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A New Species of *Pteroceras* (Orchidaceae) from Sumatera, Indonesia

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Abstract: A new species of *Pteroceras* (Orchidaceae) is described here based on cultivated material reportedly originating from Lampung, Sumatera, Indonesia. The aim of this research was to describe its morphological characteristics and compare them with closely resembling species. Morphological description and comparisons were based on living plants, fresh flowers, dried herbarium specimens, spirit-preserved materials, photographs, and taxonomic references. The results show that the new species can be easily distinguished from the other currently accepted species of *Pteroceras* by its very small leaves, single-flowered inflorescence, and spur shape. The species is morphologically close to *P. viridiflorum*, but differs in having smaller leaves, a single-flowered inflorescence, triangular to dentate lip calli with acute apex, and a three-lobed subhastate spur.

Keywords: Aeridinae; Epiphyte, Orchid.

Introduction

Pteroceras Hassk. (Orchidaceae: Vandeae: Aeridinae) is a small genus of predominantly epiphytic orchids distributed from India and Sri Lanka through southern China and continental Southeast Asia to Malesia. The type species of *Pteroceras* is *P. teres* (Holttum, 1960) and this genus is characterized by short, unbranched stem; distichously arranged leaves; free spreading sepals and petals, the petals usually distinctly narrower than sepals; a mobile, 3-lobed lip with conspicuous hollow spur or sac lacking interior ornaments; and a short column with a prominent longer column foot; the pollinarium typically comprises two globular pollinia attached to a strap-shaped stipe that is much longer than the viscidium (Wood, 1990; Seidenfaden & Wood, 1992; Pedersen 1992; Pedersen, 1993; Pridgeon *et al*., 2014; Sulaiman *et al.,* 2022).

The genus *Pteroceras* is allied to several closely allied genera within Aeridinae, including *Brachypeza* Garay, *Bogoria* J.J.Sm., *Chroniochilus* J.J.Sm., *Grosourdya* Rchb.f., *Macropodanthus* L.O.Williams, *Micropera* Lindl., *Sarcochilus* R.Br., *Thrixspermum* Lour., *Trachoma* Garay, and *Tuberolabium* Yamam. (Kocyan & Schuiteman, 2013; Priyadarshana *et al*., 2019). However, these genera can be distinguished from *Pteroceras* based on a combination of morphological characters as explained in Priyadarshana *et al*. (2019).

To date, there are 22 accepted *Pteroceras* species with the center of diversity in western Malesia region (POWO, 22 August 2026), particularly Peninsular Malaysia, Sumatera, and Borneo, where the majority of species occur. Among these areas, Borneo harbours the highest species richness, with 10 species recorded from the island. Meanwhile, Sumatera harbours the second-highest species richness with 6 recognized species: *P. biserratum* (Ridl.) Holttum, *P. compressum* (Blume) Holttum, *P. fraternum* (J.J.Sm.) Bakh.f., *P. hirsutum* (Hook.f.) Holttum, *P. leopardinum* (C.S.P.Parish & Rchb.f.) Seidenf. & Smitinand, and the widespread *P. teres* (Blume) Holttum.

Despite its relatively high species richness, the diversity and distribution of *Pteroceras* in Sumatera remain incompletely documented, particularly in areas that have received limited botanical exploration. An unidentified *Pteroceras* species was first observed in

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cultivation at orchid nurseries in Sumatera and Java in early 2024. Examination of cultivated material reportedly originating from Tanggamus, Lampung Province, revealed that it could not be assigned to any currently accepted species. Detailed morphological comparisons with closely related species confirmed its distinctiveness, and the taxon is therefore described here as a species new to science.

Materials And Methods

Morphological descriptions were prepared based on examination of four different individuals, including living plants, fresh flowers, dried herbarium specimens, spirit-preserved materials, and photographs obtained from plants cultivated in orchid nurseries in Java and Sumatera. Morphological comparisons were conducted using relevant taxonomic references, herbarium collections kept at BO, digitized specimens accessed through the Global Biodiversity Information Facility (GBIF), and living collections maintained at Purwodadi Botanic Garden-BRIN. Morphological measurements of vegetative and floral structures were made using a ruler accurate to 0.5 mm. Floral morphology was examined in detail using an Olympus SZ61 stereomicroscope. Photographs of living specimens were taken with an Olympus OM System TG-7 camera. Terminology used in the morphological descriptions follows Harris & Harris (2001).

Result And Discussion

Taxonomic treatment

Pteroceras sakaisambayan Metusala, ***sp. nov.*** (Figures 1, 2, 3)

Type: INDONESIA. Sumatera, Lampung Province, Tanggamus Regency, from cultivated material of Lampung origin maintained in a nursery in Java, *RIO 1210* (holotype BO!).

