Phalaenopsis kapuasensis (ORCHIDACEAE), A NEW SPECIES FROM KALIMANTAN, INDONESIAN BORNEO

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Abstrak

Spesimen anggrek genus Phalaenopsis sp. (Orchidaceae: Vandeae, Aeridinae) telah diperoleh dari Kapuas Hulu, Provinsi Kalimantan Barat, Indonesia. Deskripsi data-data morfologi dilakukan berdasarkan pengamatan terhadap tumbuhan hidup, material awetan basah, spesimen herbarium, serta foto-foto berwarna dari individu yang dibudidayakan. Perbandingan morfologi dengan spesies Phalaenopsis terkait lainnya (P. gigantea, P. doweryensis, dan P. rundumensis) dilakukan berdasarkan data-data dari protolog, tumbuhan hidup, spesimen herbarium dan foto-foto. Hasil studi menunjukkan adanya perbedaan signifikan pada karakter morfologi bunga, sehingga spesimen Phalaenopsis sp dari Kapuas Hulu tersebut dideskripsikan sebagai spesies baru dengan nama Phalaenopsis kapuasensis Metusala & P.O'Byrne.

Keywords: *Phalaenopsis*, Kalimantan, Orchidaceae

INTRODUCTION

Phalaenopsis kapuasensis Metusala & P.O'Byrne, a new species from the Indonesian province of West Kalimantan, belongs in the same complex as *P. gigantea* J.J.Sm., *P. doweryensis* Garay & Christenson, and *P. rundumensis* P.J. Cribb & A. Lamb. All these species are endemic to Borneo.

Phalaenopsis gigantea was described in 1909 from specimens collected on the 1896-1897 Nieuwenhuis trans-Borneo expedition, and cultivated at Bogor (Smith, 1909). It has been recorded from Kalimantan, Sabah and Sarawak in lowland dipterocarp forest, hill dipterocarp forest and mossy hill forest from sea level to 900 m. Flower colour is somewhat variable, and two colour forms have been formally described. Although the species is well-known in cultivation, the majority of specimens are ex-nursery, and there are surprisingly few documented records of wild-collected plants. Consequently, details of range, habitat and infra-specific variation of the wild population are poorly understood.

Phalaenopsis doweryensis was described in 2001 from plants cultivated in the USA that reportedly originated in Sabah (Christenson, 2001). All the material we have seen originated in nurseries; the range, habitat and infra-specific variation of the wild population are unknown. On-line photographs show some variation in flower colour, especially the colour and amount of spots/streaks on the tepals. One or two of these photos appear to show *P. kapuasensis* rather than *P. doweryensis*.

Phalaenopsis rundumensis was described in 2011 from plants collected at 600-800 m in hill forest in the Rundum area of Sabah, and cultivated at Tenom

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Orchid Centre (Cribb & Lamb, 2012). Illustrations in the protologue show considerable variation in flower colour. Although the species is not yet widely cultivated, the few online photographs also show considerable variation in flower colour. The extent of range and habitat of this species are uncertain, and the infra-specific morphological variation is unknown. In their protologue, Cribb & Lamb implied that *P. rundumensis* may be intermediate between *P. gigantea* and *P. doweryensis*, and stated that the exact relationship of *P. rundumensis* to *P. gigantea* needs further investigation.

Kipandi Park in Sabah has two *Phalaenopsis* specimens that were purchased from a local orchid hunter, who collected them from a single locality. Both have the habit and tepal shape of *P. rundumensis*. Both have an inflorescence that elongates slowly, producing 2-3 flowers at a time, which is a characteristic of *P. rundumensis*. The 5.8 cm high flowers on one plant have an elliptic lip midlobe with the lateral margins in the middle slightly erose, and towards the apex somewhat expanded and dentate; this is typical of *P. rundumensis*. The other has smaller flowers (4.8 cm high) with an obovate midlobe that has lateral margins towards the apex considerably expanded and deeply dentate, which is closer to *P. doweryensis* than *P. rundumensis*.

We are still far from understanding the taxa in this complex. Unfortunately, most newly-collected specimens are sold to nurseries or private individuals rather than being donated to botanic gardens or placed in herbaria, so the information needed to resolve the complex is being lost to science. Although we are reluctant to add to the confusion surrounding this complex, the presence of a distinct taxon needs documenting. Since *P. kapuasensis* is as distinct from the other species as they are from each other, we have opted to describe it as a species rather assign it subspecific status under one of the other taxa.

