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NOTE

Impatiens siculifer Hook.f. (Balsaminaceae) and *Tricarpelema chinense* D. Y. Hong (Commelinaceae) Two Additions to the Flora of India from Lohit Valley of Arunachal Pradesh, India

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ABSTRACT: The paper reports two species, viz. *Impatiens siculifer* Hook.f. and *Tricarpelema chinense* D. Y. Hong as new records for India from Lohit valley of Arunachal Pradesh.

KEY WORDS: Balsaminaceae, Commelinaceae, Lohit valley, Arunachal Pradesh, new records, India.

INTRODUCTION

Lohit valley is the easternmost part of the Indian Territory. It starts where Lohit River enters Arunachal Pradesh from China and ends where the river merges with the mighty river Brahmaputra in Assam. The valley comprises two administrative districts: Lohit and Anjaw. A floristic confluence of three major phytogeographic region, viz. China, Myanmar and India, the Lohit valley is still largely un-explored due to its difficult and inaccessible geographical terrain. During the course of extensive floristic survey and exploration under the project "Flora of Anjaw District"(2010–2013) of Botanical Survey of India, the authors have collected, among others, specimens of two species which after through study and identification turned out to belong to *Impatiens siculifer* Hook. f. var. *siculifer* and *Tricarpelema chinense* D. Y. Hong. A critical perusal of the literature revealed that both of these species have not been reported from India so far. Hence they are reported here with descriptions and colour illustrations so as to enable the field botanists, foresters, environmentalists, herbalists, etc. to identify them in the field.

TAXONOMIC TREATMENTS

Impatiens siculifer Hook. f., Nouv. Arch. Mus. Hist. Nat., sér. 4, 10: 246. 1908; Chen, Akiyama & Ohba, Fl. China 12:68.2007. Fig. 1. A–I

Perennial herbs, up to 1m tall; stem slender, simple or few-branched, upper portion slightly ribbed, nodes swollen. Leaves alternate, usually crowded on upper part of stem; stipules glandular; upper leaves subsessile, lower leaves with 1.5–3 cm long, slightly winged petiole; blade ovate-lanceolate or elliptic-lanceolate, 5–20 × 2.5–5 cm, setose between teeth, lateral veins 5–11 pairs, base cuneate, margin crenate or coarsely crenate, apex acute or acuminate. Inflorescences in upper leaf axils, racemose, peduncle 5.5–6.3 cm long, 5–8-flowered. Pedicels slender or stout, bracteate at base; bracts persistent, lanceolate. Flowers golden yellow, ca. 3 cm deep. Lateral sepals 2, narrowly oblong, ca. 5 mm long, membranous, slightly thickened on 1 side, 3–5-veined, apex cuspidate. Lip navicular; narrowed into an incurved or recurved, long spur, with reddish spots, tip shortly rostellate, long-beaked at the mouth of the lip, linear, 1cm long, greenish; standard sub-orbicular or orbicular, abaxial midvein thickened, narrowly winged, margins wavy; wings yellow, not clawed, 2-lobed; basal lobes sub-triangular, ca. 5 mm long; distal lobes lorate, ca. 1 cm long, tip acuminate, reddish spot at base of the distal lobe; anthers obtuse; gynoecium 5 mm long. Capsule clavate.

Impatiens siculifer Hook. f. was first discovered by Dr. A. Henry in the year 1898 from Yunnan province of China and J. D. Hooker published it as a new species in the year 1908 from Henry's collection (Hooker, 1908). This species can easily be distinguishable due to its lanceolate leaves confined mainly to upper portion of the stem, axillary racemose inflorescence, smaller golden yellow flowers, linear curved spur with reddish spots, and the horn like appendage (awn) in the mouth of the lip. A comparison of its morphological characters with other closely related species is provided in Table 1. Chen et al. (2007) have divided *Impatiens siculifer* Hook.f. into three verities as follows:

Key to the varieties of *Impatiens siculifer*

1. Leaves adaxially brown-purple, margin coarsely crenate; upper petal orbicular ..... var. ***mitis***

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Table.1 Distinguishing characters of *Impatiens siculifer* and its closely related species

