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# Notes on the genus *Plocoglottis* (Orchidaceae) from Bali, Indonesia: lectotypification of two taxa and a new record

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*Summary: Plocoglottis* Blume is an orchid genus of ca 40 species widely distributed in Asia. None of them has been previously recorded in Karangasem Regency (East Bali). While visiting Lempuyang temple, we came across the population of flowering plants of *Plocoglottis plicata* (Roxb.) Ormerod. This finding has led to further taxonomic investigations and the decision about the need for the designation of two lectotypes: *P. acuminata* Blume and *P. plicata*.

*Keywords:* Bali, Indonesia, lectotype, orchids, *Plocoglottis*, taxonomy

*Plocoglottis* Blume (Bijdr. Fl. Ned. Ind. Bijdragen tot de flora van Nederlandsch Indië 6: t. 2, f. 91. 1825. Type-species: *Plocoglottis javanica* Blume, Bijdr. Fl. Ned. 381. 1825) comprises about 40 species, which are distributed from Andaman Islands, Thailand, Malaysia (mostly Borneo), Philippines, Indonesia (Sumatra, Borneo, Java, Moluccas and Sulawesi) to New Guinea and the Solomon Islands. This genus is represented in Bali only by *P. plicata* (Roxb.) Ormerod, while on the neighbouring island Java as many as 5 species (*P. gigantea* (Hook. f.) J.J. Sm., *P. javanica* Blume, *P. lowii* Rchb. f., *P. quadrifolia* J.J. Sm. and *P. plicata* (Roxb.) Ormerod) can be found. Bali is subjected to a high level of anthropogenic impact (e.g. loss of habitats due to agricultural and urban expansion of inhabitants and tourists, harvesting). The island is rather small, thus, the pace of environmental destruction is observed to be much faster and its scale is much bigger. The information about orchid flora in Bali is still rather random and insufficient.

During trekking around Pura Penataran Agung Lempuyang (Lipińska, Margońska, Dobrzyński), we came across a few flowering plants. The presence of fully developed flowers enabled the identification of these plants as undoubtedly *P. plicata*. Later floristic research of the preserved materials from various research institutions, literature and information from local researchers let us confirm that this species has never been recorded from this part of Bali. Taxonomic studies (conducted by Margońska) have simultaneously indicated the need for the determination of two lectotypes.

## Materials and methods

Few flowering plants of *P. plicata* were observed during trekking around Pura Penataran Agung Lempuyang (Lipińska, Margońska, Dobrzyński). The identification has been confirmed by means of standard methods of classical taxonomy, thanks to the presence of relatively numerous, fully developed flowers. Taxonomical and floristic investigations have been conducted based on preserved materials from various research institutions [AAU, AMES, B, BM, BO, BP, BR, C, C-GS, E, F, FI, G, GB, GH, HBG, K, L, LINN, MO, P, SEL, SING, TJ, U, UGDA, UPS, US, WAG, WU, W-R, Z, Herbarium of Bali Botanical Garden; by Margońska & Lipińska],

literature, digital databases (Archivum Orchidalium – Margonska, OrchidBase – Lipińska) and also information from local researchers.

## Taxonomic treatment

***Plocoglottis plicata*** (Roxb.) Ormerod (in Comber, Orchids of Sumatra (2001): 293)

Basionym: *Limodorum plicatum* Roxb. (Fl. Ind. ed. 1832, 3: 465)

Type-specimens: *Phaius callosus*, *B. Louralee s.n.* (*ex Hortus Bengalensis* Catalogue of the Plants Growing in the Hounourable East India Company's Botanical Garden at Calcutta), *W. Roxburgh icone* – LECTO-E designated here by Margońska; BM, BR, G, K-259298 and LIV, Indonesia, Sumatra, *sine prec. loc.*, *in sylvis montanis*, erect perennial, flowering in hot season (03-06), 1803.

