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Zingiber sirindhorniae, a remarkable new species in *Zingiber* section *Dymczewiczia* (Zingiberaceae) from Thailand

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ABSTRACT:- *Zingiber sirindhorniae* Triboun and Keerat., a new species from Thailand, is described and illustrated. It belongs to *Zingiber* section *Dymczewiczia* (Horan.) Benth. because of its terminal inflorescence which is rather rare in *Zingiber*.

KEY WORDS: new species, *Zingiber*, *Dymczewiczia*, Zingiberaceae, Thailand

INTRODUCTION

Zingiber Mill. is one of the larger genera in the family Zingiberaceae. It comprises 120-140 species (Larsen and Larsen, 2006) distributed in tropical and subtropical habitats from mainland Asia to Australia (Hooker, 1890; Ridley, 1899; Loesener, 1930; Larsen and Larsen, 2006).

The genus is divided into four sections, namely *Cryptanthium* Horan., *Dymczewiczia* (Horan.) Benth., *Pleuranthesis* Benth. and *Zingiber*, which are easily distinguished by characters of the inflorescence (Bentham and Hooker, 1883). Most species produce a radical inflorescence on a separate shoot with an erect peduncle (*Zingiber* section *Zingiber*) or a procumbent peduncle (*Zingiber* section *Cryptanthium*). Fewer species produce a terminal inflorescence on a leafy shoot (*Zingiber* section *Dymczewiczia*) or an inflorescence breaking through leaf bases of a leafy shoot (*Zingiber* section *Pleuranthesis*).

In 2008 botanists from the Bangkok Herbarium (BK) and Queen Sirikit Botanic Garden (QBG) explored a limestone mountain in Thailand as part of the preparation of the family Balsaminaceae for the Flora of Thailand. An unknown ginger plant was found near the summit of a mountain in Pha Khao District of Loei Province. Its flower had the characters of a *Zingiber*, but its inflorescence was borne terminally on the leafy shoot which is uncommon in the genus.

The first to describe a new species of *Zingiber* from Thailand was Koenig (1783), who described *Amomum montanum* J. Koenig from Phuket, the basionym of *Zingiber montanum* (J. Koenig) A. Dietr. Over a hundred years later Craib (1912) proposed three new species, *Z. bradleyanum* Craib, *Z. kerrii* Craib and *Z. smilesianum* Craib. Later still, Larsen (1996) enumerated 16 species in the country. Theilade (1999) revised the genus in Thailand again, based mainly on herbarium specimens, and recognised 26 species. Of these,

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seven were new to science. A few years later, Mood and Theilade (2002) proposed three more new species. Between 2001 and 2014 the first author conducted research on *Zingiber* in Thailand, particularly for the Flora of Thailand, and recognises 56 species, comprising altogether 60 taxa. Of these, ten taxa were new to science (Triboun, 2006; Triboun *et al.*, 2014). One additional new taxon is proposed here as new to science.

DESCRIPTION OF NEW SPECIES

Zingiber sirindhorniae

Triboun and Keerat., sp. nov.

(Figs 1-2)

Diagnosis: *Zingiber sirindhorniae* belongs to *Zingiber* section *Dymczewiczia* (Horan.) Benth. due to the terminal inflorescence on the leafy shoot. It is most similar to *Zingiber plicatum* Škorničk. and Q.B. Nguyễn in having terminal inflorescence and the limestone habitat, but they differ by the former having a short and small terminal inflorescence on a leafy stem and by the dark maroonish flowers.

Typus: P. Triboun, P. Suksathan, M. Wongnak, H. Bunnuang and K. Keeratikiet 4060, 6 July 2008, Thailand, Loei Province, Pha Khao District, Wat Tham Pha Sawan, alt. 380 m (BK holotype; BKF, E, QBG isotypes).

