

Zingiber collinsii Mood & Theilade (Zingiberaceae), a newly recorded ginger from Laos

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ABSTRACT. A botanical expedition to southern Laos recorded the occurrence of *Zingiber collinsii* Mood & Theilade (Zingiberaceae), which had been recognized as endemic to Vietnam. Since this is a little-known species, detailed description, illustration, notes on habitat, ecology, and taxonomic discussion compared with the Vietnamese type are provided based on our newly collected Lao materials.

KEYWORDS: Bolaven Plateau, Lao PDR, new record, taxonomy, *Zingiber*

INTRODUCTION

The genus *Zingiber* Mill. is the second largest genus in the Zingiberaceae with 100–150 species (Wu & Larsen, 2000; Kishor & Leong-Škorničková, 2013) and occurs from S and SE Asia to China and Japan and to northern Australia, with its center of diversity in monsoonal continental Asia (Larsen, 2005).

Laos is one of the most under-collected regions in continental SE Asia, and the very low collection density reported for Laos

(Newman *et al.*, 2007; Middleton *et al.*, 2019). In fact, many new species and new records have been discovered based on the collections obtained from our recent botanical inventories (e.g. Souladeth *et al.*, 2017, 2019; Tagane *et al.*, 2018). For the species of *Zingiber* in Laos, Gagnepain (1908) first reported seven species of *Zingiber* in Flore Générale de l'Indo-Chine and more recently Newman *et al.* (2007) enumerated 13 species of the genus in the

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checklist. Since then, one new species and several taxa of *Zingiber* were newly recorded (Leong-Škorničková *et al.*, 2014; Newman, 2015; Souvannakhoummane & Leong-Škorničková, 2018) and 28 taxa are listed in the latest checklist of Lao plants (Newman *et al.*, 2017 onward).

A field excursion to the Bolaven Plateau, Sanamxai District, Attapeu Province, in southern Laos carried out in July 2019 led us to collect a characteristic *Zingiber* plant with orange-red young inflorescence and leaves with burgundy lower surface growing in the lowland evergreen forest near the Tad Xe Ponglai waterfall. Besides the herbarium specimens, living rhizomes were collected for cultivation to investigate its flowers. After careful morphological investigation both of vegetative and reproductive organs under cultivation, it was identified as *Zingiber collinsii* Mood & Theilade being assignable to the section *Zingiber*. *Zingiber collinsii* had been known only from the type locality in Vietnam.

In this paper, *Z. collinsii* is recorded for the first time in the flora of Laos (Fig. 1), which raises the number of taxa of *Zingiber* in Laos to 29. *Zingiber collinsii* is thus far a poorly known species, and its original protologue by Theilade & Mood (1999) is quite simple. Therefore the detailed description, taxonomic note comparing the Vietnamese type is given in the following taxonomic treatment. The description was made based on the living plants, alcohol preserved and herbarium specimens, and the terminology follows Beentje (2016).

TAXONOMIC TREATMENT

Zingiber collinsii Mood & Theilade in Nord. J. Bot. [19(5): 525. 1999, *nom. illeg.*] 20(1): 32. 2000. Type: Vietnam, Dak Lak, Dray Sup area, secondary forest, 1980, *Mark Collins VN80* (holotype AAU!). Fig. 2.

Perennial rhizomatous herb, 0.7–1 m tall. *Rhizome* branched, thickened, fleshy, *ca.* 2 cm in diam., externally light brown, internally ochraceous, strongly aromatic. *Leafy shoots* upright, with 11–17 well-developed laminae at anthesis, 1.2 cm in diam. basally, 1 cm in diam. in the middle part, pubescent; bladeless sheaths 3–4, striate, dark red, glabrous, margin membranous; ligule ovate, 0.8–2 cm long, reddish, pubescent, apex obtuse, bi-lobed, margin entire, translucent; petiole 3–4 mm long, consisting of pulvinus only, light green, densely pubescent; lamina ovate-elliptic to elliptic-oblong, (4–)10–23 cm long, 5–10 cm wide, acuminate at apex, attenuate at base, adaxially bright green, glabrous, prominently plicate, abaxially burgundy and pubescent. *Inflorescences* arising from the rhizome close to the base of the pseudostem; peduncles up to 5 cm long, procumbent; spikes fusiform, 11.5–13 cm long, *ca.* 2.5 cm wide, composed of 10–24 bracts; fertile bracts each subtending one flower, ovate, 3–4 cm long, 3–3.5 cm wide when flattened, orange to red, glabrous, apex obtuse; bracteoles elliptic, 3 cm long, *ca.* 1.5 cm wide; flower 5–6.5 cm long; calyx tubular, irregularly dentate at apex, translucent white, *ca.* 1.5 cm long, 1 cm in diam. at base, slightly wider toward apex; floral tube *ca.* 3.5 cm long, narrowly funnel-shaped, slightly