Impatiens siculifer	*Impatiens stenantha*	*Impatiens longipes*
Perennial herbs	Annual herbs	Annual herbs
Leaf blade ovate-lanceolate or elliptic-lanceolate, 5–20 × 2.5–5 cm, lateral veins 5–11 pairs	Leaf blade lanceolate or elliptic ovate, 7–15 × 3–5 cm; lateral veins 7–9 pairs	Leaf blade ovate-lanceolate, 5–9 × 2–3 cm; lateral veins 5–7 pairs
Inflorescence axillary, peduncle equal or shorter than leaves	Inflorescence axillary or terminal, peduncle shorter than leaves	Inflorescence axillary or subterminal, peduncle longer than leaves
Flower bud greenish yellow, with long awn	Flower bud reddish, awned	Flower bud yellow, not awned
Flower c. 3 cm, throat with minute reddish blotch or spots	Flower 1.5–2.5 cm, throat with prominent reddish spots	Flower c. 2.5 cm, throat without blotch or spots
Lateral sepals 2; narrowly oblong, ca. 4 × 0.5 mm	Lateral sepals usually 2, sometimes 4; oblong-lanceolate, 3–5 × 2–2.5 mm	Lateral sepal 2 or 4, ovate oblong

1.Leaves adaxially green, margin crenate; upper petal suborbicular 2
2. Flowers yellow; peduncles and pedicels slender .....var. ***siculifer***
2. Flowers purple; peduncles and pedicels stout .....var. ***porphyrea***

Based on this key, the specimens of this species collected and studied by us from Arunachal Pradesh belong to the variety *siculifer*.

Specimens examined: **INDIA**, Arunachal Pradesh, Lohit District, Salangam to Udayak Pass, 1000–1600 m, N 27°55.989'-E96°22.646', 10.07.2012, *R. Gogoi* and *S. Borah 24689* (ARUN); CHINA, Yunnan, 1898, *A. Henry 10038A* (K).

Flowering period: Jul–Sep.

Fruiting period: Oct–Nov.

Distribution and habitat: **India**: Salangam to Hawa Camp, Lohit District; **China**: Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

Grows in moist shady ravines along sub-tropical forest margins in dense colonies.

Tricarpelema chinense D.Y. Hong, Acta Phytotax. Sin. 12: 475. 1974; Hong & DeFilipps, Fl. China 24:32.2000. Fig.2. A–F.

Herbs up to 1 m tall, erect, distally, branched; stem brown, pubescent with multicellular hairs. Leaf sheaths 1–2 cm, densely pubescent with multicellular hairs; leaf blade elliptic, 15–30 × 4–7 cm, sparsely hispidulous, base cuneate-attenuate into a short petiole, apex acuminate. Inflorescence sparsely pubescent with glandular, multicellular hairs; peduncle 8–14 cm long; cincinni 2.5–5 cm long; pedicels up to 10 mm long at anthesis, purple, sparsely pubescent with glandular, multicellular hairs. Posterior sepal ovate-orbicular, ca. 7 mm long; other 2 sepals oblong, shallowly boat-shaped, ca. 5 mm long, sparsely pubescent with glandular, multicellular hairs along veins. Posterior two petals orbicular, anterior one obovate, all blue-purple or pale blue, ca. 8 mm long, shortly clawed. Stamens glabrous, purple, outer coiled, those of 2 fertile stamens (inserted opposite sepals) to 15 mm long, others shorter; anthersoblong. Ovary ellipsoid, trigon-ous; style to 15 mm long. Capsule 13–18 × 3–4 mm; pericarp grayish yellow, ± shiny when mature. Seeds 4 or 5 per valve, pale gray, 1.5–2.5 mm across.

Specimens examined: **INDIA**: Arunachal Pradesh, Anjaw District, Chaglagam Road, Hyuliang, 800 m, 25.05.2011, *R. Gogoi 24460*; Lohit District, in between Salangam to Udayak Pass, 1000–1500 m, N 27°55.989'-E96°21.308', 10.07.2012, *R. Gogoi* and *S. Borah 24697* (ARUN).

Distribution and habitat: **India**: Chaglagam Road, Hyuliang, Anjaw and Salangam to Hawacamp, Lohit District, Arunachal Pradesh; **China**: S C Sichuan (Leshan Shi, Mabian Xian). The species grows in the moist shady localities along dense sub-tropical forest margins.

Flowering & Fruiting period: May–Aug.

Tricarpelema chinense D.Y. Hong was first described by Hong (1974) and considered to be endemic to China (Hong and Defilippis, 2000). It is similar to the Indian species *T. gigantium* (Hask.) H. Hara but differs from the latter in having glandular multicellular hairs on the inflorescence, multicellular hairs on leaf sheaths and stem; pedicel 8–10 mm long; capsule 13–18 mm long. A comparison of its morphological characters with other closely related species is provided in Table 2.

