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A new species of *Globba* (Zingiberaceae) from India

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ABSTRACT: A new species of *Globba*, *G. kanchigandhii,* from North-East India is described, illustrated and compared with its allied species. A detailed description, illustration, photographs, distribution, ecology, phenology and relevant notes also provided. A comparison table is also provided.

KEY WORDS: *Globba kanchigandhii*; *G. multiflora*; *G. macroclada*; India; Nagaland; Phek; Zingiberaceae.

INTRODUCTION

Genus *Globba* L. is the third largest genus of the family Zingiberaceae (Williams *et al.*, 2004) and consists of about 110 species, distributed in S. China, India and Malaysia (Takano & Okada, 2000; Larsen *et al*., 1998; Smith, 1988), ranking in number behind only the polyphyletic genera *Alpinia* Roxb. and *Amomum* Roxb. (Kress *et al*., 2002). In India, the genus is represented by about 14 species and is almost confined to all states, but greatest number occurs in North-East India (Sabu, 2006). During the taxonomic revision of Indian Zingiberaceae, the authors came across an interesting species of *Globba*, from the evergreen forests of Phek District, Nagaland. Rhizomes collected from the field were transplanted in the Calicut University Botanical Garden (CUBG) as a part of germplasm conservation of Indian Zingiberaceae and growing well at garden. The plants were studied from the field and also from the plants grown in CUBG. Studying its phenology and fresh flowers helps us to understand its floral and vegetative characters and validate its distinctness. Detailed morphological studies and its comparison with species from neighbouring countries, specimens collected from various localities in North-East India and herbarium materials deposited at ASSAM, CAL, CALI, and K and identified as a new member to Zingiberaceae. According to Williams *et al.* (2004), this new species belongs to Sub genus *Mantisia* and Sect. *Haplanthera*. The detailed study of the types, protologue and literatures (Banerjee, 1966; Som Deva, 1981; Lal & Verma. 1987; Larsen, 1997; Takano & Okada, 2000; Takano & Okada, 2003; Yusuf, 2004; Li *et al*., 2009; Picheansoonthon & Tiyaworanani, 2010; Tanaka *et al*., 2015; Sam & Ibrahim, 2016) provided us with evidence that this population does not morphologically match with any of the known species. Herein it is described as a new species with detailed description and illustration.

TAXONOMIC TREATEMNT

Globba kanchigandhii A. Joe & M. Sabu ***sp. nov.***
Figs. 1 & 2

Similar to *Globba multiflora* Wall. ex Baker, but differs from it in having lesser number of flowers in an inflorescence, glabrous peduncle, erect and horn-like free triangular lateral staminodes, short corolla tube, stigma cylindric and presence of persistent bracts even at flowering stage.

TYPE: INDIA: Nagaland. Phek District, Muchojho, Way to Surhoba, 05 September 2006, N25°42.472′, E 094°06.256′, 1517 m alt., *Sanoj E. & V. P. Thomas 105684* (holotype CALI, isotypes CAL, CATH)

Perennial herb, up to 115–117 cm high, erect, or slanting. Leaves 14–17, shortly petiolate or sessile, ligulate. Ligule short, glabrous, 2–3 mm long, bipartite, membranous. Lamina 22–25 × 7–7.5 cm, oblong-lanceolate, apex long acuminate, base attenuate, adaxially green, glabrous, abaxially light green, pubescent. In some inflorescence flowers are replaced by bulbils. Bulbils 3–4, found at the lower portion of the inflorescence, 2.3–2.5 × 1–1.2 cm, conical, cream, green towards the tip, when young full green, scaly, scales persistent. Inflorescence terminal, erect, pyramidal in shape, peduncle 5–8 cm long, glabrous. Bracts 1.1–1.3 × 0.3–0.4 cm, persistent, lanceolate, boat-shaped, green, pubescent externally, margin ciliate. Bracteoles 0.5–0.6 × 0.2–0.3, lanceolate, membran4ous, yellow-green, apex ciliate. Pedicel 0.5–0.6 cm long, deciduous, highly pubescent, small abortive flower bud near the bracteole, green, *c.* 0.1 cm long. Flowers 4–4.4 cm long, 2–3 opens at a time, one on each bract. Calyx 0.6–0.7 cm long, tubular, yellow, three-toothed, margin ciliated, surface sparsely pubescent, pouched at tip. Corolla tube 1.2–1.4 cm long, yellow, densely hairy externally, curved at the middle, dorsal corolla lobe 0.5–0.6 × 0.3–0.4, ovate, boat-shaped, yellow, glabrous, pouched at the tip; lateral

