

Three new additions to the orchid flora of Lao PDR

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ABSTRACT. Descriptions, updated information on distribution ranges and two illustrations are provided for three orchids newly discovered in Laos, namely, *Cheirostylis octodactyla* Ames, *Peristylus lacertiferus* (Lindl.) J. J. Sm. and *Vanilla somae* Hayata. *Cheirostylis pingbianensis* K. Y. Lang is reduced to the synonymy of *C. octodactyla*.

KEYWORDS: *Cheirostylis octodactyla*, new distribution record, *Peristylus lacertiferus*, *Vanilla somae*

INTRODUCTION

Since Schuiteman *et al.* (2008) published their annotated checklist of about 485 species of Orchidaceae known from Laos, several subsequent surveys in the country have led to the discovery of new species, including *Holcoglossum calcicola* Schuit. & P. Bonnet and *Paphiopedilum barbigerum* Tang & F. T. Wang var. *sulivongii* Schuit. & P. Bonnet (Schuiteman & Bonnet, 2009), *Paphiopedilum canhii* Aver. & O. Gruss (Averyanov *et al.*, 2010), *Habenaria svengsuksae* Schuit. & P. Bonnet (Schuiteman & Bonnet, 2014),

Paphiopedilum rungsuriyanum O. Gruss, Rungruang, Chaisur. & Dionisio (Gruss *et al.*, 2014), *Nervilia kasiensis* S. W. Gale & Phaxays. (Gale & Phaxaysombath, 2017) and *Coelogyne pseudoviscosa* Elis. George, J.-C. George & Rakthai (George *et al.*, 2017). In addition, distributional records have been published for over 90 orchid species newly recorded in Laos (Averyanov, 2013; Averyanov *et al.*, 2016; Kumar *et al.*, 2016, 2018).

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This paper reports a further three orchid species new to the flora of Laos, two of which were discovered during botanical exploration of Xiangkhouang Province as part of the first author's Master's dissertation, with the third being confirmed as part of the orchid ex situ conservation programme at Pha Tad Ke Botanical Garden, Luang Prabang. Species descriptions, updated information on geographic distribution, photographic plates and line drawings are presented. Living collections and specimens have been deposited at Pha Tad Ke Botanical Garden; National Herbarium of Laos; Herbarium of Faculty of Forestry, National University of Laos (FOF) and Herbarium of Biology Department, National University of Laos.

TAXONOMIC TREATMENT

1. *Cheirostylis octodactyla* Ames, Philipp. J. Sci., C 2: 314. 1907; Chen *et al.* in Fl. China 25: 59. 2009; Pedersen & Suksathan, Taiwania 54: 317. 2009; Pedersen in Fl. Thailand 12(1): 34. 2011. Type: Philippines, Mount. Halcon, in very dense mossy thicket on ridge at 8,200 ft. elev., 22 Nov. 1906, Merrill 5834 (holotype AMES!, isotype K!).— *C. inabai* Hayata, Icon. Pl. Formosan. 4: 108. 1914; Aver., Turczaninowia 11(1): 106. 2008. Type: Taiwan, Rinkoho, ad 5000 ped. elev., Aug. 1911, *H. Inaba s.n.* (holotype TII!).— *C. oligantha* Masam. & Fukuy., Trans. Nat. Hist. Soc. Taiwan 30: 241. 1940. Type: Taiwan, 1 Aug. 1939, Masamune & K. Mori 2220 (holotype TAI!).— *C. pingbianensis* K. Y. Lang, Acta Phytotax. Sin. 34(6): 635. 1996; Chen *et al.* in Fl. China 25: 59. 2009, *syn. nov.* Type:

China, Yunnan, Pingbian Xian, Laojianshan, in forest, 2100 m, 11 Oct. 1954, *K.M. Feng 4816* (holotype KUN!). Figs. 1 & 3A.

