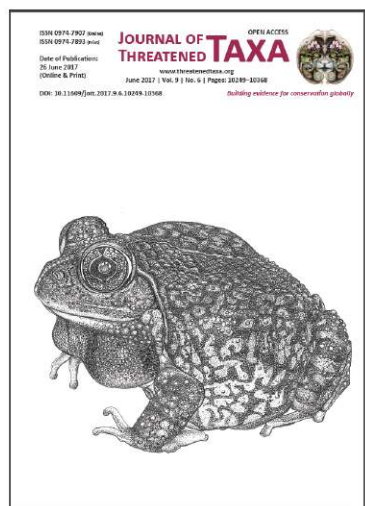


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NOTE

FOUR SPECIES OF COMMELINACEAE, AS ADDITIONS TO ANDHRA PRADESH, INDIA

S. Salamma, M. Chennakesavulu Naik, M. Anil Kumar, A. Sreenath & B. Ravi Prasad Rao

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During floristic explorations in Visakhapatnam District and Horsley Hills in Andhra Pradesh during August–November 2016, we located several plant specimens belonging to family Commelinaceae. After critical study of the specimens collected in different localities of Horsley Hills they were identified as belonging to *Cyanotis vaga*, *C. villosa* and *Murdannia nimmoniana* and those from Penchalakona Hills as *Cyanotis villosa* and Tyda forest as *Cyanotis burmanniana*. Perusal of literature (Rao 1997; Reddy et al. 2008; Nandikar & Gurav 2014) revealed that all these four species are new records for the state of Andhra Pradesh and *Cyanotis vaga* is recorded for the first time from southern Peninsular India.

Genus *Cyanotis* comprises 58 species worldwide (The Plant list 2014) with diverse distribution in Asia and Africa (Faden 2012). It is represented by 16 species in India (Karthikeyan et al. 1989), but limited to 13 through annotations made by Nandikar & Gurav (2014). Pullaiah (1997) reported six species of *Cyanotis* from Andhra Pradesh, i.e., *Cyanotis arachnoidea*, *C. arcotensis*, *C. axillaris*, *C. cristata*, *C. fasciculata* and *C. tuberosa*. With the present study, the genus is now represented by nine species in Andhra Pradesh.

Genus *Murdannia* is represented by ca 60 species worldwide (The Plant List 2014; Govaerts & Faden 2016; Pellegrini et al. 2016) and mostly found in tropical and subtropical regions of Asia and Africa. Karthikeyan et al. (1989) enumerated 23 species in India. In Andhra Pradesh, Pullaiah (1997) reported eight species of

FOUR SPECIES OF COMMELINACEAE, AS ADDITIONS TO ANDHRA PRADESH, INDIA

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Murdannia of which *Murdannia juncooides* has been reduced as a variety to *Murdannia nimmoniana*. This study adds one more species to the list.

Description, phenology, distribution, voucher specimen information and photographs are provided for all the species. Voucher specimens are deposited in the Herbarium of the Department of Botany, Sri Krishnadevaraya University, Anantapuramu (SKU). Abbreviations used for collectors are: BR (B. Ravi Prasad Rao), SSLM (S. Salamma), MCN (M. Chennakesavulu Naik), MAK (M. Anil Kumar), AS (A. Sreenath), and PA (P. Anjaneyulu).

Cyanotis burmanniana

Wight, Icon. Pl. Ind. Orient. 6: 34. t. 2089. 1853. *C. papilionacea* (L.) Schult.f. var. *burmanniana* (Wight) Clarke in A. & C. DC., Monogr. Phan. 3: 246. 1881; Hook. f., Fl. Brit. India 6: 385. 1892; Karthik. et al., Fl. Ind. Enum. Monocot. 26: 1989; Faden in Dassanayake, Rev. Handb. Fl. Ceylon 14: 121. 2000; Nandikar & Gurav in Taiwan 59(4): 308–309, 2014.

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Image 1. *Cyanotis burmanniana*

Specimens examined: 52527 (SKU), 29.xi.2016, Tyda forest, in dried water fall in rock crevices, Visakhapatnam District, BR & PA (Images 1 & 5).

Annual herbs, up to 25cm long. Roots fibrous. Stem glabrous, pale green to brown. Leaves cauline, sessile; lamina ovate to elliptic or lanceolate, $0.5-5 \times 0.4-1$ cm, apex acute, base cuneate, sparsely pilose on both the surfaces; leaf sheath $0.1-0.5$ cm long, puberulous to velutinous. Inflorescence terminal and axillary, with 2–5 cincinni, cincinni pedunculate; peduncle $1-5.5$ cm long, tomentose; bracts ovate to lanceolate, ca 1cm long, foliaceous, shorter than the cincinni; bracteoles ovate, 5mm long, pubescent or rarely glabrous. Flowers up to 8 per cincinni, bisexual. sepals 3, lanceolate-oblong, ca 0.4×0.5 cm, sparsely to densely pilose; petals 3, blue to pale pink or violet, $0.3-0.5 \times 0.4-0.5$ mm, glabrous; stamens 6, filaments densely bearded with blue to violet moniliform hairs, anthers yellow, with a black dot. Capsules trilocular, elliptic to obovate, ca 2×2 mm, each locule 1 or 2 seeded, sparsely pilose at apex and along the ridges; seeds ovoid to ellipsoid, $1-2 \times 1-2$ mm, glabrous.

