

RESEARCH ARTICLE

Addition of five grass species to the state of Telangana

A. Ramakrishna^{1,3}, S. Shankar¹, M. Uday Kumar², B.Kalpana¹, B. Sadasivaiah³, A. Madhusudhan Reddy⁴, Nirmala Baburao¹ and T. Pullaiah⁵

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Abstract Five species of Poaceae namely *Arundinella nervosa*, *Enteropogon monostachyos*, *Eulalia phaeothrix*, *Oryza officinalis* and *Panicum fischeri* collected from Amrabad Tiger Reserve, Telangana and reported here as new additions to the flora of Telangana state. Apart, the detailed description, ecology and distribution information is facilitated here.

Key words: Distribution, Ecology, Endemic, Grass, New records, Poaceae

Introduction

Telangana state is situated in the central stretch of the eastern seaboard of the Indian Peninsula with an area of 114,840 km² and lies between 15.50'–19.55' N latitudes and 77.14'–78.50' E longitudes. The area is divided into two main regions, the Eastern Ghats and the plains. The Nallamala Hill ranges of Telangana distributed in Nagarkurnool and Nalgonda districts. These hills possess moist deciduous, dry deciduous and scrub forests. The family Poaceae is represented by 242 species (Pullaiah 2015, Reddy and Reddy 2016, Reddy 2018, Nagaraju *et al.* 2019 a,b; 2020 a,b; 2021 a,b,c; Nagaraju & Annamma 2021; Nagaraju and Bharath 2021, Swamy and Nagaraju 2019, Swamy *et al.* 2021, Swamy and Arumugam 2021) in Telangana

state. While inventorying the grasses of Amrabad Tiger Reserve, Telangana, the authors collected five interesting species of grasses. Detailed study of the collected specimens and thorough perusal of relevant literature (Pullaiah 2015, Reddy and Reddy 2016, Reddy 2018) revealed that the above five species are additions to the Telangana State of India.

Materials and methods

Intensive and extensive floristic surveys were conducted between 2012 and 2022 in the Amrabad Tiger Reserve, Telangana. The plant specimens were collected at different locations with GPS coordinates. The herbarium specimens prepared by following the standard herbarium techniques (Jain and Rao 1977) were preserved at Dr. B.R.R. Govt. Degree College, Jadcharla, Telangana. The phenological events of the grasses, habitat, associated plant species and soil type were recorded in the field.

Result and discussion

After a critical study, the specimens were identified as *Arundinella nervosa*, *Enteropogon monostachyos*, *Eulalia phaeothrix*, *Oryza officinalis* and *Panicum fischeri* (Plate 1 & 2). A

✉ B. Sadasivaiah
sadasivaiahbyalla@gmail.com

1 Department of Botany, Osmania University, Hyderabad, Telangan

2 Department of Botany, The Madura College, Madurai, Tamil Nadu

3 Department of Botany, Dr. BRR Government College, Jadcherla, Telangana

4 Department of Botany, Yogi Vemana University, Kadapa, Andhra Pradesh

5 Department of Botany, Sri Krishnadevaraya University, Ananthapuramu, Andhra Pradesh

scrutiny of literature has revealed that these species are not reported from Telangana State (Pullaiah 2015, Reddy and Reddy 2016, Reddy 2018). Hence the present distribution of these grass species forms new distributional record for the Telangana State.

All these grasses are palatable to the herbivores of the tiger reserve and support the top carnivores. *Arundinella nervosa* was not reported from erstwhile Andhra Pradesh by Pullaiah (1997) and it was added as a new distributional record by Madhusudhan Reddy (2002) from Tirumala Hills of Chittoor District. *Enteropogon monostachyos*, *Eulalia phaeothrix* and *Panicum fischeri* were reported from Eastern Ghats of erstwhile Andhra Pradesh but not from Telangana Part. *Oryza officinalis* is a wild relative of cultivated species of *Oryza sativa* L., and was reported only from Gundla brahmeswaram wildlife sanctuary of erstwhile Andhra Pradesh by Ellis (Pullaiah 1997) and Madhusudhan Reddy (2002). Hence, the present collections of all the above five grass species are first time reporting from Telangana State.

Taxonomic treatment

Arundinella nervosa (Roxb.) Nees ex Hook. & Arn., Bot. Beechey Voy. 237.1836; C.E.C. Fisch. in Gamble, Fl. Madras 3:1801.1934; Bor, Grasses Burma Ceylon India & Pakistan 424.1960; Moulik, Grass. Bamb. India 59.1997.