Terrestrial, rhizomatous perennial herb, up to 11 cm tall. *Rhizome* elongate, creeping, moniliform, 3–5 cm long. *Stem* erect, terete, 4–10 cm long, fleshy, 5–8-leaved. *Leaves* ovate, 0.8–2.2 × 0.5–1.2 cm, base rounded, apex acute, dull green above, paler underneath; petiole channeled, 0.4–1.2 cm long (including sheath), glabrous, light green. *Inflorescence* short, 0.8–1.2 cm long, 2–4-flowered; peduncle often enclosed in leaf sheaths; floral bracts ovate-lanceolate, 5–8 × 2–4 mm, apex acuminate, glabrous, green. *Flowers* glabrous. *Ovary* cylindrical-fusiform, 8–12 mm long (including pedicel), glabrous, light green. *Sepals* 9–12 mm, connate for *ca.* 4/5 of length and forming a tube; free dorsal lobe 3–3.5 mm long, lateral lobes 1.7–2 mm long, apex subacute. *Petals* oblanceolate, slightly oblique, 9–12 × 2–2.5 mm, base attenuate, apex obtuse. *Labellum* 8–12 mm long along the midline, differentiated into hypochile, mesochile and epichile; hypochile *ca.* 3 mm long, concave, inside with two longitudinal rows of 15–20 papilla-like appendages; mesochile *ca.* 6 mm long, lacking lateral flanges; epichile transversely elliptic, 2.4–3.5 × 4–5.2 mm, coarsely 7–9-dentate, glabrous, white. *Column* 2.5–3 mm, long; stelia linear, 2.5–3 mm long; anther broadly ovoid, *ca.* 1 mm; rostellum arms to 3 mm long.

Habitat and phenology.— Growing among decaying organic material on damp soil in primary evergreen forest, at *ca.* 2200 m

elevation; flowering from September to October.

Specimens examined.— Lao PDR, Xiangkhouang Province, Mok Mai District, Phou Sam Soum, 9 Sept. 2016, K. Souvannakhoumane & Viengphet KS-Bio0035 (FOF).

Distribution.— China, Taiwan, Thailand, Laos, Vietnam and Philippines.

Vernacular.— ເອ້ອງຜັກກາບປີ (ueang pak gap pi).

Notes.— *Cheirostylis octodactyla* is distinguished from the close related *C. serpens* Aver. by its stem erect, inflorescence shorter than leaf and epichile transversely elliptic, coarsely 7–9-dentate. *C. pingbianensis* was originally described from Yunnan province in South China (Lang, 1996), but was considered a synonym of *C. inabai* by Averyanov (2008). *Cheirostylis inabai* has since been reduced to the synonymy of *C. octodactyla* by Pedersen & Suksathan (2009) and Chen *et al.* (2009). Hence, we include *C. pingbianensis* in the synonymy of *C. octodactyla*.

2. *Peristylus lacertiferus* (Lindl.) J. J. Sm., Bull. Jard. Bot. Buitenzorg III, 9: 23. 1927 [as *lacertifer*]; Kurzweil, Nordic J. Bot. 28: 26, t.3. 2010 & in Fl. Thailand 12(1): 238. 2011; Chen *et al.* in Fl. China 25: 142. 2009.— *Coeloglossum lacertiferum* Lindl., Gen. Sp. Orchid. Pl. 302. 1835.— *Habenaria lacertifera* (Lindl.) Benth., Fl. Hongk.: 362. 1861. Type: Myanmar, Tavoy, Wallich 7055 (*W. Gomez s.n.*) (K000974210) (holotype K!).— *Gymnadenia tenuiflora* Lindl. ex Wall.,

Numer. List: no. 7055. 1832. *nom. nud.*— *Coeloglossum acuminatum* Lindl., Gen. Sp. Orchid. Pl.: 302. 1835. Type: Nepal, Wallich *s.n.* (holotype K!).— *Choeradoplectron spiranthes* Schauer, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19 (Suppl. 1): 436. 1843.— *Peristylus spiranthes* (Schauer) S. Y. Hu, Chung Chi J. 13: 2. 1976. Type: Hong Kong, *Meyen s.n.* (B†).— *Habenaria meyenii* Merr., J. Arnold Arbor. 18: 67. 1937. Type: China, Promontorio Syng-moon, Iulio (not located).— *Peristylus chloranthus* Lindl. ex Benth., Hooker's J. Bot. Kew Gard. Misc. 7: 37. 1855. Type: Hong Kong, common on top of Victoria Peak, *Champion 269* (holotype K!).— *P. hiugensis* Ohwi, J. Jap. Bot. 12: 381. 1936. Type: Japan, Kiushiu, Hiuga, *Z. Tashiro s.n.* (holotype KYO). Figs. 2 & 3B.

