

## A new synonym of the endangered species *Paphiopedilum papuanum* (Orchidaceae)

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### Abstract

*Paphiopedilum sandyanum* Cavestro and G.Benk is a newly published species from Moluccas, Indonesia. After meticulous examination and morphological comparisons, it has been concluded that *P. sandyanum* is conspecific with *P. papuanum* (Ridl.) L.O.Williams. Comparison of morphological characters between these two species is provided below. Moreover, information is provided on newly discovered *P. papuanum* populations from near the type locality of *P. sandyanum*.

**Keywords:** *Paphiopedilum sandyanum*, *P. papuanum*, endangered species, Papua, synonym.

### Introduction

*Paphiopedilum papuanum* (Ridl.) L.O.Williams was established based on *Cypripedium papuanum* Ridl. (Williams 1946). The species had first been collected by C. B. Kloss on the British Wollaston expedition in Mount Carstensz, New Guinea (Rendle 1915). This species is closely related to *Paphiopedilum violascens* Schltr., which Schlechter had described only four years earlier and came from the eastern part of New Guinea (Schlechter 1911). *Paphiopedilum papuanum* is characterized by thick, leathery, tessellated leaves, a one-flowered inflorescence, oblong and obtuse petals with blackish dots at the base, and a lunate-reniform staminode (Ridley 1915). *Paphiopedilum papuanum* is currently placed in *Paphiopedilum* section *Barbata* (Kraenzl.) V.A.Albert & Borge Pett. (Albert and Pettersen 1994).

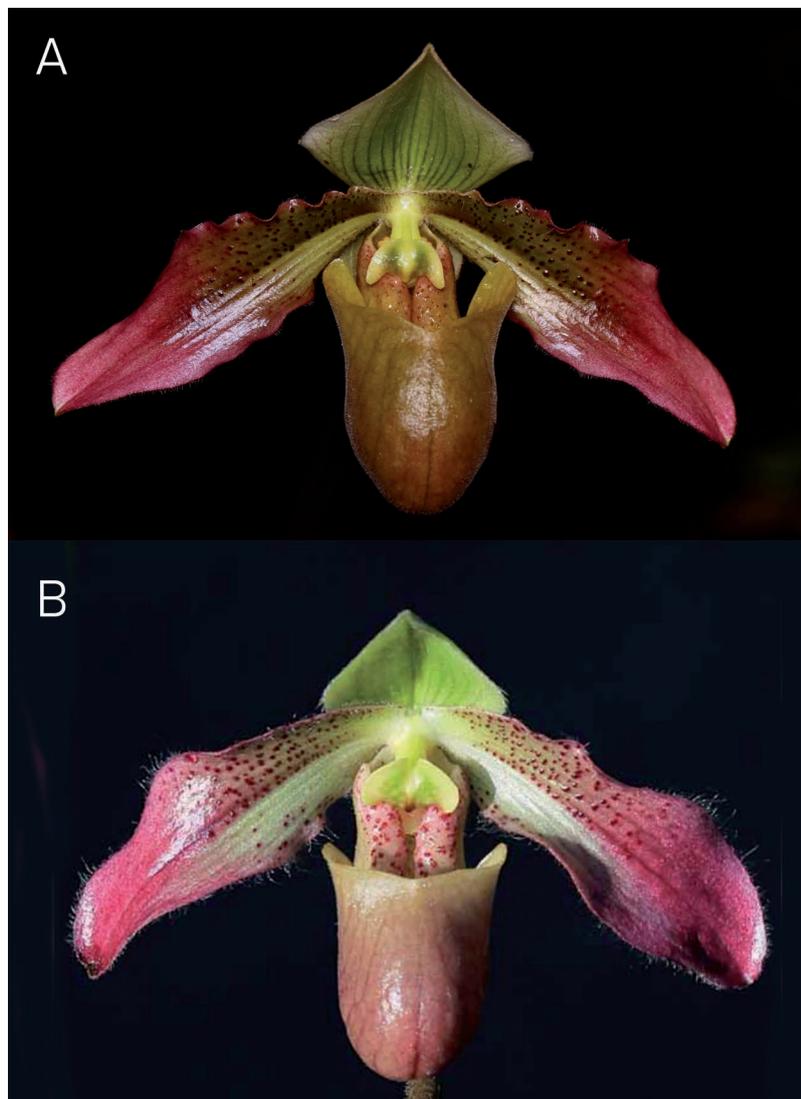
Recently, *Paphiopedilum sandyanum* Cavestro and G.Benk was published as a new species of *Paphiopedilum* section *Barbata* from Maluku Tenggara Regency, Moluccas, Indonesia (Cavestro and Benk 2022). Those authors first compared their Moluccas material with *P. mastersianum* (Rchb.f.) Stein and *P. schoseri* Braem & H.Mohr occurring on the Moluccas and then with *P. violascens* from New Guinea. However, they did not compare *P. sandyanum* with *P. papuanum* which has more similarities. We could not check the type specimen because it is not yet deposited in the Herbarium Bogoriense. We also confirmed with the collector of *P. sandyanum*, Sandy Jacop, that the type specimen has not yet been deposited and is still being processed and prepared for submission.

