A New Species of *Cryptocoryne* (Araceae) from Borneo

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Abstract

Cryptocoryne zaidiana Ipor & Tawan, a noteworthy new species from Long Tran, Tinjar, Miri Division, Sarawak, is described and illustrated. This amphibious species grows on mudflats in sandy clay soil of the intertidal freshwater zone of Sungai Mering. Its leaf shape and texture are similar to those of *Cryptocoryne lingua* Engler but differ especially in its spathe characteristics. It has a strongly recurved ovate limb, the upper surface is distinctly covered with purplish and creamy protuberances and it has a distinct creamy collar.

Introduction

In Sarawak *Cryptocoryne* species occur in the inner tidal zone in rivers and streams, on riverbanks of slow and fast flowing rivers or streams and in ditches of swampy and flooded areas. In most places they are found in shaded locations. They are known as *kalakatai* (Iban - Sarawak); *kiambang batu* (Malay-Sarawak and Peninsular Malaysia) and *tropong air* (Banjarmasin-Kalimantan).

The discovery of the new species *Cryptocoryne zaidiana* raises the current total number of *Cryptocoryne* species in Sarawak to fourteen. The eleven species reported by Jacobsen (1985) are *C. ciliata* (Roxburgh) Schott, *C. auriculata* Engler, *C. bullosa* Engler, *C. ferruginea* Engler, *C. keei N.* Jacobsen, *C. lingua* Engler, *C. longicauda* Engler, *C. pallidinervia* Engler, *C. striolata* Engler, *C. zonata* De Wit and *C. grabowskii* Engler. Jacobsen (2002) regards *C. zonata* as *C. cordata* Griffith var. *zonata* (De Wit) N.Jacobsen and *C. grabowskii* as *C. cordata* Griffith var. *grabowskii* (Engler) N.Jacobsen. Recently two other species have been described, *viz. C. uenoi* Y.Sasaki (2002) and *C. yujii* Bastmeijer (2002), which were collected from

Sabal Keruing, Sri Aman Division and Sungai Nibong, Durin, Sibu Division, respectively (Bastmeijer, 2005). It is essential to conduct more field work to obtain extensive records of the existence and occurrence, as well as understanding of the natural diverse habitats of *Cryptocoryne* species in Sarawak.

Description of the Species

Cryptocoryne zaidiana Ipor & Tawan ***sp. nov.***

Differt a *C. lingua* folia majore, limbus ovatus, valde recurvatus, protuberance supra sed. **Typus** - Sarawak: Miri Divison, Tinjar, Long Tran, Sungai Mering, whole plant with inflorescence and young syncarp, 2 July 2004, *C.S. Tawan, I.B. Ipor & A. Mohd Rizan CST 2548*, (holotypus, HUMS (Herbarium Universiti Malaysia Sarawak) - in spirit).

Rhizome stout, internode length 1.0–3.0 cm, 4.5–6.8 mm diam., whitish, smooth, adventitious roots contracted at the nodes, new roots whitish and later becoming brownish due to mud stains, 1–14 cm long, **Cataphylls** 1–2 keeled adaxial to the flowering shoot, ovate, 5 cm long, 1.5 cm across at the middle, convolute, base whitish, light greenish upper portion, slightly hyaline near the margin, smooth on both surfaces, base truncate, apex acute. **Leaves** with upper surface green, smooth and a shiny, lower surface smooth and pale green or sometimes slightly purplish; blade ovate, 9.5–13.5 x 4.0–6.0 cm, base truncate-cordate, apex acute, margin entire sometimes slightly wavy near the base; midrib flattened on both surfaces, secondary veins 4 pairs, not prominent, slightly channeled on both surfaces; petiole elongate, 19–23 cm long, 3.6–5.6 mm diam. in middle, leaf sheath *c.* 3.5–4.5 cm long with hyaline margins, middle portion rounded or sometimes angled, upper part slightly flattened, green, lower part usually brownish due to mud stains. **Spathe** 9–14 cm long, pedunculate 1.5–2.5 cm long, 6 mm diam., whitish, smooth; kettle 2–2.8 cm long, constricted about 1/3 from the top; outer surface with a whitish background with faint purplish longitudinal lines, inner surface 1/3 of the upper portion, whitish, 2/3 lower portion sprayed with fine purple spots; tube 4.5–7 cm long, narrow, cylindrical at base 5 mm diam., broader in the upper part, 7.5 mm diam., outer surface faintly purplish, more intense in the upper part; inner surface whitish, slightly twisted, tube fusion line distinct, purple; **limb** strongly recurved, 3.0–4.0 cm long, 1.5–2 cm across (near the collar), ovate, apex apiculate, 3–4 mm long, dark purple, upper surface with protuberances or warty, creamy-whitish, margin and surface towards the apex covered