Lithophytic perennial herb, in a loose clump, with 3-15 shoots. Rhizome sympodial, rounded or nearly so, 1-1.4 cm in diam., brown outside, yellowish brown inside, with the scent of culinary ginger, storage roots 2-6, cylindrical, 3-6 cm long, c. 0.7 cm diam. Leafy shoots slender, 40-70 cm tall, 0.2-0.4 cm diam., 5-12 leaves distichously arranged, internodes 4-5 cm long, 3-5 leafless sheaths below these; blade oblong, 8-14 x 3.6-4.5 cm, base cuneate, apex acuminate,

glabrous on both sides; ligule bilobed, lobes 3-5 mm, red; petiole 3-6 cm long, swollen, green. Inflorescence borne apically; spike erect, 5.5-7.5 cm long, c. 1 cm wide, with 6-8 bracts, each with a single flower; peduncle 1-2 cm long. Bract green or maroonish red, 2.2-2.6 cm long, c. 1 cm wide. Bracteole oblong, c. 2.2 cm long, c. 0.6 cm wide, apex acute, sparsely hairy. Calyx tubular, 1.2-1.4 cm long, tube 0.3-0.5 cm wide; lobes 0.7-0.9 cm, apex tridentate. Corolla white; tube c. 1.5 cm long; dorsal lobe 1.7-2 cm long, 0.5-0.6 cm wide; lateral lobes 1.7-1.9 cm long, c. 0.4 cm wide. Labellum conspicuously 3-lobed, c. 2 cm long, dark maroonish in outer half and at edge, base and middle part in lower half white; midlobe orbicular 1-1.3 cm wide, apex shallowly emarginate; side lobes sub-globose, c. 0.5 cm wide, apex rounded. Anther creamy white with red or maroonish dots or mottled, c. 1 cm long, c. 0.3 cm wide; filament short; appendage c. 1 cm long, dark maroonish. Stylodes 2, c. 3 mm long. Ovary c. 3 x c. 3 mm, sparsely hairy; style slender extending the corolla tube beyond anther and anther appendage; stigma ciliate. Ovules 3-5 per locule. Capsule ellipsoid, c. 2 cm long, c. 0.4 cm wide; seed 1-3, ellipsoid, c. 2 x c. 2 mm, black with white aril.

Distribution. Endemic to Thailand. So far known only from Loei Province.

Ecology. In humus among rocks in partially shaded dry evergreen forest on limestone hills, alt. 350-450 m.

Phenology. Flowering in June to August and fruiting in July to October.

Etymology. The specific epithet honours Her Royal Highness Princess Sirindhorn of Thailand who has taken a

