

## ***Arisaema ciliatum* H. Li var. *liubaense* Gusman & Gowda (Araceae), a new record for India**

**Manudev K. M.<sup>1</sup>, Santhosh Nampy<sup>2,3</sup> and Arunkumar P. G.<sup>2</sup>**

<sup>1</sup>Department of Botany, St. Joseph's College, Devagiri, Kozhikode, Kerala- 673 008, India

<sup>2</sup>Department of Botany, University of Calicut, Malappuram P.O., Kerala- 673 635, India

*E-mails:* santhohnampy5@gmail.com; manudevkmadhavan@gmail.com

<sup>3</sup>*Corresponding author*

[Received 22.05.2015; Revised & accepted 08.06.2015; Published 30.06.2015]

### **Abstract**

*Arisaema ciliatum* H. Li. var. *liubaense* Gusman & Gowda, collected from Khasi Hills in Meghalaya, is reported as a new record for the Flora of India. It also forms the first report of its occurrence outside China. Taxonomic description and colour photographs are provided to facilitate easy identification in the field.

**Key words:** *Arisaema* sect. *Sinarisaema*, *Arisaema ciliatum* var. *liubaense*, Khasi hills, Cherrapunjee.

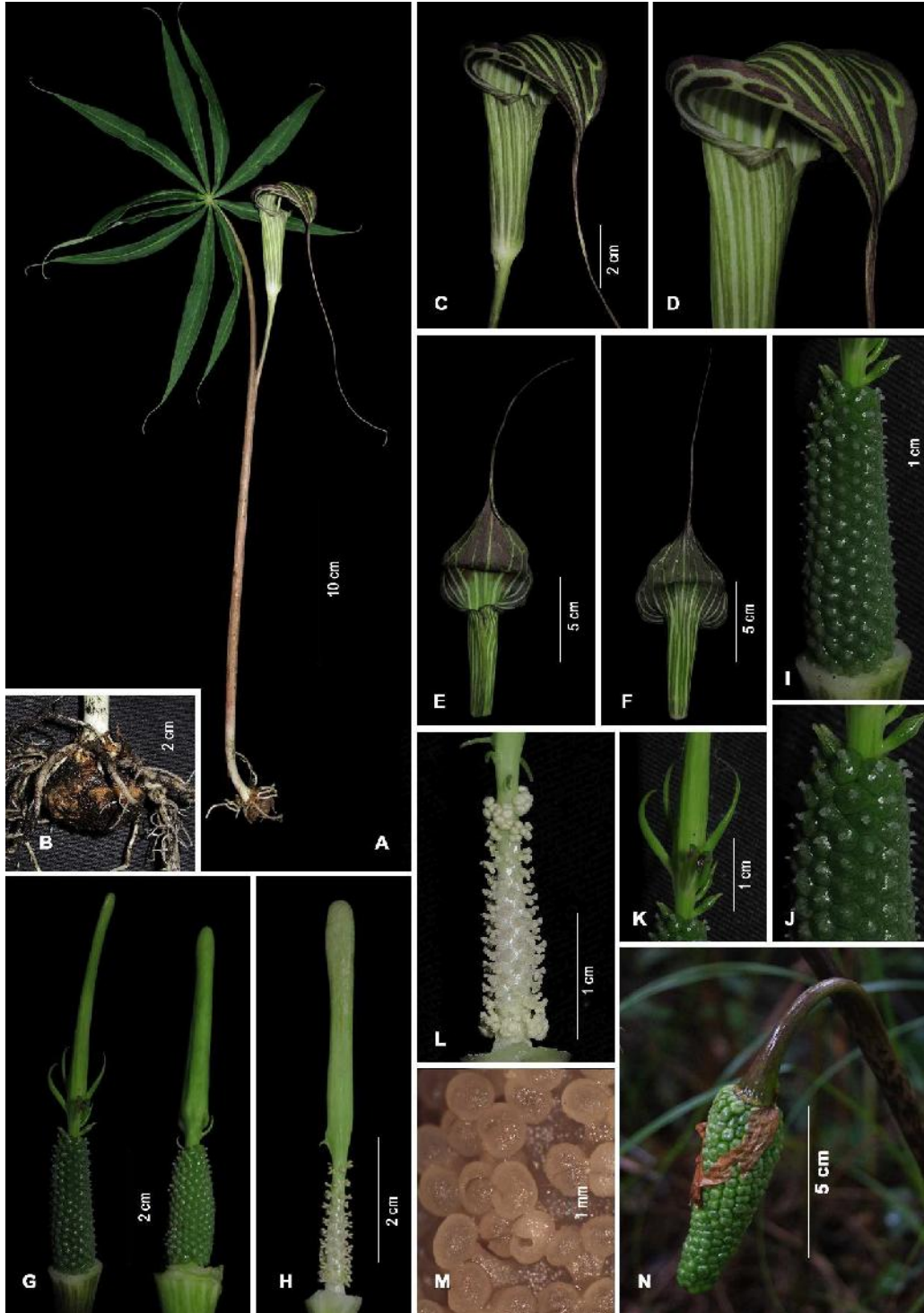
### **INTRODUCTION**

The genus *Arisaema* C.F.P. Martius (Araceae), consisting of about 210 taxa in the world (Govaerts *et al.* 2014), is principally Asiatic in distribution. It is represented by 48 species and 13 infraspecific taxa in India (Manudev & Nampy 2014).