Annuals; culms solitary, ca. 60cm high. Leaf sheath glabrous to pubescent. Leaf blade linear, acuminate at apex, tuberculate-ciliate to glabrous. Panicle elliptic, open, up to 25cm. Spikelets paired, pedicelled, lanceolate, 4.5–6×1mm. Glumes persistent, dissimilar, gaping, lower 3-nerved, upper 5-nerved. Florets 2; lower male or barren, upper bisexual. Lower lemma elliptic, 2.8–3.5×0.8–1mm, obtuse at apex, membranous, 3-nerved, paleate. Upper lemma oblong-elliptic, 2.5×1.3mm, apex with 2 lateral setae and a middle long awn, sub-coriaceous; setae ca. 2 mm; awn geniculate, paleate. Stamens 3. *Caryopsis elliptic*.

Habitat & Ecology: Common in plains and slopes of dry deciduous forests. It is associated with *Heteropogon contortus* (L.) Beauv. ex Roem. & Schult., in plains and *Cymbopogon coloratus* (Hook. f.) Stapf, *Sehima nervosum* (Rottler) Stapf

and other grasses on slopes.

Flowering & Fruiting: October–January.

Distribution: Endemic to India (Andhra Pradesh, Goa, Karnataka, Kerala, Maharashtra, Meghalaya, Tamil Nadu) (Kabeer and Nair 2009).

Specimens examined: India-Telangana, Nagarkurnool District, Mannanur Range, Pullaiahpalli, A. Ramakrishna & B. Sadasivaiah 4330.

Note: The spikelets of this species are like those of *Arundinella setosa* Trin., but differs in having leaf sheath and blades densely covered with tubercle-based hairs.

Enteropogon monostachyos (Vahl) Schum., Abh. Konigl. Akad. Wiss. Berlin 17. 1894; C.E.C. Fisch., in Gamble, Fl. Madras 3:1834. 1934; Bor, Grasses Burma Ceylon India & Pakistan 472. 1960; Moulik, Grass. Bamb. India 2:568. 1997.

Perennials; culms 50–100 cm long. Leaf sheaths glabrous. Leaf blades linear, 10–30×0.2–0.6 cm, glabrous. Spikes solitary, 8–15cm long. Spikelet packing broadside to rachis, 2-rowed. Spikelet solitary, dorsally compressed, oblong, 6–7× ca. 0.5mm, comprising 1 fertile floret, with diminished florets. Glumes persistent, dissimilar, shorter than spikelet, thinner than fertile lemma, 1-nerved. Lower lemma oblong, coriaceous, bidentate, 5–6×1 mm, awned, dorsally compressed, keeled, 3-nerved, paleate. Upper lemma lanceolate, 4–5×0.8mm, chartaceous, awned, awn from sinus, paleate. Stamens 3. Caryopsis ellipsoid.

Habitat & Ecology: Occasional in the open forest slopes near bushes. It is associated with *Canthium parviflora* Lam. and other thorny shrubs.

Flowering & Fruiting: August–December.

Distribution: World: Sri Lanka and Myanmar.

India: Andhra Pradesh, Maharashtra and Tamil Nadu.

Specimens examined: India, Telangana, Nagarkurnool District, Mannanur Range, Devunisari, A. Ramakrishna & B. Sadasivaiah 3388.

Eulalia phaeothrix (Hack.) Kuntze, Revis. Gen. Pl. 2: 775. 1891; C.E.C. Fisch. in Gamble, Fl.

Plate 1



A. Arundinella nervosa, *B. Enteropogon monostachyos*, *C. Eulalia phaeothrix*, *D. Inflorescence of Eulalia phaeothrix*

Plate 2



E. Oryza officinalis, F. Panicum fischeri, G-K. Spikelets of Arundinella nervosa, Enteropogon monostachyos, Eulalia phaeothrix, Oryza officinalis, Panicum fischeri

Madras 3:1715. 1934; Bor, Grasses Burma Ceylon India & Pakistan 156. 1960. *Pollinia phaeothrix* Hack., Mongr. Phan. 6: 168. 1889; Hook.f., Fl. Brit. India 7: 112. 1896.

