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continued on the back inside cover

Cover: Green Sea Turtle *Chelonia mydas* watercolour by Elakshi Mahika Molur.



Additional record of the Black Turmeric *Curcuma caesia* Roxb. (Zingiberales: Zingiberaceae) in Bhutan

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Curcuma L. is a genus of rhizomatous herbs distributed in tropical and subtropical regions especially in India, Thailand, Indochina, northern Australia, Malaysia, and Bangladesh (Jantan et al. 1999). The genus contains more than 200 species and subspecies, which belong to the family of Zingiberaceae. The majority of *Curcuma* species grow in mountainous areas around the world (Singh et al. 2002). Many species of *Curcuma* are cultivated and used as ingredient of traditional medicine (Jantan et al. 1999). In Bhutan, there are records of four species of *Curcuma* under Zingiberaceae family including *C. caesia* (i.e., *Curcuma longa* L., *Curcuma aromatica* salisb, *Curcuma zedoaria* (Christm.) Roscoe). The plants were found thriving in warm broadleaved forests near settlements against grazing and anthropogenic activities.

Specimen of *C. caesia* was collected during field exploration from Orong Gewog under Samdrup Jongkhar district (26.933117° N, 91.493064° E), Bhutan on 10 July 2021 at an elevation of 1,227 m. The geo-coordinates were recorded with Garmin GPS. Herbarium specimens was prepared following Smith (1971) and the morphological characteristics were examined for confirmation of the identity of specimen following Noltie (1994) and Mitra & Mukherjee (2013).

Taxonomy

Curcuma caesia Roxb.

in Asiat. Res. (Calcutta) 11: 335. 1810 – Lectotype “*Curcuma caesia*” in Icones Roxburghianae Ineditae No. 1923 (Leong-Škorničková et al. 2010; Mitra & Mukherjee 2013).

Type: India, Calcutta 11: 335. 1810 W. Roxburgh (1923) (Lectotype-BM, Photo!)

Description: *Curcuma caesia* Roxb. satnds erect as a rhizomatous herb, reaching a height of 70–100 cm. Pseudo stem, approximately 30–35 cm tall, sheaths green. The rhizome large, 5–6 × 9–10 cm, blue-blackish, verging towards grey, the blue colour is highly variable, depending upon the nature of the soil and age of the rhizome, strongly aromatic; sessile tubers branched, condensed; roots fleshy; root tubers many, ovate oblong, pale, watery pearl colour. Leaves distichous, 79–100 cm; petiole as long as lamina; lamina 30–40 × 10–15 cm, oblong lanceolate, tip acute, base acuminate, glabrous, purple or reddish-brown patch along the sides on the distal half of the mid rib on upper side only, fading at maturity, groove of the midrib green. Inflorescence lateral, 25–30 cm long, peduncle 12–18 cm; spike 12–15 × 5 cm; coma bracts large, pink to violet, lower ones streaked green.

