

Five species of *Liparis* (Orchidaceae) newly recorded for Thailand

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ABSTRACT. During work on a forthcoming new revision of *Liparis* in Thailand, five new national records were discovered, and details on the Thai occurrences are reported in this paper. Three of the newly recorded species are terrestrials that only produce leaves in the rainy season. Thus, (1) *L. acutissima* Rchb.f. (also known from Cambodia, Laos and Vietnam) is reported from Phu Wua Wildlife Sanctuary, province of Bueng Kan; (2) *L. sootenzanensis* Fukuy. (also known from Taiwan and Vietnam), is reported from Phu Hin Rong Kla National Park, province of Phitsanulok; and (3) *L. stenoglossa* C.S.P.Parish & Rchb.f. (previously considered endemic to Myanmar) is reported from Wat Tham Pha Sawan, Nong Hin, province of Loei. The two remaining species are epiphytes that bear leaves all the year round. Thus, (4) *L. elegans* Lindl. (widespread in Malesia) is reported from Khao Sok National Park in province of Surat Thani and from Khao Chet Yot in province of Trang; and (5) *L. vestita* Rchb.f. (previously known from India only) is reported from Amphoe Rong Kwang in province of Phrae and from two parts of Khao Yai National Park (situated in the provinces of Nakhon Nayok and Prachin Buri, respectively). The newly recorded species are illustrated by colour photos, and morphological descriptions based on Thai material are provided together with lists of synonyms and supplementary references to the literature. The name *L. elegans* Lindl. is lectotypified.

KEY WORDS: *Liparis acutissima*, *L. elegans*, *L. sootenzanensis*, *L. stenoglossa*, *L. vestita*, distribution, occurrence, taxonomic revision.

INTRODUCTION

The genus *Liparis* Rich. (Orchidaceae) generally consists of small plants with inconspicuous flowers and a terrestrial, epiphytic or lithophytic growth habit (Chen et al., 2009). In Genera Orchidacearum (Pridgeon et al., 2005) the total number of species is estimated to be ca 320, mainly including representatives from the tropics worldwide, but also from temperate regions. The genus is well represented in mainland South-East Asia and neighbouring islands – with recent estimates of regional species richness ranging from 22 species in Myanmar (Kress et al., 2003) and also in Peninsular Malaysia and Singapore (Seidenfaden and Wood, 1992) to 24 in Bhutan, Sikkim and Darjeeling (Pearce & Cribb, 2002), 34 in Cambodia, Laos and Vietnam (Seidenfaden, 1992), 43 in Sumatra (Comber, 2001) and 63 in China and Taiwan (Chen et al., 2009).

In the latest critical treatment of *Liparis* in Thailand, Seidenfaden (1976) recognized 30 species.

To this list can now be added another five species, viz. *L. acutissima* Rchb.f., *L. sootenzanensis* Fukuy., *L. stenoglossa* C.S.P.Parish & Rchb.f., *L. elegans* Lindl. and *L. vestita* Rchb.f. The five new records reported here were discovered during our work on a forthcoming new revision of *Liparis* in Thailand (Tetsana et al., in prep.), performed in preparation of the Flora of Thailand account on the genus.

Individual accounts on the five new records follow below. Each account includes the accepted name, synonyms, type citations and references to relevant literature as well as citation of the Thai material examined and a brief outline of the known distribution outside Thailand. To facilitate identification of these newly recognized members of the flora of Thailand, we also provide colour photos and morphological descriptions based on the Thai material. Finally, we include supplementary notes with special focus on the sparse ecological data available on the five species in Thailand.

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NEW RECORDS

Liparis acutissima Rchb.f., *Otia Bot.* Hamburg. 1–2(1): 37. 1878; Gagnep. in *Fl. Indo-Chine* 6(2–5): 175. 1932; Seidenf., *Dansk Bot. Ark.* 31(1): 45. 1976; Seidenf., *Opera Bot.* 114: 137. 1992.—*Leptorkis acutissima* (Rchb.f.) Kuntze, *Revis. Gen. Pl.* 2: 671. 1891 [5 Nov 1891]. Type: Vietnam, Ile Phú Quốc, Bay Đốc, Oct. 1875, Godefroy 789 p.p. (holotype **W** [Herb. Rchb.f. 39793]; isotypes **C!**, **P**). Fig. 1A–B.