Terrestrial, tuberous perennial herb, 20–40 cm tall. *Tubers* oblong, 0.4–2.2 × 0.3–1.2 cm, yellowish to white inside, grey outside. *Stem* 4–10 cm long, bearing *ca.* 3 tubular sheaths at base, up to 3-leaved. *Leaves* clustered, ovate-lanceolate, 2.5–11 × 0.9–3.4 cm, base rounded, apex acute. *Inflorescence* racemose, 13–34 cm long; peduncle slender, 9–20 cm long, glabrous; sterile bracts 3–7, occasionally foliaceous, lanceolate, 6–45 mm long, glabrous; rachis 3–15 cm long, 4–25-flowered; floral bracts lanceolate, 4–13 mm long, apex acuminate, glabrous. *Flowers* erect, green, pale yellowish-green or white. *Ovary ca.* 12 mm long (including pedicel), glabrous. *Dorsal sepal* ovate-oblong, concave, 2.4–3.6 × 1.2–1.6 mm, margin entire, apex acute; lateral sepals ovate, 25–40 × 12–22 mm,

margin entire, apex acute. *Petals* ovate, 2.3–3.4 × 1.2–1.4 mm, apex obtuse. *Labellum* oblong-obovate, 2.7–3.9 × 1.7–1.9 mm, base concave, 3-lobed towards apex; disk with a large, subglobose callus near base; lateral lobes triangular-lanceolate, double the length of mid-lobe, 1–1.4 × 0.4–0.7 mm, apex acute; mid-lobe ovate-ligulate, 0.7–1.3 × 0.6–1.2 mm, apex obtuse; spur pendulous, somewhat incurved, ovoid, *ca.* 1.5 mm long, apex acute. *Column ca.* 1 mm long, glabrous, white. *Capsule* elliptic, 10–15 × 2–4 mm, glabrous, green.

Habitat and phenology.— In Laos, this species is common in the grassy understorey of open coniferous forest on sandy or mixed clay-loam soils at 700–1250 m elevation; flowering from August to October, fruiting from October to November. It is widely distributed throughout Southeast Asia.

Specimens examined.— Lao PDR, Xiangkhouang Province, Phoukoud District, Xiang Nga Village, 18 Sept. 2017, *K. Souvannakhoummane KS-Bio0091* (FOF, National Herbarium of Laos); Leathong Village, 14 Sept. 2017, *K. Souvannakhoummane KS-Bio0068* (FOF, National Herbarium of Laos).

Distribution.— India, Nepal, Myanmar, China, Taiwan, Japan, Thailand, Laos, Vietnam, Malaysia, Indonesia and Philippines.

Vernacular.— ເອ້ອງຫໍ່າແປ້ (ueang ham bea).

3. *Vanilla somae* Hayata, Icon. Pl. Formosan. 6: 88. 1916; Chen & Cribb in Fl. China 25: 167. 2009.— *Miguelia somai*

(Hayata) Aver., Turczaninowia 14(2): 49. 2011. Type: Taiwan, May 1916, *Hayata s.n.* (holotype TI!).— *Vanilla griffithii* var. *formosana* T. Itô, Icon. Pl. Japon. 1: 1. 1911. Type: Taiwan, Taipei, Wulai, Uraisya, 12 Nov. 1929, *G. Masamune 379* (holotype TAI *n.v.*).— *V. ronoensis* Hayata, Icon. Pl. Formosan. 9: 114. 1920.— *V. griffithii* var. *ronoensis* (Hayata) S. S. Ying, Coloured Ill. Indig. Orchids Taiwan 1(2): 509. 1977. Type: Taiwan, Inter Rono et Kosenpo, Apr. 1917, *Hayata s.n.* (holotype TI *n.v.*).— *V. shenzhenica* Z. J. Liu & S. C. Chen, Acta Phytotax. Sin. 45: 301. 2007; Chen & Cribb in Fl. China 25: 168. 2009. Type: China, Shenzhen, Longgang, Meishajian, 300 m, 22 May 2005, *Z.J. Liu 3025* (holotype NOCC). Figs. 3C–D.

Climbing or creeping, succulent, perennial herb. *Stem* to 10 m long; internodes 5–10 cm long. *Leaves* alternate, narrowly ovate to elliptic-lanceolate, 18–20 × 4.5–6 cm, base rounded to obtuse, apex acuminate, thick, fleshy, slightly reticulate-veined, glabrous. *Inflorescence* axillary, a monochasial cyme, 1- or 2-flowered; floral bracts triangular, 0.8–1.4 cm long, glabrous, light green. *Flowers* 5.5–6.5 cm in diam., greenish or yellowish, pink or reddish inside. *Pedicel and ovary* 3–4.5 cm, glabrous, light green. *Sepals and petals* similar, spreading, elliptic-oblancheolate or oblancheolate, 3.5–4 × 0.8–1 cm, slightly recurved, apex obtuse. *Labellum* 3.9–4.8 cm long, basally connate for *ca.* 4/5 length to both sides of column and forming a trumpet-like tube, margin undulate, apex dilated and obscurely 3-lobed; lateral lobes broad, incurved, margins crisped or

irregularly incised; median lobe suborbicular or triangular, fleshy; disk bearing 2 or 3 rows of horn-like papillae 3–4 mm long near the apex and a patch of white brush-like hairs at the centre. *Column* slender, straight, 2.2–2.8 cm long, 2-winged at apex; anther hemispheric, *ca.* 3 mm in diam., fleshy. *Stigma* transversely slit-like, rostellum square, covering stigma.