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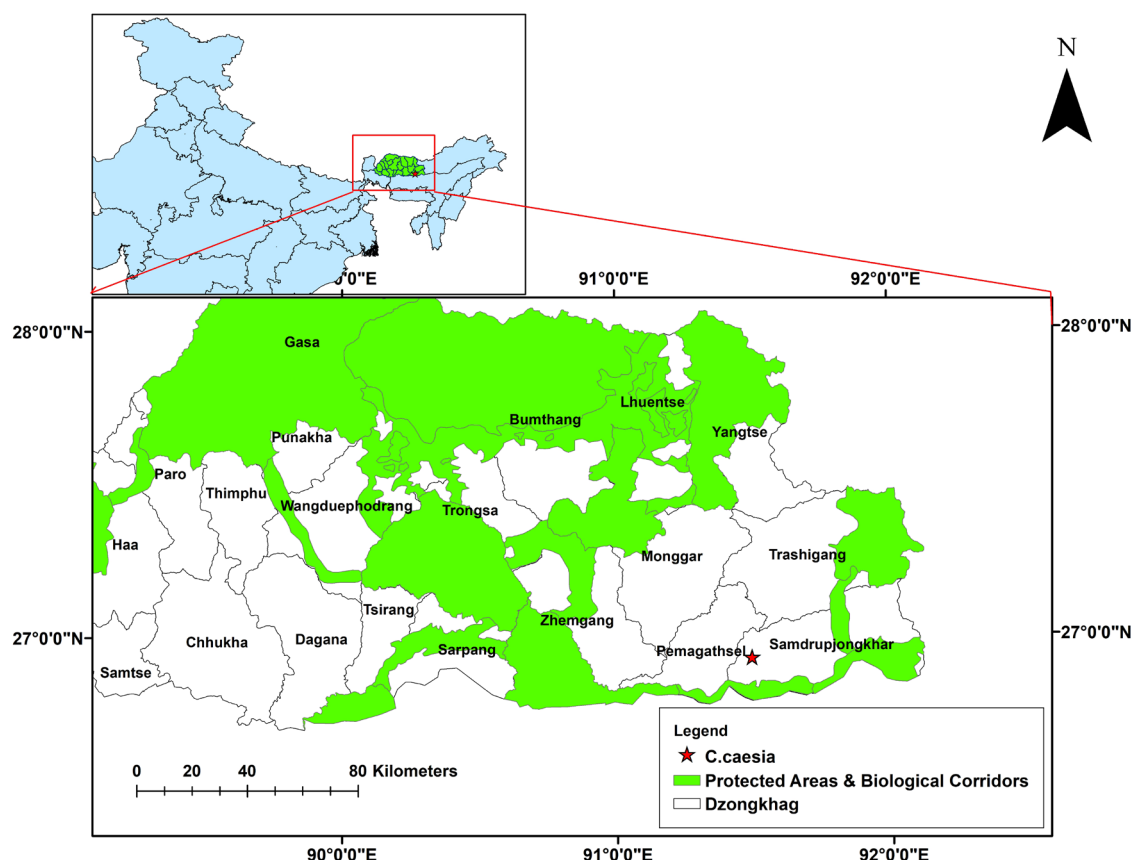


Figure 1. Distribution record of *Curcuma caesia* in Bhutan.

Fertile bracts 18–20, 6.5–7 × 4.4–5 cm, lower half fused, tip rounded, green with pink tip, each bract subtends a cincinnus of 8–10 flowers. Bracteoles large, 2.5–3.5 cm, white with medium light green patch. Flowers 4–6 cm equal to slightly shorter than bracts. Calyx 0.8–1 cm, truncate, 3-lobed at apex, split on one side. Corolla tube 3–3.3 cm long, lobes unequal; dorsal lobes 1.5 × 1.2 cm, concave, hooded; lateral lobes 1.5 × 1 cm, tip rounded, pink. Labellum 1.5–1.7 × 1.8 cm, tip emarginated, yellow with deep yellow median band. Lateral staminodes 1.5 × 1 cm, yellow. Anther 7 mm long, without crest, spurred at base, spurs 3 mm long, divergent. Epigynous gland two, 5 cm long, linear, yellowish green. Ovary 5 mm, trilobular, with many ovules. Style long, filiform; stigma bilipped, slightly exserted above the anther lobes (Leong-Škorničková et al. 2010).

Distribution: The geographic distribution of the species ranges from northeastern India to Thailand, Indochina, Malaysia, Indonesia, and northern Australia (Apavatjirut et al. 1999).

Specimen examined: Bhutan: 17161 (THIM), Orong, Samdrup Jongkhar District, (26.933117° N, 91.493064° E; 1,227 m), 10.vii.2021, K. Orong & N. Shacha, 2023. 011

(Lectotype BM, Photo!).

Flowering: Flowers appear during the initiation of the monsoon and fruits mature at the end of the monsoon (May–July).

Habitat: *C. caesia* was found in warm broadleaved forest (dominated by species like *Castanopsis indica* Robx. Ex. Lindl, *C. hystrix* DC, *Callicarpa arborea* Roxb. & *Schima wallichii* (DC.) Korth growing near settlement at Orong Gewog under Samdrup Jongkhar District, Bhutan at an elevation of 1,227 m. Other associative species growing along with *C. Caesia* were *Phlogacanthus pubinervius* T. Anderson, *Artemisia* spp., *Biden pilosa* L., *Chromolaena odorata* (L.) R.M.King & H.Rob. and *Ageratina adenophora* (Spreng.) R.M.King & H.Rob.

Conservation Status: The species is widely cultivated because of its medicinal values and economic benefit (Apavatjirut et al. 1999). In the current exploration, the species was surviving near settlement with threats from grazing and developmental activities. It is imperative that the relevant authorities (e.g., Department of Forest and Park Services) and other conservation agencies take the necessary management strategies to conserve the species.

