

## NEW RECORDS OF ZINGIBERACEAE FROM SOUTHERN THAILAND

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### ABSTRACT

Eleven species of Zingiberaceae including *Boesenbergia flava* (Ridl.) Holtt., *Camptandra parvula* (King ex Bak.) Ridl., *Etilingera metriocheilos* (Griff.) R. M. Smith, *E. pauciflora* (Ridl.) R. M. Smith, *E. subterranea* (Holtt.) R. M. Smith, *E. triorgyalis* (Bak.) R. M. Smith, *Hornstedtia conica* Ridl., *H. leonurus* (Koenig) Retz., *H. ophiuchus* (Ridl.) Ridl., *Plagiostachys* aff. *albiflora* Ridl. and *Scaphochlamys perakensis* Holtt. are newly recorded for Thailand. Two genera, *Camptandra* and *Plagiostachys*, are also newly recorded.

Key words: new records, Thailand, Zingiberaceae

### INTRODUCTION

Larsen (1996), in his preliminary checklist, recorded 21 genera and 200 species of Zingiberaceae in Thailand. Not included in his list were 11 species additionally found during botanical surveys in Narathiwat and Yala Provinces, southern Thailand, during 1999–2000: *Boesenbergia flava* (Ridl.) Holtt., *Camptandra parvula* (King ex Bak.) Ridl., *Etilingera metriocheilos* (Griff.) R. M. Smith, *E. pauciflora* (Ridl.) R. M. Smith, *E. subterranea* (Holtt.) R. M. Smith, *E. triorgyalis* (Bak.) R. M. Smith, *Hornstedtia conica* Ridl., *H. leonurus* (Koenig.) Retz., *H. ophiuchus* (Ridl.) Ridl., *Plagiostachys* aff. *albiflora* Ridl. and *Scaphochlamys perakensis* Holtt. Two species, *Camptandra parvula* (King ex Bak.) Ridl. and *Plagiostachys* aff. *albiflora* Ridl., represent newly recorded genera for Thailand. All 11 species were hitherto recorded from Peninsular Malaysia and Singapore by Larsen et al. (1999). Descriptions, illustrations and distribution of these 11 species are presented. Specimens are deposited at PSU and QSBG.

### SPECIES LIST

***Boesenbergia flava* (Ridl.) Holtt.**, Gard. Bull. Sing. 13: 113. 1950. *Gastrochilus flavus* Ridl., Fl. Mal. Pen. 4: 248. 1924. *Gastrochilus minor* Ridl. (not Bak.), J. Str. Br. Roy. As. Soc. 32: 111. 1899., Mat. Fl. Mal. Pen. 2:17. 1907. Figure 1.

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*Leafy shoot* ca. 40 cm tall. *Leaves* 4–7; sheaths pubescent, especially on the innermost sheath; ligule 2-lobed, glabrous, apex acuminate, 1.5–2 cm long; petiole pubescent, ca. 15 cm long; lamina obovate-lanceolate, upper surface glabrous, lower surface pubescent, base attenuate, apex acuminate, 36–45 x 7.5–9 cm. *Inflorescence* terminal, compact, enclosed between two uppermost leaf-sheaths; bracts lanceolate, pubescent, apex acuminate, 6 x 1 cm; bracteoles lanceolate, pubescent, apex minutely 3-lobed, 5.5 x 1.3 cm. *Calyx* tubular, apex 3-toothed, pilose, 1.7 cm long. *Corolla* tube puberulent, 7 cm long; *Corolla* lobes glabrous, yellow, dorsal one concave, apex acuminate-mucronate; lateral ones lanceolate, apex acute-mucronate, 2.2–3.2 x 0.7–1.0 cm. *Staminodes* obovate-lanceolate, puberulent, yellow, apex cuspidate, 2.5 x 0.9 cm. *Labellum* broadly oblong, slightly concave, apex 2-lobed, puberulent on lower half of both surfaces, yellow with bright yellow middle band and pink blotches at base, margins wrinkled, 3.0 x 2.0 cm. *Stamen*: filament flat, with few hairs at base, 9 x 2 mm; anther 9 x 4 mm; crest 2-lobed, lobe acute, 2 mm long. *Ovary* cylindrical, glabrous, 5 mm long; stylodes narrowly cylindrical, glabrous, 8 mm long; stigma cup-shaped, apex lobed, ciliate. Capsules not seen.

*Ecology*: On stream bank in evergreen forest, c. 400 m msl.