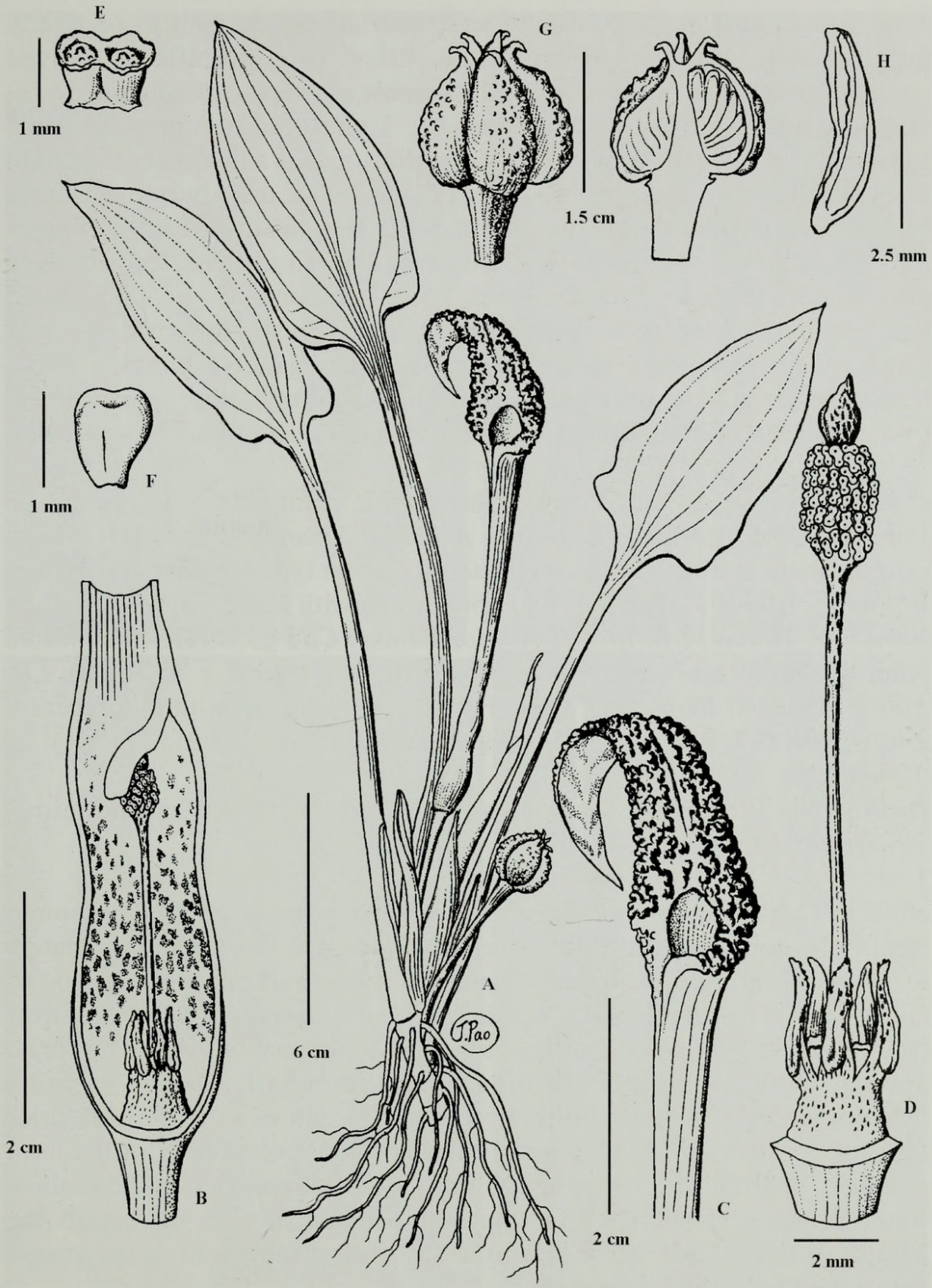

Figure 1. ***Cryptocoryne zaidiana*** Ipor & Tawan.
A Plant with inflorescence and fruit; **B** inner surface of the kettle; **C** limb surface and collar; **D** spadix showing the male and female flowers; **E** thecae; **F** stamen; **G** syncarp with verrucose surface; **H** seed. (A-F from the holotype *CST 2548*; G-F from the *CST 2549* - drawn from the fresh material).

