

Commelina erecta (Commelinaceae), new distributional record for Indian subcontinent

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कोमेलिना इरेक्टा (कोमेलिनेसी), भारतीय उपमहाद्वीप के लिए नवीन वितरणात्मक रिकॉर्ड

महेंद्र नाथ मिट्टा एवं मयूर डी. नन्दिकर

सारांश

कोमेलिना इरेक्टा (कोमेलिनेसी) भारतीय उपमहाद्वीप से पहली बार ज्ञात हुआ है | सुगम पहचान हेतु विस्तृत आकृतिकीय विवरण एवं फोटो के अतिरिक्त यहाँ सजातीय पादपों का एक तुलनात्मक विवरण भी प्रदान किया गया है |

ABSTRACT

The Linnaean *Commelina erecta* (Commelinaceae) is recorded for the first time from Indian subcontinent. A comparative account of congeneric taxa is provided here in addition to the detailed morphological description and photographs for ease in identification.

Keywords: *Commelina*, African taxa, new record, India

INTRODUCTION

The genus *Commelina* L. (Commelinaceae) is pantropical with c. 170 species and mainly diverse in Tropical Africa (Faden, 2012). It shows a wide range of variation in habit, inflorescence, flower colour, capsule dehiscence, seed number, testa ornamentation and chromosome number. Spathaceous bracts, reduced flowering cincinni and few-seeded capsules are the key morphological characters which make *Commelina* distinct from other members of Commelinaceae (Faden, 2012). India represents 29 species of this genus, of these *C. alisagarensis*, *C. andamanica*, *C. badamica*, *C. hirsuta*, *C. littoralis*, *C. rupestris*, *C. tricolor* and *C. wightii* are endemic (Nandikar & Naik, 2019). Some species are chiefly found as weeds along the roadsides and agricultural fields while some are restricted to high-elevated grasslands and coastline habitat, but mostly prefers the shade and wet places to grow.

As a part of revisionary work of Indian Commelinaceae, the corresponding author have conducted extensive field expeditions in Telangana and Andhra Pradesh

states, in search of little-known taxa such as *Commelina alisagarensis* (known only by its type collection from Alisagar, Telangana) and other Commelinaceae plants. One of our visits to ancient Kondaveedu fort near to Guntur, Andhra Pradesh resulted in a collection of gregariously flowered *Commelina* with sparsely hirsute spathes, showy, blue to lilac petals, distally flattened and incurved stamens. After comparing the available Indian and African literature and *Commelina* specimens housed at BSI, BLAT, CAL, K, and MH, we found the spathes show resemblance with an African taxon *Commelina erecta* subsp. *livingstonii* (C.B. Clarke) J.K. Morton due to its uniform hirsute-puberulous surface. Nevertheless, the leaves in our plants are wider (1.5–3 cm) and elliptic-lanceolate, wherein the subspecies always has narrower (less than 1.7 cm wide), linear-lanceolate leaves (Faden, 2012). Hence, this collection is recognized here as *C. erecta* L., a new distributional record for an Indian subcontinent.

Commelina erecta was described by Linnaeus from Virginia (U.S.A.) and considered as one of the world's most common and widely distributed (tropical and

temperate Americas, sub-Saharan Africa, and southern Arabian Peninsula) species of *Commelina* (Hassemer & al., 2018). However, except some of erroneous citations (listed below) it was never recorded or listed from Asian sub-continent. The occurrence of *C. erecta* in Bangladesh by Khan & Alam (1976) was appears to be based on *C. paludosa*, as their description of terminal, aggregate spathes is uncommon in *C. erecta*. Similarly, the previous records (Barnes, 1946; Rao, 1966; Matthew, 1983; Pullaiah, 2018; Britto, 2019) of *C. erecta* from India were originally belongs to *C. kurzii* C.B. Clarke and *C. undulata* R. Br. The former is distinct from *C. erecta* by its straggling habit, ovate to lanceolate leaves, sessile, aggregate spathes, and dorsally striate to muricate capsule. Whereas *C. undulata* R. Br. is an Australian species, most debated for its taxonomic distinctness from *C. ensifolia* (Jessop & Conran, 2013) and doubtful occurrence elsewhere in the world. Since the type of *C. undulata* is not clear, the collection made by R. D. Royce (PERTH) from Fitzroy Riverbank, Eastern Australia and that cited for *C. undulata* by Rao (1966) is now turned as part of core *C. ensifolia* (pers. comm. with Russell Barret, RBG Sydney). We believe that more live specimens of *C. undulata* from the type locality need to be studied critically to clear its taxonomic distinctness from *C. ensifolia*.

Authors acknowledge the efforts by Rao (1971) to understand the species complex between *C. undulata* and *C. erecta*. However, the way he was presented the distinctness of *C. undulata* based on Mareeba, Queensland (Australia) collection and inadvertent synonymy of the same with *C. erecta* was redundant. The occurrence of *C. erecta* in India recorded by him (ex post facto *C. undulata* sensu Rao 1966) was more convoluted. As no precise collection or element from India was mentioned, neither he had provided any citation or reference to confirm the Indian occurrence of *C. erecta*.

The present population of *C. erecta* at Kondaveedu fort appears to be a historic introduction during the colonial period, as the fort and surrounding hillocks has turbulent history dominated by French and British colonists.

