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## SHORT COMMUNICATION

### THREE GRASSES (POACEAE), ADDITIONS TO THE FLORA OF ANDHRA PRADESH, INDIA

Anil Kumar Midigesi & Boyina Ravi Prasad Rao

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**Abstract:** *Bothriochloa insculpta* (A. Rich.) A. Camus, *Cyrtococcum patens* (L.) A. Camus var. *patens* and *Sacciolepis myosuroides* (R. Br.) A. Camus. (Panicoidae: Poaceae) are three grasses that were collected from Chittoor and Visakhapatnam districts of Andhra Pradesh. They are being reported here as new records for Andhra Pradesh State. Descriptions, illustrations, and important notes are provided for all the species.

**Keywords:** Angiosperm, Chittoor, new records, Visakhapatnam.

**Abbreviations:** SKU—Sri Krishnadevaraya University Herbarium

Floristic explorations in different parts of Andhra Pradesh from 2016 to 2017, yielded a few grass specimens from the Horsley Hills of Chittoor District, Paderu cultivated fields and the Lambasingi Ghat of Visakhapatnam District. After careful examination and identification with obtainable literature (Fischer 1928; Bor 1960; Kabeer & Nair 2009) these have been identified as *Bothriochloa insculpta*, *Cyrtococcum patens* var. *patens*, and *Sacciolepis myosuroides*.

*Bothriochloa* Kuntze comprising 35 species are

distributed in Africa, Australasia, Europe, North & South America, Pacific, temperate & tropical Asia (Clayton et al. 2006), and represented by 17 species in India (Kabeer & Nair 2009), of which four are recorded in Andhra Pradesh (Pullaiah 2018). *Cyrtococcum* Stapf, comprising 15 species are distributed in Africa, Australasia, North & South America, Pacific, temperate & tropical Asia (Clayton et al. 2006) and represented by six species in India (Moulik 2007; Kabeer & Nair 2009) of which five are known to be distributed in Andhra Pradesh. *Sacciolepis* Nash comprising about 25 species are distributed in Africa, Australasia, North & South America, Pacific, temperate & tropical Asia (Clayton et al. 2006) and represented by four species in India (Karthikeyan et al. 1989; Moulik 1997; Kabeer & Nair 2009), of which two are recorded from Andhra Pradesh.

A perusal of the literature pertaining to Andhra Pradesh State (Fischer 1928; Moulik 1997; Kabeer & Nair 2009; Pullaiah 2018) revealed that these three grass taxa have not been reported till date and the present collections form new distribution records for the state.