Flowering and fruiting: September–January.

Distribution: India: Andhra Pradesh (Tyda forest, Visakhapatnam District), Goa, Karnataka, Kerala and Tamil Nadu; Sri Lanka.

Habitat & Ecology: Rare, in moist shaded localities.

Note: Nandikar & Gurav (2014) have erroneously mentioned the presence of this species in Andhra

Pradesh based on the collection made by V.A. Rao (603-CAL) in northern hump of the Island, Rameshwaram, Ramanthapuram District, which is actually a part of Tamil Nadu.

Cyanotis vaga

(Loureiro) Schultes & Schultes f. in Roemer & Schultes, Syst. Veg. 7: 1153. 1830. *Tradescantia vaga* Loureiro, Fl. Cochinch. 1: 193. 1790. Karthik. et al., Fl. Ind. Enum. Monocot. 27.1989; Nandikar & Gurav in Taiwaniana 59(4): 308-309, 2014.

Specimens examined: 52073 (SKU), 25.ix.2016, Horsley Hills, Chittoor District, SSLM & MCN; 52084 (SKU), 25.ix.2016, Horsley Hills, Chittoor District, BR & SSLM (Images 2 & 6).

Perennial herbs, up to 30cm long. Roots fibrous. Stem pubescent, purple, basal forms tunicate bulbs. Leaves cauline, sub sessile; lamina linear to linear-lanceolate, $2-7.5 \times 0.5-0.8$ cm, apex acute to acuminate, base cuneate, upper surface sparsely pilose, lower surface cobwebby; leaf sheath $0.8-1.5$ cm long, ciliate. Inflorescences terminal, subterminal and axillary, consisting of 1–5 cincinni, cincinnus subsessile to shortly pedunculate; peduncle <1.5 cm long, densely pubescent; bracts lanceolate, ca 2.5mm long, pilose beneath; bracteoles oblong, falcate, $0.3-0.5 \times 0.2-0.3$ cm, sparsely to densely pilose. Flowers up to 6 per cincinnus, bisexual; sepals 3, oblong-lanceolate, $0.4-0.6 \times 0.2$ cm, white hirsute on abaxial surface; petals 3, purple or blue-



Image 2. *Cyanotis vaga*

purple, 6–8 × 4–6 mm, pilose or glabrous; stamens 6, filaments bearded with blue to purple moniliform hairs, anthers yellow; style equal to filaments of stamens, sparsely bearded, with blue moniliform hairs. Capsule trilocular, oblong, 2.5–3 × 2.5–3 mm, each locule 1 or 2 seeded, puberulous in distal half; seeds ovoid to ellipsoid, 1.3–1.5 × 1.5 mm, glabrous.

Flowering & fruiting: July–December.

Distribution: India: Andhra Pradesh (Horsley Hills, Chittoor District), Arunachal Pradesh, Meghalaya, Nagaland, West Bengal (Darjeeling) (Nandikar & Gurav 2014) and Odisha (Saxena & Brahmam 1995); Bhutan; China; Laos; Nepal; Myanmar; Taiwan; Thailand; and Vietnam.

Habitat and ecology: Rare, in rocky crevices and sun exposed areas on hill tops.

Cyanotis villosa

(Spreng.) Schult. & Schult f. in Syst. Veg. 7: 1155. 1830; *Tradescantia villosa* Spreng., Syst. Veg. 2: 116. 1825. Hook. f., Fl. Brit. India 6: 387. 1894; Karthik. et al., Fl. Ind. Enum. Monocot. 27: 1989; Faden in Dassanayake, Rev. Handb. Fl. Ceylon 14: 134. 2000. Nandikar & Gurav, in Taiwan 59(4): 309–310, 2014.

Specimens examined: 52074 (SKU), 25.ix.2016, Horsley Hills, Chittoor District, Andhra Pradesh, India, coll. BR & SSLM; 52075 (SKU), 25.ix.2016, Horsley Hills, Chittoor District, Andhra Pradesh, India, coll. SSLM & AS; 53410 (SKU), 8.ii.2017, Penchalakona Hill top, Nellore District, Andhra Pradesh, coll. MCN & AS (Images 3 & 7).