In 2011, the first author saw a picture of a strange wild-collected *Phalaenopsis* labeled as *Phalaenopsis gigantea* 'yellow' from West Kalimantan, and asked the owner of the plant, Muhammad Gunawan, to send some flowers for examination. Muhammad Gunawan kindly supplied some flowers (as spirit material) in mid 2011. The first author initially thought this material represented a form of *Phalaenopsis gigantea* with narrower tepals, a presumption that was supported by the lip midlobe shape, which is quite similar to that of *P. gigantea*. The status of this plant remained unclear until some plants were offered for sale in a local exhibition held in Jakarta in 2017. In mid 2017, Dr. Ingrid Hilman, one of the orchid hobbyists who has the plant, kindly gave the first author some fresh flowers, and we were able to re-examine its status.

MATERIALS AND METHODS

Morphological description of the new species was based on examination of living plants, spirit material, and a dried herbarium specimen, and was supplemented by colour photographs of several cultivated plants. Dried flowers were studied after softening in boiling water. Details of the flowers, particularly the column and lip (labellum) were examined under a stereomicroscope. The comparison with other *Phalaenopsis* species involved the study of their protologues, living plants, herbarium specimens, and photographs.

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RESULT AND DISCUSSION

Phalaenopsis kapuasensis Metusala & P.O'Byrne, ***sp. nov.*** (Figs. 1,2,3)

Type:—INDONESIA. Borneo, West Kalimantan Province, Kapuas Hulu Regency, *RIO* 9005 (holotype: BO!).

Diagnosis:—*Phalaenopsis kapuasensis* is close to *Phalaenopsis rundumensis* but differs in having shorter tepals not more than 17 mm long, a lip with a hairy midlobe and different shape sidelobes.

Pendent epiphytic *herb*. Roots cylindrical to slightly flattened when creeping, green-silvery, textured on surface. Stem 4-5 cm long. **Leaves** usually 3-6 per stem, pendent, oblong to oblong-elliptic, 22-48 × 5-10 cm, succulent, thick, waxy, obtuse to unequally retuse, green; sheaths 1.5-1.7 × 1.8-1.9 cm, not compressed, green. **Inflorescences** several, pendulous, 10-34 cm long, peduncle *c.* 0.3 diam, glabrous; rachis somewhat thicker than the peduncle, up to 19 cm long × 0.5 cm diam, occasionally with 1-2 short branches from below the rachis, light green to dark green, bearing up to 30 flowers (or more) with 2-10 open simultaneously; floral bract triangular, 2.5-3.0 × 3.0 mm, acute, green. **Flower** 2.6-3.0 cm across, rather flat and somewhat stellate; sepals and petals greenish-yellow to pale-yellow with continuous or discontinuous brown or maroon-red transverse bars; lip white, midlobe with longitudinal purple lines on upper surface, stained pink below, sidelobe interior often suffused, spotted or streaked purple, basal swelling yellow or gold; column and anther-cap white to cream. Pedicel-with-ovary *c.* 1.5 cm, green. **Dorsal sepal** elliptic, 14-16 × 6.5-10.0 mm, apex obtuse to acute. **Lateral sepals** obliquely elliptic-ovate to elliptic, 15-16 × 8-11 mm, apex obtuse to acute, often slightly acuminate. **Petals** elliptic to oblanceolate, 14-16 × 6-10 mm, obtuse to acute. **Lip** porrect, 3-lobed, 11-12 mm, fleshy; ***side lobes*** erect, oblong-falcate, 5-6 × 2.5-3.0 mm, with an oblong triangular fleshy thickening along front margin, apex truncate with a small notch in distal half of upper margin; ***mid-lobe*** shallowly concave, obovate or elliptic, 7-8 × 4-7 mm, margins erose, adaxial surface distally with covering of short, rather broad hairs, with a low median keel extending from base that elevates in distal third of midlobe to become an erect fleshy median crest that extends beyond midlobe apex; two thin plate-like keels with erose margins extend longitudinally on each side of median keel; between sidelobes a callus forms two forward-projecting tapering horns that slightly outcurve at their tips, below and in front a thinner oblong-ovate plate extends onto midlobe, bifid at tip; blade apex obtuse to acute. **Column** porrect, slightly decurved near the apex, 7.0-7.5 mm, from a narrow base broadening to 3.5 mm before apex, shortly pubescent on ventral surface; anther cap sub-globose with two triangular plate-like projections on the front, 2.5 x 3 mm, apex obtuse; pollinia 2 with a cleft, sub-globose, 1.5 x 1 mm; stipe 2 mm, narrow and curved.