## THREE GRASSES (POACEAE), ADDITIONS TO THE FLORA OF ANDHRA PRADESH, INDIA

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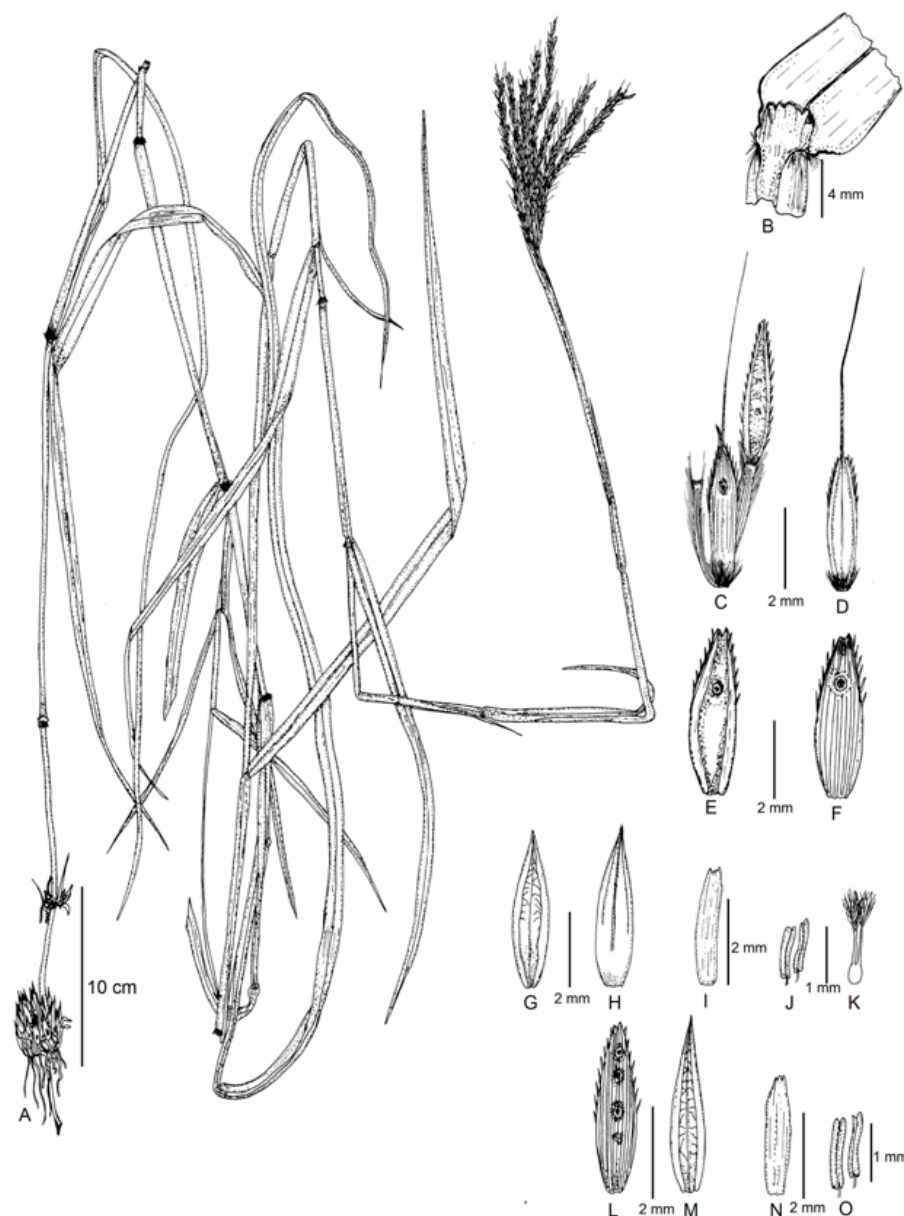


Figure 1. *Bothriochloa insculpta*: A—habit | B—ligule | C—spikelet pair | D—sessile spikelet | E—lower glume of sessile spikelet (ventral view) | F—lower glume of sessile spikelet (dorsal view) | G—upper glume of sessile spikelet (ventral view) | H—upper glume of sessile spikelet (dorsal view) | I—lower lemma of sessile spikelet | J—stamen | K—gynoecium | L—lower glume of pedicelled spikelet (dorsal view) | M—upper glume of pedicelled spikelet (ventral view) | N—lower lemma of pedicelled spikelet | O—stamen.

Descriptions, illustrations, important notes and other details are provided for the three taxa.

***Bothriochloa insculpta*** (A. Rich.) A. Camus in Ann. Soc. Linn. Lyon n. s., 76: 165. 1931; Bor, Grasses Burma, Ceylon, India & Pakistan: 107. 1960; Moulik, Grass. Bamb. India 1: 266. 1997. *Andropogon insculptus* Hochst. ex A. Rich., Tent. Fl. Abyss. 2: 458. 1851. *Andropogon pertusus* var. *insculptus* (A. Rich.) Hack., Monogr. Phan.6: 482. 1889; Hook. f., Fl. Brit. India 7: 174. 1896. *Amphilophis*

*insculpta* (Hochst.) Stapf, Fl. Trop. Afr. 9: 176. 1917; C.E.C. Fisch. in Fl. Madras 3: 1732. 1934 (Fig. 1; Image 1).