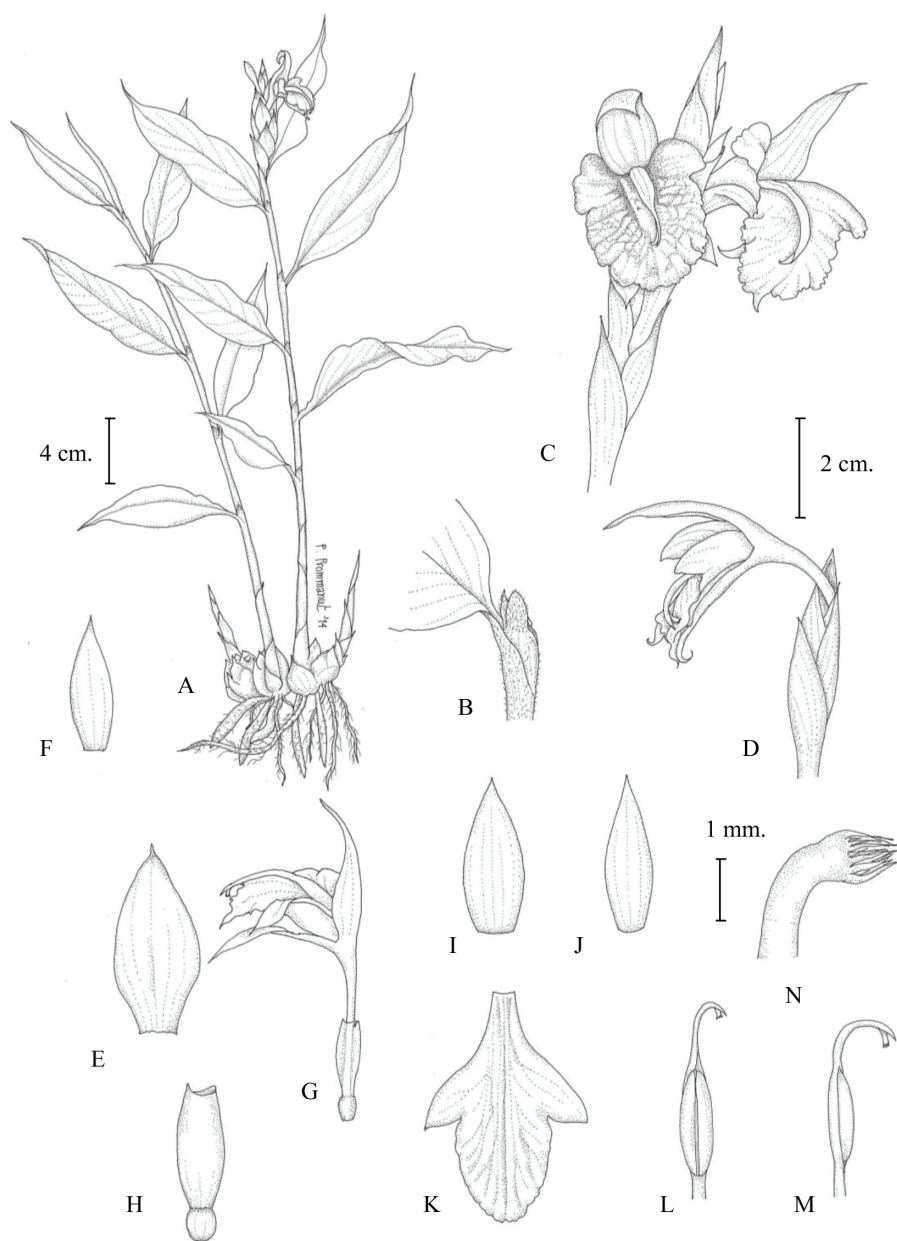


Figure 1. *Zingiber sirindhorniae* Triboun and Keerat.: A. habit, B. ligules and part of leaf sheath, C.-D. inflorescences with flowers, E. bract, F. bracteole, G. flower, H. dorsal lobe of corolla, I. lateral lobe of corolla, J. labellum, K. calyx with ovary, L. stigma and part of style, M.-N. anthers, appendages and stigmas. Drawn by Phattaravee Prommanut.

