

Orchidantha lengguanii* (Lowiaceae), a new species from Peninsular Malaysia, and typification of *O. maxillarioides

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ABSTRACT. A new *Orchidantha* species from Endau-Rompin National Park (Johor, Peninsular Malaysia), *O. lengguanii* Škorníčková, is described and illustrated. It is compared to its morphologically most similar species *Orchidantha maxillarioides* (Ridl.) K.Schum., which is also illustrated. A lectotype and epitype for *Orchidantha maxillarioides* are also designated here.

Keywords. Epitype, Johor, lectotype, *Lowia*, *Orchidantha maxillarioides*, *Protamomum*, Sungai Selai, typification

Introduction

The Lowiaceae, with a single genus *Orchidantha*, is one of three small families in the Zingiberales. The entire family was last revised by Holttum (1970) who recognised six species. Since then there have been numerous additions, mainly from Borneo (Nagamasu & Sakai, 1999; Pedersen, 2001) but also from Thailand (Jentjittikul & Larsen, 2002) and Vietnam. Currently 20 species are recognised, including two recent additions from Vietnam, *Orchidantha stercorea* (Trần & Leong-Škorníčková, 2010) and *O. virosa* (Leong-Škorníčková et al., in press). Some of the more recent works include a more detailed introduction to the genus and this information is not repeated here.

Four species are currently known to occur in Peninsular Malaysia: *Orchidantha longiflora* (Scort.) Ridl. (Scortechini, 1886; Ridley, 1924), *O. maxillarioides* (Ridl.) K.Schum. (Ridley, 1893; Schumann, 1900), *O. fimbriata* Holttum (Holttum, 1970), and *O. siamensis* Larsen (Larsen, 1961). *Orchidantha calcarea* Henderson (1933) is currently recognised as a heterotypic synonym of *O. longiflora*.

In August 2002, Dr Saw Leng Guan and his team (FRIM) encountered an interesting *Orchidantha* during the 'Second Scientific Expedition 2002' to the Sungai Selai area of Endau-Rompin National Park. As the new collection seemed to be closely related to *Orchidantha maxillarioides*, and without comparative material of the latter to hand, they did not pursue the description of a new species. Dr Saw, however, brought a living specimen back for cultivation at the Forest Research Institute Malaysia in

Kepong (FRIM 2002-0665), and this plant has established well. During my work towards a monograph of Lowiaceae, the novelty has been confirmed and is therefore described and illustrated below.

It is compared to the morphologically similar species *Orchidantha maxillarioides*, and both species are illustrated with detailed colour plates here. The terminology follows Beentje (2012).

***Orchidantha lengguanii* Škorničk., sp. nov.**

Similar to *Orchidantha maxillarioides*, but an overall larger plant with flesh-coloured to rusty-brown labellum with a prominent bulge opposite the stigma (versus cream to pinkish coloured labellum with minute dark purple violet dots, without a prominent bulge opposite the stigma) and stigma with broadly U-shaped viscidium (versus stigma with V-shaped viscidium).

TYPE: Voucher from a cultivated plant at the Forest Research Institute Malaysia, Kepong (FRIM 2002-0665), 25 Nov 2013, R. Kiew FRI 75738 (holotype KEP, including a flower in spirit collection; isotype SAN, SING (incl. spirit)). (Fig. 1, 2)

Clump-forming herb to 1 m high. Juvenile and adult plants with distinctly petiolate leaves, *leaves* of mature plants up to 105 cm long, arching, petiolate; *petiole* up to 85 cm long, green, glabrous; *lamina* narrowly elliptic, slightly unequal, 38–50 × 8.5–11.5 cm, green and glabrous on both sides, base obtuse to attenuate, apex acute to attenuate, mid-vein pale green, impressed (grooved) above, prominent beneath. **Inflorescence** on branched, subterranean stem with prominent bracts and/or their scars; prophyll, second and third bracts cream (subterranean parts) to light green (above ground parts); *prophyll* triangular (roundly triangular), 2-keeled, c. 7 mm long, c. 6 mm wide; *second bract* c. 13 mm long, 8–9 mm wide; *third bract* c. 27 mm long, c. 8 mm wide; *floral bract* appearing above the soil or with the proximal part embedded in the soil and/or leaf litter, light green, tinged slightly maroon, c. 45 mm long. **Flowers** appearing above the ground, emitting a very slight, almost imperceptible, scent of mushrooms; *ovary extension* c. 55 mm long, cream-white with slight reddish tinge towards the sepals; *sepals* semi-translucent deep purple-red (claret) with greenish apices, narrowly elliptic, cuspidate, slightly unequal (dorsal being shorter and narrower); *dorsal sepal* c. 40 mm long, c. 8 mm wide, with slightly reflexed margins, bending backwards; *lateral sepals* c. 43 mm long, 9–10 mm wide; *lateral petals* asymmetric, oblong, c. 7 mm long, c. 3 mm wide, overlapping along inner side covering stamens and style, dark purple-violet with a white thick patch at base, semi-translucent greenish towards the apex, apiculate to cuspidate (c. 1 mm); *labellum* elliptic to mildly obovate with narrow base, 30–35 mm long (incl. base), 18–21 mm at widest point, flesh-coloured to rusty brown, with a raised midrib (midrib c. 5 mm wide) and few (usually 2) raised lines along the midrib, margin entire, irregularly undulate, greenish or dark brown, base c. 7 mm long,



