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STANHOPEA PANAMENSIS, A NEW SPECIES FROM CENTRAL PANAMA (ORCHIDACEAE)

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ABSTRACT

Stanhopea panamensis N.H. Williams & Whitten is described from central Panama. The species is closely related to the species group that includes *S. oculata* and *S. wardii*, but it differs in lip morphology, flower color and odor, and pollinators. A key to the *Stanhopea* species of Panama is presented.

THE SPECIES of *Stanhopea* described here has been recognized as distinct for many years by Dodson and Dressler (pers. comm.). Their studies of the taxonomy and pollination biology of *Stanhopea* have greatly clarified species concepts within the genus and have revealed the importance of floral fragrance composition and pollinator specificity in *Stanhopea* and other orchids that are pollinated by male euglossine bees. This species has carried the specific epithet "panamensis" in our unpublished data and in a published work (Williams and Whitten, 1983), but no one has validly published the name. The need for publication became evident several years ago when Ackerman informed us that an undescribed species of *Stanhopea* might exist in central Panama. Based upon data he obtained during his intensive study of euglossine bees and orchids of central Panama (Ackerman, 1983), he hypothesized the existence of an undescribed *Stanhopea* species from Cerro Campana, Panama that produces benzyl benzoate in its fragrance and is pollinated by *Eufriesea ornata*. Examination of fragrance and pollinator data for the undescribed species agreed with Ackerman's predictions.

The species description is based on plants cultivated at the University of Florida. Mean and range of measurements are based on a sample of liquid-preserved flowers from five plants.

Stanhopea panamensis N.H. Williams & Whitten, sp. nov.

Pseudobulbi aggregati, late ovoidei, subangulati, olivacei, 4-4.5 cm longi, 3.5-4 cm lati, vaginis ovato-lanceolatis subcoriaceis vestiti, monophylli. Folia longe petiolata, elliptico-oblonga, breviter acuminata, plicata, subcoriacea, 40-50 cm longi, 10-16 cm lata: petioli 7-9 cm longi. Scapi axillares, penduli, vaginis elliptico-ovatis concavis subimbricatis vestiti, 3-7 flori; pedicelli 8-10 cm longi. Flores grandes, alba, sparsim purpureo-punctatis. Sepala subconniventia, sepalum posticum elliptico-oblongum, obtusum, concavum, circiter 7.3 cm longum et 3.4 cm latus, sepala lateralia ovata, obtusa, valde concava, circiter, 7.7 cm longa et 4.8 cm lata. Petala revoluta oblonga, obtusa, valde convexa, undulata, circiter 6.4 cm longa. Labellum carnosum, profunde 3-lobum, circiter 6.5 cm longum; hypochilum obliquum transverse late ellipticum, leviter geniculatum, late carinatum, lamella dorsalis non basi dentata, canalis subclausus basi apertus; mesochilum profunde 2-partitum, brachiis falcato-incurvis acuminatus; epichilum articulatum, ovatum, subobtusum, convexum. Columna subincurva, 6.2 cm longa, supra medium dilatata pollinia 2; stipes oblongo-linearis, viscidium cordatum.

Plant typical of the genus. Pseudobulbs clustered, broadly ovoid, 4-4.5 cm tall and 3.5-4 cm wide, subangular, olivaceous, partly covered by ovate-lanceolate bracts, monophyllous. Leaf petiolate, petiole 7-9 cm long; blade elliptic-oblong, broadly acuminate, plicate, subcoriaceous, 40-50 cm long, 10-15 cm broad. Inflorescences 3-7 flowered. Flowers average in size for the genus; creamy white with the basal half of the hypochile and the base of the sepals and petals yellow; sepals and petals very sparsely spotted with red-purple, spots 2-4 mm in diameter; column flecked with smaller reddish-purple dots. Dorsal sepal 7.3 cm long (6.5-8.4), 3.4 cm broad (2.6-4.0); lateral sepals 7.7 cm long (7.0-8.8), 4.8 cm broad (4.0-8.7). Petals reflexed and curled between the dorsal and lateral sepals, narrowly ovate, margin undulate, apex acute, 6.4 cm long (5.8-7.1), 1.8 cm broad (1.4-2.1). Labellum 6.5 cm long (5.5-7.7), composed o

[1]We thank Robert Dressler and Calaway Dodson for their comments and for unpublished data on *Stanhopea* pollination.