Terrestrial, sympodial herb. *Flowering* shoots up to 65 cm tall. *Pseudobulbs* underground, corm-like, globose, ovoid, 2–2.5 cm long, 0.5–1.5 cm in diameter, enclosed by membranous sheaths. *Foliage leaves* 4–5, alternate (more or less distichous), petiolate, non-articulate; petiole channelled, sheathing at the base, 0.5–1.2 cm long; lamina lanceolate-linear, entire, acuminate, 9.5–16 by 0.8–1.4 cm, membranous or herbaceous, 3–4-veined. *Inflorescence* erect, 30–56.5 cm long, lax, up to 40-flowered; peduncle slender, terete-angular, 20–31 cm long; rachis terete, 10–25.5 cm long; floral bracts not reflexed, lanceolate, 2–2.7 mm long. *Flowers* orange-yellow. *Sepals* glabrous on both sides, 3–4-veined (rarely 5-veined); dorsal sepal lanceolate-oblong, acute, 3.5–5 by 0.5–1.2 mm, 3-veined; lateral sepals obliquely oblong-elliptic, obtuse, 2.5–3.5 by 2.3–2.5 mm, 4-veined (rarely 5-veined). *Petals* spatulate-linear, obtuse, reflexed with revolute margins, 3.5–4 by 0.2–0.3 mm, 1-veined (rarely up to 3-veined). *Labellum* broadly elliptic to elliptic-obovate, shortly clawed, with a pair of low subbasal inconspicuous papillose calli, 2.2–3.0 by 1.5–3 mm, irregularly serrate (entire towards the base), abruptly bent down from the correct, slightly channelled claw, apex emarginate, apiculate. *Column* orange-yellow, ca 3 mm long, glabrous, slightly incurved, semiterete, front margins developed into rounded keels towards the apex; anther orange-yellow, transversely elliptic in upper view, with protruding triangular front margin, obtuse. *Ovary* (including pedicel) glabrous, orange-green to orange-yellow, with 6 longitudinal ridges, 4.5–6.5 mm long. *Capsule* clavate to ellipsoid, 0.6–0.75 by 0.4–0.5 cm.

Thailand.— NORTH-EASTERN: Bueng Kan [Phu Wua Wildlife Sanctuary, trail to Wat Tham

Khong, 12 July 2012, *Chamchumroon et al.* 5399 (**BKF!**); 2 Aug. 2012, *Suphuntee et al.* 753 (**BKF!**); 19 Sept. 2012, *Tetsana & Bunpha* 551 (**BKF!**), 552 (**PSU!**)].

Distribution.— Cambodia, Laos, Vietnam.

Vernacular.— Ueang klip muan bai ya (เอื้องกลีบม้วนใบหญ้า) (here proposed).

Notes.— During recent intensive field surveys, a large population of this species was discovered along the nature trail to Wat Tham Khong in Phu Wua Wildlife Sanctuary (province of Bueng Kan), just next to the Laotian border. Here, *L. acutissima* grows in sandy soil in shallow moist depressions on freely exposed, virtually tree-less sandstone bedrock. The low vegetation is dominated by Gramineae, Eriocaulaceae, Droseraceae and Lentibulariaceae. Blooming in the rainy season, surviving the dry season in leafless condition.

Liparis sootenzanensis Fukuy. in *Annual Rep. Taihoku Bot. Gard.* 1933(3): 84. 1933; T.P.Lin, *Native Orch. Taiwan* 2: 238. 1977. H.J.Su, *Fl. Taiwan*, ed. 2, 5: 950. 2000.—*L. macrantha* Rolfe var. *sootenzanensis* (Fukuy.) S.S.Ying, *Col. Illustr. Indig. Orch. Taiwan* 1: 224, pl. 95. 1977.—*L. nigra* Seidenf. var. *sootenzanensis* (Fukuy.) T.S.Liu & H.J.Su, *Fl. Taiwan* 5: 1047. 1978; Su, *Native Orch. Taiwan* (ed. 5): 221, fig. 36(4). 1999; Cheng, *Illustr. Fl. Taiwan V(II)*: 1573. 2000.—*Diteilis sootenzanensis* (Fukuy.) M.A.Clem. & D.L.Jones, *Orchadian* 15(1): 41. 2005 [Sept. 2005]. Type: Taiwan, Shinchiku, Mt. Minamisooten-zan, May 1933, *Fukuyama 4104* (holotype **KPM** [photo seen]). Fig. 1C–D.