Fig. 1. *Orchidantha lengguanii* Škorničk. **A.** Habit. **B.** Flowers. Photographed at the Forest Research Institute Malaysia, Acc. No. *FRIM 2002-0665*. (Photos: Jana Leong-Škorničková)



Fig. 2. *Orchidantha lengguanii* Škorničk. **A.** Flower (semi-side view). **B.** Flower (front view). **C.** Detail of stigma (dorsal view) with anthers attached and petals removed, stigma (ventral view) and petals (scale in mm). **D.** Detail of petals and a prominent bulge on the basal part of the labellum opposite the stigma. Photographed at Forest Research Institute Malaysia, Acc. No. FRIM 2002-0665. (Photos: Jana Leong-Škorničková)

with prominently inflexed side lobes, 4 mm wide (with side lobes unextended – i.e. in their inflexed position), dark maroon-purple (almost black) but lighter towards the ovary extension. **Stamens** c. 3 mm long; **filament** c. 0.5 mm long, **anther thecae** c. 2.5 mm long, longitudinally dehiscent throughout their length. **Style** 2–3 mm long; **stigma** 2–2.5 mm long, deeply three-lobed, dorsal surface pink with purple patches; stigma lobes pink purple, conduplicate, with margin whitish, semi-translucent, membranous, irregularly and sparsely serrated; **median lobe** 2–2.5 mm long; **lateral lobes** c. 2 mm long; **viscidium** broadly U-shaped. **Fruits** and seeds not seen. Based on living and spirit material of FRI 75738 and spirit material of FRI 48193.

Etymology. The species is named after its discoverer, Dr Saw Leng Guan, an excellent field botanist from the Forest Research Institute of Malaysia. He is not only a well-known palm specialist, but also has a particular interest in the Zingiberales of Peninsular Malaysia (see e.g. Larsen et al., 1999).

Distribution. So far known only from the type locality in Endau-Rompin National Park, Sungai Selai area.

Ecology & phenology. Growing in lowland dipterocarp forest, river side. The phenology is not well understood. The original collection made in August 2002 was flowering only sparsely. In cultivation, profuse flowering has been observed in November–December.

Notes. Based on its morphology, *Orchidantha lengguanii* appears to be closely related to *O. maxillarioides* (Fig. 1–4). Both species have petiolate leaves (both as juveniles and adult plants) making them hardly distinguishable when sterile, except that *O. lengguanii* is somewhat larger, reaching up to 1 m in height (versus up to 0.7 m in height for *O. maxillarioides*). Both species have dark maroon sepals, with a dorsal sepal reflexed, but the labella of both species are markedly different: *Orchidantha lengguanii* has a larger (30–35 × 18–21 mm), flesh-coloured to rusty-brown labellum with irregularly undulate green or dark brown margin compared to *O. maxillarioides* (20–23 × 10–11 mm) which has a recurved cream to pinkish coloured labellum with minute dark purple violet dots and mildly crisp purplish margin. A prominent bulge on the basal part of the labellum opposite the stigma is a typical feature of *O. lengguanii* (Fig. 2D). Other clearly visible differences are in the shapes and sizes of lateral petals, the shape of the stigma (broadly U-shaped viscidium in *O. lengguanii* vs. V-shaped viscidium in *O. maxillarioides*) and the anthers (compare Fig. 2C–D and 4C–D).

Other specimens examined: PENINSULAR MALAYSIA. **Johor.** Endau-Rompin National Park, Sungai Selai, 8 Nov 2005, Saw, L.G. FRI 48193, collected from material cultivated at Kepong Botanic Gardens as FRIM 2002-0665 (KEP, only spirit material).

