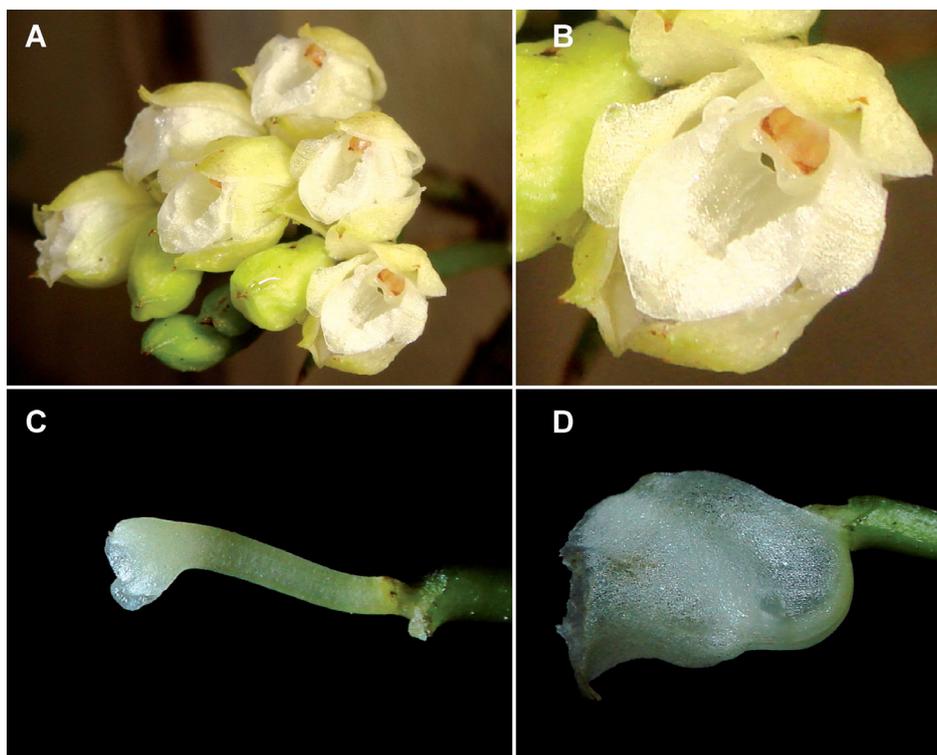


Fig. 3. *Sertifera albiflora* Szlach. & al. – inflorescence and flower details (photograph by R. Medina Trejo)
 Explanations: A – inflorescence, B – flower, C – gynostemium, D – lip in natural position



Fig. 4. *Sertifera albiflora* Szlach. & al. – dissected perianth (photograph by R. Medina Trejo)
 Explanations: A – dorsal sepal, B – petal, C – lateral sepal, D – lip and ovary, E – floral bract

