



***Musa chunii* Häkkinen (Musaceae): An addition to the wild banana flora of India and notes on conservation of a Critically Endangered species.**

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Abstract: *Musa chunii* Häkkinen, a Chinese species with ornamental potential is reported for the first time from India. A detailed description, photographs, conservation measures and relevant notes on the species are provided.

Keywords: Musaceae, *Musa chunii*, New Record, North-East India, *Rhodochlamys*,

Introduction

Musaceae, commonly known as banana family, distributed in tropical Asia from the eastern Himalayas to northern Australia and also in tropical Africa. India is well known for its vast genetic diversity of members of Musaceae comprising seeded wild species to seedless cultivars of various ploidy levels. Being great economic importance in Agriculture, the cultivated bananas have attracted a good sense of research in India. The wild relatives, however, have attracted much less attention, as they are taxonomically difficult group because of the large fleshy nature of the plant, ephemeral aspect of the flowers and poor presentation in herbaria and literature. In India wild *Musa* spp. are largely distributed in North-Eastern States, Western Ghats, Eastern Ghats and Andaman and Nicobar Islands. However, many regions within its center of diversification in North-East India have not been explored systematically due to various factors. No comprehensive work on the family or any genera in particular has been carried out since Hooker (1892). The only work after Hooker covering the whole India is the mere enumeration by Karthikeyan *et al.*, (1989). Recently many species have been reported from neighboring countries like China, Myanmar, Vietnam etc. Considering the lesser number of new reports of taxa from India, as compared from neighboring countries, we could expect more from this region also. This paper focuses on the new record of *M. chunii* Häkkinen (2009) from India, which belongs to the sect. *Rhodochlamys*. The section is characterized by having erect or drooping inflorescence with fruit pointing towards the

bunch apex. Most of the species also typically have relatively few fruits and are best known for their brightly colored bracts, a feature that makes them popular as ornamental plants' (Cheesman, 1947; Simmonds, 1962; Shepherd, 1999; Häkkinen & Sharrock, 2002). This is an interesting ornamental banana with the purpl/lilac bracts and green fruits turning to yellow which lasts for about 2–3 months

During a recent field survey to Kalimpong and Gangtok, the senior author could collect an interesting *Musa* from the Kenibreed Nursery of Kalimpong, which was originally collected and maintained by Mr. Keshow Chandra Pradhan from Tezu region of Arunachal Pradesh. Since the specimen did not match with any of the specimens described from India, it was compared to the species described from other countries. It was identified as *M. chunii* and this interesting rare species was first described from Dehong Prefecture, Yunnan, China and known to occur only in china and Myanmar. This collection forms an addition to the Indian wild banana. Hence, a detailed botanical description of the species is provided to facilitate its easy identification, based on living plants from the Kenibreed Nursery, Kalimpong by completing the entire INIBAP *Musa* Descriptor List (IPGRI INIBAP/CIRAD, 1996). The descriptive terms here follow the traditional banana taxonomy as used by Simmonds (Simmonds, 1962, 1966) and Argent (Argent, 1976). The photographs for the support of description are also provided. Voucher specimens were deposited at the Calicut University Herbarium (CALI). Apart

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from the Kenibreed Seeds nursery, the taxon would be conserved in the Calicut University Botanical Garden (CUBG) also. Every effort would be taken for its multiplication and *in situ* conservation of the taxon in its natural habitat.

Taxonomic Treatment:

Musa chunii Häkkinen, Journal of Systematics and Evolution 47(1): 87-91. 2009. Fig. 1.



Fig.1: *Musa chunii* Häkkinen A: Habit. B: Inflorescence. C: Infructescence. D: Single fruit. E: Leaf base. F: Leaf apex. G: Bisexual flower. H: Flower without tepals. I: Cross-section of ovary. J: Bract. K: Male flower. L: Flower without tepals. Photos by M. Sabu.