*Distribution*: Southern Thailand and Peninsular Malaysia.

*Specimens examined*: C. Maknoi T45 (25 Aug. 99), T51 (8 Sep. 99), Waeng, Narathiwat.

***Camptandra parvula* (King ex Bak.) Ridl.**, J. Str. Br. Roy. As. Soc. 32: 104. 1899. *Kaempferia parvula* King ex Bak., Fl. Br. Ind. 6: 223. 1890. Figure 2.

*Leafy stem* tufted, 8–10 cm tall. *Leaves* 7–8; sheaths pubescent, upper half ciliate; ligule membranous, 2-lobed, pubescent, ciliate, 3 mm long; petiole pubescent, 7–12 mm long; lamina oblong, upper surface pubescent near apex, lower surface pubescent, base cuneate, apex acuminate, ciliate at apex, 6.5–10 x 2–4.5 cm. *Inflorescence* terminal; peduncle puberulent, 5 mm long; bract one, green, rounded, folded, apex acuminate, with few hairs at apex, 2.3 x 2.5 cm; bracteoles suborbicular, glabrous, apex emarginate, 5 x 4 mm. *Flowers* in a cincinnus of five. *Calyx* funnel-shaped, glabrous, 5 mm long, apex unequally 3-lobed, lobes rounded. *Corolla* tube white, glabrous, 1.7 cm long; lobes white, hooded, glabrous, 1 cm long; dorsal one shortly hairy, apex acute-mucronate; lateral ones ovate, 5 mm wide. *Staminodes* clawed, 2.7 x 9 mm; blade elliptic, white with pale yellow patch at base, sparsely puberulent at base, apex rounded. *Labellum* rounded, white with yellow median band, scarlet lines on either side and narrowly pale yellow rays, 2 x 2 cm, apex deeply 2-lobed, base puberulent. *Stamen*: filament white, glabrous, 1 mm long; anther white, 2 mm long; basal spurs glabrous, 2 mm long. *Ovary* glabrous, green, 3 mm long. Capsules not seen.

*Ecology*: On densely shaded stream bank in evergreen forest, c. 400 m msl.

*Distribution*: Southern Thailand, Peninsular Malaysia and Borneo.

*Specimens examined*: C. Maknoi T44 (25 Aug. 99), T52 (8 Sep. 99), T60 (18 Nov. 99), T77 (25 Mar. 00), Waeng, Narathiwat.

***Etlingera metriocheilos* (Griff.) R. M. Smith**, Not. R.B.G. Edinb. 43(2): 247. 1986. *Achasma metriocheilos* Griff., Not. Pl. Asiat. 3: 427, t. 356. 1851. *Amomum sphaerocephalum*



Figure 1. *Boesenbergia flava* (Ridl.) Holtt.



Figure 2. *Camptandra parvula* (King ex Bak.) Ridl.



