

## A New Species of *Zingiber* (*Zingiberaceae-Zingibereae*) from Northeast India

Anupam Das TALUKDAR<sup>a</sup>, Durgesh VERMA<sup>b</sup>, Dilip Kumar ROY<sup>b,\*</sup>  
and Manabendra Dutta CHOUDHURY<sup>a</sup>

<sup>a</sup>Department of Life Science & Bioinformatics, Assam University, Silchar, Assam, 788 011 INDIA;

<sup>b</sup>Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya, 793 003 INDIA

\*Corresponding author: dilipbsierc@gmail.com

(Accepted on May 9, 2015)

A new species of the genus *Zingiber* from northeast India, *Zingiber bipinianum* D. K. Roy, D. Verma, A. D. Talukdar & M. Dutta Choudhury, is described and illustrated.

**Key words:** Balpakram National Park, Meghalaya, new species, northeast India, *Zingiber*.

*Zingiberaceae* is the largest family in the order *Zingiberales* with 53 genera and over 1200 species (Kress et al. 2002). The genus *Zingiber* Mill. comprises around 141 species distributed throughout tropical Asia, Australia and the South Pacific with its center of diversity in Southeast Asia (Theilade 1999, Sabu 2006). Karthikeyan et al. (1989) listed 20 species of *Zingiber* from within the political boundary of India, but the actual number is expected to be higher. In Northeast India the genus is represented by 17 species so far (Rao and Verma 1972, Kumar 1996, Tripathi and Singh 2006, Bhaumik and Pathak 2008, Kumar et al. 2013, Sabu et al. 2013, Kishor and Skornickova 2013, Thongam et al. 2013).

During field exploration in Balpakram National Park located in the South Garo Hills district of Meghalaya, northeastern India, one of the authors (DKR) discovered a few individuals belonging to family *Zingiberaceae* that were easily identified as a member of *Zingiber* due to distinctive features such as swollen base of the petiole to form a pulvinus and presence of

a single anther with beak shaped appendage, which embraces the upper part of style. Observations in the field and careful studies of the voucher specimen have revealed a number of morphological differences from all other known species, which warrant its description as a new species.

***Zingiber bipinianum*** D. K. Roy, D. Verma, A. D. Talukdar & M. Dutta Choudhury, **sp. nov.**

[Figs. 1–2]

This new species differs from *Z. roseum* (Roxb.) Roscoe in having coriaceous, villous ligules, creamy-white corolla lobes, linear-lanceolate lateral staminodes, creamy-white anther and anther-crest; from *Z. meghalayense* Sushil K. Singh, R. Kumar & Mood in comparatively shorter pseudostems, villous leaf beneath and petioles, sparsely hairy bracteoles, pubescent ovary; from both in purple bracts, bidentate calyx and purple-blotched labellum.

**Type:** INDIA. Meghalaya: South Garo Hills district, Balpakram National Park, Hatisia Beat, Teptepa, 25°13'21.23"N 90°54'27.24"E, 257