Specimen examined: 51982 (SKU), 5.ix.2016, the Horsley Hills, Chittoor District, Andhra Pradesh, India, coll. B. Ravi Prasad Rao & M. Anil Kumar

Perennials. Culms erect or rambling, up to 2.5 m high; nodes hairy, basal nodes stilt rooted. Leaf sheaths glabrous, as long as or longer than nodes, 7–14 cm long, shortly ciliate at mouth; ligule membranous, shortly ciliate at apex; blades linear-lanceolate, glabrous, mid

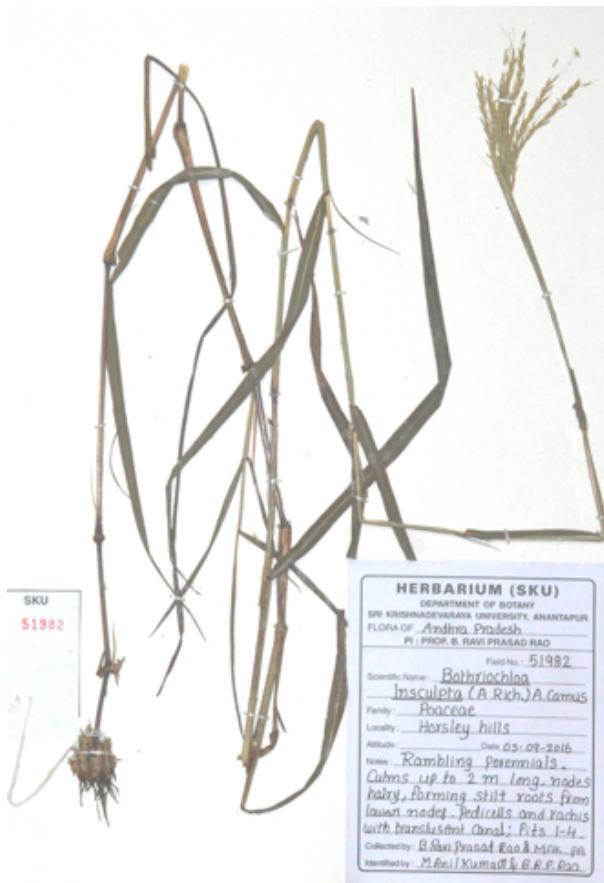


Image 1. Herbarium of *Bothriochloa insculpta*.

nerve prominent, 20–28 × 0.6–0.8 cm long. Inflorescence of racemes, racemes digitate or sub digitate, racemes rachis internodes with translucent canal. Spikelets binate; sessile bisexual; pedicelled male. Sessile spikelet: 2-flowered, oblong–lanceolate, 4.25–4.5 mm long, awned. Lower glumes oblong–lanceolate, membranous – thinly chartaceous, flat, glabrous on dorsal surface, with a pit, margin narrowly winged in upper half, wings ciliate, apex shortly 2-lobed, 9–11-nerved, nerved inconspicuous; upper glumes lanceolate, membranous, boat shaped, glabrous, lower margins sparsely ciliate hairy, apex acuminate, 1-keeled, 3-nerved. Florets 2; lower barren; upper bisexual. Lower lemmas hyaline, nerveless, 2.8–3.2 mm long. Lower paleas minute or absent. Upper lemmas reduced to the base of awn, principal lemma awn from the apex, geniculate, 11–14 mm long over all; column twisted, scabrid on margins, 6–8 mm long; bristle 4–6 mm long. Paleas minute or absent. Stamen 3, anthers 1–1.5 mm long. Ovary ovate-oblong. Stigmas 2, plumose. Caryopsis not seen. Pedicelled spikelets: oblong-lanceolate, chartaceous, male, unawned; pedicel of pedicelled spikelets 2–3 mm long with a translucent

canal, hairy on margins, 0.75 length of sessile spikelet. Lower glumes oblong-lanceolate, cartilaginous, glabrous on dorsal surface, pitted, pits 3 (2–4), glandular, margins narrowly winged in upper half, ciliate on margins, 11–13-nerved, nerved conspicuous; upper glumes more or less akin to upper glumes of sessile spikelets, 4–4.2 × c.1 mm long. Lemmas hyaline, nerveless, 2.5–2.8 mm long, unawned. Stamens 3, anthers 1–1.5 mm long.