Figure 3 *Etilingera metriocheilos* (Griff.) R.M. Smith

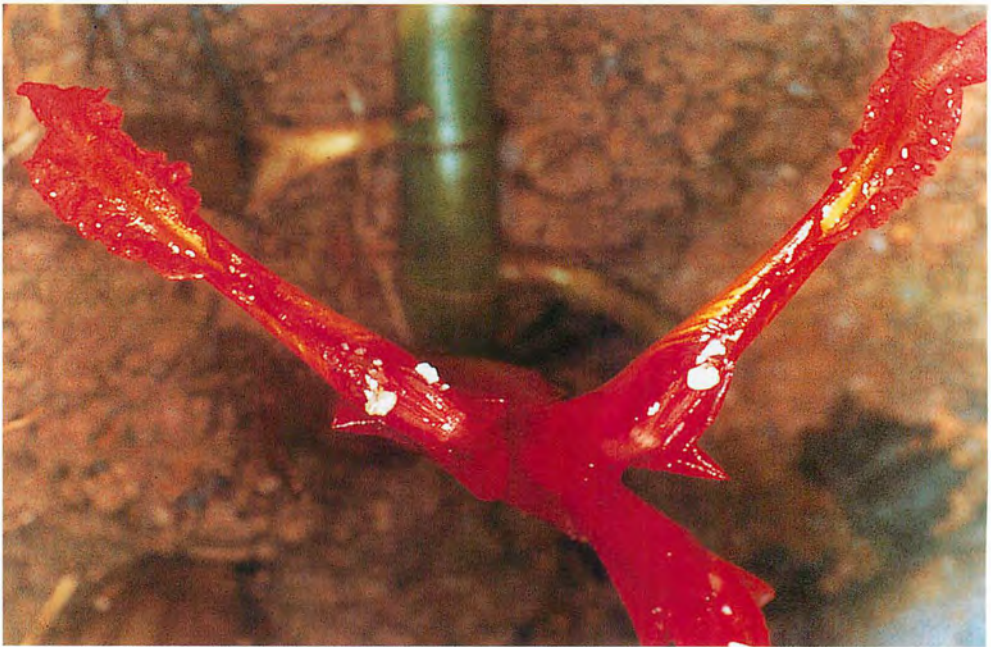


Figure 4 *Etilingera pauciflora* (Ridl.) R.M. Smith

Bak., Fl. Br. Ind. 6: 234. 1892. *Hornstedtia sphaerocephala* (Bak.) K. Schum., Pflanzenr. Zingib. 192. 1904. *Achasma sphaerocephalum* (Bak.) Holtt., Gard. Bull. Sing. 13: 189. 1950. *Amomum metriocheilos* Bak., Fl. Br. Ind. 6: 234. 1892. *Hornstedtia albomarginata* Ridl., J. Str. Br. Roy. As. Soc. 32: 145. 1899. Figure 3.

Rhizome thick, 3.5 cm diameter; scales red. *Leafy stem* base swollen to 10 cm diameter, 5 m tall. Leaf sheaths red, glabrous; ligule lanceolate, glabrous, apex acute, 2.5 cm long; petiole glabrous, 3–4 cm long; lamina narrowly obovate, glabrous, green, 75–115 x 16–23 cm, base cuneate, apex shortly caudate. *Inflorescence* lateral, from rhizome near base of the leafy stem; peduncle 10–18 cm long; sheaths broadly lanceolate, glabrous, 2–7 x 2–2.5 cm, apex acute. *Involucral* bracts elliptic to lanceolate, slightly concave, dark red, puberulent along margin, 6–9 x 1.5–3.5 cm, apex acute, ciliate; bracts narrowly obovate-lanceolate, dark red with lighter margin, puberulent, apex rounded, slightly hooded, ciliate, 5.5–9.5 x 0.3–1.5 cm, inner bracts smaller; bracteoles tubular, puberulent, pale red, apex acute, ciliate, 4 cm long, split down one side for 2.5 cm. *Calyx* tubular, puberulent, apex 2-lobed, dark red, gradually lighter towards base, 6 cm long, split down one side for 2.5 cm. *Corolla* tube white with pale red, 3 cm long, glabrous; lobes narrowly ovate to elliptic, red, puberulent, apex rounded, ciliate, 2.5 x 0.5–0.6 cm long. *Labellum* clawed; claw red with dark red patch in the middle and white edge; blade reddish pink, apex rounded, 2 cm wide. *Stamen* pale red, glabrous; filament 5 x 3 mm; anther white, 11 x 4 mm. *Ovary* puberulent; stigma dark red, 5 mm wide. Infructescence on ground; scales, *involucral bracts* and bracts persistent; capsules obovoid, pubescent, often with longitudinal ridges, brown.

Ecology: In open area along roadside, c. 600 m msl.

Distribution: Southern Thailand, Peninsular Malaysia and Borneo.

Specimens examined: C. Maknoi T24 (10 Jul. 99), T85 (30 Jun. 00), Betong, Yala.

***Etlingera pauciflora* (Ridl.) R. M. Smith**, Not. R.B.G. Edinb. 43(2): 248. 1986. *Hornstedtia pauciflora* Ridl., J. Str. Br. Roy. As. Soc. 32: 144. 1899. *Achasma pauciflora* (Ridl.) Holtt., Gard. Bull. Sing. 13: 187. 1950. Figure 4.