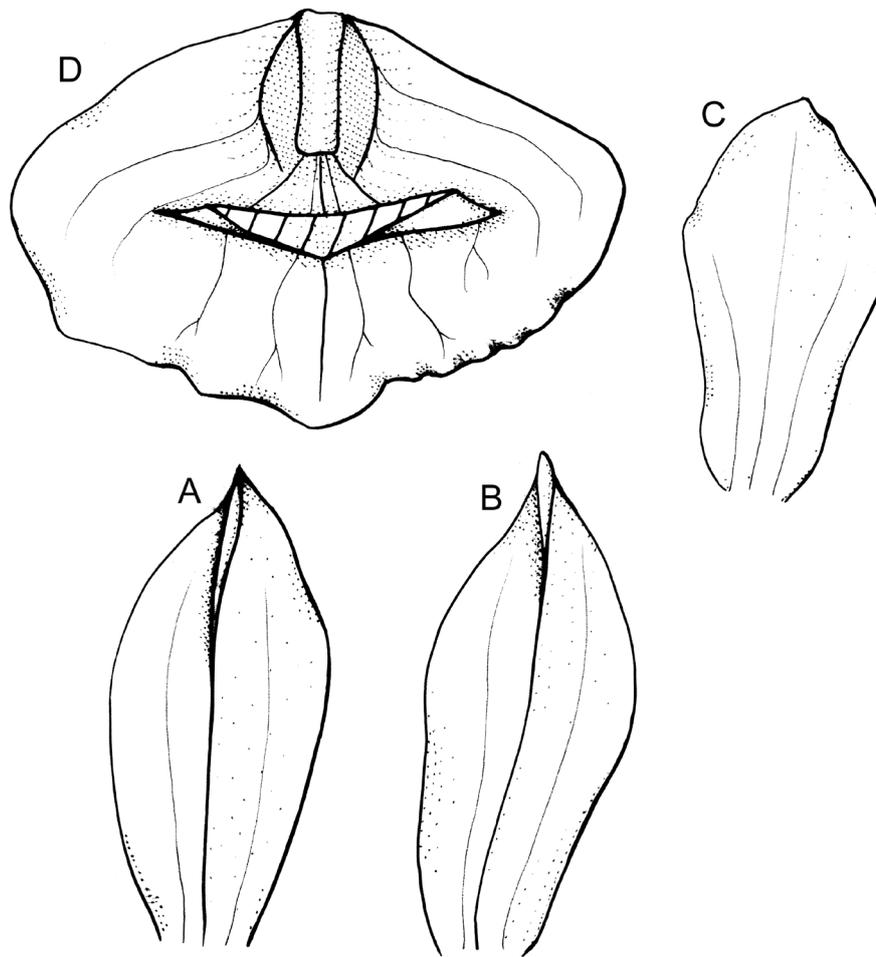


Fig. 5. *Sertifera colombiana* – dissected perianth (redrawn by P. Baranow from Lehmann 7225, AMES)
 Explanations: A – dorsal sepal, B – lateral sepal, C – petal, D – lip

obliquely ligulate-lanceolate, subobtusate, obscurely 3-nerved. Lip – 6.5-7 mm long in total, 7.5-10 mm wide when expanded, enfolding the gynostemium, basally saccate, transversely elliptic when spread, lamina – bivalvate, each side of the lower part suborbicular in outline, margins entire, apical part – subquadrate in outline, truncate with triangular apex, margins – crenate and slightly undulate, disc – with a transverse, rather thick plate-like ridge, basal callus – prominent, oblong, single. Gynostemium – 5 mm long, typical for the genus. Other specimens examined: Colombia. Dept. Putumayo. La Torre. Flowering in cultivation in March 2008. *Cult. R. Medina s.n.* (UGDA – photo!). Additional material: photo provided by Ortiz & Uribe (2007) in the “Gallery of Colombian orchids” as unidentified species of *Sertifera*.

Distribution, habitat and ecology: The new species is known, so far, from the Sibundoy Valley in the Colombian department of Putumayo. While the photo of the new entity was also presented by Ortiz Valdívieso & Uribe Vélez (2007), the authors did not provide information on the provenance of the specimen.

Plants grow terrestrially in humid areas, among scrubs at about 1600-1700 m of elevation. The flowering time of known populations is March. *Sertifera albiflora* may grow sympatrically with *Sertifera colombiana* but both species differ in the flowering time.

Taxonomic notes: *Sertifera albiflora* is easily separable from all other species of the genus by having pure white flowers, whereas in all other species the flowers are pink to purple, occasionally with white or whitish apices of petals and lip. The only exception was *S. aurantiaca* C. Schweinf. with yellowish-orange flowers. The new species belongs to the nominal section of the genus, which is characterized by having simple, unbranched stem, and subcapitate, compact inflorescence. *S. albiflora* resembles *S. colombiana* Schltr. (Fig. 5) from which it is easily distinguishable by white flowers (vs. flowers purple). Unlike in the latter species, sepals of *S. albiflora* are ovate to oblong-ovate (vs. sepals oblong) and the lip apex is truncate with central triangle, and the lip margin is crenate and slightly undulate (vs. apex acute to obtuse, margin in apical half erose). Additional difference observed in the new



Fig. 6. Specimens of *Sertifera colombiana* that grow sympatrically with *S. albiflora* in Putumayo (photograph by Marta Kolanowska)

species is the distinctly, densely glandular leaf sheath (vs. glabrous). Both taxa differ also in the flowering time – *S. colombiana* flowers in January. During the field study conducted in Department of Putumayo, the

population of *S. albiflora* was not observed in flower in the same time with *S. colombiana* (Fig. 6).

Acknowledgments. We are grateful to Natalia Olędryńska and Przemysław Baranow for preparing illustrations.

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