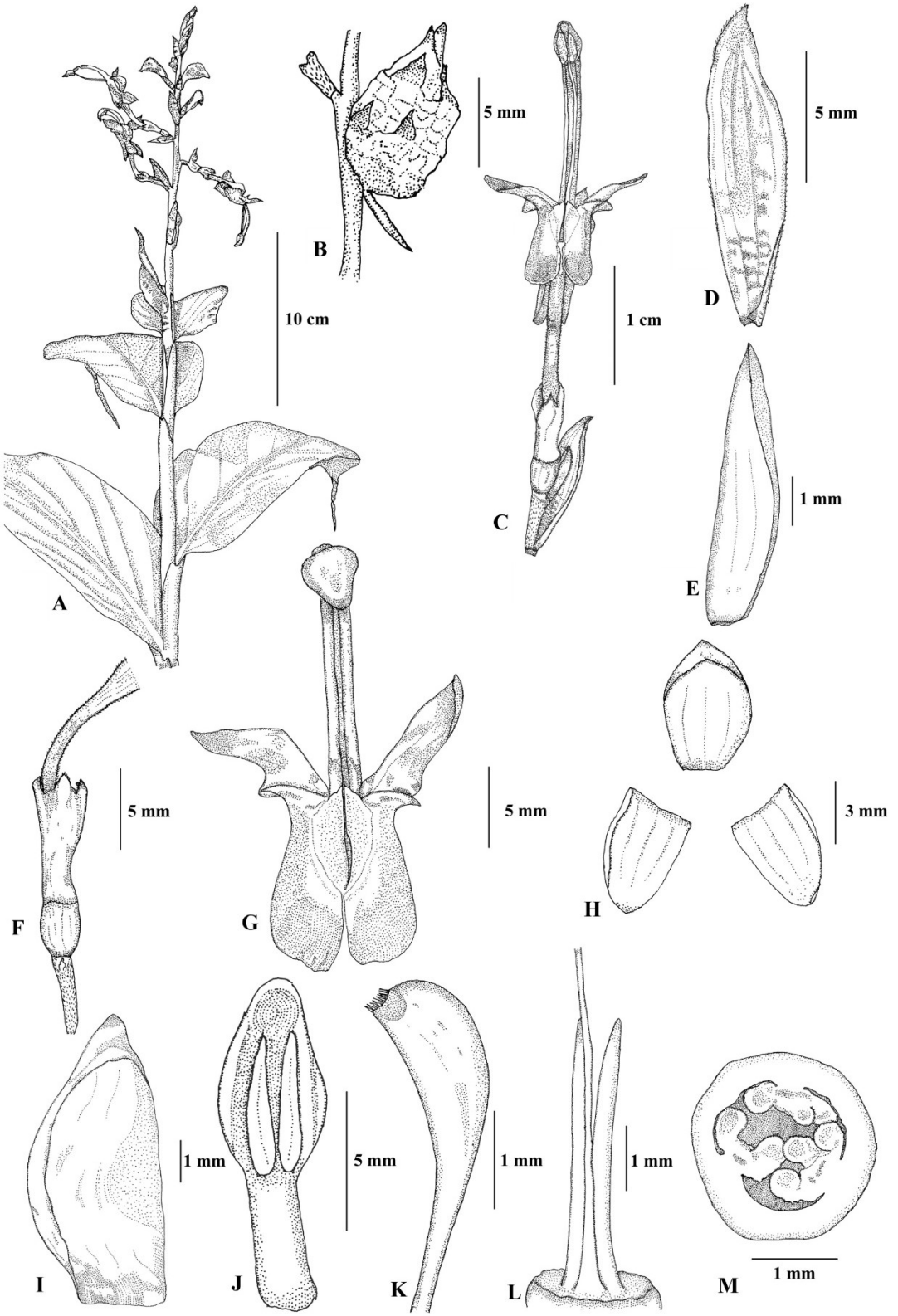

Fig 1. *Globba kanchigandhii*: A: Habit. **B**: Bulbil. **C**: Entire flower. **D**: Bract. **E**: bracteole. **F**: Basal part of flower. **G**: Labellum with lateral staminode and stamen. **H**: Corolla lobes. **I**: Dorsal corolla lobe. **J**: Anther (ventral view). **K**: Stigma. **L**: Ovary with epigynous glands and base of style. **M**: Cross-section of ovary. Illustration by Alfred Joe.