Rhizome slender, 6 mm in diameter; *Leafy stem* 3 m tall. *Leaves* sessile; sheaths glabrous, ciliate; ligule triangular, glabrous, apex rounded, sometimes with a ciliate apex, 1.3–1.7 cm long; lamina narrowly lanceolate, glabrous on both surfaces, 50–55 x 8.5–9.5 cm, base cuneate, apex caudate. *Inflorescence* lateral, directly from rhizome, lower part often embedded in soil, bearing 1–3 flowers which open simultaneously; peduncle pubescent on the upper part, 3–4 cm long; sheaths narrowly ovate, 1.5–6 x 0.7–1 cm, apex acute, upper sheaths pubescent at base. *Involucral bracts* narrowly ovate, pubescent at base and apex, 4–6 x 1.2 cm, apex acute; bracts similar to involucral bracts; bracteoles tubular, pubescent, 2.5–4.5 cm long, apex 2-lobed, split down one side ca. 2.5 cm. *Calyx* tubular, pubescent, 7 cm long, apex acutely 3-lobed, split down one side for 2.5 cm. *Corolla* tube glabrous, 5 cm long; lobes red, glabrous, 3.5 cm long; dorsal one elliptic-oblong, apex acute, 1.2 cm wide; lateral ones narrowly obovate, apex rounded, 7 mm wide. *Labellum* clawed; claw orange-yellow with red margin; blade orange-red, 5 x 1 cm, apex rounded. *Stamen*: filament glabrous, 3 mm long, ca. 5 mm wide; anther pilose along the line of dehiscence, 1 x 0.5 cm. *Ovary* pubescent on the upper part, 3 mm long; stylodes hairy at apex, 5 mm long; stigma white, ciliate, 4 mm wide. Capsules not seen.

Ecology: In partly shaded area in evergreen forest, c. 600 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimens examined: C. Maknoi T66 (26 Jan. 00), Waeng, Narathiwat; T72 (28 Jan. 00), Betong, Yala.

***Etlingera subterranea* (Holt.) R. M. Smith**, Not. R.B.G. Edinb. 43(2): 250. 1986. *Achasma subterraneum* Holt., Gard. Bull. Sing. 13: 187. 1950. Figure 5.

*Leafy stem* 2 m tall. Leaf sheaths glabrous; ligule triangular, glabrous, apex rounded, 6–7 x 6 mm; petiole glabrous, 6–8 mm long; lamina obovate-lanceolate, glabrous on both surfaces, green with purplish patches on either side of midvein, 35–50 x 8–9.5 cm, base obtuse, apex acuminate. *Inflorescence* lateral, directly from rhizome, c. 30 cm apart from leafy shoot, bearing 8 flowers; peduncle erect, pubescent, 7–12 cm long; sheaths narrowly ovate, scattered pilose, 2–4 x 1 cm, apex acute. *Involucral bracts* 2, ovate-oblong, rigid, pubescent, particularly near margin, apex acute, ciliate, 4 x 1.4 cm; bracts similar to the involucral bracts, the inner bracts narrower, pubescent; bracteoles tubular, pubescent, apex 2-lobed, 3 cm long, split down one side for 1.5 cm. *Calyx* tubular, pubescent, apex 2–3 lobed, 6 cm long, split down one side for 1 cm. *Corolla* tube glabrous, 4.5 cm long; lobes oblong, red, puberulent, and apex ciliate, 2.2 cm long; dorsal one apex acuminate, 5 mm wide; lateral ones apex rounded, 3 mm wide. *Labellum* clawed; claw dark red with white edge, 6 cm long; blade obovate, red, apex 2-lobed, 1.5 cm wide. *Stamen* puberulent; filament 3 x 3 mm; anther 1 x 0.4 cm wide. *Ovary* pubescent, 5 mm long; stylodes connate, streaked on one side to base, apex lobed; stigma black, ciliate, 2.5 mm wide. Capsules not seen.

Ecology: In partly shaded area near stream in evergreen forest, c. 400 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimen examined: C. Maknoi T76 (8 Mar. 00), Waeng, Narathiwat.

***Etlingera triorgyalis* (Bak.) R. M. Smith**, Not. R.B.G. Edinb. 43(2): 250. 1986. *Amomum triorgyale* Bak., Fl. Br. Ind. 6: 237. 1892. *Hornstedtia triorgyalis* (Bak.) Ridl., J. Str. Br. Roy. As. Soc. 32: 144. 1899. *Achasma triorgyale* (Bak.) Holt., Gard. Bull. Sing. 13: 186. 1950. Figure 6.