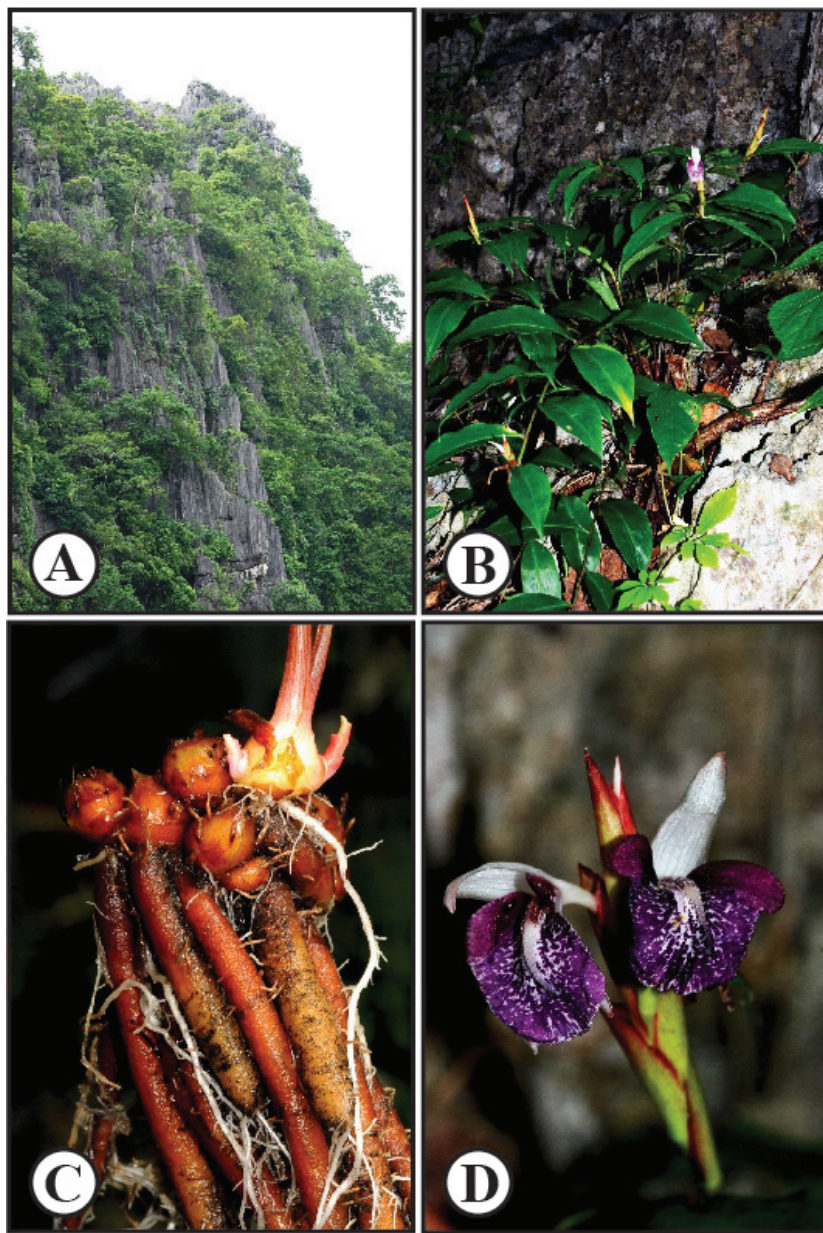


Figure 2. *Zingiber sirindhorniae* Triboun and Keerat.: A. habitat, B. habit, C. rhizomes, and D. inflorescence with opened flowers. Photographed by Pramote Triboun.

keen interest in the conservation of plants.

Vernacular. Aiyarit (ไอยริศ), name given by Her Royal Highness Princess Sirindhorn.

Notes. Four Thai species of *Zingiber* produce a terminal inflorescence; the inflorescence is always terminal in *Z. pellitum* Gagnep. and *Z. gramineum* Blume, while *Z. barbatum* Wall. and *Z. junceum* Gagnep. occasionally produce a terminal inflorescence.

These four species are taller (to 1 m tall or taller) and are terrestrial, while *Z. sirindhorniae* is rather slender and small (40-70 cm tall), and grows in humus in crevices on limestone cliffs. In habit *Zingiber sirindhorniae* is more like *Z. plicatum* Škorničk. and Q.B. Nguyễn. The inflorescence of the new species is rather fragile and delicate.

Key to Thai species of the genus *Zingiber* section *Dymczewiczia*

- 1 Plant glabrous 2
- Plant villous 3
- 2 Leafy shoot 40-70 cm tall, labellum dark maroon *Z. sirindhorniae*
- Leafy shoot 0.5-1.5 m tall, labellum yellow *Z. junceum**
- 3 Leaf blade linear *Z. gramineum**
- Leaf blade elliptic to oblong 4
- 4 Labellum yellow with reddish patches at margin *Z. pellitum*
- Labellum yellow with brown tint inside *Z. barbatum**

* The species which produce both terminal and radical inflorescences.

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