with distinct dark purple protuberances, lower surface whitish or faintly purplish; collar distinct, creamy; throat surface deep purplish or sprayed with purplish spots, surface smooth. **Female flowers** *c.* 6, stigma ovate-elliptic, purplish; ovary whitish elongate, 3 mm long, 1 mm wide, **Male flowers** *c.* 50, smooth, creamy or light yellow; naked axis spadix 9–10 mm long, purplish; sterile appendix *c.* 1.5 x 1.0 mm, ovate, deep purple; olfactory bodies dark purple; flap ovate, 4–5 x 3–3.5 mm, whitish. **Fruit peduncle** 3.5–6.0 cm long, 3–4.5 mm diam., whitish or sometimes speckled with dark purple spots. **Syncarp** broadly ovoid, 1.5–1.7 cm long, 12–16.5 mm diam., dull green speckled with dark purple, slightly verrucose surface, apex distinctly apiculate, dark green-purple. **Seeds** elongate 6–7 mm long, 1.8–2.0 mm broad at base, dark purple in the upper portion, lower part whitish, surface slightly striated. Embryo with three long, green plumulary processes.

Other specimens studied: Type locality, whole plant with inflorecence, 16 June 2004, *C.S. Tawan , I.B. Ipor & A. Mohd Rizan CST 2545* (HUMS) – in spirit from cultivated plant collected from the type locality; herbarium specimens from the type locality, whole plant with mature syncarp, 2 July 2004, *C.S. Tawan , I.B. Ipor & A. Mohd Rizan CST 2550* (HUMS); whole plant with inflorescence and young syncarp, 2 July 2004, *C.S. Tawan, I.B. Ipor & A. Mohd Rizan CST 2551* (HUMS); whole plant with inflorecence, 2 July 2004, *C.S. Tawan, I.B. Ipor & A. Mohd Rizan CST 2552* (SAR).

Distribution: Endemic in Sarawak, as yet known only from Sungai Mering, Tinjar, Miri Division.

Habitat: *Cryptocoryne zaidiana* occurs in small patches on muddy ground (sandy clay soil) with a litter of leaves and twigs. The river is approximately 5–7 m wide and flooded with a considerable slow current after a period of heavy rain. The riverbank is established with secondary riverine forest (15–18 years after padi planting according to the local people). The forest undergrowth is mainly dominated by bemban, *Donax grandis* (Marantaceae). The river normally becomes shallow or sometimes dries up after dry periods. At this time, this river is a popular place for the local people to '*mansai*' (to fish using round-shaped nets to scoop in the shallow water to catch small fish). This regular activity appears to disturb the habitat of *C. zaidiana*. More severe disturbance is imminent as the area is earmarked for oil palm plantations.

Notes: Cryptocoryne zaidiana shows in its habitat and morphological characteristics certain similarity with *C. lingua*. These two species thrive well on mudflats of riverine clay soil along the fringes of riversides and

Plate 1. ***Cryptocoryne zaidiana*** Ipor & Tawan.
A Plant with unopened inflorescence; **B, C** limb surface and collar; **D** syncarp with verrucose surface; **E** seeds; **F** the male and the female zones.

ditches. *C. lingua* grows well in a certain level of salinity during short drought spells in the Sungai Sarawak (Ipor, *pers. obs.*). To date, *C. zaidiiana* has only been found in freshwater within the intertidal zone. Both species have spongy leaves but *C. lingua* has an ovate to oblong blade with a truncate base whereas *C. zaidiana* has ovate blades with a truncate to cordate base. This species is different from *C. lingua* in having an ovate, strongly recurved limb with protuberances on the upper surface. *C. lingua* has a caudate, smooth limb without protuberances on the upper surface.

Etymology: This species is named in honour of the late Tun Ahmad Zaidi Adruce, who was the first Chancellor of Universiti Malaysia Sarawak (UNIMAS) and the fifth Governor of Sarawak, in recognition of his great contribution to the state of Sarawak and in particular to research development at UNIMAS during his lifetime.

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References

Bastmeijer, J.D. 2002. *Cryptocoryne yujii* Bastmeijer (Araceae), eine neue Art aus Sarawak. *Aqua Planta.* **27**: 145–146.

Bastmeijer, J.D. 2005. The Crypts pages http://132.229.93.11/Cryptocoryne/index.htm1

Jacobsen, N. 1985. The *Cryptocoryne* (Araceae) of Borneo. *Nordic Journal of Botany.* **5**: 31–50.

Jacobsen, N. 2002. Der *Cryptocoryne cordata* Griffith – complex (Araceae) in Malesian. *Aqua Planta.* **27**: 150–151.

Sasaki, Y. 2002. *Cryptocoryne uenoi* Y. Sasaki (Araceae), eine neue Art aus Sarawak. *Aqua Planta.* **27**: 147–148.