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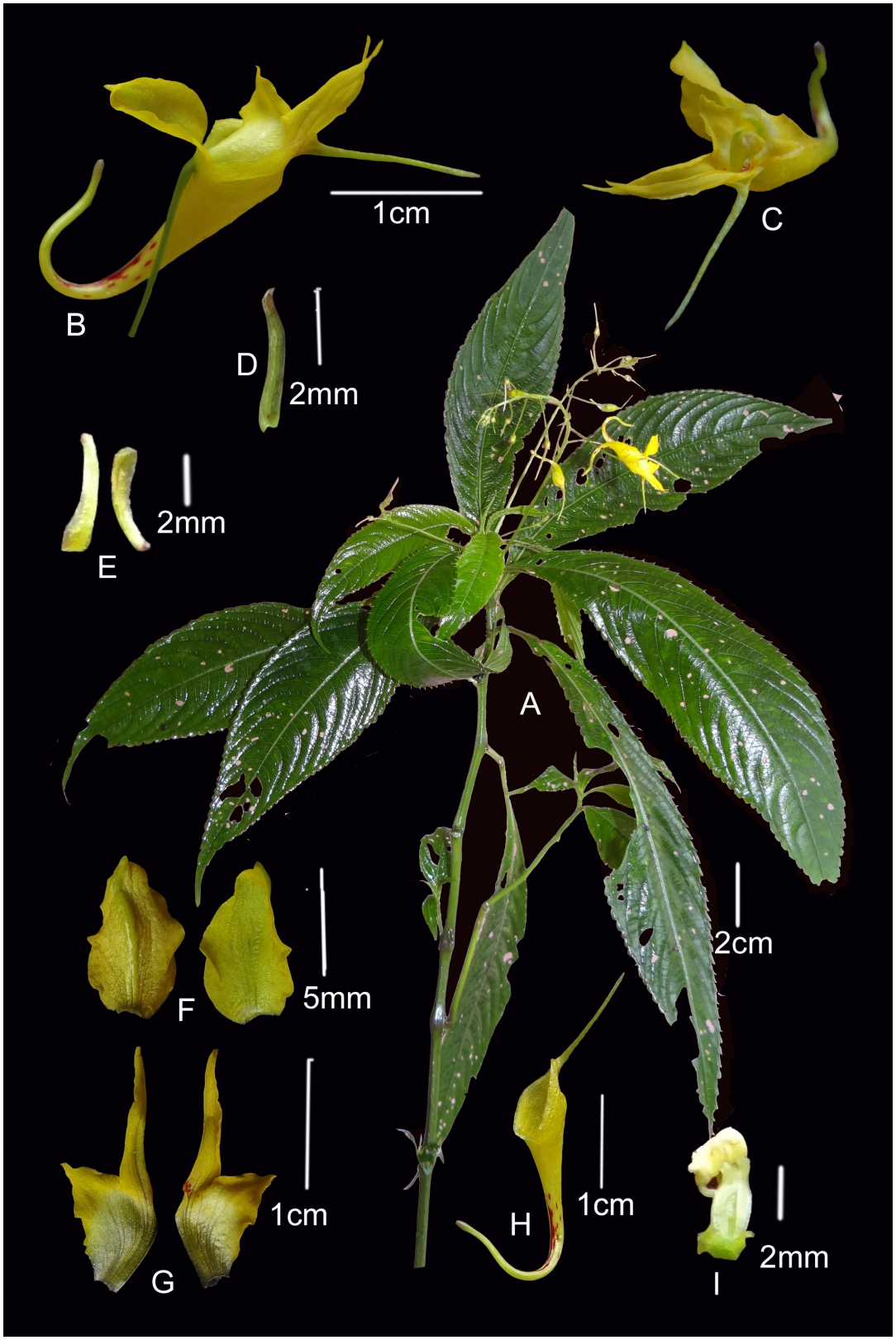


FIG. 1. ***Impatiens siculifer*****: A: Habit. B: Side view of flower. C: Frontal view of flower. D: Bract. E: Lateral sepals. F: Standard-dorsal & ventral view. G: Wing-dorsal and ventral view. H: Lip. I: Androecium.**