Orchidantha maxillarioides (Ridl.) K.Schum. in Engler, H.G.A. (ed), Pflanzenr. IV, 45: 42 (1900). – *Protamomum maxillarioides* Ridl., Trans. Linn. Soc. London, Bot. 3: 383, t. 66 (1893). – *Lowia maxillarioides* (Ridl.) Baker, Bot. Mag. 120: t.7351 (1894). TYPE: Peninsular Malaysia, Pahang, Pulau Tawar woods, H.N. Ridley 2399 (lectotype SING [SING0043128], designated here; isolectotypes K [K000292166, K000292166], SING [SING0043127]). EPITYPE: *Protamomum maxillarioides*, colour painting by James de Alwis, SING, designated here. (Fig. 3–5)

Notes. *Orchidantha maxillarioides* was first described and illustrated by Ridley as *Protamomum maxillarioides* based on material collected from Kota Glanggi limestone rocks in the woods of Pulau Tawar [Pahang, Peninsular Malaysia] (Ridley, 1893). He brought living material to Singapore Botanic Gardens and sent some of it to Kew Gardens, where it flowered in June 1893. The plant was then illustrated for Botanical Magazine (t. 7351), where Baker provided it with a short note and description, and



Fig. 3. *Orchidantha maxillarioides* (Ridl.) K.Schum. **A.** Habit. **B.** Flowers. Photographed at Singapore Botanic Gardens, SBG 20104107. (Photos: Jana Leong-Škorničková)

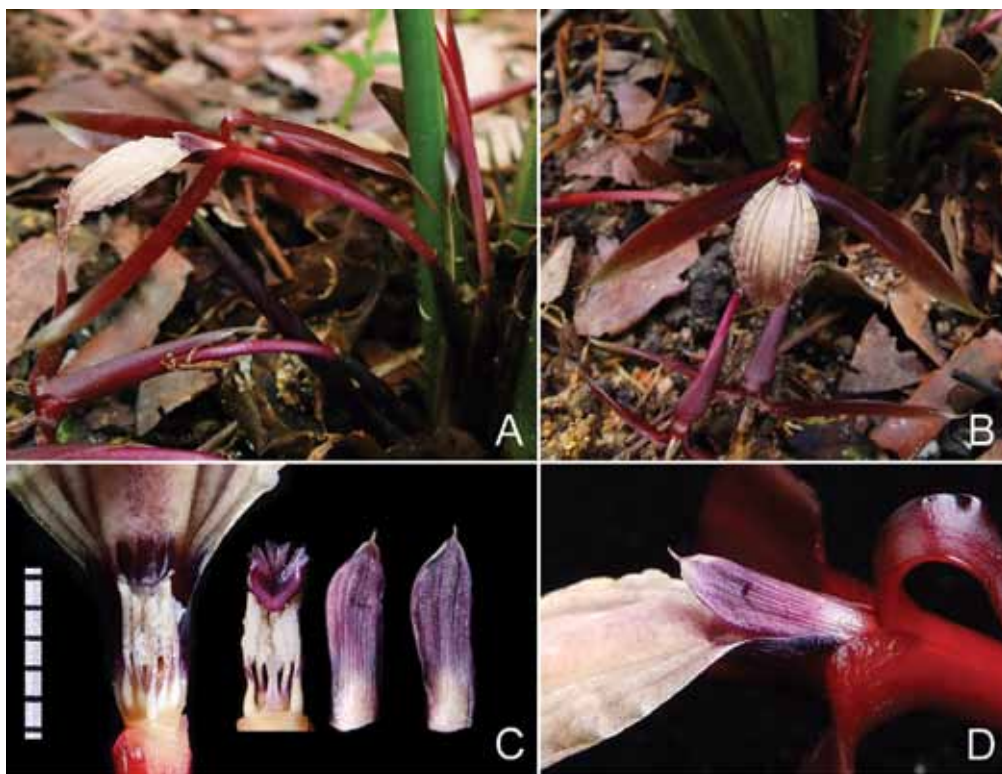


Fig. 4. *Orchidantha maxillarioides* (Ridl.) K.Schum. **A.** Flower (side view). **B.** Flower (front view). **C.** Detail of stigma (dorsal view) with anthers attached and petals removed, stigma (ventral view) and petals (scale in mm). **D.** Detail of petals (side view). Photographed at Singapore Botanic Gardens, *SBG 20104107*. (Photos: Jana Leong-Škorničková)

transferred it to the genus *Lowia* (Baker, 1894). Finally, Schumman made the transfer to *Orchidantha* in 1900.