*Leafy stem* 3–4 m tall. Leaf sheaths glabrous; ligule puberulent, 1.5–2 x 2 cm at the base, apex rounded; petiole pubescent, 3–4 cm long; lamina obovate, upper surface glabrous, lower surface pubescent, 78 x 17 cm, base obliquely cuneate, apex acute. *Inflorescence* lateral, directly from rhizome near the base of the leafy stem; peduncle pubescent, 7–12 cm long; sheaths ovate, pubescent at base, apex acute, 2–4 x 1 cm. *Involucral bracts* obovate, red, 7–9 x 3–3.5 cm, base sericeous, apex mucronate, the inner one longer and narrower; bracts narrowly obovate, sericeous, 7 x 1 cm, apex acute; bracteoles tubular, hairy, 6 cm long, apex 2-lobed, split down one side for 2 cm. *Calyx* tubular, pubescent, 8 cm long, apex with 3 unequal spiny lobes, split down one side for 4 cm. *Corolla* tube pubescent, 5 cm long; lobes narrowly oblong, red, glabrous; dorsal one apex rounded, 3 x 0.6 mm; lateral ones apex acute, 2.5 x 0.4 mm. *Labellum* clawed; claw 6 cm long; blade obovate, red with white edge, 1.7 cm wide, apex rounded. *Stamen*: filament very



Figure 5. *Etlingera subterranea* (Holt.) R.M. Smith



Figure 6. *Etlingera triorgyalis* (Bak.) R.M. Smith



Figure 7. *Hornstedtia conica* Ridl.



Figure 8. *Hornstedtia leonurus* (Koenig) Retz.



short, pubescent; anther 1 x 0.5 cm. *Ovary* pubescent, 6 mm long; stylodes slightly unequal, 8–9 x 2 mm, apex acute; stigma red, 4 mm wide. Capsules not seen.

Ecology: In partly shaded area near stream in evergreen forest, c. 400 m msl.

Distribution: Southern Thailand, Peninsular Malaysia, Borneo and Sumatra.

Specimens examined: C. Maknoi T50 (8 Sep. 99), Waeng, Narathiwat; T89 (30 Jun. 00), Betong, Yala.

***Hornstedtia conica* Ridl.**, J. Str. Br. Roy. As. Soc. 32: 142. 1899. *Hornstedtia alliacea* Val. Ic. Bogo. 4: t. 350. 1912. Bull. Buitenz. 3<sup>rd</sup> Ser. 3: 174. Figure 7.

Rhizome slender, often above ground. *Leafy stem* base swollen, 3 m tall. Leaf sheaths finely ribbed with cross bars; ligule lanceolate, ribbed, glabrous, apex acute; petiole glabrous, 2 cm long; lamina lanceolate, glabrous on both surfaces, base truncate, apex caudate, 50 x 9 cm. *Inflorescence* lateral, fusiform, 7.5 cm long, c. 20 cm apart from the leafy stem; peduncle 3.5 cm long. *Involucral bracts* lanceolate, finely ribbed, woolly, 2.5–8 x 3–3.5 cm, apex acute; bracts ovate-lanceolate, narrowly tapering to apex, glabrous, 9.5 x 2 cm; bracteoles narrowly lanceolate, narrowly tapering to apex, glabrous, 4 x 0.6 cm. *Calyx* tubular, woolly, 5–6 cm long, apex unequally 2-lobed, split down one side for 2.5 cm. *Corolla* tube glabrous, 5.5 cm long; lobes slightly unequal, glabrous, 2 x 0.6 cm; dorsal one hooded. *Labellum* obovate-oblong, pilose, with 2 thickened median bands, 3 x 0.5–0.7 cm, apex rounded, edge wrinkled. *Stamen*: filament 1.5 x 0.4 cm; anther pubescent. *Ovary* pubescent, 7–10 mm long. Infructescence same length as inflorescence but slightly broader; young capsules white; seeds black, arillate.

Ecology: In partly shaded area in evergreen forest, c. 400 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimens examined: C. Maknoi T11 (18 Jun. 99), T69 (26 Jan. 00), Waeng, Narathiwat.

***Hornstedtia leonurus* (Koenig) Retz.**, Obs. Bot. 6: 18. 1786; Ridl., J. Str. Br. Roy. As. Soc. 32: 142. 1899. *Amomum leonurus* Koenig, Ret Obs. Bot. 3: 69. 1783. *Amomum ridleyi* Bak., Kew Bull. 128.1892. *Stenochasma convolutum* Griff., Notul. 3: 433, t. 359. 1851. Figure 8.