Liparis tixieri Guillaumin, *Bull. Mus. Natl. Hist. Nat. sér.* 2, 33: 434. 1961. Type: Vietnam, Đà Lạt, sine anno, *Tixier 17/59* (holotype **P!**).

Liparis nigra Seidenf. var. *flava* Aver., *Bot. Zhurn. (Moscow & Leningrad)* 84(10): 128. 1999. *Liparis flava* (Aver.) Aver. in Aver. & Averyanova, *Updated Checklist Orchids Vietnam*: 79. 2003. Type: Vietnam, Lâm Đồng, Lạc Dúống, *Averyanov, Hiep & Binh VH4426* (holotype **LE**; isotypes **AAU!**, **HN**, **MO**, **P**).

Terrestrial, sympodial herb. *Flowering* shoots up to 80 cm tall. *Pseudobulbs* freely exposed above the ground, several-noded, terete from a fusiform base, 20–25 cm long, 2.5–3 cm in diameter. *Foliage*

leaves 4–5(–6), alternate (quaquaversal to more or less distichous), petiolate, non-articulate; petiole channelled, sheathing at the base, 4.0–6.5 cm long; lamina elliptic-ovate to elliptic, entire or wavy, acuminate, 17–24 by 5–11 cm, membranous or herbaceous, 8–9-veined. *Inflorescence* erect, 20–60 cm long, lax, 10–30-flowered; peduncle stout, terete-angular, slightly winged, 10–20 cm long; rachis slightly winged, 10–40 cm long; floral bracts not reflexed, broadly lanceolate, 5–7.5 mm long. *Flowers* light green. *Sepals* glabrous on both sides; 5-veined, dorsal sepal linear-lanceolate, acute, 12–17.5 by 2.5–3 mm; lateral sepals obliquely lanceolate-oblong, obtuse, 13.5–14.5 by 4–4.5 mm. *Petals* narrowly linear-oblancheolate, obtuse, reflexed with revolute margins, 14.5–15 by 1–1.5 mm, 1-veined. *Labellum* obovate, shortly clawed, with a pair of low subbasal keels, 12.5–13 by 10.5–11 mm, serrate in its distal part (otherwise entire), abruptly bent down from the correct, slightly channelled claw, apex (emarginate-) truncate. *Column* whitish-green, 6–8 mm long, glabrous, incurved, semiterete, front margins developed into rounded keels towards the apex; anther yellowish-green, ovate in upper view, with protruding triangular front margin, obtuse. *Ovary* (including pedicel) glabrous, twisted, light green, with longitudinal ridges, 20–23 mm long. *Capsule* clavate-cylindric to obovoid, 1.7–3.2 by 0.7–1.1 cm.

Thailand.— NORTHERN: Phitsanulok [Phu Hin Rong Kla National Park, trail to Man Daeng Waterfall, 27 May 2011, *Tetsana et al.* 328 (BKF!), 329 (PSU!)]]; province unknown: “Mae Lem south of Khun Sang Ridge”, 10 June 1967, *Seidenfaden & Smitinand GT 5164 (C!)*].

Distribution.— Taiwan, Vietnam.

Vernacular.— Klip muan khiao morakot (กล้วยไม้วนเขี้ยวมรกต) (here proposed).

Notes.— Examination of material in Seidenfaden’s spirit collection at C revealed an old, previously unidentified, collection of *L. sootenzanensis* from “Mae Lem south of Khun Sang Ridge”. During a recent field trip to Phu Hin Rong Kla National Park (province of Phitsanulok), a small population of the same species was found along the trail to Man Daeng Waterfall. Here *L. sootenzanensis* grows in shady, humus-rich soil in hill evergreen forest. Finally, some photographs taken recently by Priwan Srisom in the southern

part of Khao Soi Dao Wildlife Sanctuary (province of Chanthaburi) unequivocally show the same species. Flowering in the beginning of the rainy season, the entire plant remaining fresh until the next flowering period.