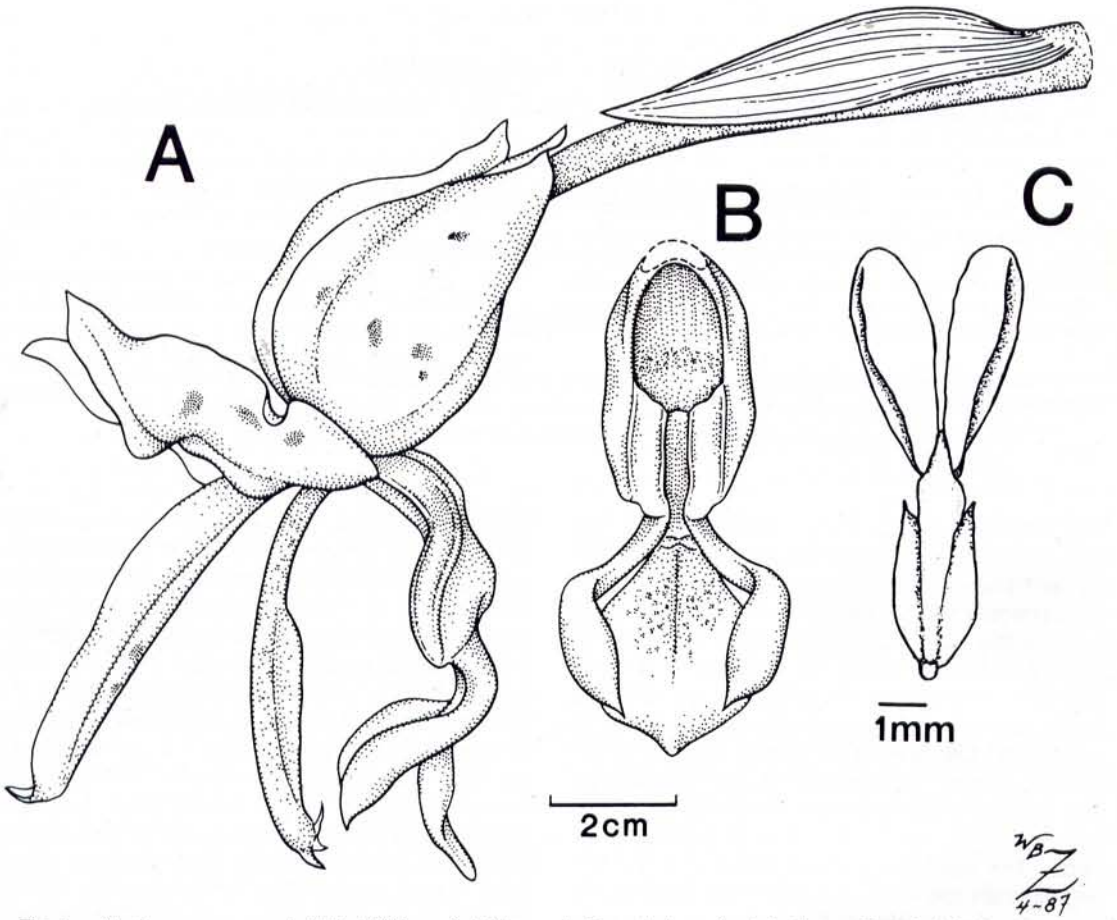

Fig. 1. *Stanhopea panamensis* N.H. Williams & Whitten. **A.** Lateral view of whole flower. **B.** Adaxial (dorsal) view of labellum. **C.** Pollinarium.

three parts. Hypochile 3.4 cm long (3.0-3.7), 1.8 cm broad (1.7-2.1), ovate in dorsal view; median plates 3.1 cm long (2.7-3.4) and 5.5 mm wide (5.0-7.0); ventral plates 1.5 cm long (1.2-1.7) and 6 mm wide (6.0-7.0); dorsal plates 1.6 cm long (1.5-1.7) and 5 mm wide (5.0-6.0); the canal between the dorsal plates equal in width at the base and at the apex, but narrowing slightly in the middle. Hypochile only slightly geniculate in lateral view, bent at an obtuse angle. Mesochile short, inserted under the concave apex of the hypochile, 1.4 cm long (1.2-1.6) and 5 mm wide, lateral margins forming elongate curved horns, 3.1 cm long (3.0-3.4), 7 mm broad (5.0-8.0), and 3.5 mm thick (3.0-4.0). Epichile articulated with the apex of the mesochile, broadly ovate, apiculate, margins flattened, apex slightly recurved, 3.2 cm long (3.0-3.5) and 2.3 cm wide (2.2-2.7). Column elongate, arcuate, trullate at the base, broadly winged for the apical two-thirds, 6.2 cm long (5.7-6.7), 1.9 cm wide (1.7-2.2). Pollinia 2, stipe linear-oblong, viscidium cordate.