*Leafy stems* tufted, c. 3–4 m tall. Leaf sheaths shallowly ribbed, glabrous, dark brown; ligule apex rounded, 7 mm long; petiole glabrous, 1.5 cm long; lamina oblong, glabrous, with a yellow median patch along the mid-vein, 62 x 15.5 cm, base unequally cordate, apex acuminate. *Inflorescence* 9 x 1.5 cm, mostly embeded in soil; the largest involucral bract fine ribbed, densely pubescent, 7.5 x 1.8 cm, apex acute; bracts ovate-lanceolate, narrowly tapering to apex, pilose outside, 7 x 1 cm; bracteoles tubular puberulent; outer one 7 cm long, apex deeply 2-lobed; inner one 5 cm long, apex acute. *Calyx* tubular, densely pubescent, denser on the veins, 7 cm long, apex acute, split down one side for 2 cm. *Corolla* tube glabrous, 6 cm long; lobes hooded, 3.5 cm long; dorsal one narrowly ovate, 1.5 cm wide; lateral ones lanceolate, 6 mm wide. *Labellum* 3-lobed, dark red, 3 cm long; mid-lobe narrowly triangular, apex rounded, 1 x 0.8 cm. *Stamen*: filament glabrous, 1.7 cm long; anther pubescent along the line of dehiscence, 1.3 cm long. *Ovary* densely pubescent, 5 mm long. Capsules not seen.

Ecology: In partly shaded area near stream in evergreen forest, c. 200 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimens examined: C. Maknoi T40 (24 Aug. 99), T64 (25 Jan. 00), Su-ngai Padi, Narathiwat.

***Hornstedtia ophiuchus* (Ridl.) Ridl.**, J. Str. Br. Roy. As. Soc. 32: 141. 1899. *Amomum ophiuchus* Ridl., Trans. Linn. Soc. 3: 381. 1893. Figure 9.

Rhizome hard, shallowly underground, c. 2–3 cm diameter. *Leafy stem* 3 m tall. Leaf sheaths with prominent ridges and white streaks; ligule broadly triangular, outside pubescent, 1 x 1.2 cm, apex acute; petiole to 1 cm long; lamina narrowly lanceolate, chartaceous, upper surface glabrous, lower surface densely pubescent, 60 x 10 cm, base cuneate, apex acuminate. *Inflorescence* lateral, near the base of the leafy stem, conical, 12.5 cm long including a short peduncle. *Involucral bracts* lanceolate, greenish with reddish margins, puberulent, 5–9 x 3–3.5 cm, apex acute with a short spine. *Calyx* tubular, densely pubescent at base, 6.5 cm long, apex acute, split on one side for 2.5 cm. *Corolla* tube red, glabrous, 8 cm long; dorsal lobe glabrous, 1.5 x 0.8 cm, apex hooded; lateral ones glabrous, 1.8 x 0.4 cm, apex acute, recurved. *Labellum* ovate, red, with white basal edges, apex rounded, recurved, 1.8 x 0.8 cm. *Stamen* densely glandular hairy, 1.2 cm long; filament short. *Ovary* densely pubescent, 7 mm long. Capsules not seen.

Ecology: In partly shaded area in evergreen forest, c. 600 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimen examined: C. Maknoi T26 (10 Jul. 99), Betong, Yala.

***Plagiostachys* aff. *albiflora* Ridl.**, J. Str. Br. Roy. As. Soc. 50: 150. 1908. Figure 10.

Rhizome thick, white, 2.5–3 cm in diameter. *Leafy stems* tufted, 1.2 m tall. Leaf sheaths puberulent; ligule 2-lobed, puberulent, 1.5 cm long; petiole puberulent, 1–4 cm long; lamina narrowly elliptic to obovate, green, purplish below when young, glabrous, 65 x 5–9 cm, base cuneate, apex caudate, cauda 1.5–3.5 cm long, upper leaves narrower. *Inflorescence* protruding from leaf-sheath at about 9–12 cm above ground, 5–8 cm long; peduncle tomentose, 1.5–2 cm long; sheaths few, narrowly ovate, tomentose, 3–4 x 1–1.5 cm. *Flowers* dense; ebracteate; pedicels tomentose, 2 mm long; bracteoles tubular, creamy white, tomentose, 1.2 cm long, apex hooded, with a fleshy cuculate tip, split down one side for 8 mm. *Calyx* tubular, white with red apex, glabrous, 1 cm long, apex 3-lobed, thick, fleshy, decaying before anthesis. *Corolla* tube white, glabrous, 7 mm long; lobes boat-shaped, red; dorsal one elliptic, with translucent edges, 4.5 x 9 mm, apex hooded; lateral ones oblong, 4 x 6 mm, apex rounded, ciliate. *Staminodes* triangular, white with red spots at the swollen base, apex acute, 2 mm long. *Labellum* obovate, white with yellow median band, red lines on either side and red rays towards margins, 8 x 8 mm, base with a red spot on each side, apex 2-lobed, lobe apices acuminate. *Stamen*: filament flat, with scattered glandular hairs, 2 x 1 mm; anther 4 x 2 mm; connective with scattered glandular hairs; crest 2-lobed, 0.5 mm long. *Ovary* glabrous, 2 mm long; stylodes connate, 3-lobed, ca. 1 mm diameter; style base swollen, adnate to the corolla tube above the stylodes. Capsules globose, green when young, 1.5 cm wide.