Synonym: *Plocoglottis acuminata* Blume (1849): 46, *non Plocoglottis acuminata* Ames (1907): 326 (as *Plocoglottis acuminata* Ames (1905): 82, *nom. nud.* in syn. of *Plocoglottis copelandii* Ames (1907): 326)

***Dendrobium javanicum*** Korth. *ex* Bl., pro syn. Blume (1849): 46

Type-specimens: *Dendrobium javanicum* ssp., herbarium *P.W. Korthals* [Herb. Lugd. Bat.] (*ex*-protologue), Indonesia, Java, and Sumatra, *in sylvis montanis*. In Leiden Herbarium [L – *ex* Herb. Lugd. Bat.], there are five herbarium sheets that are referred to as syntype-specimens of the taxon:

*P.W. Korthals s.n.*, LECTO-L0062343 (designated here by Margońska, chosen because of well-preserved floral elements), Sumatra
*P.W. Korthals s.n.,* L0062342, Sumatra
*C.L. Blume 2242aI*, L0062345, Java
*C.L. Blume 2242aII*, L0062346, Java
*H. Kuhl & J.C. van Hasselt s.n.,* L0062344, Java

## Discussion

*Plocoglottis plicata* is distributed in Malaysia (generally Borneo), Brunei, Philippines, Indonesia (Sumatra, Borneo, Java, Moluccas and Sulawesi) mostly in wet lowland forests, generally at elevations around 300–1200 m a.s.l., but mostly at 400–600 m a.s.l. Wood et al. (2011) confirmed the presence of this species in Borneo moreover from lowland dipterocarp forests at 400–500 m a.s.l. The first record of this species for Bali was published based on the specimens *Sarief & Maier R.E.P. 232* (Girmansyah et al. 2013). Plants of *P. plicata* have also been recorded on the slopes of Mount Batukaru, near Wongaya Gede village and Jatiluwih village, between 790–1878 m a.s.l. (Wibowo et al. 2015). They have been identified as *Plocoglottis acuminata* (which is synonymous to *Plocoglottis plicata* (Roxb.) Ormerod). Sulistiarini et al. (2016) rightly noted that most herbarium specimens deposited in various herbaria [especially Herbarium Bogoriense, BO], were collected in Central and East Bali, while fewer specimens were from the western part of the island. For this reason, they became interested in the exploration of plant diversity in the western parts of the island, especially in Jembrana district in the forested areas of Mt Merbuk (1386 m a.s.l.) and Mt Mesehe (1300 m a.s.l.), the two highest mountains in Jembrana. The authors have found plants of this species in lowland forests along rivers and in primary forests sometimes growing on rocks. Sulistiarini et al. (2016) described the location