MATERIAL AND METHODS

Collected plant material was processed for herbarium and deposited at BSI, BSID, CAL and NGCPR, flowers were wet preserved. The description was written based on live plants observed in the field, herbarium specimens, wet preserved flowers, and field photographs. The terminology by Faden (2012) is followed. The lectotype of *Commelina erecta* housed at OXF (virtually through JSTOR global plants) and other specimens including *C. kurzii* and *C. ensifolia* at BLAT, BM, CAL, K and MH were consulted in person. Taxonomy of *Commelina erecta*

with its congeneric taxa were discussed with experts in the field. The regional Indian flora's and published literature were studied for understanding the concept of *C. erecta* in India. Photographs were taken in the field with Nikon D700 DSLR and edited in Adobe Photoshop 7.0.

TAXONOMY AND DISTRIBUTION

***Commelina erecta* L.**, Sp. Pl. 41. 1753. Type: Herb. Dillenius No. 63 (lectotype, Dill HE_77–88, OXF, image!), designated by Hassemer (2018). (Fig. 1)

A perennial, diffuse, procumbent to ascending to erect herb with definite, rhizomatous base; roots thick fibrous; shoots much branched from the base, c. 60 cm high; internodes 2–14 cm long, often distally reduced, green to vinaceous, glabrous, distally sparsely puberulent or rarely white floccose; node green-vinaceous; leaves distichous, crowded distally, leaf sheath tubular or open, 1.5–2.8 cm long, green or vinaceous ribbed, puberulent, margin ciliate; distal leaves often ligulate, ligule hyaline to concolorous with sheath; lamina elliptic to lanceolate, 4–10 × 1.5–3 cm, apex acute to acuminate, base oblique to cuneate, abaxial surface puberulent, pale green, adaxial surface puberulous to sparsely pilose, margin often pilose, characteristically undulate. Flowering spathe leaf opposite from the distal leaves, usually one, rarely 2–3, mucilaginous within, pedunculate, peduncle 1.8–2.5 cm; spathe outline 1.5–2.5 × 0.5–1.5 cm, apex acute-acuminate, base fused, rounded to truncate, margin hyaline, surfaces puberulent to puberulous, sparsely hirsute in the middle and towards the base; upper cincinni vestigial, enclosed in spathe; lower cincinni 3–5 flowered, flowers usually bisexual, rarely male; lateral sepals hyaline to white or shades of pale blue to lilac, elliptic to obovate, c. 5 × 2 mm, apex hooded, base fused; medial sepal lanceolate, c. 3 × 1.5 mm, free, concolorous with lateral petals; lateral petals showy, dark to pale blue, or mauve or lilac, orbicular to reniform, 8–12 × 10 mm, clawed, margin repand; medial petal concolorous with lateral petals, ensiform to subulate; lateral stamens with c. 10 mm long, blue to pale blue filaments, filaments distally flattened and incurved, anther ellipsoid, pale blue to lilac; medial stamen filament pale blue, c. 5 mm long, anther saddle shaped, yellow; staminodes 3, filament blue, 2–3 mm long, antherodes lobed, yellow; ovary green, ovoid, c. 1 × 1 mm, sparsely pilose, style c. 12 mm long, stigma inconspicuous. Capsule bi- to trilocular, 1–3-seeded, globose to ovoid, c. 5 × 5 mm; often dorsal locule undeveloped, or empty, indehiscent; seeds oblate to globose, c. 3 × 2 mm, fuscous or rarely mottle with pale yellow, smooth, faintly farinose with ring of soft whitish material around periphery, embryotega inconspicuous, hilum linear.



Fig. 1: *Commelina erecta* L. **A.** Habitat at Kondaveedu fort; **B.** Flowers with blue petals and smaller spathe; **C.** Flowers with lilac petals and large spathe; **D.** Opened spathe and 4-flowered lower cincinnus; **E.** Opened spathe with capsule and cincinnus (Photographs: Mayur Nandikar)

Flowering: Starts from August and peaks during October to December.

Habitat: Along the hill slopes, rocky boulders, amidst the shrubs, fully exposed to the sun, 200–300 m above sea level.

Distribution: India (Andhra Pradesh); tropical Africa, Middle East, and temperate and tropical America.

Specimens examined: India, Andhra Pradesh: Kondaveedu fort, Guntur district, 07.09.1956, S. K. Wagh 76698 (BLAT); *ibid*, 10.10.2019, M. D. Nandikar & M. N. Mitta 1442 (BSI, BSID, CAL, NGCPR).

Notes: The only collection *C. erecta* from India was from Kondaveedu fort (SK Wagh 76698: BLAT), previously misidentified as *C. ensifolia* perhaps due to its similarities in having solitary spathes. Since this specimen has elliptic to lanceolate leaves and large spathes, it is now brought under *C. erecta*.

Although tropical African plants of *Commelina erecta* are said to have usually clustered spathes (Faden, 2012), which is not observed in Indian specimens, spathes are rarely 2-3 but usually solitary. Similarly, African plants shows light to deep blue flowers, but in our collection, it varies from pale to deep blue to mauve to lilac, or mixed shades of blue and lilac, but lateral stamen filaments are consistently blue, even in lilac or mauve flowers. Capsule is also varying from 1 to 3 locules, often the dorsal locule is found to be indehiscent or absent. Nevertheless, these characters are inconsistent and vary within the population and hence insignificant to determine any infraspecific rank. The deposition of soft white or brown material on the periphery of the seeds is common in *C. ensifolia*, *C. kurzii*, *C. paludosa*, however, it is comparatively predominant in the seeds of *C. erecta*.

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