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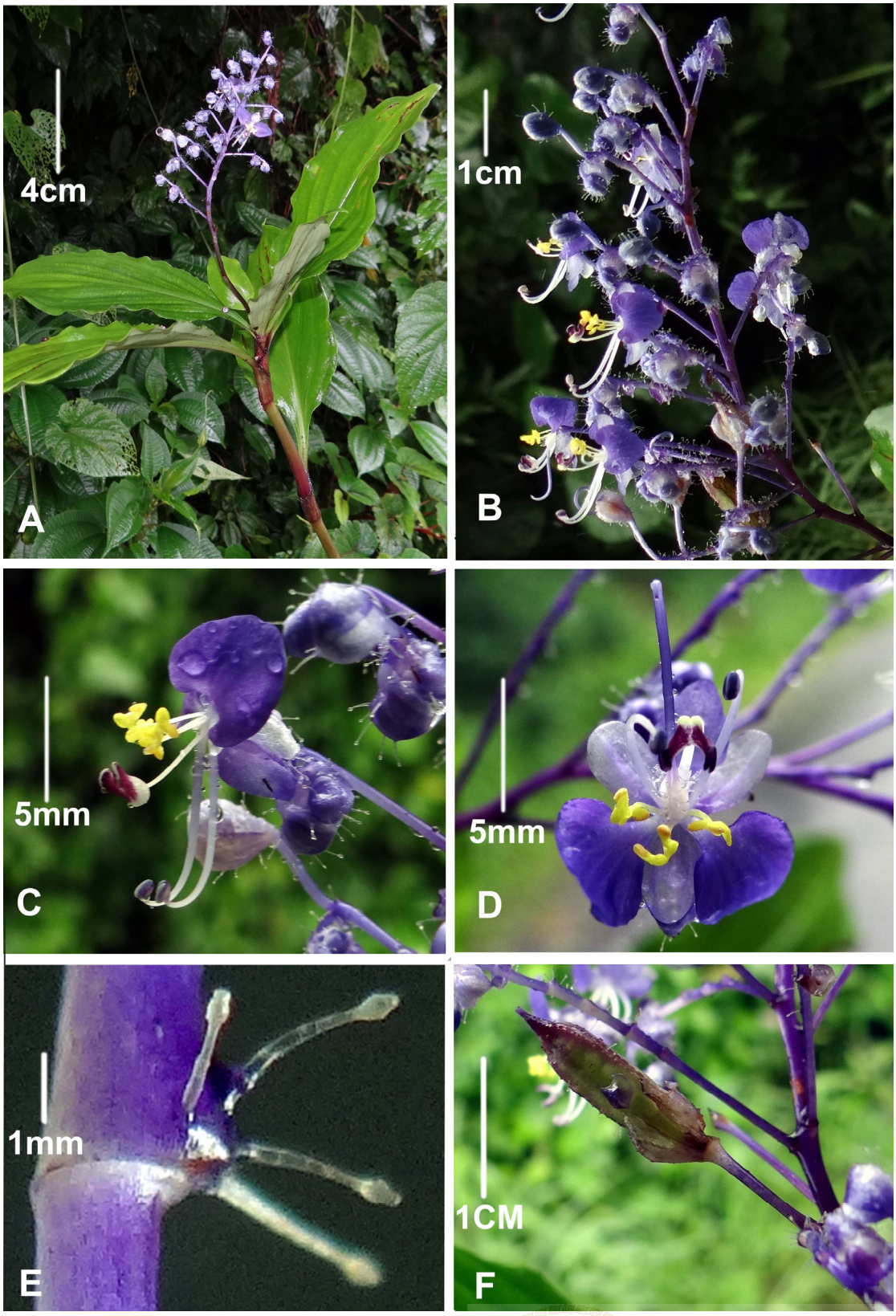


FIG. 2. ***Tricarpelema chinense*****. A: Habit; B: Close view of inflorescence. C: Close view of flower. D: Frontal view of flower. E: Glandular hairs on pedicel. F: Image of capsule.**

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Table.2. Distinguishing characters of *Tricarpelema chinensis* and its closely related species

Tricarpelema chinense	*Tricarpelema xizangense*	*Tricarpelema glanduliferum*
Plants up to 100 cm tall	Plants up to 60 cm tall	Plants up to 85 cm long
Leaf blade elliptic, 15–30 × 4–7 cm.	Leaf blade lanceolate, 9–14 × 2.2–4.5 cm.	Leaf blade lanceolate, 11–17 × 1–5 cm
Inflorescence up to 14 cm long, with multicellular hairs	Inflorescence up to 17 cm long, with multicellular hairs	Inflorescence up to 17 cm long, with unicellular hairs
Posterior petal ovate-orbicular	Posterior petal ovate-elliptic	Posterior petal lanceolate
Pedicel up to 10 mm at anthesis	Pedicel 7 mm at anthesis	Pedicel 1–1.5 cm at anthesis
Ovary ellipsoid	Ovary narrowly ellipsoid	Ovary narrowly ellipsoid
Capsule up to 18 mm long	Capsule not seen	Capsule up to 12 mm long

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印度植物誌之新見—黃金鳳（鳳仙花科）與三瓣果（鴨趾草科）

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摘要：本文報導了在印度阿魯納恰爾邦發現的兩個新紀錄種：黃金鳳與三瓣果。

關鍵詞：鳳仙花科、鴨趾草科、勞哈特谷、阿魯納恰爾邦、新紀錄、印度。

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