Turner (2000) published an account of all Zingiberalean taxa ever published by H.N. Ridley and attempted to clarify typification of these names. The methods outlined in Turner's paragraph on typification of Ridley names are generally sound. It stresses the facts that Ridley rarely used the term type, often did not indicate collectors, collection numbers or herbaria, and was lax regarding annotating specimens, resulting in the need to lectotypify most of the names coined by Ridley. While Turner's paper certainly serves as a good overview, further refinement through lectotypifications is needed for numerous names. One of such names is *Protamomum maxillarioides*, for which Turner's entry reads as:

TYPE: Peninsular Malaysia, Pahang, Pulau Tawar Woods, *H.N. Ridley 2399* (holotype, SING!; isotype K!).

In the protologue, Ridley (1893) only cited the locality 'Pulau Tawar woods', with no particular reference to a collection number, where the herbarium material was deposited, or the number of sheets collected. The protologue was included in an article dealing with the flora of the Eastern Coast of the Malay Peninsula and it is obvious from the context that Ridley was the collector. Holttum (1970) indicated that *Ridley 2399* was the type but did not comment further on the number or distribution of the specimens. The search for original material yielded four sheets collected by Ridley in Pulau Tawar in 1991 (all labelled as *Ridley 2399*), of which two are located at SING and two at K. It is the only Ridley collection of this taxon available from this location. Both specimens at SING are labelled 'holotype' in Turner's handwriting. As both sheets contain entire plants with flowers/flower and fruits, and they are not labelled as parts of a single specimen (ICN 8.3., McNeill et al., 2012), they must, along with the two sheets at K, be considered to be syntypes. SING 0043128, with flowers and fruits, has been selected here as the lectotype.

The shape and colour of the floral parts of *Lowiaceae* (labellum, petals and stigma in particular) are critical for identification of the species but preserve poorly in dry material. Designation of an epitype for such cases, as outlined by Leong-Škorničková et al. (2010), is therefore desirable if any suitable high-quality drawings/paintings exist. Two colour paintings directly linked to the original material are available in this case. The existence of the above mentioned coloured lithograph, based on the original living material Ridley sent to Kew and published in *Botanical Magazine* (t. 7351), is already well known. There is, however, another fine colour painting of this species which is less well known.

Ridley's paper (1893) containing the protologue included a black and white lithograph (t. 66). This was prepared by J.N. Fitch [J.N. Fitch lith & imp.; right bottom corner] who based it on a painting made from a living specimen by James de Alwis [J.D. Alwis ad viv.; left bottom corner]. From Ridley's letter to Sir Joseph Hooker (dated 30 September 1893, Singapore; attached to one of the specimens at K) it is clear that Ridley sent a drawing of *Protamomum maxillarioides* from Singapore to the Linnean Society to be included in his paper on the flora of Pahang which was yet to be published when Ridley wrote the letter. A search in the Archive collections of Singapore Botanic Gardens yielded an almost identical colour painting. The painting bears annotations 'Pahang, Sept. 1893' and lacks a signature of the artist. However, from its fine execution it seems beyond any doubt, that it was painted by James de Alwis who was employed by H.N. Ridley from 1890. It is not clear if two copies of this painting were prepared in Singapore, with one being sent to the Linnean Society, or if the Singapore painting is the only original and was returned after the lithograph was prepared. What is not in doubt is that it is directly linked to Ridley's original material and approved by Ridley, and hence an invaluable resource for the correct interpretation of the name. The painting, which shows the habit of the plant as well as some very fine flower details, is reproduced here (Fig. 5) and is designated as an epitype.



Fig. 5. The colour painting of *Protamomum maxillarioides* made from living material in Singapore Botanic Gardens by James de Alwis, designated as epitype. Reproduced with permission of the Singapore Botanic Gardens.

ACKNOWLEDGEMENTS. My foremost thanks are due to Dr Saw L.G. who introduced me to this new species and let me work on the spirit and living material that he collected in 2002, despite his own interest in the Zingiberales of Peninsular Malaysia. I also thank him for sharing his insights on this species and other Lowiaceae from Peninsular Malaysia. I am also grateful to Dr Ruth Kiew for her time and help during my visits to FRIM. My thanks are due to the curators of the AAU, BK, BKF, K, KEP, P and SING herbaria and to associated libraries for letting me examine Lowiaceae specimens and references. I am also grateful to the Singapore Botanic Gardens for granting permission to reproduce the painting and herbarium sheet. I also thank Dr Axel D. Poulsen and Dr David Middleton for detailed comments on this manuscript. The funding of my research by National Parks Board (Singapore) and by the Czech Science Foundation, GAČR [grant number 14-13541S] is gratefully acknowledged.

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