During a field expedition to Khasi Hills in Meghalaya in 2013, as a part of taxonomic revision of Indian *Arisaema*, an interesting specimen was collected. The plant has an attractive spathe with a white-striped, pale-brownish green tube and anastomosing, pale green-white striped, purplish-brown to carmine limb ending in a long tail. Critical examination revealed that the specimen is *Arisaema ciliatum* var. *liubaense* Gusman & Gowda, a taxon hitherto known only from western China. On a further trip to the same locality in 2014 resulted in the collection of a fruiting specimen with nodding peduncle and stoloniferous tubers, confirmed the identity of the taxon.

*A. ciliatum* var. *liubaense* has invariably carmine spathe with pale green longitudinal stripes, tube margins lacking cilia and glabrous spadix appendix more exerted from the spathe-tube (Gowda & Gusman 1999). The present collection agrees in all the above characters except the colour of the spathe which is greenish at the tube and purple or carmine in the limb. Since these collections became the first report of this infraspecific taxon from India and its occurrence outside China, detailed description and photographs are provided for its easy identification in the field.

Gowda & Gusman (1999) described var. *liubaense* based on the plants grown from the corms received from Michael Hoog (Dutch Gardener), which was originally supplied by Carla Teune, who collected it from Liuba (China) in 1981. Though collected from a Dutch nursery, in the protologue, authors cited the locality and date of collection as near Liuba, area



**PLATE-I.** *Arisaema ciliatum* H. Li var. *liubaense* Gusman & Gowda: **A.** Habit; **B.** Corm; **C.** Inflorescence; **D.** Mouth portion enlarged; **E.** Spathe-front view; **F.** Spathe-back view; **G.** Female spadices; **H.** Male spadix; **I.** Female floriferous region; **J.** Female flowers-enlarged view; **K.** Neuters; **L.** Male floriferous region; **M.** Male flowers-enlarged view; **N.** Fruiting spike borne on a nodding peduncle (A–M from Manudev & Santhosh Nampy 135220; N from Manudev 139883).



**PLATE - II.** Holotype of *Arisaema ciliatum* H. Li var. *liubaense* Gusman & Gowda (U). © National Herbarium Nederlands.

of Mt. Minya Konka (Gonga Shan) Szechuan (Sichuan) Province, China, at 3600 m alt. on 15.09.1981. Holotype is deposited at U and isotype at L also reiterates the same. On a personal communication with Dr. Kanchi N. Gandhi (Nomenclatural Registrar, Harvard University) opined that the collection details provided in the protologue by Gowda & Gusman (*l.c.*) has to be clarified since the type specimens were actually raised in the author's garden.

### TAXONOMIC TREATMENT

*Arisaema ciliatum* H. Li var. *liubaense* Gusman & Gowda, *Blumea* 44: 39. 1999. *Type*: Originally from China, Szechuan (Sichuan) Province, near Liuba, area of Mt. Minya Konka, 3600 m amsl, *C. Teune* 369, subsequently raised by Gusman, 09.05.1989 (U, image !). [PLATES - I & II]

