Murdannia sahyadrica, a new species of Commelinaceae from the Northwestern Ghats, India

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Murdannia sahyadrica, a new species of *Commelinaceae* from the Northwestern Ghats, India

Abstract

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A species of *Commelinaceae, Murdannia sahyadrica* from the Northwestern Ghats in India, is described as new to science and illustrated. Morphologically it shows close affinities to *M. semiteres* and *M. juncoides,* from which it differs by orbicular petals, stamens symmetrically arranged around the central erect style, an ovoid capsule and uniseriately arranged seeds.

Additional key words: *Murdannia semiteres, Murdannia juncoides,* taxonomy, Sahyadri, Sinhagad, Maharashtra

Murdannia Royle comprises about 50 species and has its greatest diversity in tropical Asia (Faden 1998). Twenty-four species are reported so far from India (figure modified after Karthikeyan & al. 1989: 27–30), the number including *M. fadeniana* Nampy & Joby, which replaces the Sri Lankan *M. glauca* (Thwaites ex C. B. Clarke) G. Brückn. in India (Nampy & Joby 2003), and *M. striatipetala* Faden (2001), but not *M. satheeshiana* Joby & al. (2011) and *M. brownii* Nandikar & Gurav (2011). The distinctiveness of the last two species is doubted by us and requires further studied.

Working on a revision of family *Commelinaceae* in India, the authors made scientific surveys in different parts of the Northwestern Ghats. During recent trips, plants of *Murdannia* were collected which resemble *M. semiteres* and *M. juncoides* because of their filiform falcate leaves, terminal and axillary pseudoumbellate cincinni, bluish petals and basally fused stamens and staminodes, but differ by taxonomically relevant features. Critical examination revealed them as a distinct, hitherto undescribed species, which is described as new to science and illustrated here.

Murdannia sahyadrica A. Ancy & Nampy, **sp. nov.**
Holotypus: India, Northwestern Ghats, Maharashtra, Pune district, Sinhagad, alt. 804 m, 5.9.2010, *S. Nampy & K. M. Manudev 2394* (DEV; isotypi: B, CALI, US). – Fig. 1, 2A–D, 3A–C.

Diagnosis. — *Murdannia sahyadrica* resembles *M. semiteres* and *M. juncoides* but differs by its orbicular petals, stamens arranged symmetrically around the central erect style, ovoid capsule and uniseriately arranged seeds.

Description. — Annual, erect herbs, c. 22 cm tall, unbranched to basally 1–2-branched. *Roots* thin, fibrous from the base. *Internodes* 2–10 cm long, green, glabrous. *Leaves* cauline, alternate; *sheath* 1.5–6 mm long, pale green, glabrous, with fused margins; *lamina* 5–15 × 0.05–0.2 cm, filiform, falcate towards base, acute at apex, margins entire, both surfaces glabrous. *Inflorescences* terminal and axillary, consisting of 2–3 pedunculate or non-pedunculate pseudoumbellate cincinni. *Peduncles* 0.8–1.8 cm long, glabrous. *Bracts* filiform, bracteoles amplexicaul, persistent. *Flowers* male and bisexual, opening c. 10 a.m.,

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fading 12.30 p.m. *Pedicel* glabrous, green to purple, 2–2.5 mm long. *Sepals* 3, free, equal, 1.4–1.8 × 1 mm, elliptic, pale green, glabrous; apex sometimes with purple tinge; margin entire, hyaline. *Petals* 3, free, blue, 2.6–4 × 2–3 mm, orbicular, nearly incurved; margin apically minutely undulate; apex subacute. *Stamens* 3, antesepalous, symmetrical around the style, curving inwards; *filaments* glabrous, 1–2 mm long, slightly purple basally, fused at the base with each other and 2 staminode filaments, third staminode filament free; *anthers* ellipsoidal, dorsifixed, deep maroon to black, dehiscing longitudinally. *Pollen* ellipsoidal, white. *Staminodes* 3, antepetalous; *antherodes* hastate to 3-lobed; lobes white. *Ovary* ovoid, pale green to maroon, central; *style* central, erect, white to purple; *stigma* papillate. *Capsule* 1–2 × 0.8–1.6 mm, ovoid, 3-locular, brown, glabrous. *Seeds* 2 or 3 per locule, uniseriate, 0.6–1 × 0.5–0.8 mm, rounded to elliptic (from dorsal view); testa dark brown to black, smooth with fused farinose granules forming faint, irregular reticulations; *hilum* dotted to elliptic; *embryotega* dorsal. – Flowering and fruiting August to November.