Diagnosis: The flowers of *Pteroceras sakaisambayan* are morphologically close to those of *Pteroceras viridiflorum*. However, the new species can be distinguished by having much smaller leaves (1.0–1.3 cm long × 0.4–0.6 cm wide) (vs. 5.0–7.5 cm long × 1.5–2.0 cm wide), a single-flowered inflorescence (vs. 3–5 flowered), triangular to dentate lip calli with acute apex (vs. semi-orbicular lip calli with rounded apex), and a 3-lobed, broadly subhastate spur (vs. an oblong, straight spur).

Description:—Epiphytic monopodial herb. **Roots** cylindrical to slightly flattened when creeping, greenish-silvery, 0.8–1.5 mm in diam., sometimes branched. **Stem** up to 2.5 cm long, slightly flattened. **Leaves** alternate and distichously arranged, forming two opposite rows along the stem, up to 10 per row, oblong to elliptic or oblong-ovate, 1.0–1.3 cm × 0.4–0.6 cm, margins entire, light green to dark green, overlapping, apex unequally bilobed with obtuse to acute lobules separated by a narrow cleft. **Inflorescence** pendulous, 1-flowered, emerges from the upper part of the stem at the internodes opposite the leaf blades, *ca*. 1.5 cm long; peduncle and rachis extremely short, obscured, 1.0–2.0 mm long, glabrous; floral bract minute, ovate to triangular with obtuse to acute apex, green. **Flower** *ca.* 1.0 cm across, sepals and petals greenish-yellow to pale-yellow with a bold horizontal maroon-red streak at the base; lip white with maroon-red steaks pattern on the internal surface of the sidelobes; column light green and anther-cap yellowish-cream. **Pedicel with ovary** 4.0–5.0 mm long, terete, glabrous, shallowly longitudinally grooved, light green. **Dorsal sepal** oblong to oblong-elliptic, 4.0–5.0 mm × 2.0–3.0 mm wide, glabrous, margin entire, apex obtuse to slightly retuse. **Lateral sepals** obliquely ovate, 4.0–5.0 mm × 3.0–3.5 mm wide, glabrous, margin entire, apex obtuse. **Petal** obliquely oblong, 3.0–4.0 mm × 1.0–1.5 mm wide, glabrous, margin entire, often slightly falcate, apex rounded to truncate. **Labellum (lip)** attached to the apex of column foot by a movable joint, porrect, mobile, 3-lobed, 5.0–7.0 × 4.0–5.0 mm, fleshy, rather stiff, spurred; **sidelobes** erect, obliquely oblong, 3.0–4.0 × 1.5–2.0 mm, glabrous, apex rounded to truncate; **midlobe** triangular to ovate, fleshy, thick, *ca*. 1.0 mm × 2.0 mm wide, apex acute, acuminate to obtuse; **calli** 2, small, triangular to dentate, each arising near the base of the side lobes, adjacent to the spur aperture, *ca*. 0.5 mm high × 0.5 mm wide at base, apex acute; **spur** elongated, broadly subhastate in outline, 4.0–5.0 × 4.0–5.0 mm, slightly dorsally flattened, outer surface glabrous, distinctly divided into 3-lobules; spur's lateral lobules widely expanded, broadly triangular to deltoid in outline from upper view,

apex rounded to broadly rounded; spur's median lobule projecting beyond the lateral lobules, subrectangular to broadly oblong in outline from upper view, apex truncate to rounded apex; a shallow depression usually presents on the upper median surface of the spur between the lateral lobules; in longitudinal section, the spur is slightly curved or slightly sigmoid in outline, internal surface minutely pubescent. **Column** porrect, short, stout, *ca*. 1.5 mm long, glabrous, apex truncate; **foot** elongated, *ca.* 2.5 mm long, broadened toward apex, forming an angle 70–80◦ with the column; **anther cap** cuculate, 1.0–1.5 × 1.0–1.5 mm, glabrous, apex obtuse to truncate; **pollinia** 2, subglobose, 0.5–0.9 mm in diam., stipe oblong, very thin, 1.0–1.5 mm long, viscidium subobovate to subtriangular.



Figure 1. *Pteroceras sakaisambayan*. A single-flowered inflorescence arising from the upper part of the stem, with an extremely short pedicel and rachis, and minute bracts at the base. Holotype. Photograph by Destario Metusala.