Habitat & Ecology: Usually grows at high altitudes (above 1100m).

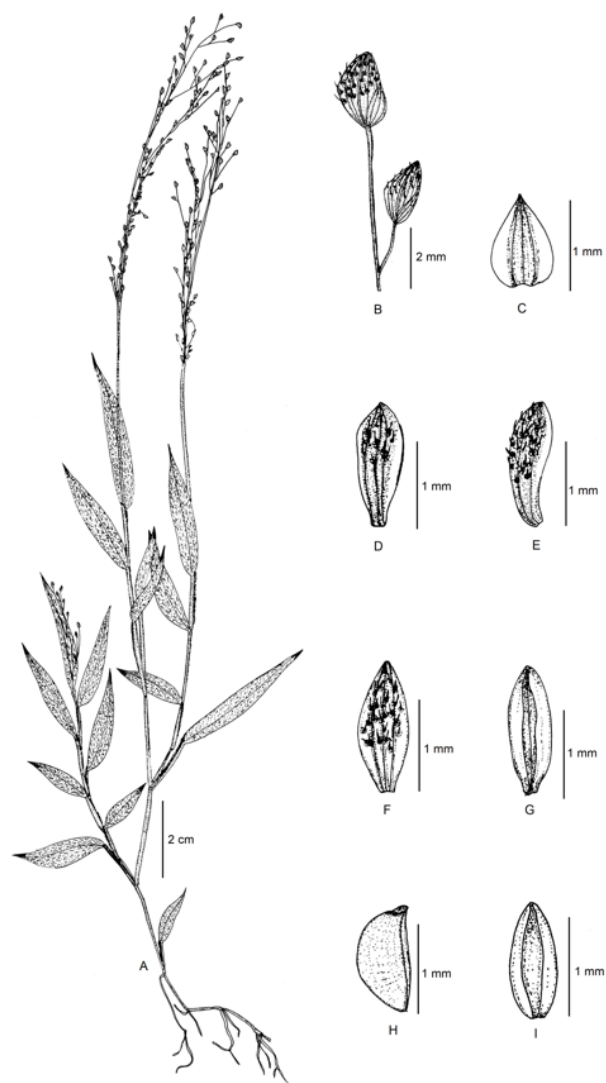
Flowering & fruiting: November–March.

Distribution: India (Bihar, Maharashtra and peninsular India); Africa; western Indian ocean; Australasia; Europe; South America; temperate and tropical Asia.

***Cyrtococcum patens*** (L.) A. Camus in Bull. Mus. Natl. Hist. Nat. 27: 118. 1921, var. ***patens***; C.E.C. Fisch. in Fl. Madras 3: 1786. 1934; Bor, Grasses Burma, Ceylon, India & Pakistan: 292. 1960; Moulik, Grass. Bamb. Ind. 1. 86. 1997. *Panicum patens* L., Sp. Pl.: 58. 1753. *Cyrtococcum radicans* (Retz.) Stapf., Hooker's Icon. Pl. 31: t. 3096. 1922; C.E.C. Fisch. in Fl. Madras 3: 1786. 1934. *Panicum radicans* Retz., Obsser. Bot. 4: 18. 1786. *Cyrtococcum muricatum* (Retz.) Bor, Grasses Burma, Ceylon, India & Pakistan: 291. 1960. *Panicum radicans* Retz., Observ. Bot. 4: 18. 1786. (Fig. 2; Image 2).

Specimen examined: 52962 (SKU), Lambasingi Ghat, 13.xii.2017, Visakhapatnam District, Andhra Pradesh, coll. B. Ravi Prasad Rao & M. Anil Kumar.