Image 3. *Cyanotis villosa*

Annual herbs, up to 35cm long. Roots fibrous. Stem pubescent, green. Leaves cauline, sessile; lamina elliptic–lanceolate, 2–7 × 0.5–2 cm, apex acute to acuminate, base rounded, sparsely to densely pilose; leaf sheath 0.5–1 cm long, ciliate at mouth. Inflorescence terminal and axillary, composed with 1–4 cincinni, cincinnus subsessile, shortly pedunculate; bracts ovate to lanceolate, ca 0.8mm long, foliaceous; bracteoles lanceolate, falcate, ca 0.5 × 0.3 cm, pubescent. Flowers up to 6 per cincinni, bisexual; sepals 3, linear–lanceolate, ca 0.5 × 0.2 cm, sparsely to densely pilose; petals 3, white to light blue, 0.4–0.5 × 0.5 mm, glabrous; stamens 6, filaments swollen at apex, densely bearded, with blue moniliform hairs, anthers yellow; style as long as filaments of stamens, swollen at apices, sparsely bearded as on stamens. Capsule trilocular, oblong, ca 3 × 2.5 mm, each locule 1 or 2 seeded, sparsely to densely pilose at apex; seeds ovoid to ellipsoid, about 1.5 × 1.2 mm, glabrous.

Flowering & fruiting: August–April.

Distribution: India: Andhra Pradesh (Horsley Hills, Chittoor District), Karnataka, Kerala and Tamil Nadu; Sri Lanka.

Habitat & ecology: Rare, in moist, shady localities.

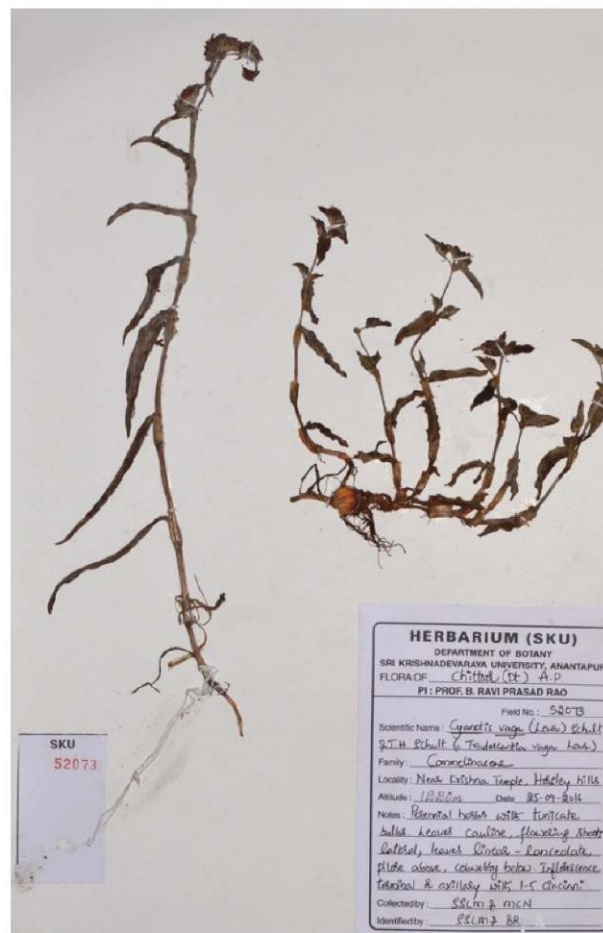
Murdannia nimmoniana

(J. Graham) Bole & M. R. Almeida. in J. Bombay Nat. Hist. Soc. 83: 593. 1896. *Commelina nimmoniana* J. Graham, Cat. Pl. Bombay 224. 1839.

Specimens examined: 51580 (SKU), 25.ix.2016, Horsley Hills, Chittoor District, Andhra Pradesh, India, Coll. BR & SSLM; 52080 (SKU), 25.ix.2016, Horsley Hills,



Image 4. *Murdannia nimmoniana*

Image 5. Herbarium image of *Cyanotis burmanniana*.Image 6. Herbarium image of *Cyanotis vaga*.

Chittoor District, Andhra Pradesh, India, Coll. BR & MAK (Images 4 & 8).

Annual herbs, up to 15cm long. Roots fibrous. Stem glabrous, purplish-red. Leaves in basal rosette, filiform, linear, 3–12 cm × 0.5–0.3 mm, finely acuminate, glabrous. Inflorescence of terminal and axillary paniculate cymes, cincinni pseudo-umbellate, peduncle ca 1cm long, pedicel ca 0.5mm long, glabrous, red to purple; bracts filiform, 3mm long, glabrous. bracteoles elliptic, persistent, amplexicaul, ca 0.2mm long, glabrous. Flowers up to 5, bisexual; sepals 3, elliptic, 0.3–0.5 × 0.1–0.2 mm long, glabrous; petals 3, blue to purple, 0.2–0.5 × 0.1–0.3 mm; stamens 3, antisealous, anthers white to purple; staminodes 3, antipetalous; antherodes white; style central-enantiostylus. Capsule trilocular, ellipsoid-subglobose, 1–1.8 × 0.5–1.2 mm, each locule 6–8 seeded, biseriate, glabrous; seeds rounded-elliptic, or trapezoidal-irregularly angular 0.2–1 × 0.2–0.8 mm, glabrous.