Etymology: the specific epithet *sakaisambayan* is derived from the Lampung-language expression "sakai sambayan", a revered cultural value of the Lampung indigenous community. This epithet combines *sakai,* meaning helping one another sincerely, and *sambayan,* meaning working together for the common good. Together, *sakai sambayan* embodies traditional values of solidarity, mutual support, and cooperation (Abdulsyani *et al*., 2020; Ariyanti & Putri, 2025). The epithet was chosen in recognition of the cultural heritage of the Lampung indigenous community. The name honors the cultural heritage and enduring social values of the Lampung people.

Habitat dan Distribution: The natural habitat, ecology, and population status remain unknown. According to information from local nurseries, the species was reportedly collected from Tanggamus Regency, Lampung, Sumatera. Its actual distribution also remains uncertain until field surveys are conducted.

Phenology: Flowering was observed in plants cultivated ex situ at nurseries in Java and Sumatera during January, April, July, and October.

This newly described species can be easily distinguished from the other 22 currently accepted species of *Pteroceras*, particularly in its very small leaves (< 2 cm long), single-flowered inflorescence, and well-developed 3-lobed spur. However, the peduncle and rachis are extremely short and obscured, making them difficult to observe. This raises the question of whether the species could instead be associated with *Brachypeza* Garay.

Traditionally, *Brachypeza* has been defined as a monopodial genus of short-stemmed plants with soft, elliptic leaves and successively flowering inflorescences, the flowers bearing a spurred lip, relatively long column, and very short column foot. Its type species is *Brachypeza archytas* (Ridl.) Garay (Omerod *et al*., 2022). Later, Kocyan and Schuiteman (2014) transferred five species of *Pteroceras* to *Brachypeza* based on molecular evidence but did not redefine the morphological concepts of either genus. Instead, they proposed a single additional character to distinguish *Pteroceras* from *Brachypeza* by the presence of conspicuous longitudinal cavities on the inflorescence rachis. They also stated that they decided not undertake further transfers without DNA-based evidence, suggesting that the rachis character alone may not provide a consistently reliable basis for generic delimitation, particularly in species with very short or single-flowered inflorescences.