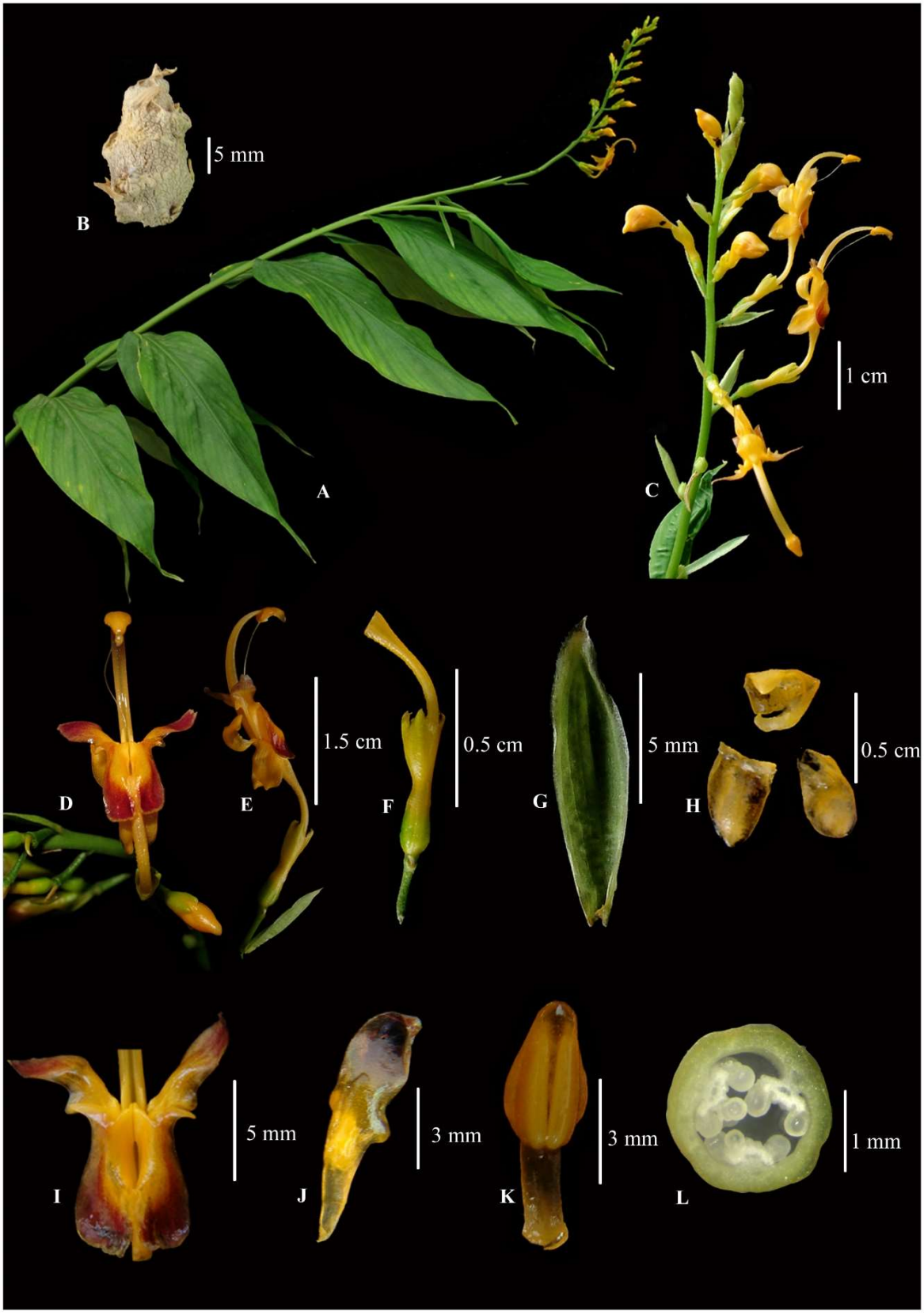

Fig 2. ***Globba kanchigandhii.*** **A**: Habit. **B**: Bulbil. **C**: Inflorescence. **D–E**: Flower. **D**: Front view. **E**: Lateral view. **F**: Basal part of flower. **G**: Bract. **H**: Corolla lobes. **I**: Labellum with lateral staminodes. **J**: Lateral staminode. **K**: Stamen. **L**: CS of ovary. Photos by Alfred Joe.