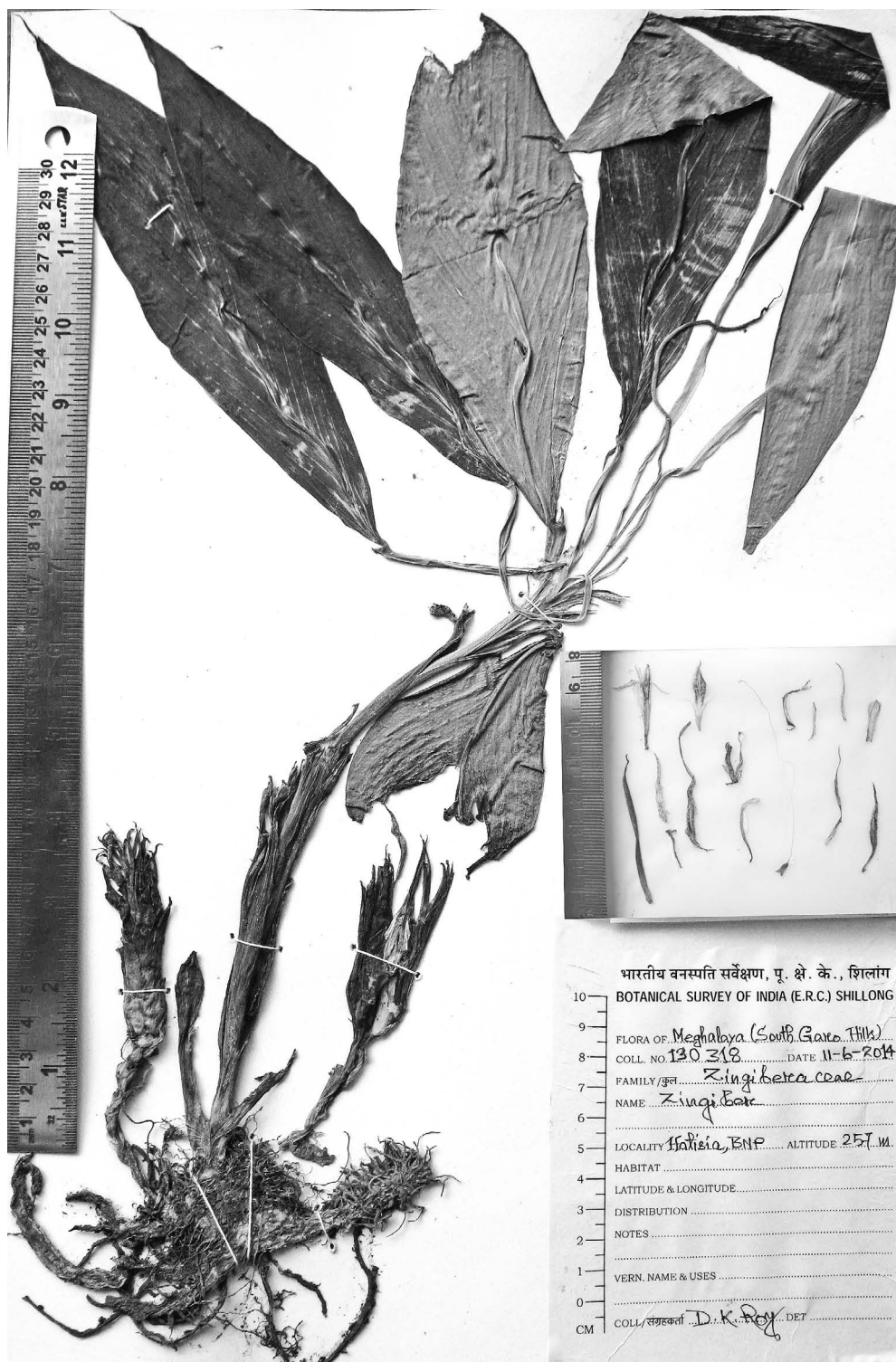


Fig. 1. Type of *Zingiber bipinianum* D. K. Roy, D. Verma, A. D. Talukdar & M. Dutta Choudhury (INDIA, Meghalaya, Balpakram National Park, 11 June 2014, D. K. Roy 130318, ASSAM, holotype).

Table 1. Morphological comparison between *Zingiber bipinianum*, *Z. roseum* and *Z. meghalayense*

	<i>Z. bipinianum</i>	<i>Z. roseum</i>	<i>Z. meghalayense</i>
Pseudostem	30–50 cm long	40–60 cm long	200 cm long
Petiole	villous	villous	glabrous
Ligule	bifid, coriaceous, 0.5–0.9 cm, villous, apex acute, brown-ciliate	bifid, membranous, 1.5–2.0 cm	bifid, coriaceous, 0.5 cm, villous
Leaf blade	elliptic-lanceolate, 11.5–25.5 × 6.5–10.0 cm, adaxially glabrous or sparsely pubescent, abaxially villous	oblong-lanceolate, 8.5–40 × 4.3–11.5 cm, adaxially glabrous, abaxially villous	oblong-lanceolate, 4–45 × 7–7.5 cm, glabrous
Peduncle	5.0–6.0 cm long.	short or sessile	7–9 cm long
Spike	ellipsoid, 6.5–7.0 × 2.0–2.5 cm.	ellipsoid, 4–6 × 2.0–2.5 cm.	ovate or subglobose, 4–7 × 3–4 cm.
Bract	purple, outer one broadly ovate, inner ones ovate-lanceolate, 4.0–5.2 cm long, apex acuminate	red, outer one broadly ovate, inner one ovate-lanceolate, 4–5 cm long, apex acuminate	red, linear, 3–4 cm long, apex rounded