Habitat and phenology.— Growing in damp, decaying organic matter in dry evergreen forest, at *ca.* 600 m elevation; flowering from March to April.

Specimens examined.— Lao PDR, Luang Prabang Province, Chomphet District, Houy Tham Village, 2 Mar. 2014, K. Phouthavong, D. Vaiyaphane & K. Souvannakhoummane, KP578 (Pha Tad Ke herbarium and living collection at Pha Tad Ke Botanical Garden, QBG).

Distribution.— China, Taiwan, Laos and Vietnam.

Vernacular.— ເອ້ອງໆເຫຼືອມ (ueang ngou reuam).

Notes.— Averyanov (2011) transferred *V. somae* to his new genus *Miguelia*, as *M. somai* (Hayata) Aver., on the basis of presence of 2 shell like bracts covering the base of the scape, inflorescence panicle with 1 or 2 axes bearing one to many biflorous cymes in *Miguelia* as compared to naked base of the scape and raceme separated character by inflorescence raceme with few to many spirally arranged flowers in *Vanilla*, but this genus is not accepted by Govaerts *et al.* (2018). We concur with the latter and here maintain this taxon in the genus *Vanilla*.

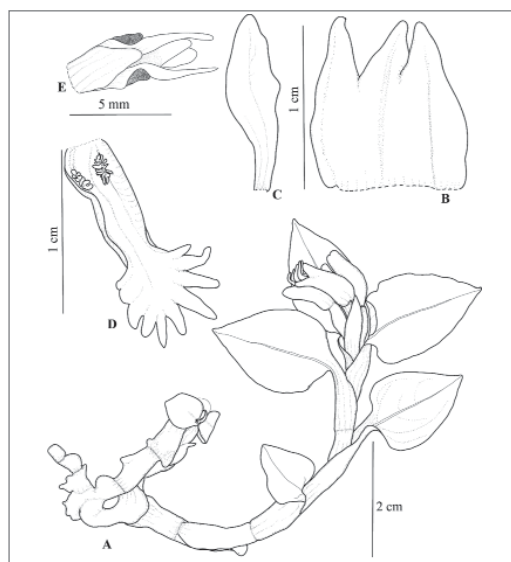


FIGURE 1. *Cheirostylis octodactyla*: A. habit; B. synsepal; C. petal; D. labellum; E. column. Drawn by K. Souvannakhoummane from *Souvannakhoummane & Viengphet KS-Bio0035*.

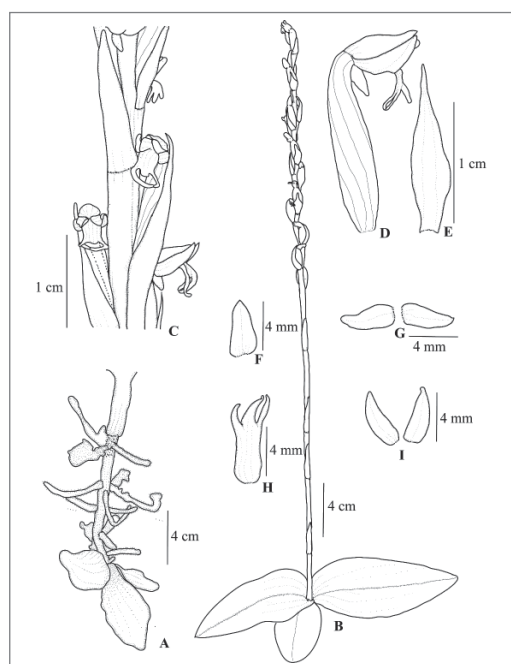


FIGURE 2. *Peristylus lacertiferus*: A. underground parts; B. habit; C. rachis and flowers; D. ovary and flower, lateral view; E. floral bract; F. dorsal sepal; G. lateral sepals; H. labellum; I. petals. Drawn by K. Souvannakhoummane from *Souvannakhoummane KS-Bio0091*.



FIGURE 3. *Cheirostylis octodactyla*: A. habit; *Peristylus lacertiferus*: B. habit, flowering rachis (inset) and capsules (inset); *Vanilla somae*: C. leaves and flowers; D. flower. Photos by K. Souvannakhummane & K. Phouthavong.

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