

**PLAGIOSTACHYS NICOBARICA (ZINGIBERACEAE),  
NEW GENERIC RECORD AND A NEW SPECIES  
FROM THE NICOBAR ISLANDS, INDIA**

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SUMMARY

*Plagiostachys nicobarica*, a new generic record and a new species from the Nicobar Islands, India, is described and illustrated. The genus, so far known from China, Indonesia, Malaysia, the Philippines and Thailand, is now reported from India.

**Key words:** Zingiberaceae, *Plagiostachys nicobarica*, India, new generic record, new species.

INTRODUCTION

The family Zingiberaceae, one of the largest monocotyledonous families of the Indian subcontinent, is represented by 22 genera and about 180 species (Jain & Prakash 1995). Even though several notable studies on this family have been carried out during the past several years in India, survey of remote areas has been regularly bringing out new discoveries (Sabu & Mangaly 1991, Jain & Prakash 1995, Srivastava 1998, Skornickova & Sabu 2005a, b, Sabu 2006). Srivastava (1998) carried out remarkable work on the Zingiberaceae of Andaman & Nicobar Islands and enumerated 23 species in 10 genera, both wild and naturalized. Recent work by Larsen (1997), William et al. (2004) and Skornickova & Sabu (2005a, b) have reduced the total number of genera to 19 from 22 by the transferring of *Curcumorpha* to *Boesenbergia*, *Mantisia* to *Globba* and *Paracautleya* to *Curcuma*.

As part of a Department of Science and Technology (DST) project, the authors visited the Andaman Islands in April 2002 for the study of Gingers in that region. While studying the herbarium specimens at the Andaman & Nicobar Circle of the Botanical Survey of India at Port Blair (PBL) four collections (2977, 3832, 3933, 7162) drew the attention. Two of them (3832, 3933) have been misidentified at family level and placed under Marantaceae. The other two (2977, 7162) were determined as *Cautleya* Hook.f. But the position of the inflorescence and scanty notes on the labels clearly indicated that they belong to the genus *Plagiostachys* Ridl. However, the notes on the labels are insufficient for species delimitation.

Our team again visited the Nicobar Islands in 2003 and 2007 to collect *Plagiostachys* specimens. They could collect specimens in fruiting and flowering stage. The rhizomes were planted in the Calicut University Botanical Garden (CUBG) and flowered in November 2003. A critical study of specimens in comparison with other species has