Distribution: Indonesia, West Kalimantan (exact locality withheld for conservation reasons).

Habitat and ecology: Lowland forest; 50-200 m.

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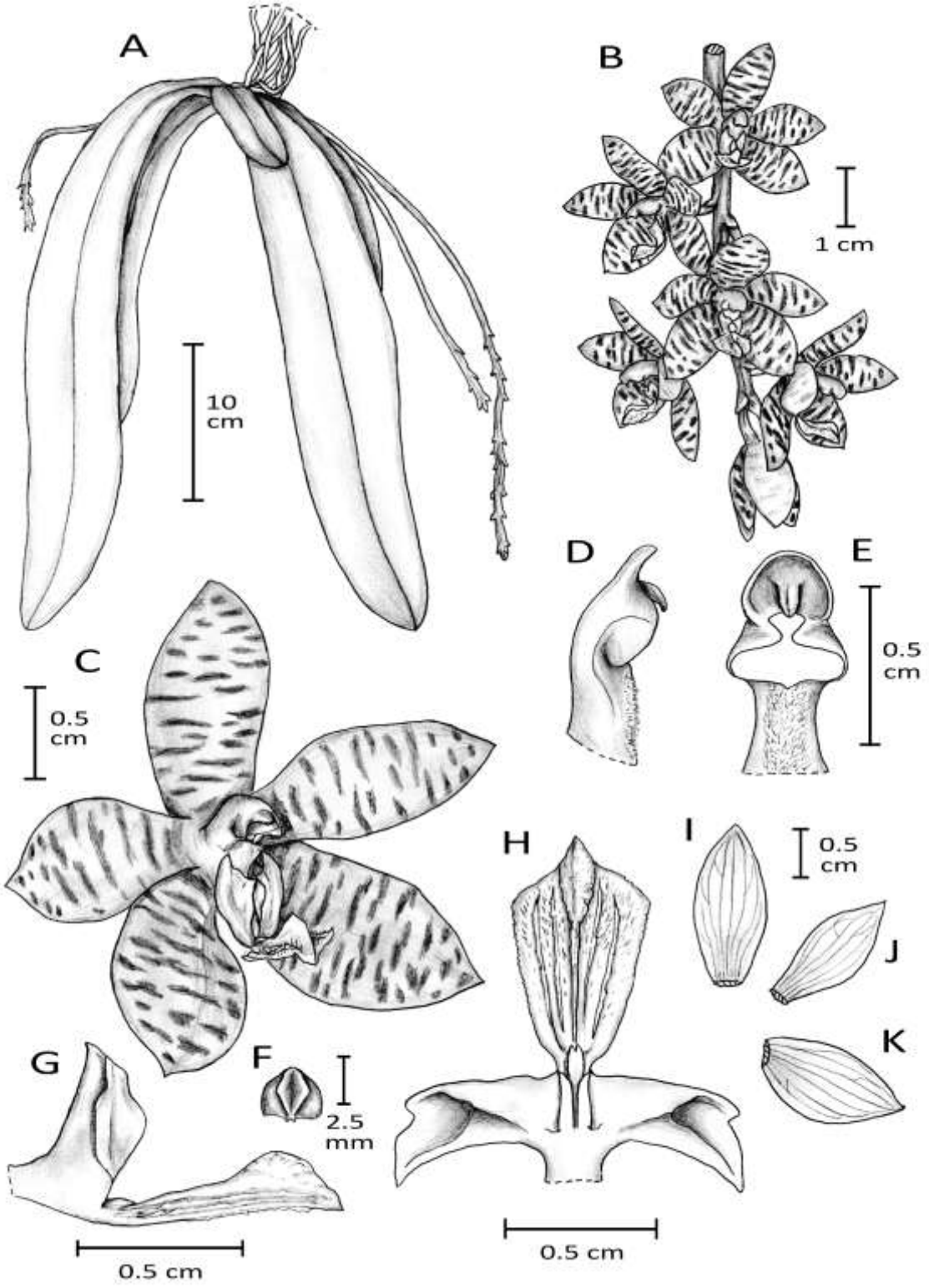