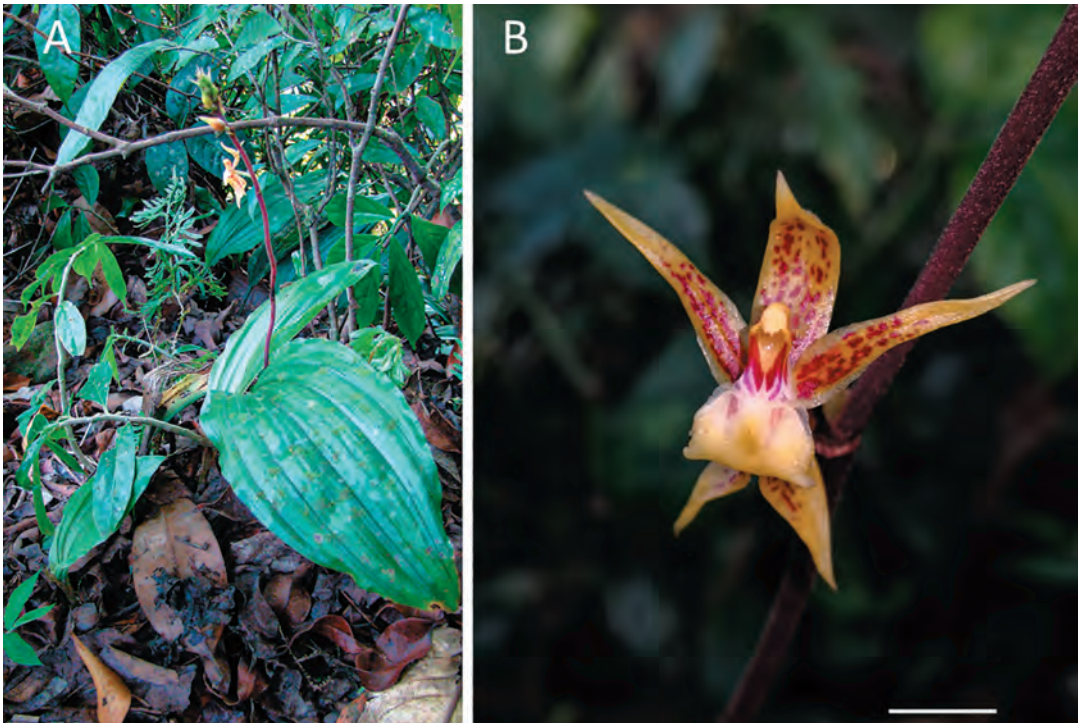


**Figure 1.** Plants of *Plocoglottis plicata* in natural habitat on south-western slopes of Mt Lempuyang (A, photo credit: Margońska) and part of the inflorescence with fully opened flower (B, photo credit: Lipińska). Scale bar: 5 mm.

as: Mendoyo subdistrict, Poh Santen village, Pasatan, forest surrounding Mt Mesehe, 2013, 18.05.2013, *D. Arifiani 1365* [BO]; Mendoyo subdistrict, Batu Agung village, Panca Seming, Yeh Mesehe protected forest 17.05.2013, *Y. Santika 548* [BO]; Jembrana subdistrict, Batu Agung village, Palungan Batu, Pangkung Palir, along Tukad Aya river, forest surrounding Mt Merbuk, 23.04.2014, *D. Arifiani 1416* [BO]. Plants were found at an altitude between 400 m and 860 m on sites located in Mendoyo subdistrict, whereas in Jembrana subdistrict populations were found only at an elevation of 280 m a.s.l. Sulistiarini et al. (2016) published the discovery of these sites as new records of this species for Bali. The species was also recorded by Jeffrey Champion in the eastern part of West Bali, in Sepang, at 750 m a.s.l. (personal observations, the new record is being published herein). Plants in the western part of Bali are terrestrials, growing in hot to warm lowland and mixed montane rainforests, in deep shade in alluvial soils with sandstone, limestone and shales. They occasionally also grow on rocks in lowland forests along the rivers or in primary forests (Sulistiarini et al. 2016). However, the species has also been known as quite common in the central part of Bali, e.g. from old volcano north-eastern crest above Bedugul (Champion's personal comments, confirmed in 2019 by Champion, Margońska, Lipińska, Dobrzyński, Sutrawan, Suwidiada, Ardika, Mudiada). The plants here, however, grew in a wet moss forest, about 1000 m a.s.l. (never in low elevations). In 2018 and 2019, the authors have also spotted this species in East Bali, Karangasem Regency, on south-western slopes of Mt Lempuyang, what is a new record of the species for this part of Bali (Fig. 1). Plants were growing in a quite large, though dispersed population in a wet mountain forest. They have been flowering in both August and October. So this observations prove that Balinese populations of *Plocoglottis plicata* (= *acuminata*) can be more widespread than previously expected. Future floristic investigations of

this matter is highly recommended. The conservation status of the species should be described as locally quite common in Bali. Although its populations are dispersed, single clusters are abundant. Considering the pace and scale of degradation and loss of suitable habitats and plant communities in Bali, it should be treated as a vulnerable species.

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