Flowering & fruiting: August–December.

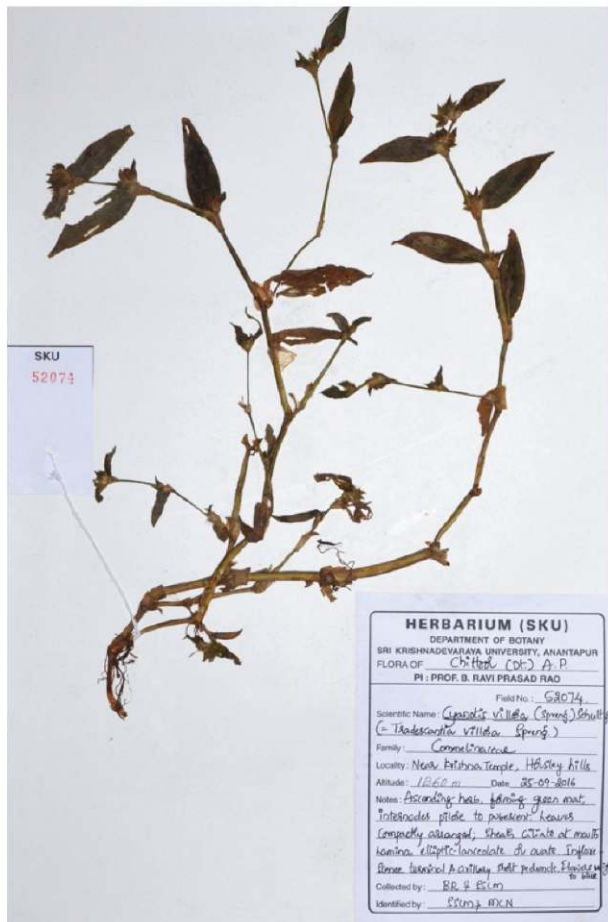
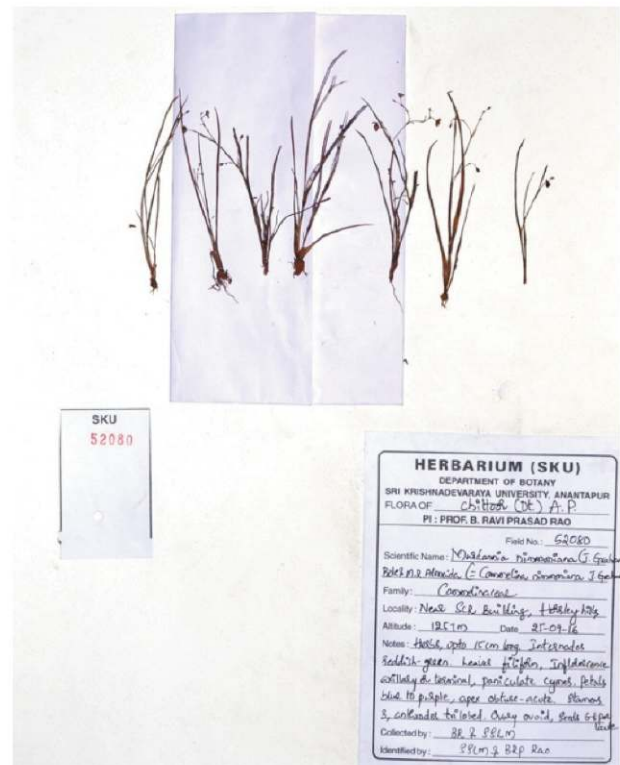
Distribution: India: Andhra Pradesh (Horsley Hills - Chittoor District), Goa, Gujarat, Karnataka, Kerala, Maharashtra and Tamil Nadu; eastern Africa.

Habitat & ecology: Rare, on moist soil beds on rocks.

Note: Pullaiah (1997) reported the presence of *Murdannia semiteres* (currently accepted name: *M. nimmoniana*) in Mahaboobnagar and Medak districts of erstwhile Andhra Pradesh based on past collections. Since the locality falls in the newly formed Telangana State, our collection from Horsley Hills form a new distributional record to the state of Andhra Pradesh.

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Image 7. Herbarium image of *Cyanotis villosa*.Image 8. Herbarium image of *Murdannia nimmoniana*.

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