

## *Sobralia pakaraimense* (Orchidaceae), a new species from Guyana

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Received 18 Feb. 2013, final version received 21 May 2013, accepted 22 May 2013

Baranow, P. & Szlachetko D.L. 2013: *Sobralia pakaraimense* (Orchidaceae), a new species from Guyana. — *Ann. Bot. Fennici* 50: 347–350.

*Sobralia* (Orchidaceae) is a genus of about 150 species distributed in Mesoamerica and tropical and subtropical regions of South America. Its species are most often tall plants with single, showy but fugacious flowers. As the result of a morphological study based on herbarium material examined by the authors, *Sobralia pakaraimense* Baranow & Szlach. from Guyana is described and illustrated as a new species. A key for determination of all *Sobralia* species reported till now from Guyana is provided.

*Sobralia* is a large, neotropical orchid genus comprising about 150 species distributed from Mexico to Bolivia. They are usually terrestrial, rarely lithophytic or epiphytic, caespitose herbs, with a short, stiff rhizome, covered densely by thick roots penetrating a large area of substratum. The stem is usually unbranched, rarely branching, glabrous or occasionally pubescent, from a few centimeters to almost 14 meters high. The alternate leaves are plicate, thin or stiff, plane green or occasionally reddish-brown spotted, sometimes reddish suffused on the upper, lower or on both surfaces, glabrous or rarely pubescent, usually acute or acuminate. The inflorescence is usually terminal, although many species produce lateral inflorescences. The flowers are often large or very large, showy, sometimes medium-sized or small, always resupinate. The lip is the largest segment of the perianth, squashed at the base forming a kind of narrow, tubular throat, usually adorned with calli or hairs, and the lamina is entire or trilobed near the middle or above, sometimes crisped or

fimbriate along margins. The gynostemium is clavate, erect or sigmoid or variously curved, the anther is bent forward, and the pollinia form four or eight characteristically curved bands joined together (Szlachetko *et al.* 2009).

Herbarium specimens of *Sobralia* are difficult objects for morphological study, especially their flowers. Glued to a herbarium sheet they are often useless, as being very delicate they easily get damaged upon detaching. The fact that *Sobralia* species usually produce just one flower at a time is another impediment. A thorough taxonomic revision is absolutely required as *Sobralia* species are a significant element of the orchid flora in the tropical and subtropical Americas and many of them are valued ornamental plants.

The work on the genus should be supported by the field observations. However, to collect the data from the whole distribution range of *Sobralia*, and to learn how to determine each species taking intraspecific variation into account, the existing herbarium material should be carefully analyzed. To overcome these problems, the study

has to be based on the most comprehensive possible species sampling.

The aim of this paper is to present one of the first results of our morphological study of the genus. *Sobralia pakaraimense* is a new species described and illustrated below. As it is known from Guyana, a key for determination of all *Sobralia* species reported up to now from the country is added.

The presented data are based on literature study and the results of revision of herbarium specimens as well as liquid preserved material. The examined specimens are deposited at BM, COL, COAH, K, L, U, and W (acronyms from *Index Herbariorum*: <http://sweetgum.nybg.org/ih/>). Morphological studies were done using traditional procedures. The examination of flowers was preceded by their rehydration.