TYPE: *PANAMA*: Panama: Epiphytic in cloud forest on Cerro Campana approximately 50 km southwest of Panama City, elevation ca. 900 m. Flowered in cultivation at University of Florida, accession number UF-80. *Whitten 909*. (Holotype: FLAS; isotype: SEL). Other specimens examined: *Whitten 910, 911, 912, 913, 914* (FLAS); all from Cerro Campana, Panama, and flowered in cultivation.

This species is morphologically similar to *Stanhopea wardii* Lodd. ex Lindley and *S. oculata* (Lodd.) Lindley but differs in coloration, lip morphology, floral fragrance, and pollinator. Viewed from the side, the hypochiles of *S. wardii* and *S. oculata* are bent at almost a 90-degree angle (strongly geniculate), whereas the hypochile of *S. panamensis* is only slightly geniculate (approxi-

Key to *Stanhopea* Species of Panama

1. Epichile of lip not articulated with the hypochile; lip obscurely divided into hypochile and mesochile; inflorescences two-flowered 2
1. Lip clearly 3-parted, composed of hypochile, mesochile, and epichile; 3-7 flowers per inflorescence 4
2. Hypochile with a fleshy lateral projection on each side ..... *Stanhopea cirrhata* Lindley
2. Hypochile without fleshy lateral projections 3
3. Fleshy plate in the mid-portion of the lip separated from the fleshy epichile by a transverse groove; lip 4 cm long ..... *Stanhopea ecornuta* Lemaire
3. Fleshy plate in mid-portion of lip joined to the fleshy epichile; lip 2 cm long ..... *Stanhopea pulla* Reichb. f.
4. Hypochile long and slender from a lateral view, more than twice as long as broad 5
4. Hypochile quadrate from a lateral view, less than twice as long as broad 6
5. Hypochile strongly geniculate, distinctly L-shaped in profile; ventral plates of hypochile flared out, extending beyond edges of lateral plates in dorsal view ..... *Stanhopea oculata* (Lodd.) Lindley
5. Hypochile only slightly geniculate in profile; ventral plates of hypochile not flared out *Stanhopea panamensis* N.H. Williams & Whitten
6. Hypochile conspicuously bilobed on the underside ..... *Stanhopea costaricensis* Reichb. f.
6. Hypochile not bilobed ..... *Stanhopea wardii* Lodd. ex Lindley

mately 30 degrees). Viewed dorsally (adaxially), the base of the hypochile is relatively narrow in *S. oculata*, but is wide in *S. wardii; S. panamensis* is intermediate. In *S. oculata*, the lower edge of the ventral plates of the hypochile flair outwards, extending laterally beyond the median plates in a dorsal view of the lip. In *S. panamensis*, the edges of the ventral plates do not project beyond the median plates.

Although flower color is a highly variable character within and among some *Stanhopea* species, all the specimens of *S. panamensis* that we have seen are lighter in color and have fewer spots than *S. oculata* or *S. wardii*. Flowers of some clones of *S. panamensis* are nearly pure white, with only two of three purple spots on each sepal.

Floral fragrance composition is especially important in delimitation of *Stanhopea* species because the mixture of chemicals comprising the floral fragrance determines the pollinators attracted. *Stanhopea* species usually attract only a few species of pollinating euglossine bees, and sympatric *Stanhopea* species may be reproductively isolated by the attraction of different sets of pollinators. Data on the floral fragrances and pollinators of *Stanhopea* were presented by Williams and Whitten (1983). *Stanhopea panamensis* produces a distinct fragrance that is dominated by benzyl benzoate and methyl salicylate, whereas *S. oculata* and *S. wardii* fragrances contain large amounts of 2-phenylethyl acetate, 2-phenylethyl alcohol, and cineole. Each species attracts a different pollinator. *Stanhopea panamensis* is pollinated by *Eufriesea ornata*, *S. wardii* by *Eufriesea chrysopyga* and *Eufriesea rufocauda*, and *S. oculata* by *Eufriesea caerulescens*.

Stanhopea panamensis is known only from Cerro Campana, Panama, but it is to be expected farther west in Panama at intermediate elevations. Because the genus is fairly well studied in Central America, we present a key to the *Stanhopea* species of Panama. Users of the key might find the color photographs presented in Horich (1974) helpful.

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