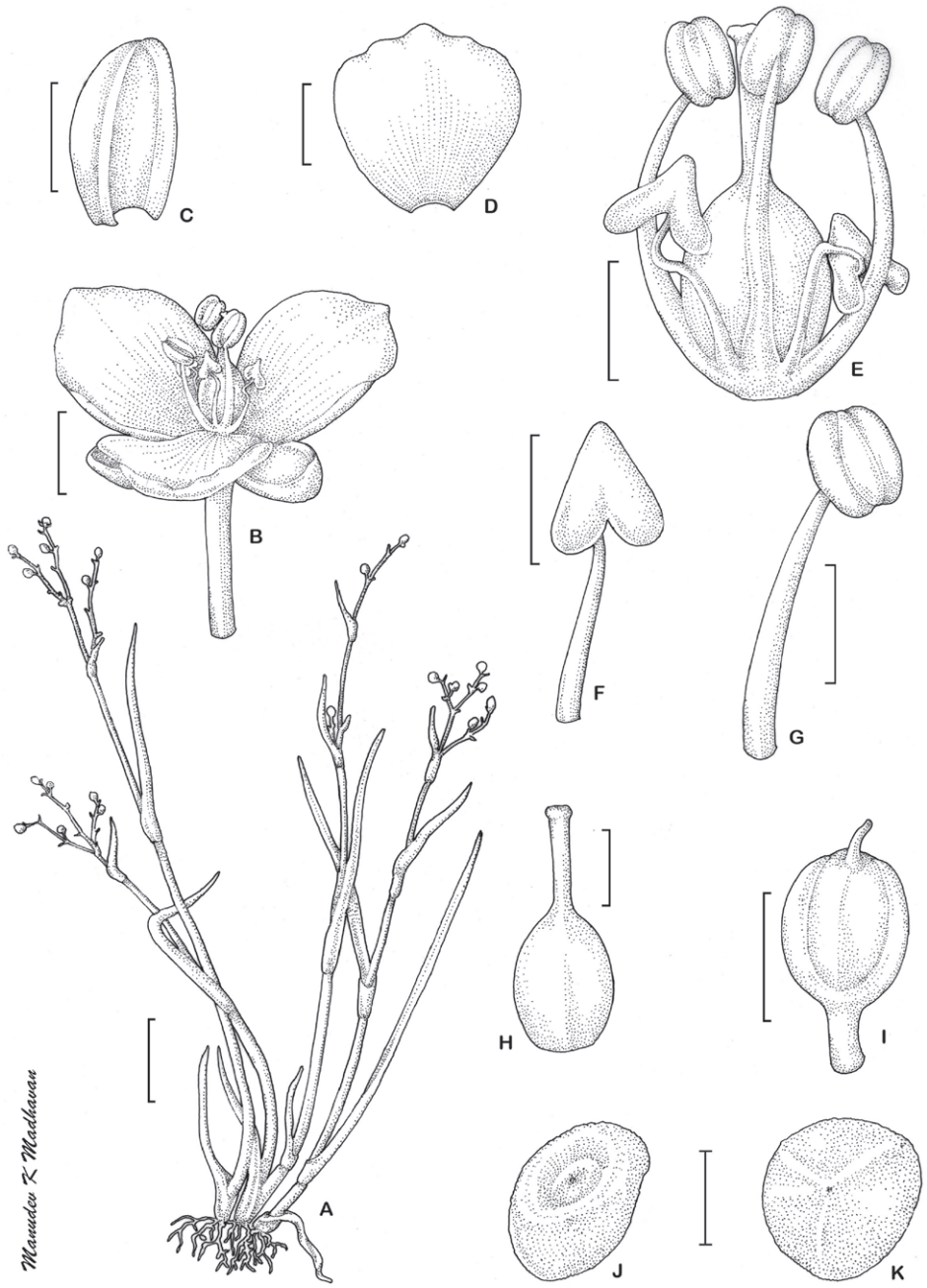

Fig. 1. *Murdannia sahyadrica* – A: habit; B: flower; C: sepal; D: petal; E: arrangement of androecium (only two of the three staminodes visible) and gynoecium; F: staminode; G: stamen; H: gynoecium with erect style; I: capsule; J: seed, dorsal view; K: seed, ventral view. – Scale bars: A = 2 cm, B–D+I = 1 mm, E+H, J–K = 0.5 mm; all from *S. Nampy & K. M. Manudev 2394* (DEV).

Etymology. — The species is named after 'Sahyadri', the popular name for the Northwestern Ghats, a part of one of the earth's biodiversity hotspots (Myers & al. 2000), in which also the type locality Sinhagad is located.