Annuals or perennials. Culms slender, erect, creeping, matt-forming, up to 40cm high. Leaf sheaths ciliate on one margin; ligules membranous 1–2 mm long; blades linear-lanceolate, dorsal surface ciliate with tubercle-based hairs, acuminate at apex, 2.5–12.5 × 0.5–1.2 cm long. Inflorescence of panicles, 5–10 cm long. Spikelets in pairs, one with short pedicel, another one with long pedicel, gibbose, 1.4–1.6 × c.1mm long. Lower glumes ovate, nearly as long as broad, margins much expanded or winged in the lower half, acute at apex, 3-nerved, c. 1 × 0.9 mm long; upper glumes helmet shaped, elliptic-oblong, membranous, tuberculate ciliate on surface, 3-nerved, c.1.5 × c. 0.5 mm long. Florets 2, lower sterile; upper bisexual. Lower lemmas similar to upper glumes, longer than fertile lemmas, tuberculate ciliate on surface, obtuse at apex, 3-nerved. Lower palea absent. Upper lemmas gibbose, crustaceous, obtuse or subcutate, with an appendage at apex, scarcely 3-nerved, c.1.2 × 0.8 mm long. Paleas obtuse at apex, as long as its lemmas, coriaceous, 2-keeled, 2-nerved, 1.2 × c. 0.4 mm long. Stamen 3. Stigmas 2, plumose. Caryopsis not seen.



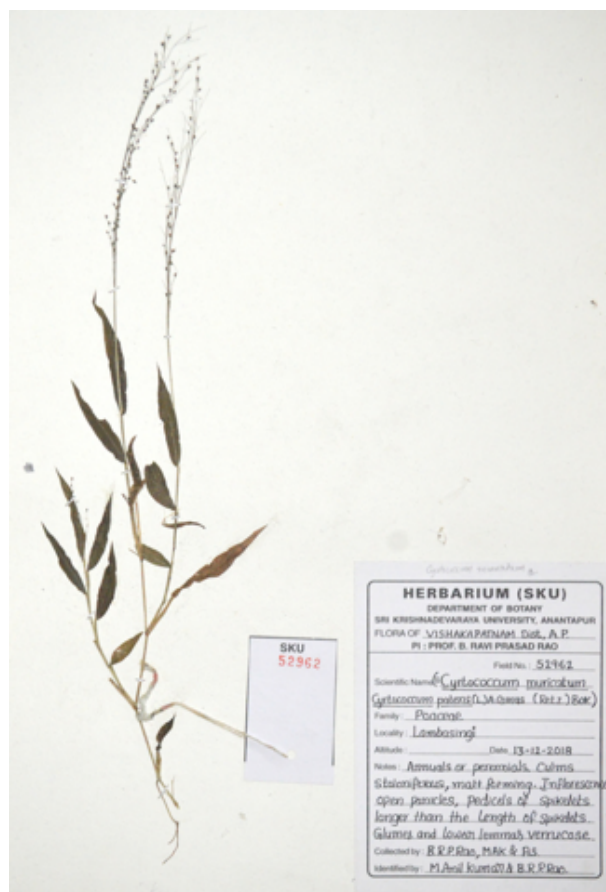
**Figure 2.** *Cyrtococcum patens* var. *patens*: A—habit | B—spikelets along with pedicels | C—lower glume | D—upper glume (dorsal view) | E—upper glume (side view) | F—lower lemma (dorsal view) | G—lower lemma (ventral view) | H—upper lemma (side view) | I—upper palea.

**Habitat & Ecology:** Found under the shades of trees in moist deciduous forests.

**Flowering & fruiting:** July–May

**Distribution:** India (Andaman, Andhra Pradesh, Assam, Bihar, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh, and West Bengal); Sri Lanka, southeastern Asia.