Bracteole	lanceolate, 2.3–2.5 × 0.4–0.5 cm, glabrous but sparsely hairy at base, creamy-white with light purple tinges	linear-lanceolate, slightly notched at the tip, sparsely hairy	lanceolate, 2.0 × 6.0 cm, reddish, glabrous
Calyx	tubular, creamy-white, purplish tinged, membranous, 1.6 × 0.7 cm when flattened, apex 2-toothed	tubular, membranous, tip slightly toothed	tubular, pinkish-white, 1.0–1.2 cm, apex 3-toothed
Corolla-tube	tube creamy-white, ca. 4.3 cm long; lobes lanceolate, creamy-white, dorsal one 2.6–2.9 × 0.6–0.7 cm, lateral ones 2.0–2.2 × 0.4–0.5 cm	tube white, 2.5 cm long; lobes pale red, dorsal one 2.5 cm long	tube pinkish-cream, 4–5 cm long; lobes lanceolate, dorsal one 3.0–3.2 × 0.8 cm, lateral ones 2.5–2.8 × 0.5 cm
Labellum	ovate-elliptic, creamy-white, blotched with purple, apex acuminate, 3-lobed	oblong-cuneate, white with spots and streaked with red and yellow, 3-lobed	broadly ovate, 2.50–2.75 × 1.5–2.0 cm, apex acute, 3-lobed, all creamy, light yellow
Lateral staminode	linear-lanceolate, ca. 5.5 mm, creamy-white, free, apex acute	suborbicular, yellow at base	acute, yellow, adnate, darker yellow apex
Anther	creamy-yellow, ca. 1 cm long	red, 1 cm long	yellow, 1.2 cm long
Anther crest	creamy white, 0.9 cm	red, 0.7 cm	yellow, 0.7–0.8 cm
Ovary	pubescent, 6 × 2 mm	pubescent, 4 mm	glabrous, 3 × 2 mm