Liparis stenoglossa C.S.P.Parish & Rchb.f., Trans. Linn. Soc. London 30(1): 154. 1874 [4 Jul 1874]; Ridl., J. Linn. Soc. Bot. 22: 279. 1886.— *Leptorkis stenoglossa* (C.S.P.Parish & Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 671 (1891). Type: Myanmar, Moulmein, April 1862, *Parish 154* (holotype **K!**; isotype **W** [Herb. Rchb.f 46289, 52868]. Fig. 1E–F.

Terrestrial or lithophytic, sympodial herb, *Flowering shoots* up to 20 cm tall. *Pseudobulbs* underground, corm-like, ovoid, 2–2.5 cm long, ca 1 cm in diameter, enclosed by membranous sheaths. *Foliage leaves* 3–4, alternate (more or less distichous), petiolate, non-articulate; petiole channelled, sheathing at base, 1.5–4.5 cm long; lamina elliptic-ovate or elliptic, 3.5–8.5 by 2–3.5 cm, membranous or herbaceous, acuminate, 5-veined, margin entire, wavy. *Inflorescence* erect, 8–17.5 cm long, lax, up to 20-flowered; peduncle slender, terete-angular, slightly winged, 3–7.5 cm long; rachis 4.5–9.5 cm long, slightly winged; floral bracts not reflexed, lanceolate, 2–3 mm long. *Flowers* with purplish-green perianth. *Sepals* glabrous on both sides, 3-veined; dorsal sepal linear-lanceolate, acute, 5.3–6.5 by 1.2 mm; lateral sepals falcately oblong-elliptic, obtuse, 4–5 by 1.5–1.8 mm. *Petals* linear, obtuse, reflexed with revolute margins, 5–6.2 by 0.5–0.6 mm, 1-veined. *Labellum* obovate-oblong, shortly clawed, with a pair of low subbasal tooth-like calli, 4–4.5 by 2–2.5 mm, erose (entire towards the base), abruptly bent down from the correct, slightly channelled claw, apex emarginate. *Column* greenish-white, 3–3.2 mm long, glabrous, incurved, semiterete, front margins developed into rounded keels towards the apex; anther yellowish-purple, ovate-cordate in upper view, with protruding triangular front margin, acuminate. *Ovary* (including pedicel) glabrous, twisted, purple, with 6 longitudinal yellowish-purple ridges, 7.5–10 mm long. *Capsule* not seen.

Thailand.— NORTH-EASTERN: Loei [Wat Tham Pha Sawan, 6 June 2009, *Phonsena et al.*