**Note:** There are two forms in *Cyrtococcum patens* (L.) A. Camus var. *patens*: one has spikelets with glabrous nature and the other with verrucose. There is regular confusion while treating var. *latifolium* and var. *patens* as both have longer pedicels; var. *latifolium* pedicels, however, are very long and capillary; while in var. *patens*



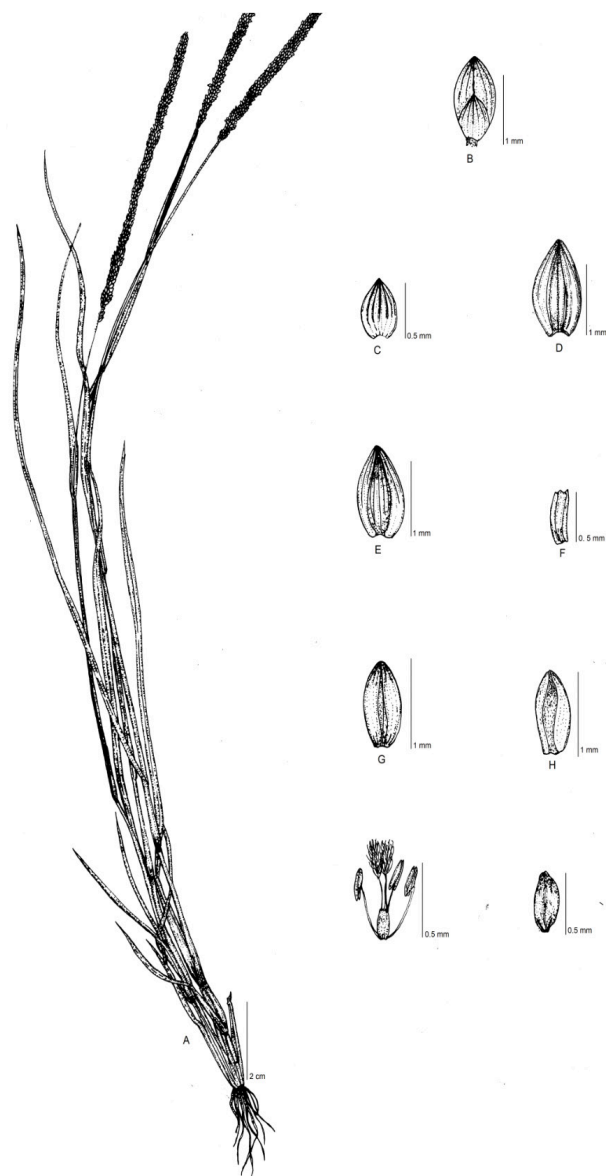
**Image 2.** Herbarium of *Cyrtococcum patens* var. *patens*.

they are relatively shorter, but always longer than the length of spikelets. Bor (1960) treated spikelets with verrucose as a separate species, i.e., *C. muricatum* (Retz.) Bor, but now it has been made a synonym to the var. *patens*. In our present collections only one specimen has glabrous spikelets and remaining are with tuberculate or verrucose spikelets. Since *C. muricatum* has been reduced as a synonym to var. *patens*, the identification became much confused and also resolves the confusion in the occurrence of the taxon in Andhra Pradesh.

***Sacciolepis myosuroides* (R.Br.) A. Camus** in Fl. Indo-Chine 7: 460. 1922; C.E.C. Fisch. in Fl. Madras 3: 1786. 1934; Bor, Grasses Burma, Ceylon, India & Pakistan: 358. 1960; Moulik, Grass. Bamb. Ind. 1. 149. 1997. *Panicum myosuroides* R. Br., Prodr. Fl. Nov. Holl. 189. 1810; Hook. f., Fl. Brit. India. 7: 42. 1896. (Fig. 3; Image 3).