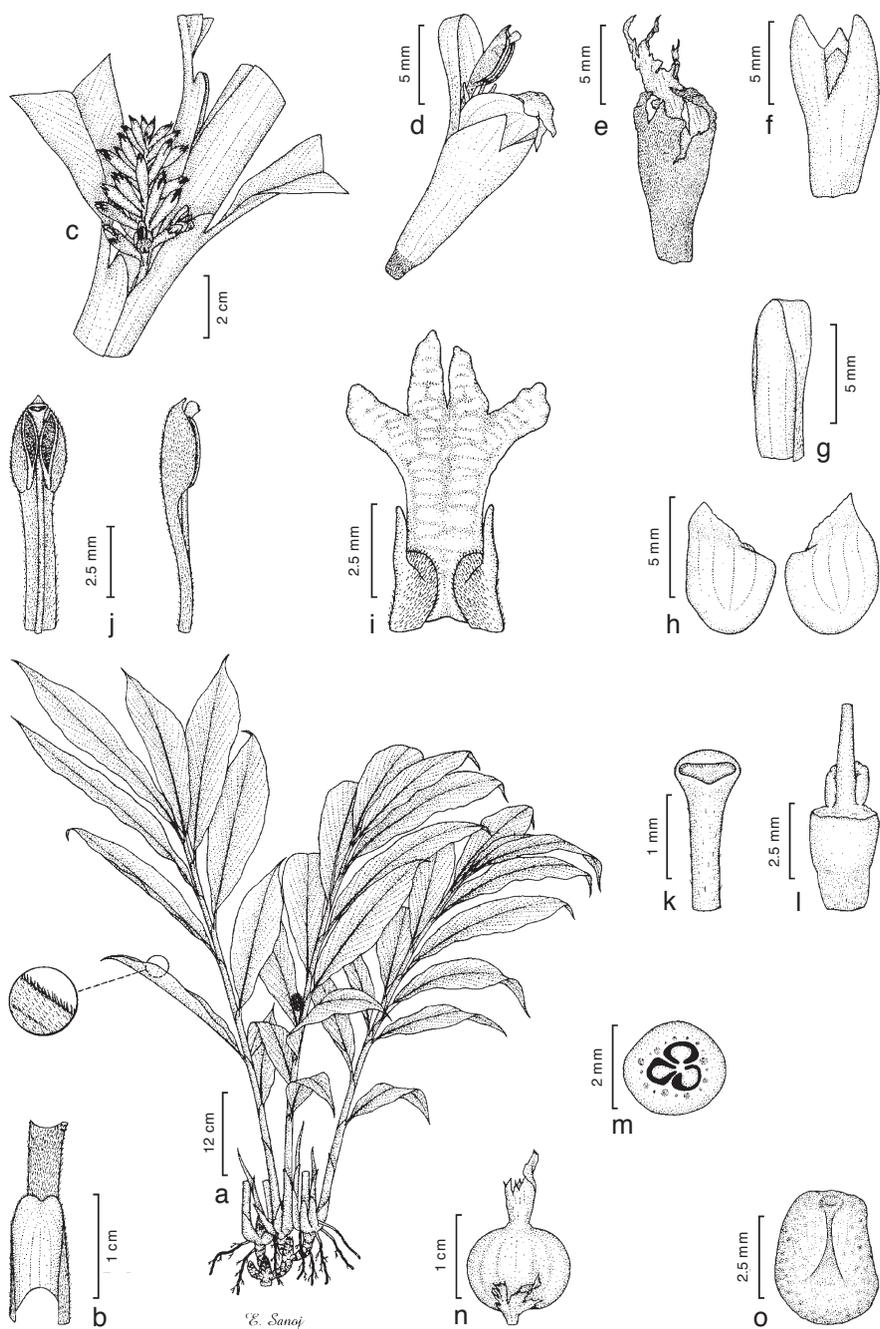


Fig. 1. *Plagiostachys nicobarica* M.Sabu, E.Sanoj & M.G.Prasanth. a. Habit; b. ligule; c. inflorescence; d. single flower; e. bracteole; f. calyx; g. dorsal corolla lobe; h. lateral corolla lobes; i. labellum; j. anther (front and lateral views); k. stigma; l. ovary with epigynous glands; m. cross section of ovary; n. fruit; o. seed (all: Thomas & Shameer 113609).

proved that this plant is distinct from described species. Specimens and photographs were sent to Prof. Kai Larsen, Aarhus University for confirmation.

The genus *Plagiostachys* was established by Ridley (1899). Earlier he treated it as a species of *Amomum*, *A. laterale* Ridl. He suggested that this genus is closer to *Alpinia* than to *Amomum*. Holtum (1950), however, was of the opinion that *Plagiostachys* is more allied to *Amomum*. Smith (1985) supported Ridley's view and stated that affinity may equally lie with *Alpinia* and in particular with *A. hansenii* R.M.Sm. and *A. havilandii* K.Schum., those with laterally produced inflorescences. Kress et al. (2002) showed the paraphyletic nature of the genus *Plagiostachys*. As this work is incomplete we are describing this species in a paraphyletic genus. Presently, the genus includes 19 species (Newman et al. 2004), mainly distributed in China and South-east Asia (Wu & Larsen 2000, Maknoi & Sirirugsa 2002, Newman et al. 2004). Present literature shows that the flora of the Nicobar Islands is more close to that of Malaysia than to that of Myanmar, Thailand or India (Turner et al. 2001).

***Plagiostachys nicobarica*** M.Sabu, E.Sanoj & M.G.Prasanth, *spec. nov.* — Fig. 1; Plate 1

*Plagiostachydi sumatrensi* Ridl. similissimo, foliis brevioribus, laminis utrinque pubescentibus, inflorescentia simplici, floribus albis, calyce corolla capsulo majore differt.  
— Typus: *Thomas & Shameer 113609* (holo CALI; iso MH, K), India, Nicobar Islands, Great Nicobar, 12.7 km on East West Road, 27.09.2007.