Distribution and habitat. — *Murdannia sahyadrica* is known only from four collections, all made in the Northwestern Ghats in the Maharashtra State. One was made in 1962 from Junnar, three recent collections come from Sinhagad and the Morjai plateau. The species occurs in soil pockets of rocks, on dripping rocks in grassland, fully exposed to sun.

Additional specimens seen. — India: Northwestern Ghats: Maharashtra: Pune district, on way to Kukdi river, Junnar, 13.10.1962, *R. S. Rao 81943* (BSI); Pune district, Sinhagad, 804 m, 5.10.2011, *Anna Ancy Antony & Santhosh Nampy 4654* (DEV). Kolhapur district, Borbet, Morjai plateau, 970 m, 6.10.2011, *Anna Ancy Antony & Santhosh Nampy 4676* (DEV).

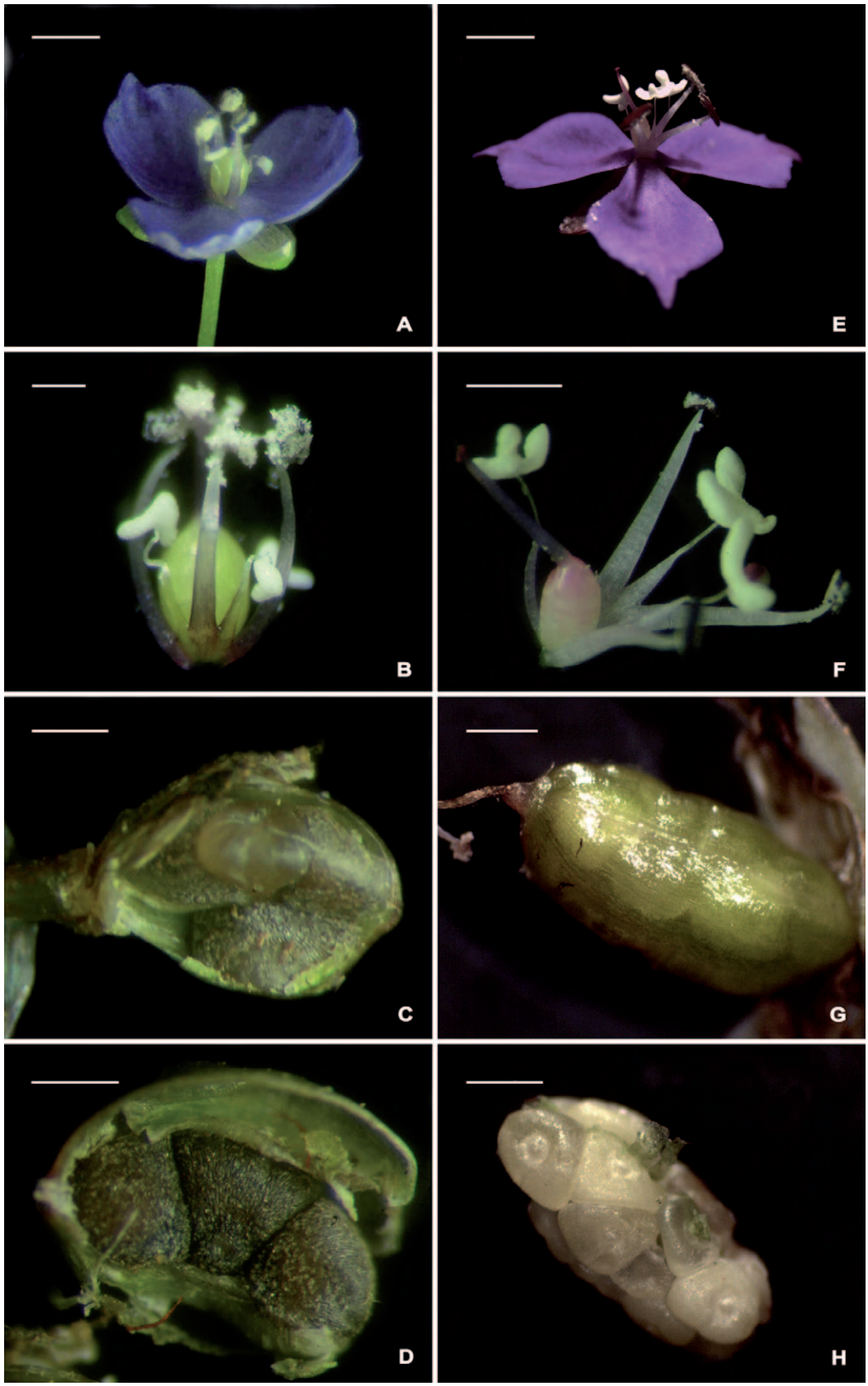

Fig. 2. Comparison of flowers and capsules of *Murdannia sahyadrica* (A–D) and *M. semiteres* (E–H) – A+E: flower; B+F: arrangement of androecium and gynoecium; C+G: capsule; D+H: arrangement of seeds in the locule. – Scale bars: A+F = 1 mm, B–D = 0.25 mm, E = 2 mm, G–H = 0.5 mm; A–D from *S. Nampy & K. M. Manudev 2394* (DEV), E–H from *A. Ancy, S. Nampy & K. M. Manudev 4603* (DEV).