FIGURE 1. Distribution map of *Zingiber collinsii*, a closed circle showing the type locality in Vietnam based on Theilade & Mood (1999) and an asterisk showing the new distribution in Laos reported in this study.

curved in upper part, *ca.* 2 mm in diam. at base, *ca.* 4 mm in diam. at apex; dorsal corolla lobe oblong, with conspicuous raised longitudinal veins, 2.3–2.5 cm long, 1–1.2 cm wide, translucent white, slightly reddish tinged, apex obtuse; lateral corolla lobes narrowly lanceolate, with conspicuous raised longitudinal veins, 1.8–2 cm long, 5–6 mm wide, translucent white, slightly reddish tinged; labellum triangular, *ca.* 2 cm long, *ca.* 1 cm wide, cream yellow, tessellated with dark purple, glabrous externally and internally, sinuate at margin; lateral staminodes well-developed, connate to labellum at base, elliptic, 0.6–0.8 cm long, 1.5–1.7 cm wide at base, creamy yellow, glabrous externally and internally, with rounded apices. *Stamen ca.* 5 cm long; anther *ca.* 2.5 cm long (with crest), apex entire; anther connective tissue cream-yellow, glabrous; anther crest beak-shaped, *ca.* 1.5 cm long when stretched, dark purple with light yellowish at base. *Ovary* cylindrical, *ca.* 3.5 mm long, *ca.* 3 mm wide, pubescent; epigynous glands two, narrowly conical, 2.5–3 mm long, light yellow, acute at apex; style white, glabrous; stigma thicker than style, translucent white, ostiole front facing, margin ciliate. *Fruit* not seen.

Laos.— Tad Xe Ponglai waterfall, Bolaven Plateau, Sanamxai District, Attapeu Province, 14°48'19"N, 106°26'39"E, 223 m elev., 6 July 2019, *Souladeth et al.* L3151 (FOF, KAG, TNS); loc. sit., florif, August 2020, *Tanaka* L3151-R (FOF, TNS).

Distribution.— Laos and Vietnam (Fig. 1).

Habitat & Ecology.— Growing at the edge of the lowland evergreen forest, near the waterfall. Flowering in the late afternoon to the evening in August to September. Fruiting unknown.

Etymology.— This specific epithet is named after Mark Collins who collected the type specimen in Vietnam.

Notes.— *Zingiber collinsii* was described from the cultivation of the plant in Hawaii, originally collected from Dak Lak Province, southern Vietnam by Mark Collins in 1980 (*Collins VN80*, AAU!). According to the diagnosis, it is characterized by the glabrous leaves which are silvery along the veins above and burgundy below, and inflorescences with orange bracts, and the cream labellum tessellated with dark purple. However, in Lao plants, the upper surfaces of leaves are bright green without silvery lines, and the lower surfaces of leaves are burgundy and pubescent. The petiole is consisting of a densely hairy pulvinus. Leafy stems are pubescent throughout. On the other hand, the floral morphology coincides with the Vietnamese type. Theilade & Mood (1999) interestingly stated that the plant died back for about four months every year under cultivation, and whether this occurs in the natural habitat is unknown. Our plants have been alive for more than five months in cultivation. Further collections to comprehend its morphological variations and ecological features need to be studied.