Perennial rhizomatous herbs. *Rhizome* 6–8 mm wide, branched, spreading laterally, subterranean, creamy white within, slightly aromatic, internodes compressed, covered by brown and decayed sheaths, young shoots and roots arise mostly from the base of older shoots. *Leafy shoots* 55–75 cm long, form a dense clump, slightly bend, basal 2 or 3 sheaths leafless, 9–12-leaved. *Ligule* 3.4–4 mm long, light green, coriaceous, tip notched, densely pubescent along the margin and externally. *Petiole* 1–1.5 cm long, green, pubescent. *Lamina* elliptic, 33–37 by 8.4–9.2 cm, base slightly oblique, attenuate, margin slightly undulate, ciliate, apex acuminate, slightly twisted to one side, bend down; upper surface bright green, lower surface light green, pubescent on both surfaces, more dense beneath; midrib yellowish green. *Inflorescence* 4–12.5 by 0.3–3.5 cm, terminal raceme, slightly mucilaginous, produced through lateral slits of sheaths of aerial shoot about 28–35.5 cm from the base; peduncle pale green, pubescent. *Sterile bracts* 3 or 4, mostly included within the sheaths; outermost elliptic-linear, 3.7–5.8 by 0.5–0.8 cm, tubular about 2–3 mm at base, innermost ovate elliptic, 1.5–1.8 by 0.5–0.6 cm, pubescent externally. *Bracteoles* tubular, 14–17 by 4–4.5 mm, white, leathery, densely pubescent externally, single flowered, completely covering the young buds, on aging upper half irregularly broken, early dried off, persistent. *Flower* 1.7–1.8 cm long, 1–3 open at the same time. *Pedicel* 0.5–1.5 mm long, pubescent. *Calyx* tubular, 10–11 by 4–5 mm, white, fleshy, glabrous, glossy, upper part rarely decaying, 3-toothed; teeth 5–6 mm long, hooded; mouth margin early dried off, slightly ciliate. *Corolla tube* 4–5 mm long, 3–3.5 mm wide at mouth, white, glabrous, internally hairy at the mouth, hairs downwardly directed. *Corolla lobes* pale greenish white, pellucid; dorsal lobe oblong, boat-shaped, 8–8.5 by 5–5.5 mm, pubescent externally at base, glabrous towards tip, 5-veined, hooded at tip; lateral lobes broadly ovate, 6–7 by 4.5–5 mm, glabrous,