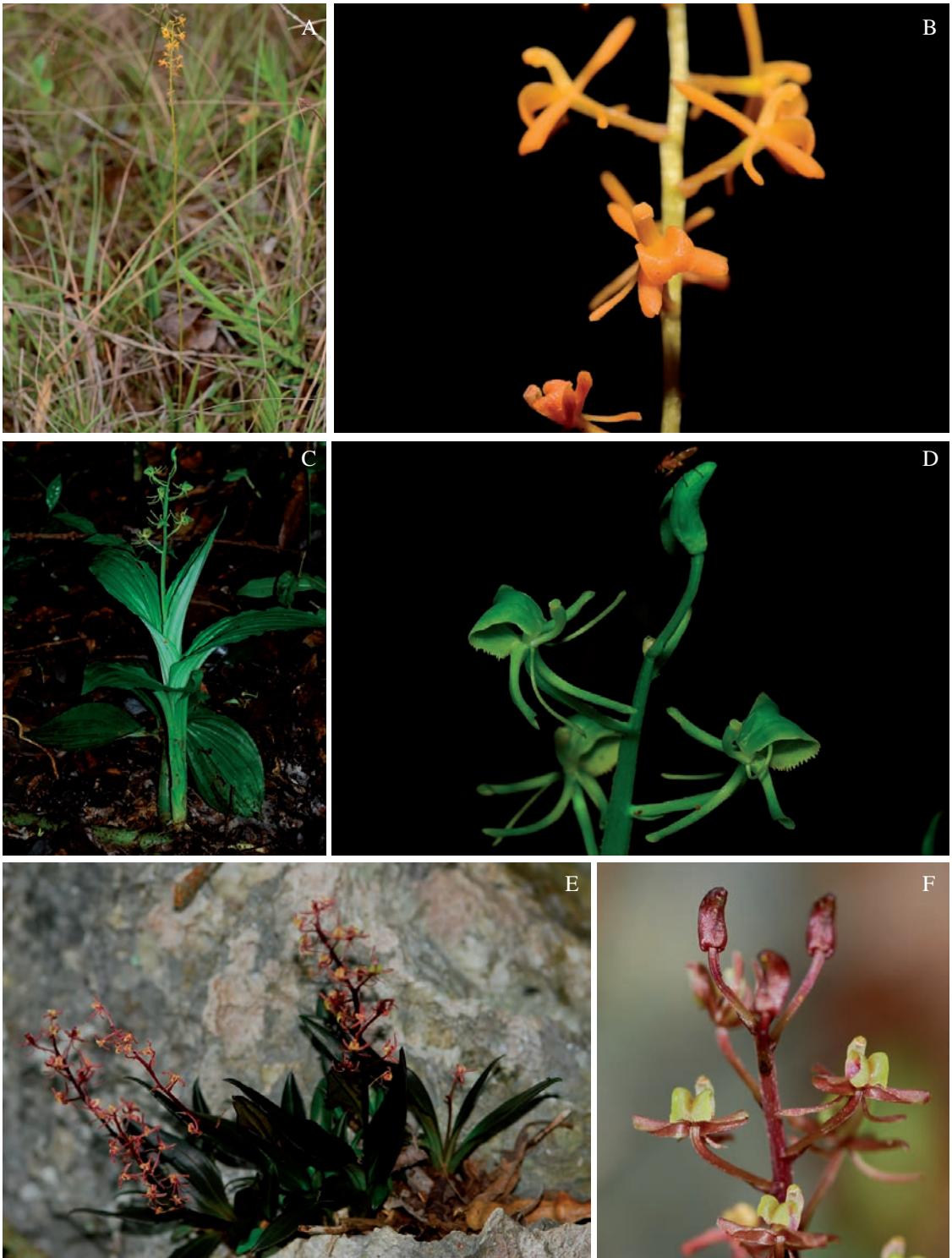


Figure 1. A–B: *Liparis acutissima* Rehb.f., Phu Wua Wildlife Sanctuary, Bueng Kan, 19 Sept. 2012; C–D: *Liparis sootenzanensis* Fukuy., Phu Hin Rong Kla National Park, Phitsanulok, 27 May 2011; E–F: *Liparis stenoglossa* C.S.P.Parish & Rehb.f., Tham Pha Sawan, Loei, 6 June 2009. Photos: A–D by N. Tetsana; E–F by P. Phonsena.

6382 (**KKU!**); Nong Hin, 27 May 2011, *Boonkerd et al. 2011-216 (BCU!)*.

Distribution.— Myanmar.

Vernacular.— Ya pro nok noi (หญ้าเปราะนอญ) (here proposed).

Notes.— Recently collected herbarium specimens of this species from Wat Tham Pha Sawan, Nong Hin (province of Loei) were discovered during revision of the *Liparis* material in BCU and KKU. According to the labels of the two collections, the individuals constituting the natural population form clusters in crevices of the limestone bedrock. Flowering in the early rainy season, surviving the dry season underground.

Liparis elegans Lindl., Gen. Sp. Orchid. Pl. 30. 1830 [April 1830]; Ridl., Mat. Fl. Malay. Penins.: 24. 1907; Seidenf., Dansk Bot. Ark. 31(1): 70. 1976; Seidenf., Opera Bot. 114: 138. 1992.— *Leptorkis elegans* (Lindl.) Kuntze, Revis. Gen. Pl. 2: 671. 1891.— *Cestichis elegans* (Lindl.) M.A.Clem. & D.L.Jones, Orchadian 15(1): 39 (40). 2005 [Sept. 2005].— *Stichorkis elegans* (Lindl.) Marg., Szlach. & Kułak, Acta Soc. Bot. Poloniae 77(1): 38. 2008. Type: Peninsular Malaysia, Penang, sine anno, Wallich 1943 p.p. [the flowering shoot to the left] (lectotype **K-LINDL!**, designated here). Fig. 2A–B.