Figure 1. *Phalaenopsis kapuasensis*. **A**, habit; **B**, part of inflorescence; **C**, flower, oblique view; **D**, column, side view; **E**, column, ventral view; **F**, anther cap; **G**, lip, natural position, side view; **H**, lip, flat; **I**, dorsal sepal; **J**, petal; **K**, lateral sepal. A, C-K taken from type specimen. All drawn by Destario Metusala.

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Figure 2. (left) *Phalaenopsis kapuasensis*, flowers. Photo: Ingrid Hilman.
Figure 3. (right) Another colour form of *Phalaenopsis kapuasensis*. Photo: Anas Sarully.

Etymology: Named after Kapuas Hulu Regency, the area where the type material originated.

Phenology: January, May, July, August, September.

Cultivation: grown by attaching the plant on a wood slab with some moss filling in the root area. Plant should be hung in a place with good air circulation, light intensity 50-70 %, and watered regularly, especially the root area.

The best character for differentiating *Phalaenopsis kapuasensis* from other taxa in this complex is the presence of short, rather thick hairs on the upper surface of the lip midlobe. *Phalaenopsis kapuasensis* can be distinguished from *P. gigantea* by the narrower leaves (up to 10 cm) with an obtuse to retuse apex, an inflorescence with flowers produced sequentially, and smaller flowers (26-30 mm wide) with narrower tepals. *Phalaenopsis gigantea* has broader leaves (up to 25 cm) with a broadly rounded apex, and the inflorescence has all the flowers open at the same time. *Phalaenopsis gigantea* has larger (45-50 mm wide) flowers with relatively broader tepals that usually overlap. In *P. gigantea* the midlobe shape is too variable to use in diagnosis, but it never has hairs on the upper surface.

Phalaenopsis kapuasensis, *P. doweryensis* and *P. rundumensis* are similar in plant habit, except that the former has up to six leaves per stem; the latter two usually have two or three leaves which are relatively shorter and broader (to 20-23 × 7-10 cm). All three species flower sequentially, and have one to several flowers open at a time. *Phalaenopsis kapuasensis* has flowers of similar size to *P. doweryensis*, but differs in having a midlobe without extension on the upper

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lateral margins. *Phalaenopsis doweyensis* has a midlobe with the lateral margins at the front extended into conspicuous minutely lacerate-dentate hooks, and it lacks hairs on the upper surface. *Phalaenopsis kapuasensis* differs from *P. rundumensis* in having smaller flowers (26-30 mm wide) with oblong sidelobes that are distinctly notched on the rather broad upper margin and a midlobe that is hairy on the upper surface. By contrast, *P. rundumensis* has larger flowers (45-50 mm), the sidelobes are triangular with a narrow entire upper margin, and the midlobe is hairless with slightly papillose lateral margins.

Since the midlobe shape is variable in *P. kapuasensis* and *P. gigantea*, and the variation is unknown in *P. rundumensis* (see Introduction), that character should not be used as a diagnostic character for species in this complex.

CONCLUSION

Phalaenopsis kapuasensis has been described and illustrated as a new species and compared to other species in the *P. gigantea* complex. More work is needed to fully resolve the taxa in this complex, but the wild populations needed to supply the necessary information are steadily being removed and sold for private gain.

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REFERENCES:

Christenson, E.A. 2001. *Phalaenopsis, A Monograph*. Timber Press, Portland, Oregon: 396 pp.

Cribb, P.J. and A. Lamb. 2012 (publ.2011). A New Species of *Phalaenopsis* from Sabah. *Malesian Orchid Journal* 9: 51-55.

Smith, J.J. 1909. Neue Orchideen des Malaiischen Archipels, 3. *Bulletin du Département de l'Agricultureaux Indes Néerlanda ises* 22: 4.

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