Dioecious, succulent, perennial herbs, to *c.* 55 cm tall. Corms globose to subglobose, 2–3 cm diam., 1.5–2.5 cm tall, cream-white, stoloniferous. Roots many, from the upper side of the corm, white. Cataphylls 2 or 3, obtuse-orbicular at apex, mucronate; outer *c.* 2.5 cm long, pale to white or purplish distally; middle 8–12.5 cm long, pale to white below, pink to purplish above; inner 17–30 cm long, pale purple or pink, brown or greenish brown, not mottled. Leaf solitary, usually unfolds with the emergence of inflorescence; petiole up to 55 cm long, 0.5–0.7 cm thick, pale to dark greenish brown, greenish distally, not mottled; leaflets radiatisect, 7–12, sessile, 7–19.5 × 2–3.8 cm, narrow, linear to oblong-elliptic, long acuminate at apex and prolonged in to *c.* 3.5 cm long tail, base gradually cuneate, margins entire, often wavy or undulate, pale-dark green ventrally, glaucous dorsally. Spadix emerging when the leaf unfolds and held below the leaf; peduncle 32–45 cm long, green or pale to dark brownish green, exerted by *c.* 5 cm from the pseudostem; pseudostem 27.5–40 × 0.7–1.5 cm, coloured as in petiole. Spathes 17–25.5 cm long with a tail up to 15 cm long; tube of spathe cylindrical, funnel shaped towards the mouth, 5–6 × 1–2 cm, pale green to brownish green, pale to white striped along the veins; margins of the mouth strongly recurved, not ciliate; limb, wider than tube, ovate-lanceolate, 5.5–6 × 4.5–5.7 cm, acute-acuminate and prolonged in to a slender tail, to 5–15 cm long, purplish-brown to carmine, with conspicuous white to pale green stripes along the veins ending in an anastomosis, horizontal, arched over and curved down with tails drooping. Female spadix sessile, 6.5–7.5 × 0.6–0.8 cm, cylindrical with a narrow fertile region of 2–2.5 cm at the base, followed by a few neuters; appendix constricted or truncate at the base after neuters, cylindrical, rounded and smooth at apex, green to light green, well exerted from the tube; neuters subulate, a few, 0.3–0.5 cm long, upcurved, green; pistils many, sessile, compactly arranged, ovoid or bottle shaped, green; ovules 1–4, white; style short; stigma papillate, stellate, white. Male spadix similar to female, slender, 5–6.5 × 0.6–0.7 cm, with a narrow fertile region 1.8–2 cm at the base, pale green to green; neuters usually absent; male flowers scattered over or crowded at the base and distant above, stipitate, consisting of 2–4, cream anthers, dehiscence by an apical round to oblong pore. Fruiting spike *c.* 6.5 × 2.5 cm, borne on a nodding peduncle; receptacle cream coloured; berries compactly arranged, green when young, orange-red at maturity, 1–4 seeded.

*Distribution*: **INDIA**: Meghalaya, Khasi Hills (present report). **CHINA**: Sichuan (Liuba), Yunnan (Heishui).

*Flowering & fruiting*: May – July.

*Ecology*: As an under growth in evergreen forests or at the margins, in moist semi-shady conditions or along the streams, often found in association with *Arisaema fraternum* Schott, *A. nepenthoides* (Wallich) Schott, *Cautleya spicata* (Smith) Baker, etc.

*Specimens examined*: India, Meghalaya. East Khasi Hills district, Laitryngew, on the way to Cherrapunjee, 1684 m, 10.05.2013, in flowering, Manudev & Santhosh Nampy 135220; *ibid.*, 22.07.2014, in fruiting, Manudev 139883 (CAL; CALI).

*Taxonomic notes*: *A. ciliatum* var. *liubaense* is closely related to *A. consanguineum* Schott in general morphological features but can be distinguished by stoloniferous corms and purplish-brown or carmine spathe limb with conspicuous white to greenish-white stripes along the veins ending in an anastomosis as opposed to a proliferous corm and usually greenish spathe limb devoid of white stripes. This variety is also allied to *A. erubescens* (Wallich) Schott but can be readily distinguished by an erect fruiting peduncle and a pinkish spathe limb shorter than the tube, with an acuminate apex devoid of a long drooping tail.

#### Acknowledgements

Authors are thankful to The Principal, St. Joseph's College, Devagiri, Kozhikode, Dr. J. E. Thoppil, Head, Department of Botany, University of Calicut for facilities; Mr. Alfred Joe, Mr. Ashfak Ahmed, Mr. Abdul Kabeer and Miss. Aishwarya, University of Calicut for assistance in the field and Department of Forests, Government of Meghalaya for permission. SN and APG are thankful to the Department of Science and Technology, New Delhi for financial assistance (F.No.SERB/SR/SO/PS/09/2012) and MKM is thankful to University Grants Commission for Research Fellowship.

#### LITERATURE CITED

- Govaerts, R.; Bogner, J.; Boos, J.; Boyce, P.; Cosgriff, B.; Croat, T.; Goncalves, E.; Grayum, M.; Hay, A.; Hettterscheid, W.; Ittenbach, S.; Landolt, E.; Mayo, S.; Murata, J.; Nguyen, V.D.; Sakuragui, C.M.; Singh, Y.; Thompson, S. & Zhu, G. 2014. World Checklist of Araceae. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://apps.kew.org/wcsp/> (retrieved 12 December 2014).
- Gowda, E.J. & Gusman, G. 1999. A new variety of *Arisaema ciliatum* (Araceae). *Blumea* 44: 37 – 39.
- Manudev, K.M. & Nampy, S. 2014. *Arisaema madhuanum*, a new species of Araceae from India. *Edinburgh J. Bot.* 71: 269 – 273.