Fig. 3. Comparison of seeds of *Murdannia sahyadrica* (A–C) and *M. semiteres* (D–F) – A+D: under light microscope, dorsal and ventral view; B–C+E–F: under scanning electron microscope, dorsal view (B–C), lateral view (E–F). – Scale bars: A–B, D–E = 0.5 mm, C+F = 0.2 mm; A–C from *S. Nampy & K. M. Manudev 2394* (DEV), D–F from *A. Ancy, S. Nampy & K. M. Manudev 4603* (DEV).

Taxonomic notes. — *Murdannia sahyadrica* shows strong morphological affinities to *M. semiteres* (Dalzell) Santapau and *M. juncoides* (Wight) R. S. Rao & Kammathy but is easily recognisable by the characters given in Table 1. *M. semiteres* was described by Dalzell (1851) from Konkan (referring to the W Indian coastal region of the states of Maharashtra and Karnataka) as *Aneilema semiteres* and *M. juncoides* by Wight (1853) as *Dichaespermum juncoides* based on specimens from Courtallum in Tamil Nadu and Quilon in Kerala. *M. semiteres* is widespread in Africa, peninsular India and the remainder of tropical Asia, while *M. juncoides* is known only from a few localities in S India. Our studies of the types, protologues, live collections and specimens housed at all major Indian herbaria conclusively revealed that *M. semiteres* and *M. juncoides* possess obovate petals with acuminate apex, basally fused stamens and staminodes bending to one side, style leaning away from the centre and 6–8 seeds in each locule being arranged in two rows.

For a long time, *Murdannia semiteres* and *M. juncoides* were considered as conspecific. However, *M. juncoides* is a perennial species with a bulbous base, af-

Table 1. Differences between *Murdannia semiteres, M. juncoides* and *M. sahyadrica.*

Characters	*Murdannia semiteres*	*Murdannia juncoides*	*Murdannia sahyadrica*
Bulbous base	absent	present	absent
Flowering time	forenoon (10 a.m. – 12.30 p.m.)	afternoon (2.45 p.m. – 5 p.m.)	forenoon (10 a.m. – 12.30 p.m.)
Petals	obovate, horizontal to reclined, apex acuminate	obovate, horizontal to reclined, apex acuminate	orbicular, nearly incurved, apex subacute
Stamens	asymmetrically oriented, leaning outwards	asymmetrically oriented, leaning outwards	symmetrically oriented, curving inwards
Style	leans away from the centre (at an angle of c. 50°)	leans away from the centre	erect and central in the flower
Capsule	ellipsoid to narrowly ellipsoid; 2.5–3 × 1–1.1 mm	ovoid; 1.5 × 2 mm	ovoid; 1–2 × 0.8–1.6 mm
Seeds	6–8 per locule, biseriate, < 0.5 mm in diameter	< 0.5 mm in diameter	2 or 3 per locule, uniseriate, > 0.6 mm in diameter
Testa	pale brown; covered with farinose granules forming minute striations	dark brown; covered with farinose granules forming striations	dark brown to black; covered with fused farinose granules forming faint irregular reticulations

ternoon flowering and a chromosome number of n=12 (Nampy & Joby 2008).

The three species can be keyed out as follows:

1. Plants with a bulbous base; flowers opening c. 2.45 p.m. and fading 5.00 p.m. . . . *M. juncoides*
– Plants without a bulbous base; flowers opening c. 10 a.m. and fading 12.30 p.m. 2
2. Petals obovate, apex acuminate; stamens asymmetrical, bending to one side; style leaning away from centre; capsule ellipsoidal, seeds biseriate, 6–8 per locule, < 0.5 mm in diameter; testa pale brown, striate . . . . . *M. semiteres*
– Petals orbicular, apex subacute; stamens symmetrical, erect, curving inwards; style central; capsule ovoid; seeds uniseriate, 2–3 per locule, > 0.6 mm in diameter; testa dark brown to black, faintly reticulate . . . . . *M. sahyadrica*

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