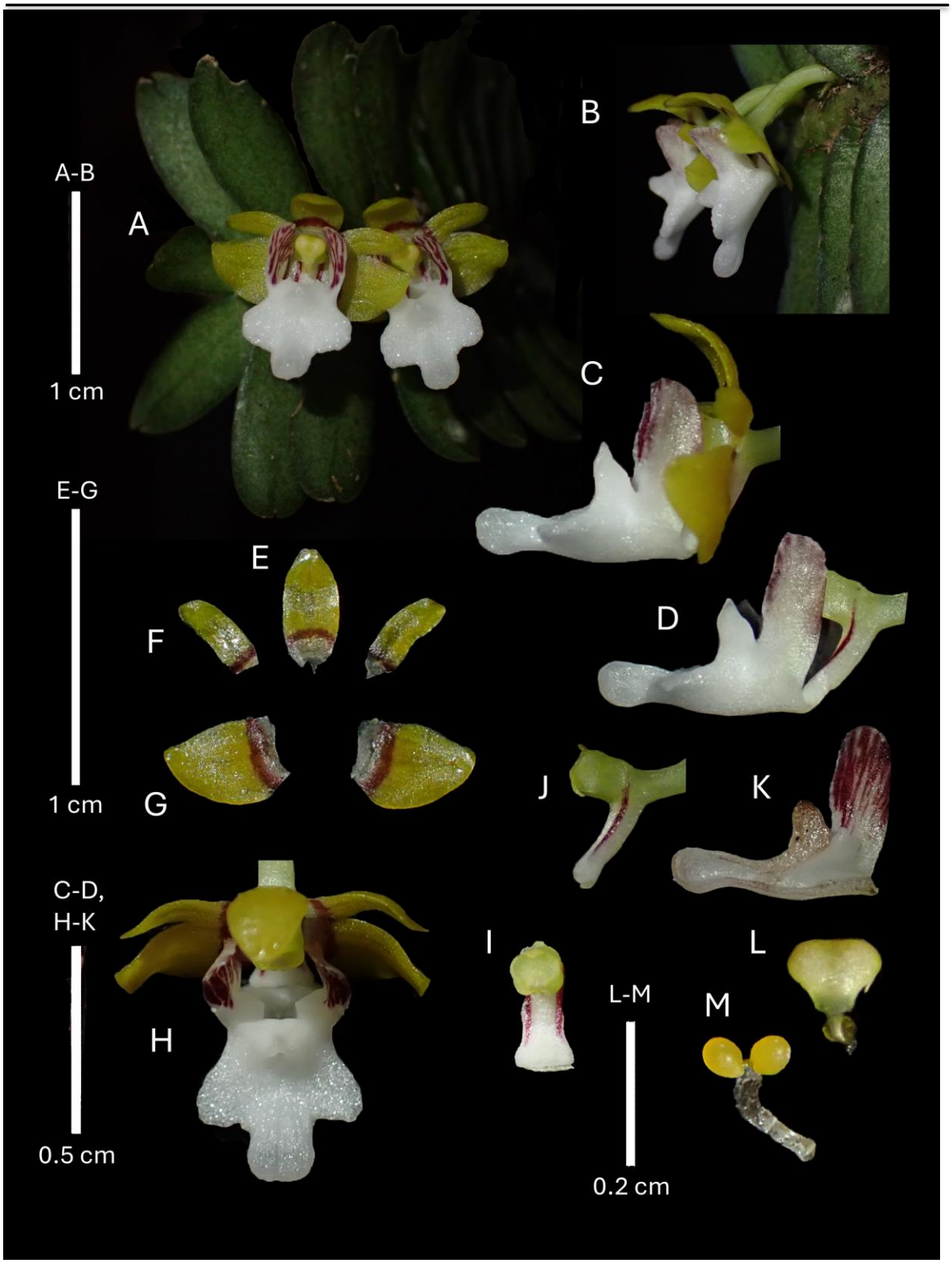


Figure 2. *Pteroceras sakaisambayan.* Holotype. **A**. Plant and flowers, front view, **B**. Flowers, side view, **C**. Flower, natural shape, side view, **D**. Column (including its foot) with labellum, **E**. Dorsal sepal, flat, **F**. Petals, flat, **G**. Lateral sepals, flat, **H**. Flower, natural shape, upper view, **I**. Column with column-foot, front view, without anther cap and pollinia, **J**. Column with column-foot, side view, **K**. Labellum (lip), longitudinal section, side view, **L**. anther cap, front view, **M**. pollinia. Photographs by Destario Metusala.



Figure 3. Flowers of *Pteroceras sakaisambayan*, oblique view, showing two small, triangular to dentate calli, each arising near the base of the side lobes, adjacent to the spur aperture (indicated by white arrows). Holotype. Photograph by Destario Metusala.

In the absence of comprehensive molecular data, the traditional morphological concept is therefore followed, under which the new species is best placed in *Pteroceras.* Moreover, its other floral characters appear generally consistent with those of *Pteroceras*, supporting its placement within the genus. Nevertheless, molecular studies would be useful to further confirm its taxonomic position and clarify its relationship with other species of *Pteroceras* and allied genera.

Among the currently accepted species of *Pteroceras*, only a few of them are miniature-sized plants with short inflorescences, including *P. erosulum* H.A.Pedersen, *P. indicum* Punekar, *P. monsooniae* Sasidh. & Sujanapal, and *P. viridiflorum* (Thwaites) Holttum. However, none of these species possesses a distinctly trilobed spur. Among them, *P. viridiflorum* from India and Sri Lanka appears to be morphologically most similar to *P. sakaisambayan*, particularly in its floral size, and porrect lip bearing two minute calli near the spur aperture. Both species also have slightly dorsally flattened spurs. However, *P. sakaisambayan* differs from *P. viridiflorum* in having very small leaves, measuring only 1.0–1.3 cm long × 0.4–0.6 cm wide, whereas those of *P. viridiflorum* are falcately oblong to ovate and much larger, measuring 5.0–7.5 cm long × 1.5–2.0 cm wide. The inflorescence of *P. sakaisambayan* arises from the upper part of the stem at internodes opposite the leaf blades, whereas in *P. viridiflorum* the inflorescence arises from the base of the stem. The inflorescence of *P. sakaisambayan* also bears a single flower only, while in *P. viridiflorum* bears 3–5 flowers. The lip calli of *P. sakaisambayan* are triangular to dentate with acute apex, in contrast to the semi-orbicular calli with rounded apex *in P. viridiflorum*. The spur shape is also obviously different, with *P. sakaisambayan* having a distinctly 3-lobed and broadly subhastate in outline, while the spur of *P. viridiflorum* is oblong and straight in outline. All of these differences provide clear morphological characters for distinguishing *P. sakaisambayan* from *P. viridiflorum*.

Conclusion

Examination of the cultivated material reportedly originating from Lampung, Sumatera, Indonesia, revealed a distinct species within the genus *Pteroceras*. Although the flowers are morphologically close to those of *P. viridiflorum*, the new species shows distinct differences in its plant habit and floral characters. Molecular studies would be valuable for further confirming its taxonomic position and clarifying its relationships with other species of *Pteroceras* and allied genera.

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