### Identification key for *Sobralia* species occurring in Guyana

1. Inflorescence terminal, single ..... 2
1. Inflorescence lateral or rarely terminal, remains of old inflorescences visible in leaf axils ..... 9
2. Inflorescence racemose, with prominent internodes .....  
..... *S. liliastrum*
2. Inflorescence condensed, cone-like, internodes invisible ..... 3
3. Inflorescence on a long, compressed peduncle .....  
..... *S. fragrans*
3. Inflorescence sessile on top of stem, peduncle reduced ..  
..... 4
4. Inflorescence covered by upper leaves ..... 5
4. Inflorescence exposed ..... 6
5. Leaf sheaths distinctly widened and compressed in the upper part, sepals yellow-green, with pink-flushed margins, petals and lip white with bright purple margins .....  
..... *S. infundibuligera*
5. Leaf sheaths tightly adjacent to stem, flowers white, lip with yellow throat ..... *S. macrophylla*
6. Stem up to 40 cm tall, inflorescence producing 2–3 flowers at a time; floral segments up to 25 mm long .....  
..... *S. suaveolens*
6. Stem 60–250 cm tall, inflorescence producing a single flower at a time; floral segments at least 45 mm long .... 7
7. Leaves up to 32 cm long and 10 cm wide, elliptic, flowers small as for size of plant ..... *S. valida*
7. Leaves up to 22 cm long and 8 cm wide, elliptic-lanceolate to narrowly ovate-elliptic, flowers large and showy ..... 8
8. Stem branching and rooting in upper part, flowers purple, lip with a white throat, without calli at base .....  
..... *S. oliva-estevae*
8. Stem unbranched, lip whitish-purple, base of lip with

callus formed by two thickenings divided into 6 or 8 lamellae running along central nerves to apex of lip .....  
..... *S. yauaperyensis*

9. Leaves grass-like, stiff, inflorescence several-flowered .  
..... *S. stenophylla*
9. Leaves lanceolate, thin, inflorescence single-flowered ...  
..... *S. pakaraimense*

### *Sobralia pakaraimense* Baranow & Szlach. sp. nova (Fig. 1)

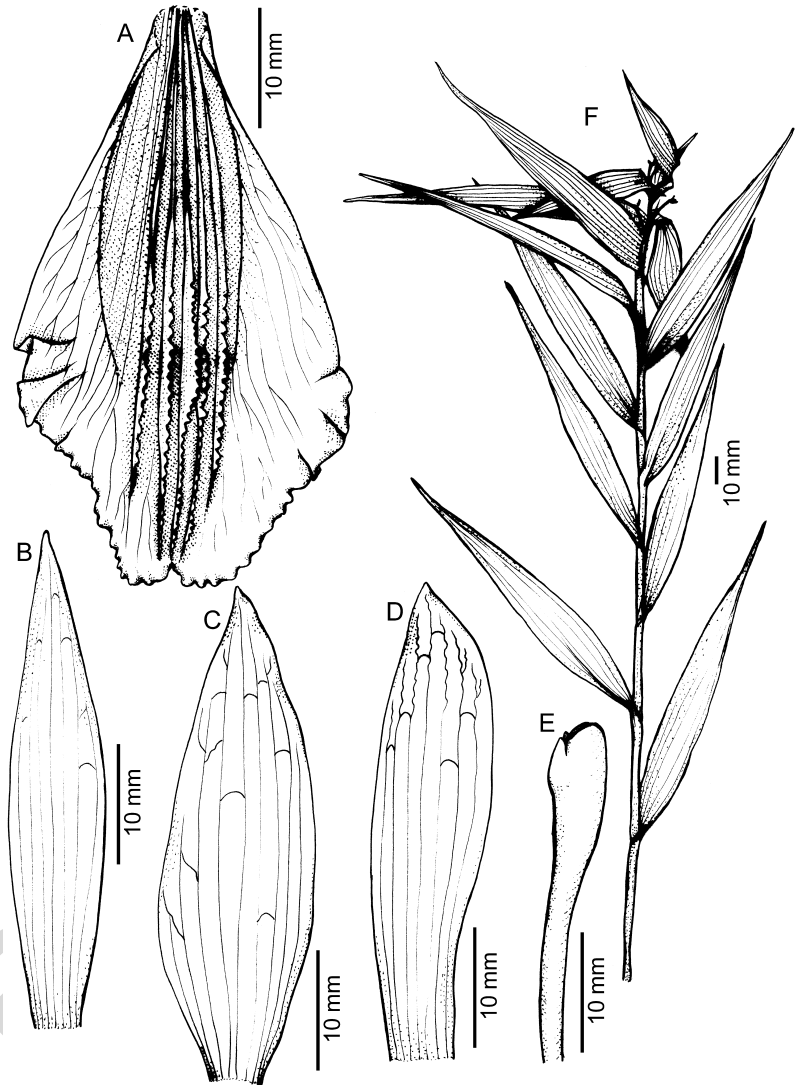
TYPE: Guyana. Cuyuni-Mazaruni, Pakaraima Mts, Kurupung River. Top of Kamarau Falls. 06°06'N, 60°21'W, 19 July 1992, Hoffman B., Roland C. & Marco G. 2081 (holotype: U-0145946; isotype US, not seen)

ETYMOLOGY: In reference to Pakaraima Mountains, the area where the type specimen was collected.