Liparis gracilis Hook.f., Hooker's Icon. Pl. 21: t. 2011. 1890. [June 1890]; Hook.f., Fl. Brit. India 6: 182. 1890. [Dec. 1890].— *Leptorkis gracilis* (Hook.f.) Kuntze, Revis. Gen. Pl. 2: 671. 1891. Type: Peninsular Malaysia, Perak, Waterfall Hill, sine anno, *Wray 2920* (holotype **K!**).

Liparis indifferens J.J.Sm., Repert. Spec. Nov. Regni Veg. 12: 24. 1913.— *Cestichis indifferens* (J.J.Sm.) M.A.Clem. & D.L.Jones, Orchadian 15(1): 40. 2005 [Sept. 2005].— *Stichorkis indifferens* (J.J.Sm.) Marg., Szlach. & Kułak, Acta Soc. Bot. Poloniae 77(1): 38. 2008. Type: Indonesia, Bogor Botanic Garden, cultivated ex New Guinea, Papua, Hollandia, sine anno, *Gjellerup/cult. Hort. Bot. Bog. 310* (holotype **BO!**; isotype **L!**).

Epiphytic or lithophytic, sympodial herb. Flowering shoots up to 35 cm tall. Pseudobulbs well-spaced on the rhizome, ovoid, 3–3.5 cm long, 1.5–1.8 cm in diameter. Foliage leaves 2–3, alternate (more or less distichous), petiolate,

articulate; petiole channelled, sheathing at base, 2–2.8 cm long; lamina lanceolate-oblong, 7–12.5 by 1.8–2.5 cm, coriaceous, acuminate, conduplicate, margin entire. Inflorescence erect, 15–26 cm long; lax, up to 50-flowered; peduncle slender, teretangular, slightly ridged, 2–7 cm long; rachis 13–17 cm long, slightly ridged; floral bracts not reflexed, lanceolate, 4–5.7 mm long. Flowers with greenish-orange sepals and petals and an orange-red labellum. Sepals glabrous on both sides, 3-veined (rarely 4-veined); dorsal sepal lanceolate-oblong, acute, 3.4–4.8 by 1.5–1.9 mm; lateral sepals obliquely oblong-elliptic, subacute, 3.8–5 by 1.5–2.1 mm. Petals obliquely linear, obtuse, reflexed with recurved margins, 4–5 by 0.5–0.8 mm, 1-veined. Labellum obovate-oblong, shortly clawed, with a pair of low subbasal tooth-like calli, 3.5–4.2 by 1.8–2 mm, slightly crenate, ciliate (glabrous towards the base), abruptly bent down from the porrect, slightly channelled claw, apex bilobed. Column greenish-white, 2.7–3 mm long, glabrous, incurved, semiterete, front margins developed into rounded keels towards the apex; anther whitish-green, broadly ovate, in upper view, with protruding triangular front margin, acute. Ovary (including pedicel) glabrous, twisted, whitish-green, with 6 longitudinal ridges, 3.5–3.8 mm long. Capsule obovate or ellipsoid-globose, 0.5–0.8 by 0.5 cm.

Thailand.— PENINSULAR: Surat Thani [Khao Sok National Park, 16 Oct. 1981, *Floto 28 (C!)*], Trang [Trang-Phatthalung border, Khao Chet Yot, 31 Jan. 2013, *Wai 1320 (PSU!)*].

Distribution.— Widespread in Malesia, from Peninsular Malaysia in the west to the Philippines in the north-east and New Guinea in the south-east.

Vernacular.— Klip muan dok ngam (กล้วยไม้วนดอกงาม) (here proposed).

Notes.— 1. When describing *L. elegans*, Lindley cited *Wallich 1943* as the only collection. We have found this specimen in K-LINDL, but we agree in J.D.Hooker's notes on the sheet that two of the four mounted plant elements belong to *L. longipes* Lindl. (= *L. viridiflora* Lindl.). The remaining two elements (a flowering shoot and a fragment of a fruiting inflorescence) match Lindley's original description of *L. elegans*, for which reason we have above designated the flowering shoot as lectotype.

2. The first known collection of this species in Thailand was made more than three decades ago (in Khao Sok National Park, province of Surat Thani), but its true taxonomic identity was not realized until a recent revision of the Thai *Liparis* material in herbarium C. One more population in peninsular Thailand was discovered at Khao Chet Yot (province of Trang) during a field survey conducted by staff of herbarium PSU in 2013. This small population was growing on mossy tree trunks in montane forest. Flowering in the late rainy season, the entire plant remaining fresh until the next flowering period.