m, 11 June 2014, D. K. Roy 130318 (ASSAM–holotype; Fig. 1).

Deciduous herbs. Rhizomes thick, fleshy. Pseudostems 30–50 cm, base purplish green. Leaves 6–10 in number, subsessile; petiole 0.3–0.5 cm, villous; ligule bifid, coriaceous, 0.5–0.9 cm, apex acute, brown ciliated; leaf blade elliptic-lanceolate, 11.5–25.5 × 6.5–10.0

cm, adaxially glabrous or sparsely pubescent, abaxially villous, base rounded, apex acuminate. Inflorescences 1–3, radical, half immersed in the soil, many flowered; peduncles short, 5.0–6.0 × 0.7–0.8 cm, sheaths broadly ovate, imbricating, 3.4–5.0 × 1.2–1.7 cm, creamy white, sometimes tinged with purple, glabrous, apex acute-obtuse. Spikes ellipsoid, 6.5–7.0 × 2.0–2.5 cm; bracts

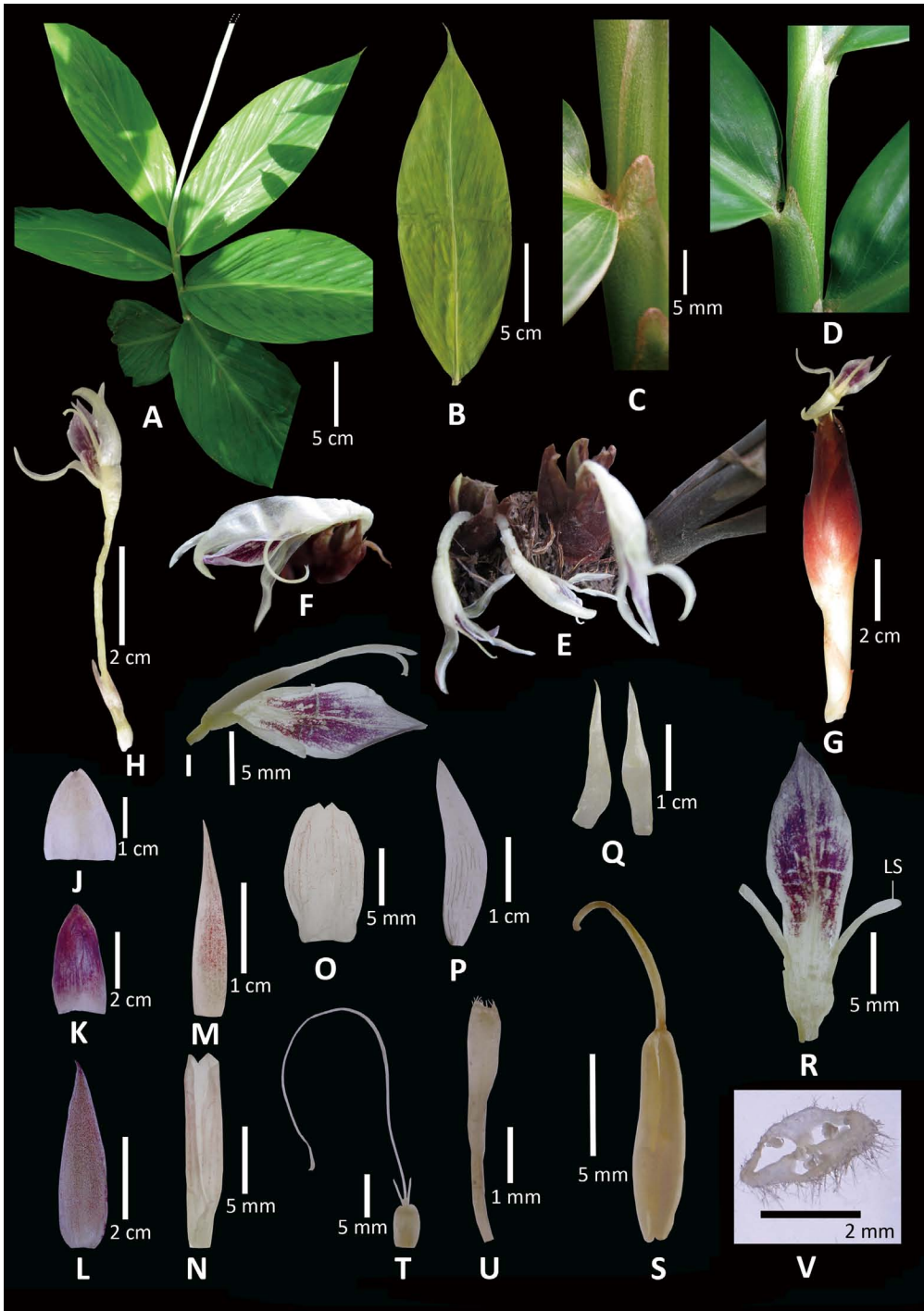


Fig. 2. *Zingiber bipinianum* D. K. Roy, D. Verma, A. D. Talukdar & M. Dutta Choudhury, sp. nov. A. Habit. B. Leaf. C, D. Portion of pseudostem showing ligule. E, F. Portion of plant with inflorescence. G. Inflorescence with flower. H. Flower. I. Portion of flower showing labellum. J. Peduncle sheath. K. Outer bract. L. Inner bract. M. Bracteole. N. Calyx. O. Calyx (flattened out). P. Dorsal corolla lobe. Q. Lateral corolla lobes. R. Labellum. LS = Lateral staminode/lobe. S. Anther. T. Ovary with style, stigma and epigynous glands. U. Stigma. V. Cross section of ovary.

closely imbricating, outer one broadly ovate, 4.0–4.5 × 2.2–2.6 cm when flattened, inner ones ovate-lanceolate, 5.0–5.2 × 1.2–1.4 cm, glabrous, apex acuminate, purple; bracteoles lanceolate, 2.3–2.5 × 0.4–0.5 cm, sparsely hairy at base, otherwise glabrous, creamy-white with light purple tinges. Calyx tubular, white with purplish tinged, membranous, split in one side, ca. 1.6 × 0.7 cm when flattened, apex 2-toothed, glabrous. Corolla tube slender, creamy-white, ca. 4.3 cm long; lobes subequal, creamy white, lanceolate; dorsal lobe 2.6–2.9 × 0.6–0.7 cm; lateral lobes 2.0–2.2 × 0.4–0.5 cm. Labellum ovate-elliptic, 3-lobed; central lobe ovate-elliptic, creamy-white and blotched with purple, ca. 2.6 × 0.7 cm, apex acuminate; lateral lobes creamy-white, linear-lanceolate, ca. 5.5 mm, free, apex acute. Stamen arching over labellum; anther sessile, creamy-yellow, ca. 1 cm long; connective appendage linear, curved, wrapped around style, creamy-white, ca. 0.9 cm. Style creamy-white, filiform, ca. 7 cm long; stigma creamy-white with a circular aperture surrounded by stiff hairs. Epigynous glands ca. 4 mm long, linear. Ovary pale greenish-white, sparsely white pubescent, ca. 0.6 × 0.2 cm. Fruit not seen.

Distribution: Currently known only from the type locality.

Etymology: The specific epithet is in honor of Dr. Bipin Kumar Sinha, Scientist, Industrial Section, Indian Museum, Botanical Survey of India, Kolkata, mentor of the third author (DKR).

Phenology: Flowers June through July.

Conservation status: Known from a single collection, hence its conservation status remains Data Deficient (DD).