Figure 9. *Hornstedtia ophiuchus* (Ridl.) Ridl.



Figure 10. *Plagiostachys* aff. *albiflora* Ridl.

Figure 11. *Scaphochlamys perakensis*  
Holtt.



Ecology: In partly shaded area near stream in evergreen forest, c. 200–600 m msl.

Distribution: Southern Thailand, Peninsular Malaysia, and Borneo.

Specimens examined: C. Maknoi T25 (10 Jul. 99), Betong, Yala; T43 (24 Aug. 99), T65 (25 Jan. 00), Su-ngai Padi; T86 (30 Jun. 00), Betong, Yala; T97 (2 Aug. 00), Waeng, Narathiwat.

Note: This species is similar to *P. albiflora* Ridl., but differs by the following characters: *Leaves* smaller, puberulent; *petiole and ligule* puberulent; *Calyx* shorter; *Stamen* with glandular hairs.

***Scaphochlamys perakensis* Holtt.**, Gard. Bull. Sing. 13: 97. 1950. *Curcuma lanceolata* Ridl., Mat. Fl. Mal. Pen. 2:22. 1907. *Hitcheniopsis lanceolata* (Ridl.) Ridl., Fl. Mal. Pen. 4: 253. 1924. Figure 11.

Leafy shoot 40–45 cm tall. *Leaves* 2; sheaths glabrous or sparsely pubescent near ligule; ligule 2-lobed, glabrous, 4 mm long; petiole pubescent, 15–17 cm long; lamina elliptic, upper surface glabrous, lower surface pubescent, base attenuate, apex acute, 30–35 x 11.5–12.5 cm. *Inflorescence* terminal, peduncle glabrous, 17 cm long; bracts broadly elliptic, glabrous, greenish brown, subtending 9 flowers in a cincinnus, apex acute, 3.5 x 2.5 cm; bracteoles distichous, obovate, 1.5–2.3 x 0.4–1.0 cm, the inner ones smaller, apex acute. *Calyx* tubular, glabrous, 6 mm long, apex shallowly 3-lobed, split down one

side 1.5 mm. *Corolla* tube glabrous, 2.5 cm long; dorsal lobe oblong, glabrous, 1.3 x 0.4 cm, apex acute; lateral lobes lanceolate, glabrous, 1.1 x 0.3 cm, apex acute. *Staminodes* broadly elliptic, glandular hairy, 5 x 2 mm, apex acute. *Labellum* elliptic, glandular hairy, apex 2-lobed, 1.3 x 0.7 cm. *Stamen*: filament flat, 1 mm long; anther 4 x 2 mm; connective glandular hairy; crest shallowly 2-lobed, 0.5 mm long. *Ovary* cylindrical, glabrous, 5 mm long. Capsules not seen.

Ecology: On open stream bank in evergreen forest, c. 400 m msl.

Distribution: Southern Thailand and Peninsular Malaysia.

Specimen examined: C. Maknoi T96 (2 Aug. 00), Waeng, Narathiwat.

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#### REFERENCES

- KHAW, S. H. 2001. The Genus *Etilingera* (Zingiberaceae) in Peninsular Malaysia including a new species. *Garden's Bulletin Singapore*. 53: 191–239.
- LARSEN, K. 1996. A preliminary checklist of the Zingiberaceae of Thailand. *Thai Forest Bulletin (Botany)* 24: 35–49.
- LARSEN, K., H. IBRAHIM, S. H. SHAW, AND L. G. SAW. 1999. In Wong, K.M. (ed.) *Gingers of Peninsular Malaysia and Singapore*. Nat. Hist. Publ. (Borneo), Kota Kinabalu. 135 pp.