Stem cane-like, erect, up to 1.5 m tall, entirely covered by glabrous leaf sheaths. Roots unknown. Leaves sessile, blades 9.6–10.8 cm long, 1–1.2 cm wide, lanceolate, acute, glabrous. Inflorescences lateral, 0.9–1 cm long, single-flowered, glabrous. Floral bracts 4 mm long, lanceolate, acute, glabrous. Pedicellate ovary 8 mm long, glabrous. Flowers light to dark pink. Dorsal sepal 45 × 6 mm, narrowly lanceolate to linear-lanceolate, acute. Lateral sepals 44 × 10 mm, oblong-ob lanceolate, obliquely acute. Petals 46 × 15 mm, obliquely lanceolate-ovate, acute to acuminate. Lip 48 × 32 mm, rhombic in outline, obscurely trilobed just below middle, with five central keel-like, dentate calli running along nerves, most central one reaching apex of lip, remaining keels slightly shorter. Lip apex retuse, margins slightly and irregularly crenate and undulate. Gynostemium 20 mm long, erect, staminodes 1 mm long erect, acute, not exceeding gynostemium apex.

DISTRIBUTION AND HABITAT: KNOWN from the type locality only. Altitude 350 m a.s.l. Terrestrial in mixed forest on sandstone, on a river island.

Carnevali *et al.* (2007) listed nine species of *Sobralia* native to Guyana: *S. fragrans*, *S. infundibuligera*, *S. liliastrum*, *S. macrophylla*, *S. oliva-estevae*, *S. sessilis*, *S. stenophylla*, *S. suaveolens* and *S. valida*. *Sobralia elisabethae* might be added to this list. Its taxonomic status, however, is in dispute, as it is often treated as a synonym of *S. liliastrum*, to which it is indeed



**Fig. 1.** *Sobralia pakaraimense* (from the holotype). — **A:** Lip. — **B:** Dorsal sepal. — **C:** Petal. — **D:** Lateral sepal. — **E:** Column. — **F:** Apical part of stem.

closely related. Romero-Gonzalez (2003) found differences in the color of the lip and the structure of the lip's protuberances. The lip of *S. liliastrum* is white with a butter-yellow to pale-yellow throat and with a disc devoid of keel, but furnished only with two thickened veins at the base. *Sobralia elisabethae* can be distinguished by its white lip with a pale-yellow throat and reddish-orange keels. According to that author, the two species are allopatric and the specimens from the Guyana shield represent *S. elisabethae*, while *S. liliastrum* is confined to southern areas of Brazil. We did not analyze the morphological details of the complex yet, so we decided to treat

all specimens of the complex from Guyana as *S. liliastrum* for the time being.

*Sobralia pakaraimense* differs distinctly from all other species reported from Guyana. Taking into account the lateral inflorescence and structure of the flowers, it might be misidentified as *S. stenophylla*. However, the leaves of *S. stenophylla* are very stiff, long, grass-like, erect and characteristically densely arranged along the stem. The leaves *S. pakaraimense* are clearly wider and shorter, thinner, more spreading and more remote. The inflorescences of *S. pakaraimense* are single-flowered, while those of *S. stenophylla* are several-flowered, with vis-

ible buds at various stages of development. The flowers, although similar in color, also differ distinctly. The floral segments of *S. stenophylla* are up to 37 mm long while those of *S. pakaraimense* are 44–48 mm long. In addition, the lip of *S. stenophylla* has seven longitudinal keels, two more than that of *S. pakaraimense*.

### Acknowledgments

We thank the curators of BM, COL, COAH, K, L, U, and W for allowing us to conduct our research on the material deposited in those institutions.

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