Liparis vestita Rchb.f., *Flora* 55: 274. 1872.—*Leptorkis vestita* (Rchb.f.) Kuntze, *Revis. Gen. Pl.* 2: 671. 1891.—*Cestichis vestita* (Rchb.f.) Ames, *Orchidaceae* 2: 139. 1908.—*Stichorkis vestita* (Rchb.f.) Marg., Szlach. & Kułak, *Acta Soc. Bot. Poloniae* 77(1): 39. 2008. Type: India, Upper Assam, Obres, *Mann 29* (holotype W [Herb. Rchb.f. 46201]; isotype C!). Fig. 2C–D.

Epiphytic, sympodial herb. *Flowering* shoots up to 30 cm tall. *Pseudobulbs* well-spaced on the rhizome, few-noded, terete from a fusiform base 14–23.5 cm long, 0.8–1.5 cm in diameter. *Foliage leaves* 2, alternate (more or less distichous), petiolate, articulate; petiole channelled, sheathing at the base, 1–1.5 cm long; lamina oblanceolate-linear, 14–16 by 1–1.5 cm, coriaceous, acuminate, conduplicate, margin entire. *Inflorescence* nodding, 10.5–15.5 cm long, dense, several-flowered; peduncle slender, terete-angular, slightly ridged, 2–3 cm long; rachis terete-angular, slightly ridged, 8.5–12.5 cm long, floral bracts not reflexed, triangular-lanceolate, 2–2.7 mm long. *Flowers* with yellowish-green sepals and petals and reddish-brown labellum. *Sepals* glabrous on both sides, 3-veined; dorsal sepal elliptic-oblong, acute, 2.5–3.5 by 1 mm; lateral sepals oblong-elliptic, subacute, 2.5–3 by 1.2 mm. *Petals* linear, obtuse, reflexed with revolute margins, 2.5–2.7 by 0.25 mm, 1-veined. *Labellum* elliptic-oblong, shortly clawed, with a pair of low subbasal inconspicuous papillose calli, 2.5–3 by 1.2–1.5 mm, entire, incurved and abruptly bent down from the porrect, slightly channelled claw, apex truncate to retuse. *Column* pale light yellow, ca 2 mm long, glabrous, incurved, semiterete, front margins developed into rounded

keels towards the apex; anther broadly obcordate in upper view, with protruding triangular front margin, acute. *Ovary* (including pedicel) glabrous, 4.5–5.5 mm long. *Capsule* not seen.

Thailand.— NORTHERN: Phrae [Amphoe Rong Kwang, Feb. 1957, flowering in cultivation 24 Oct. 2001, *Seidenfaden & Smitinand GT0153* (C!)]; CENTRAL: Nakhon Nayok [Khao Yai National Park, 28 Oct. 2009, *Maxwell 09-284* (QBG!)]; SOUTH-EASTERN: Prachin Buri [Khao Yai National Park, 18 Nov. 1977, *Cumberlege 557* (C!)].

Distribution.— India.

Vernacular.— Ueang khao san dok som (เอื้องข้าวสารดอกส้ม) (here proposed).

Notes.— During recent revisions of the *Liparis* material in C and QBG, three previously unrecognized collections of this species from Thailand were noted. Although two of them originate from Khao Yai National Park they represent occurrences in not just two different provinces (Nakhon Nayok, Prachin Buri), but even two different floristic regions (central, south-eastern). The third collection was made from a live plant obtained from the northern province of Phrae as far back as 1957. The plant still thrives in the Botanical Garden in Copenhagen, but had escaped identification until recently. According to label data of *Maxwell 09-284*, the plants grew densely clustered on a tree branch in a shaded area in a patch of primary evergreen-seasonal forest. Flowering in the late rainy season, the entire plant remaining fresh until the next flowering period.

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Figure 2. A–B: *Liparis elegans* Lindl., Khao Chet Yot, Trang, 31 Jan. 2013; C–D: *Liparis vestita* Rchb.f., Khao Yai National Park, Nakhon Nayok, Maxwell 09-284 (QBG). Photos: A–B by J. Sae Wai; C–D by N. Tetsana.

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