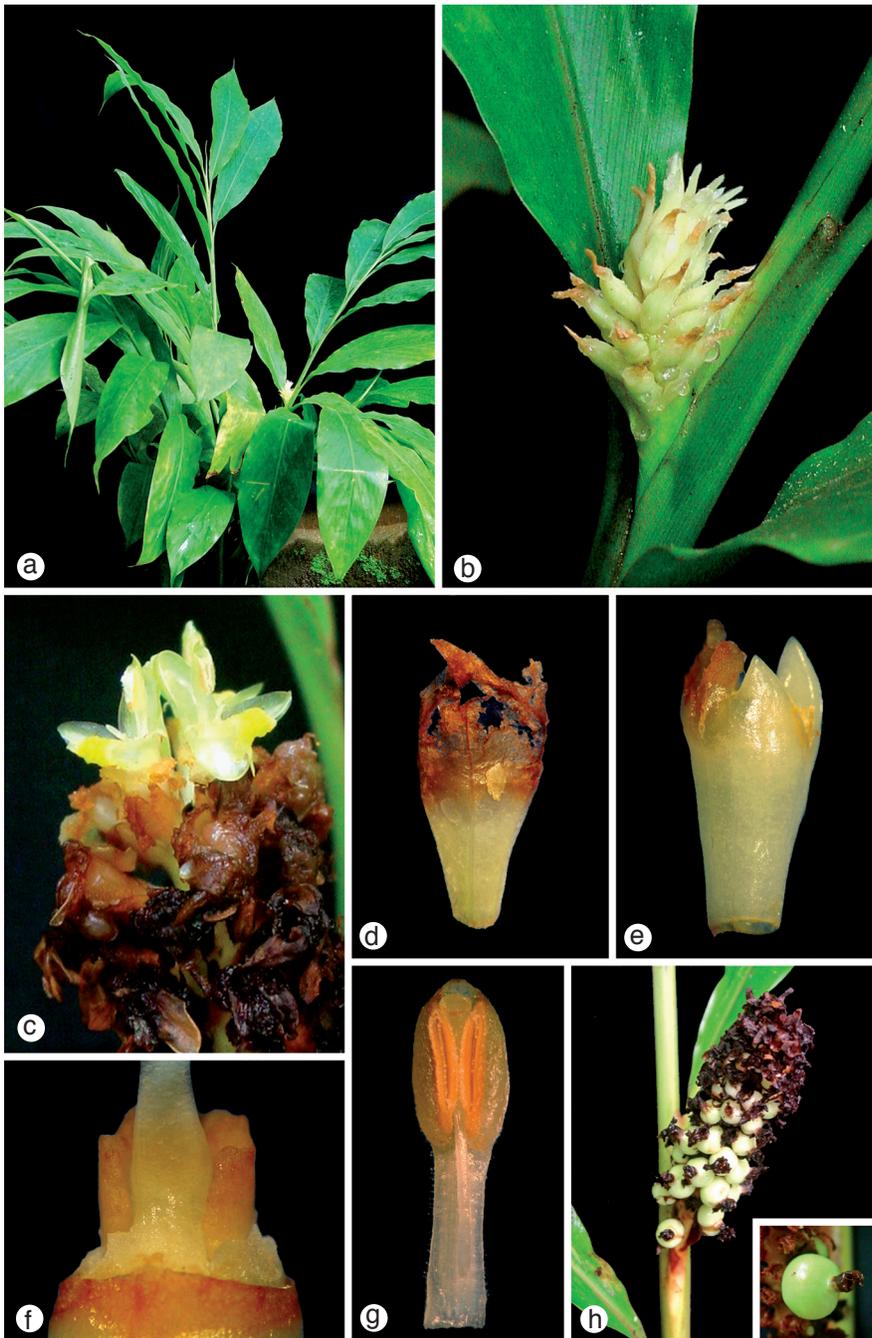


Plate 1. *Plagiostachys nicobarica* M.Sabu, E.Sanoj & M.G.Prasanth. a. Habit; b. inflorescence coming out through lateral slits of the pseudostem; c. close-up of inflorescence; d. bracteole with decaying tips; e. calyx; f. epigynous glands and style base; g. stamen; h. infructescence. — Photos by Sabu and Sanoj.

3-veined, tip rounded, recurved. *Labellum* spatulate, 7.5–8 by 4.5–5 mm, yellow, creamy white towards margin, transversely ribbed, distinctly 3-lobed, lobes unequal, middle lobe 2–2.5 mm long, deeply emarginated, margins crumpled; tip recurved. *Lateral staminodes* thumb-shaped, 2–2.5 by 0.5 mm, yellow, base swollen, covered with gland-tipped hairs, upper part subulate. *Stamen* 8–8.5 mm long; filament 5–5.5 by 1 mm, flat, white, glandular hairy; anther ovate, 3–3.5 by 2 mm, creamy white, densely glandular hairy; thecae parallel, slits longitudinal, opening only up to upper 3/4 of its length, margins hairy; crest c. 0.5 mm long, beak-like, creamy white, glabrous. *Ovary* barrel-shaped, 1.75–2 by 2–2.25 mm, white, glabrous, glossy, 3-locular, each locule with 2 ovules, on axile placenta. *Style* white, filiform, base swollen, sparsely hairy on upper half, free from corolla tube; stigma cup-shaped, creamy white, coming out through anther thecae; mouth lateral, margin ciliate. *Epigynous glands* single, girdle-shaped, c. 1.5 by 1.5 mm, pale brown, glabrous, encircling 3/4 of style base. *Capsule* globose, 0.8–0.9 by 1–1.1 cm, pale white, glabrous, longitudinally ribbed, 3-locular, with persistent bracts and calyx. *Seeds* 4–6, 3.5–4 by 3–3.5 mm, surface slightly warted with an abaxial central groove. *Aril* white, fleshy, completely encircles the seed.

Distribution — Endemic to the Nicobar Islands, near Indira point in the Great Nicobar Islands.

Habitat — Wet evergreen forests rich in humus at sea level. Flowering and fruiting: July to January.

Etymology — The specific epithet '*nicobarica*' indicates the place of collection, the Nicobar Islands.

Notes — *Plagiostachys nicobarica* is allied to *P. sumatrensis* but differs in leaf size, branching of inflorescences, flower colour and sizes of flower parts and fruits (Table 1).