Type: China. Yunnan: Dehong Prefecture, Yingjiang County, Tongbiguan Nature Reserve, alt. 1185 m, N 24°37.034', E 97°34.913', 06 April 2006, M. Häkkinen 517 (holotype HITBC; *isotypes*, H, ISBC, PE)

Plants slender, suckering freely, close to the parent plant, 20–60cm, suckers many, vertically arranged. Mature pseudostems 1.2–1.8m high, 6–9cm diam. at the base, light green, covered with old brown leaf sheaths, underlying color light green with red-purple pigmentation, shiny, sap milky. Leaf habit intermediate, laminae 100–120×40–55cm,

oblong-lanceolate, truncate at apex, adaxially dark green with purple margin, dull, abaxially medium green, appearance shiny, leaf bases asymmetric, both sides pointed, midrib adaxially light green with purple pigmentation, abaxially pink-purple. Petioles 30–42cm long, petiole margins open with erect and red-purple blotches at the base, petiole bases winged and not clasping the pseudostem. Inflorescences pendulous, peduncles 8–12cm long, cream with pink tinge, densely puberulent with short white hairs, without grooves. Sterile bract 1–2, persistent, 20–22cm long, violet abaxially and adaxially. Female buds lanceolate, convolute. Female bracts 18–20×7–9cm, pale lilac abaxially and adaxially, slightly glaucous outside, shiny inside, apex pointed, lifting one bract at a time, revolute and persistent. Basal 4–5 hands hermaphrodite. Flowers 4–6 per bract in a single row, 6.5–8cm long. Compound tepal 3.5–4.5 × 2–2.3cm, cream, ribbed at dorsal angles, lobes 5, yellow, 0.3×0.3cm, with horn-like appendage to outer two lobes 0.3–0.4cm long. Free tepal 3.1–3.4×1.8–2.2cm, translucent white, oval-shaped, corrugated at apex with a short acumen, recurved. Stamens 5, 3.8–4.4cm long, cream, filament cream, 1.7–2, anther cream, 2.1–2.4. Ovary 3–3.3cm long, straight, light green, with ovules in 2 rows per locule, axile placentation, style straight, inserted, 2.3–2.6cm long, cream, stigma globose, 0.8×0.4cm, creamy yellow. Male bud lanceolate, convolute, rachises pendulous. Male bracts 10–17×4.5–5cm, pale lilac abaxially and adaxially, very little wax present, apex pointed, lifting 2 bracts at a time, revolute and persistent, the whole bud degenerating after producing some bracts. Male flowers on average 6 per bract in one row, 4.8–5.4cm long. Compound tepal 4–4.3×1.1–1.2cm, cream, ribbed at dorsal angles, and with 5-toothed orange-yellow lobes. Free tepal 3–3.5×1.2–1.3cm, translucent cream, corrugated at apex with a short acumen. Stamens 5, 4–4.5cm long, exserted, filament white, 2–2.4cm long, anther cream, 2–2.5cm long. Ovary straight, 1.1–1.2cm long, creamy white, style straight, inserted, 3.5–3.7cm long, stigma cream, globose. Fruit bunch lax, with 5 hands and 4–6 fruits per hand, in a single row, fingers curved towards the peduncle, individual fruit 6.7–7.4cm long, 2.5–3cm diam., pedicel c. 1cm long, glabrous, fruits curved, slightly ridged, apex blunt-tipped, with floral relicts,

immature fruit peel color green with black blotches, becoming yellow.

Distribution and habitat: *M. chunii* is distributed in China and Myanmar. The present record of this species from Arunachal Pradesh shows its extended distribution to India. This species grows as forest undergrowth.

Conservation status: This species has been collected only from one location in Arunachal Pradesh and could be found 10–15 plants in a clump and is very rare. No populations were located in from other Northeastern states. Häkkinen could collect only one population from China bordering Myanmar and an isolated population from Myanmar. *M. chunii* is here given the status of Critically Endangered (CE) (IUCN 2011). The extent of occurrence is estimated to be less than 10 sq km area and the species is known to exist in only three localities. Continuing decline in area of occupancy may be the reason for the decline of population. Clearing of hills for cultivation can cause damage to the existing population and will lead to the extinction of this interesting species. As part of conservation program of Wild Indian Musaceae, this would be conserved in Calicut University Botanical Garden. Every effort will be taken for *in situ* conservation of this potential ornamental plant in its natural habitat.

Flowering and fruiting: January–August.

Notes: This species shows similarity with *M. rubinea* Häkkinen of the section *Rhodochlamys* but differ from it in having pale lilac color bracts, creamy peduncle and much big fruits.

Specimens examined: INDIA. **West Bengal:** Kalimpong, Everest Nursery area (originally collected from Tezu, Arunachal Pradesh), 21 April 2013, N 27°03.455', E 088°28.151', 1253 m, *M. Sabu* 130763 (CALI!),

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