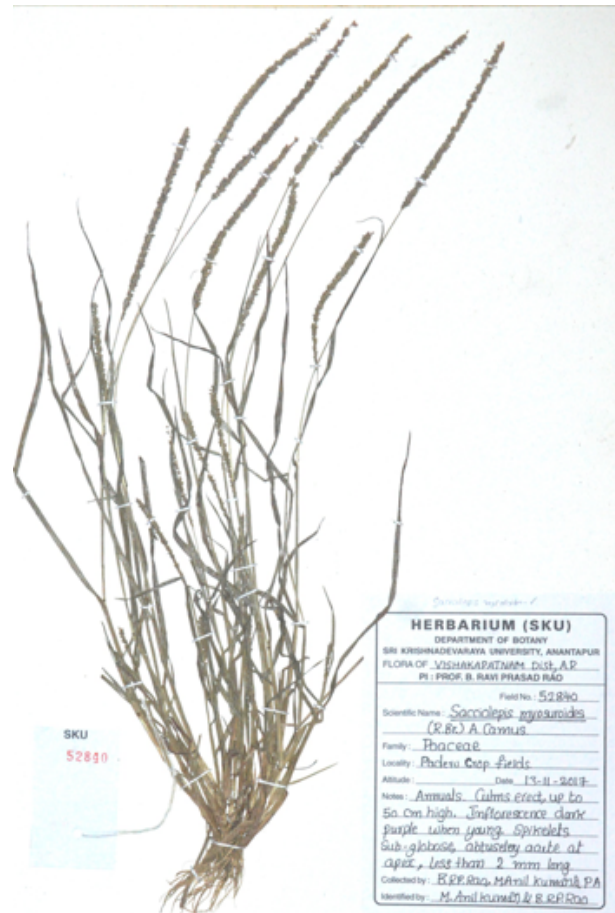
Specimen examined: 52840 (SKU), 13.xii.2017, Paderu fields, Visakhapatnam District, Andhra Pradesh, India, coll. B. Ravi Prasad Rao, M. Anil Kumar & P. Anjaneyulu.

Annuals. Culms erect, tufted or decumbent at



**Figure 3.** *Sacciolepis myosuroides*: A—habit | B—spikelet | C—lower glume | D—upper glume | E—lower lemma | F—lower palea | G—upper lemma | H—upper palea | I—stamens & gynoecium | J—caryopsis.

base, up to 1.1m high, nodes glabrous. Leaf sheaths glabrous or scabrid, 5–8 cm long; ligules membranous, truncate; blades linear-lanceolate, glabrous or scabrid, base rounded, acuminate at apex, 10–20 × 4 cm long. Inflorescence of panicles, spiciform, usually dark purple when young, 3–20 cm long. Spikelets ovate-obovate to oblong, elliptic, obtuse at apex, 1.2–1.6 × c. 1 mm long. Lower glumes ovate, chartaceous, 5-nerved, 0.6–0.8 × c. 0.6–0.8 mm long; upper glumes as long as lemmas, glabrous, 7–9-nerved, c.1.5 mm long. Lower lemmas akin to upper glumes, 5–7-nerved, 1.2–1.4 mm long.



**Image 3.** Herbarium of *Sacciolepis myosuroides*.

Lower paleas more or less enveloped, elliptic, hyaline, 2-nerved, c. 0.5 mm long. Upper lemmas elliptic, coriaceous, 3-nerved, nerves obscure, 0.8–1.1 mm long. Upper paleas as long as upper lemmas, elliptic, 2-nerved. Stamen 3, anthers 0.4mm long. Ovary 0.3mm long, elliptic. Stigmas 2, plumose, 0.6mm long. Caryopsis ellipsoid, c. 0.5mm long.

**Habitat & Ecology:** Very common weed of cultivated fields, especially in paddy and similar swampy habitats.

**Flowering & fruiting:** July–January

**Conservation status:** Least concern (LC).

**Distribution:** India (Andaman, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Odisha, Sikkim, Tamil Nadu, Telangana, Uttar Pradesh, and West Bengal); Africa, Australasia, North & South America, Pacific, and temperate & tropical Asia.

#### Notes

1. *Sacciolepis myosuroides* is often confused and also erroneously identified as *S. indica*. Many characters

are intermediate between *S. indica* and *S. myosuroides*, but can be easily identifiable by its smaller (c. 1.5mm), glabrous spikelets.

2. The species recorded was from Warangal and Medak districts in Telangana region of erstwhile Andhra Pradesh. All the publications prior to 2014 (Kabeer & Nair 2009; Mani 2011) mentioned its distribution as Andhra Pradesh. Since there are no records for the species from present day Andhra Pradesh state till date, the present collection forms a new distribution record for the same.

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