The species is only known from the type locality and surroundings. These areas are at present under water from the Tsunami flood. Approximately 60% of the specimens are lost and remaining specimens are in danger of being wiped out at any time.

Other specimens examined:

INDIA: *Balakrishnan* 2977 (PBL), South Nicobars, Great Nicobar Island; 8 km on East West road, 19.8.1975; *Prasanth* 92614 (CALI), 12 km on East West road, 13.08.2003; *Balakrishnan* 3933 (PBL), 34 km on East West road, 22.7.1976; *N.G. Nair* 7162 (PBL), towards Pygmalion point, 2.12.1978; *Balakrishnan* 3832 (PBL), 20 km on road to Pygmalion point, 17.7.1976.

Table 1. Comparison of major characters of *P. nicobarica* and *P. sumatrensis*.

Characters	<i>P. nicobarica</i>	<i>P. sumatrensis</i>
Leaves	34–38.5 by 8.4–9.2 cm, elliptic, pubescent on both surfaces	52 by 8 cm, linear-oblong, upper glabrous, lower velutinous, cuspidate
Inflorescence	unbranched	branched
Flower	white	yellow
Calyx	1–1.1 cm long	2 mm long
Corolla tube	4–5 mm long	2 mm long
Corolla lobes	6–8.5 mm long	4 mm long
Capsule	1–1.1 cm diameter	4 mm diameter

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## REFERENCES

- Holttum, R.E. 1950. Zingiberaceae of the Malay Peninsula. *Gard. Bull. Singapore* 13: 1–249.
- Jain, S.K. & V. Prakash. 1995. Zingiberaceae in India: Phytogeography and endemism. *Rheedea* 5: 154–169.
- Kress, W.J., L.M. Prince & K.J. Williams. 2002. The phylogeny and new classification of the ginger (Zingiberaceae): Evidence from molecular data. *Amer. J. Bot.* 89: 1682–1696.
- Larsen, K. 1997. Further studies in the genus *Boesenbergia* (Zingiberaceae). *Nordic J. Bot.* 17: 361–366.
- Maknoi, C & P. Sirirugsa. 2002. New records of Zingiberaceae from Southern Thailand. *Nat. Hist. Bull. Siam Soc.* 50: 225–237.
- Newman, M., A. Lhuilliet & A.D. Poulsen. 2004. Checklist of the Zingiberaceae of Malesia. *Blumea*, Suppl. 16.
- Ridley, H.N. 1899. The Scitaminae of Malay Peninsula. *J. Straits Branch Roy. Asiat. Soc.*: 85–184.
- Sabu, M. 2006. Zingiberaceae and Costaceae of South India. *Indian Association for Angiosperm Taxonomy, Kerala*.
- Sabu, M. & J.K. Mangaly. 1991. *Alpinia smithiae* (Zingiberaceae), a new species from South India. *Edinburgh J. Bot.* 48: 69–71.
- Skornickova, J. & M. Sabu. 2005a. The recircumscription of *Curcuma* L. to include the genus *Paracautleya* R.M.Sm. *Gard. Bull. Singapore* 57: 37–46.
- Skornickova, J & M. Sabu. 2005b. *Curcuma roscoeana* Wall. (Zingiberaceae) in India. *Gard. Bull. Singapore* 57: 199–210.
- Smith, R.M. 1985. Review of Bornean Zingiberaceae: 1 (*Alpiniae* p.p.). *Notes Roy. Bot. Gard. Edinburgh* 42: 261–314.
- Srivastava, S.K. 1998. Zingiberaceae in Andaman and Nicobar Islands, India. *Higher Pl. Indian Subcontinent. Indian J. Forest., Add. Ser.* 8: 1–33.
- Turner, H., P. Hovenkamp & P.C. van Welzen. 2001. Biogeography of Southeast Asia and the West Pacific. *J. Biogeogr.* 28: 217–230.
- William, K.J., W.J. Kress & P.S. Manos. 2004. The phylogeny, evolution and classification of the genus *Globba* and tribe *Globbeae* (Zingiberaceae). *Appendages do matter. Amer. J. Bot.* 91: 100–114.
- Wu, T.L. & K. Larsen. 2000. Zingiberaceae. In: C.Y. Wu & H.R. Peter (eds), *Flora of China*. Vol. 24. Science Press, Beijing.