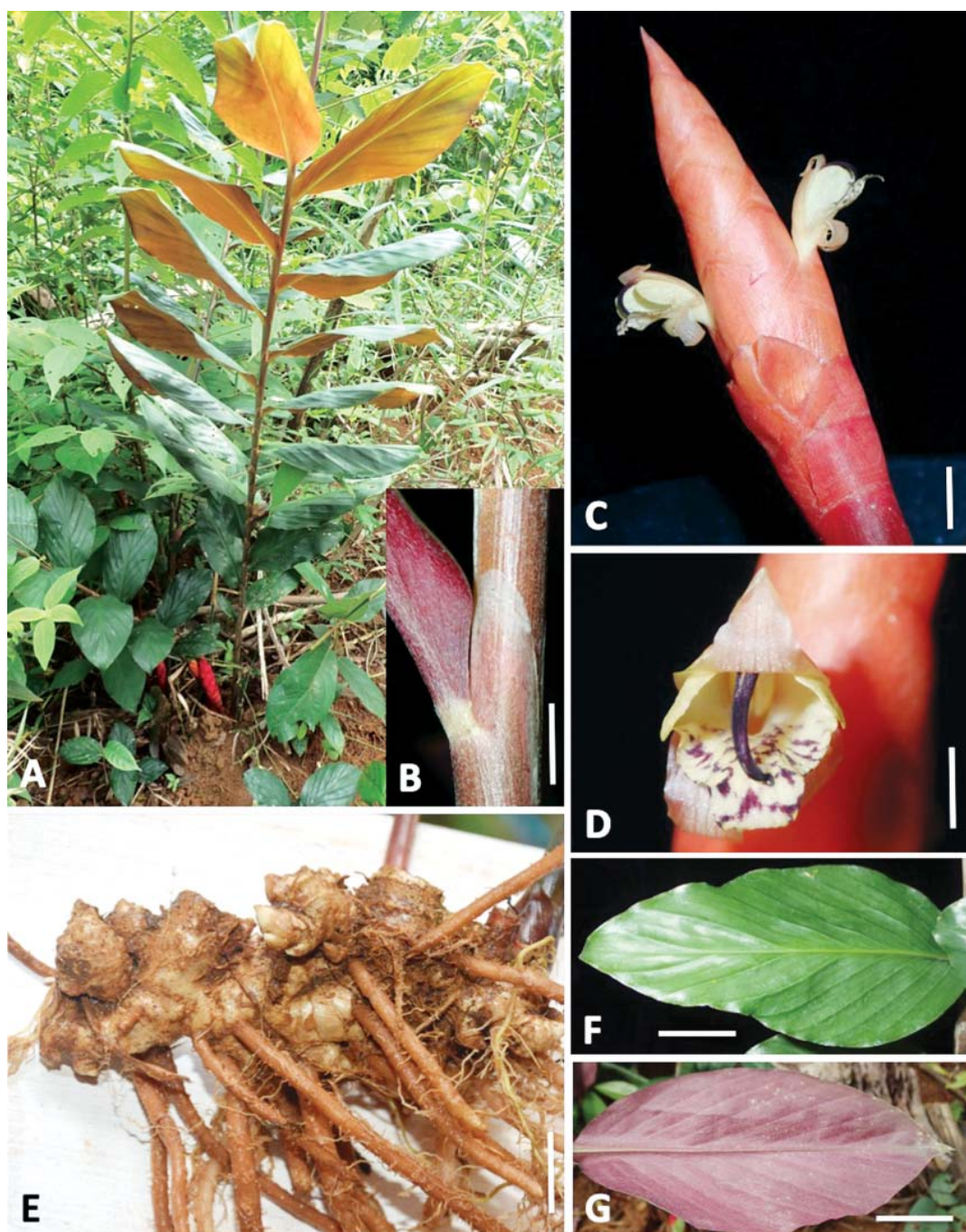


FIGURE 2. *Zingiber collinsii*: A. habit; B. close-up of ligule; C. inflorescence; D. close-up front view of a flower; E. rhizome; F. adaxial surface of leaf; G. abaxial surface of leaf. Scale bars: B–E = 1 cm, F–G = 3 cm.

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