Notes: *Zingiber bipinianum* is characterized by its broadly ovate to ovate-lanceolate purple bracts, bidentate calyx, linear-lanceolate, free lateral staminodes and creamy-white with purple blotched labellum, which separates it from all congeners. But, superficially this new species is similar to *Z. roseum* (Roxb.) Roscoe and *Z. meghalayense* Sushil K. Singh, R. Kumar &

Mood. Table 1 demonstrates the differences between these three species.

Authors are grateful to the Director, Botanical Survey of India, Kolkata and Head of Office, Botanical Survey of India, Eastern Regional Centre, Shillong for facilities and encouragement. Thanks are also due to Dr. K. N. Gandhi, Harvard University Herbaria, Cambridge, USA for his helpful suggestions in preparation of the manuscript.

### References

- Bhaumik M. and Pathak M. K. 2008. Notes on distribution of *Zingiber squarrosus* Roxb. (*Zingiberaceae*). Bull. Bot. Surv. India **50**(1–4): 152–155.
- Karthikeyan S., Jain S. K., Nayar M. P. and Sanjappa M. 1989. *Florae Indicae Enumeratio: Monocotyledonae*. 435 pp. Botanical Survey of India, Calcutta.
- Kishor R. and Shornickova J. L. 2013. *Zingiber kangleipakense* (*Zingiberaceae*): a new species from Manipur, India. Gard. Bull. Singapore **65**(1): 39–46.
- Kress W. J., Prince L. M. and Williams K. J. 2002. The phylogeny and a new classification of the gingers (*Zingiberaceae*): evidence from molecular data. Amer. J. Bot. **89**: 1682–1696.
- Kumar R., Mood J., Singh S. K. and Sinha B. K. 2013. A new species of *Zingiber* (*Zingiberaceae*) from northeast India. Phytotaxa **77**(4): 61–64.
- Kumar S. 1996. *Zingiberaceae*. In: Hajra P. K. and Verma D. M. (eds.), *Flora of Sikkim* **1**: 121–134. Botanical Survey of India, Calcutta.
- Rao A. S. and Verma D. M. 1972. Materials towards a monocot flora of Assam-II (*Zingiberaceae* & *Marantaceae*). Bull. Bot. Surv. India **14**(1–4): 114–143.
- Sabu M. 2006. *Zingiberaceae* and *Costaceae* of South India. pp. 225–250. Indian Association for Angiosperm Taxonomy, Calicut.
- Sabu M., Sreejith P. E., Joe A. and Pradeep A. K. 2013. *Zingiber neotruncatum* (*Zingiberaceae*): a new distributional record for India. Rheedea **23**(1): 46–49.
- Theilade T. 1999. A synopsis in the genus *Zingiber* (*Zingiberaceae*) in Thailand. Nordic J. Bot. **19**: 389–410.
- Thongam B., Sarangthem N. and Konsam B. 2013. *Zingiber kerrii* (*Zingiberaceae*): a new record for India from Manipur. Taiwania **58**(4): 291–294.
- Tripathi S. and Singh K. K. 2006. Taxonomic revision of the genus *Zingiber* Boehm. in North-East India. J. Econ. Taxon. Bot. **30**(3): 520–532.

A. D. Talukdar<sup>a</sup>, D. Verma<sup>b</sup>, D. K. Roy<sup>b</sup>, M. D. Choudhury<sup>a</sup>: 北東インド産ショウガ属 (ショウガ科: ショウガ連) の 1 新種

インド・メガラヤ州 Balpakram 国立公園から, ショウガ属 (ショウガ科: ショウガ連) の 1 新種, *Zingiber bipinianum* D. K. Roy, D. Verma, A. D. Talukdar & M. Dutta Choudhury を記載した. ホロタイプを Fig. 1 に示す. 本新種は苞が紫色を帯び, 広卵形~卵状披針形で, 萼に 2 歯があり, 線状披針形で離生する側生の仮雄蕊, クリーム色で紫色の斑点がある唇弁をもつことで際立っており, 他種と容易に区別できる. 本種は見た目には *Z. roseum* (Roxb.) Roscoe と *Z. meghalayense* Sushil

K. Singh, R. Kumar & Mood に似るが, 前者とは革質で有毛の葉舌やクリーム色の花冠裂片をもつことなど, 後者からは偽茎が比較的短いこと, 葉の下面や葉柄が有毛であることなどが異なる. 3 種間の違いを Table 1 に示した.

(<sup>a</sup>インド・Assam 大学  
Department of Life Science & Bioinformatics,  
<sup>b</sup>インド・Botanical Survey of India  
Eastern Regional Centre)