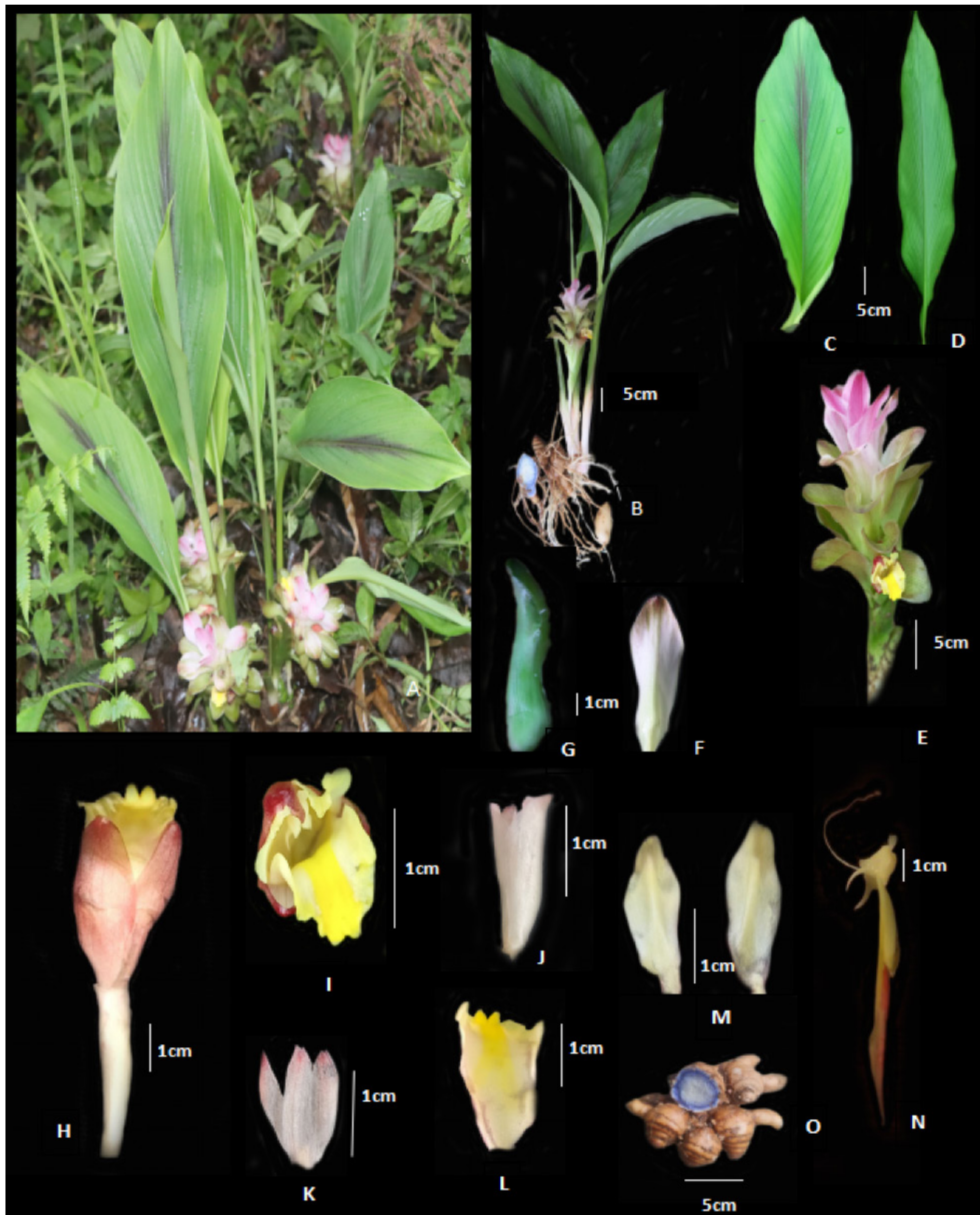


Image 1. *Curcuma caesia*: A—habitat | B—whole plant | C & D—front and back view of leaves | E—inflorescence | F—sterile bract | G—fertile bract | H—flower | I—front view of flower | J—Corolla lobes | K—Calyx | L—labellum | M—staminodes | N—anther | O—rhizomes. © K. Orong & N. Shacha.

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