Upon examination of the morphological descriptions in the protologues of both *P. sandyanum* and *P. papuanum*, we found that both species have ovate, hairy bracts, an ovate dorsal sepal, oblong and slightly spatulate petals with blackish dots at the base, and a lunate to reniform staminode (Table 1). We found no significant deviation from the typical form of *P. papuanum* that would possibly justify formal classification as a geographically-based variety or forma. In addition, one of us (RS) discovered *P. papuanum* in Fakfak Regency (Fig. 1), which is adjacent to the *P. sandyanum* locality in Maluku Tenggara Regency. Based on the above data, we consider *P. sandyanum* and *P. papuanum* to be conspecific.

### Taxonomic treatment

*Paphiopedilum papuanum* (Ridl.) L.O. Williams, *Bot. Mus. Leafl.* 12: 149 (1946). *Cypripedium papuanum* Ridl. in A.B. Rendle, *Gard. Chron.* ser. 3, 58: 131 (1915). *Type*: Indonesia, Papua Province, Irian Jaya, Mt. Carstenz, elev. 762 m, [Dec. 1914–Jan. 1915], C.B. Kloss s.n. (holotype: BM!).

*Paphiopedilum sandyanum* Cavestro and G. Benk, *Die Orchidee* 8(7): 46 (2022), **syn. nov.** *Type*: INDONESIA: Moluccas: Maluku Province, Kabupaten Maluku Tenggara, 300–400 m asl, 15 March 2022, S. Jacop (holotype: cited as BO, but not yet deposited).



**Fig. 1.** Front view of (A) *Paphiopedilum papuanum* from Fakfak Regency and (B) *Paphiopedilum sandyanum* from Moluccas. Photos by Reza Saputra (A) and Gus Benk (B).

**Table 1. Comparison of morphological characters between *P. papuanum* based on Ridley (1915: 131) and *P. sandyanum* based on Cavestro and G.Benk (2022: 45–46) and a drawing by Sandy Jacop.**

Character	<i>P. papuanum</i>	<i>P. sandyanum</i>
Leaf colour	pale green with darker green markings on the ripper face	green and mottled pale green on upper surface
Bract	ovate, pubescent, 1.3 cm long	elliptic-ovate, pubescent, 1.5 cm long
Dorsal sepal	ovate, acute, 2.4 × 2 cm	ovate, obtuse, 2.8–3 × 2 cm
Lateral sepals	elliptic-lanceolate, subacute, 1.9 × 0.8 cm	cordiform, obtuse, 2 × 1.8 cm (1.95 × 1.65 cm in drawing)
Petals	oblong, broadening slightly upwards, obtuse 4.2 × 1.2 cm, dull crimson dotted with darker spots in the lower half	obliquely oblong, slightly spatulate, obtuse, 4–4.6 × 1.5 cm (4.6 × 1.43 cm in drawing), brown spotted in lower basal half
Labellum	3.7 cm long	c. 4 cm long (4.1 cm in drawing)
Staminode	lunate to reniform	lunate to reniform

**Specimen examined:** INDONESIA: New Guinea: Papua Barat Province, Fakfak Regency, Fakfak Mountains, 792 m asl, 22 January 2022, *Reza 412* (MAN!, BO!).

**Conservation status:** Currently, *P. papuanum* is categorized in The IUCN Red List of Threatened Species as an Endangered species, due to the threat of illegal export for regional and international trade for horticultural purposes and hybridization (Rankou 2015). To prevent illegal export, based on Indonesian Regulation (Keputusan Menteri Kehutanan No. 447/Kpts-II/2003), all wild plants species require a transport permit called *Surat Angkut Tumbuhan Dalam Negeri* (SATDN) for regional shipping.

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