Table 1: Comparison of distinguishable characters of ***Globba kanchigandhii***, ***G. multiflora*** and ***G. macroclada.***

Characters	*G. kanchigandhii*	*G. multiflora*	*G. macroclada*
Ligule	Glabrous	Pubescent	Pubescent
Bulbils	At lower portion of inflorescences, cream	At lower portion of inflorescences, pale green	At tip of inflorescences, grayish green
Peduncles	5–8 cm long, glabrous	7–11 cm long, densely pubescent	24–48 cm long, glabrous
Bracts	Persistent, pubescent externally, margins ciliate	Caducous, pubescent externally, margins ciliate	Caducous, glabrous, margins non-ciliate
Calyx	0.6–0.7 cm long, surface sparsely pubescent	0.8–0.9 cm long, glabrous	0.8–0.9 cm long, glabrous
Lateral staminodes	0.9–1 cm long, erect and pointed upwards, apex triangular with elongated base, base yellow and apex purple, with a small notch at the middle	0.3–0.4 cm long, downwardly pointed and appressed to tube, yellow, smaller than the corolla lobes margins entire,	1.9–2 cm long, yellow, downwardly pointed and appressed to tube, larger than corolla lobes margins entire,
Filament	1.5–1.6 cm long	1.5–1.7cm long	2.1–2.3 cm long,
Anther	0.4–0.5 cm long	0.4 cm long	0.7–0.8 cm long
Crest	Minutely crested	Minutely crested	Lengthily crested
Ovary	0.4–0.5 cm long	0.3 cm long	0.3–0.4 cm long
Epigynous glands	0.3–0.4 cm long, cream	0.3–0.4 cm long, yellow	0.4–0.5 cm long, yellow

corolla lobes 0.5–0.6 × 0.3–0.4, ovate, boat-shaped, yellow, glabrous. Lateral staminodes 0.9–1 × 0.2–0.3 cm, erect, backwardly positioned, not appressed to the corolla lobes, glabrous, apex triangular with elongated base, base yellow and apex purple, with a small notch at the middle. Labellum 1.8–1.9 × 0.6–0.8 cm, purple, yellow towards the sinus, appendaged near sinus. Stamen 1.9–2.1 × 0.2–0.5 cm, filament 1.5–1.6 × 0.4–0.5 cm, yellow, arching, anther 0.4–0.5 × 0.2–0.3 cm, elliptic, yellow, glabrous, non-appendaged, minutely crested, rounded at tip. Ovary 0.4–0.5 cm long, green, oblong-cylindrical, glabrous, unilocular, ovules many, cream, on three parietal placenta, smooth, styles long, translucent, filiform, passes through the filament, stigma cylindrical, translucent white, glabrous, included with in the crest, mouth round, narrowly opens, margin ciliate, epigynous glands two, 0.3–0.4 cm long, cream. Fruits not observed.

Flowering and fruiting*:* June–November.

Distribution and Habitat*: G. kanchigandhii* is so far only known from the type locality, *ie*. Phek, Nagaland and grows as undergrowth in the evergreen and semi-evergreen forests.

Etymology*:* This new species has been named in honour of Dr. Kanchi Gandhi, Harvard University for his valuable contributions to the field of plant nomenclature.

Notes*:* This new species is closely allied to *G. multiflora* in its plant stature, bulbils and labellum colouration. But markedly differ from it in having fewer number flowers in inflorescence, erect and horn-like lateral staminodes, presence of persistent bracts and in its flowering period. The erect lateral staminodes make the species distinct from all known species of *Globba*.

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Fig. 3. Comparison of related species. **A–B:** ***Globba kanchigandhii***. **C–D:** ***G. multiflora***. **E–F:** ***G. macroclada***. Photos **A–E** by Alfred Joe; **F** by E. Sanoj.