Perennials; culms tufted, ca. 2 m tall, wooly at base with dark chocolate brownish hairs. Leaf sheaths rusty, reddish-brown. Leaf blades linear-lanceolate, 10–55×0.5–1.5cm, flat-inrolled, scabrid-glabrous. Racemes digitate, 2–10. Spikelets elliptic-lanceolate, 4–7×0.6–1mm, binate. Sessile spikelets lanceolate-oblong. Glumes 2, lower oblong-lanceolate, upper boat-shaped, chartaceous, depressed between keels, base villous, 3-nerved, ciliate. Floret 2-nate, lower barren and epaleate, upper hermaphrodite. Lower lemma oblong, acuminate, chartaceous, 2-nerved, ciliate apex. Upper lemma oblong-lanceolate, membranous, deeply 2-lobed, 3-nerved, awned. Upper palea ovate-lanceolate, reduced, membranous. Stamens 3. Caryopsis oblong.

Pedicelled spikelets: Similar to sessile spikelet.

Habitat & Ecology: Scarce in forest slopes along with other grasses, especially associated with *Heteropogon contortus*, *Cymbopogon coloratus*, and *Sehima nervosa*.

Flowering & Fruiting: September–December.

Distribution: Sri Lanka, South East Asia.

India: Andhra Pradesh, Karnataka, Kerala, Tamil Nadu

Specimens examined: India, Telangana, Nagarkurnool District, Devunisari, Mannanur range, B. Kalpana & B. Sadasivaiah 3372; Pedduty, Kollapur range, A. Ramakrishna & B. Sadasivaiah 3835.

Oryza officinalis Wall. ex Watt. Dict. Econ. Prod. India 5: 501 1891. *O. officinalis* sub sp. malampuzhaensis (Krishnasw & Chandras.) Tateoka, Bot. Mag. (Tokyo) 75: 422. 1962. *O. malampuzhaensis* Krishnasw. & Chandras., Madras Agric. J. 45: 471. 1958; Bor, Grasses, Burma, Ceylon, India & Pakistan 606. 1960.

Perennial, stoloniferous grass. Culms ca. 1m tall, trailing, branching at base. Leaf sheaths overlapping, keeled, glabrous. Leaf blades linear-lanceolate, 20–50×1–2 cm, flat, glabrous, midrib prominent. Panicle lax, ca. 30cm long. Spikelet

solitary, pedicelled, ca. 6×2.5mm, broadly oblong, deciduous, awned. Glumes triangular, ca. 0.2×0.1mm, 1-nerved, scaberulous, deciduous. Lemma boat-shaped, ca. 5.5×2.5mm, apex acute, keeled, sparsely hairy, awned, awn ca. 4mm long. Palea narrowly lanceolate, 3-nerved, 1-keeled, apex acute, sparsely hairy. Stamens 6. Stigmas plumose. Caryopsis oblong.

Habitat & Ecology: Rare along the margins of streams in forest, especially shady localities.

Flowering & Fruiting: September–January.

Distribution: Endemic to South India (Andhra Pradesh, Kerala, Tamil Nadu).

Specimens examined: India, Telangana, Nagarkurnool District, Mannanur range, Mallaiah Loddi B. Sadasivaiah 1742.

Panicum fischeri Bor, Kew Bull. 257. 1956; Bor, Grasses, Burma, Ceylon, India & Pakistan 324. 1960; Moulik, Grass. Bamb. India 1: 117. 1997.

Perennials, tufted, woody base, culms 50–100 cm tall. Leaf sheaths hairy, glabrous at maturity. Leaf blades linear-lanceolate, 20–30×0.3–0.5cm, mid-vein prominent, margins incurved, sparsely hairy, glabrous at maturity. Panicles effuse. Spikelets oblong-lanceolate, 4–5×1.2–1.5mm; pedicles up to 2cm long. Lower glume ovate-lanceolate, ca. 2×1.5mm, up to half of the spikelet, 5-nerved, chartaceous, acuminate. Upper glume elliptic-lanceolate, ca. 4.5×1.5mm, 7-nerved, chartaceous, acuminate, 2-keeled. Lower lemma oblong-elliptic, 4.5×1.5mm, chartaceous, 7–9-nerved, 2-keeled, glabrous. Lower palea ovate-lanceolate, ca. 2.5×1.2mm, hyaline, 2-nerved. Upper lemma oblong-elliptic, ca. 3×1.5mm, 5–7-nerved, obtuse, chartaceous. Upper palea oblong-elliptic, 2.5–3×1.5mm, hyaline, obtuse, 2-nerved. Rachilla extending beyond upper floret, extension flap like, ca. 2mm long. Stamens 3. Stigma plumose. Caryopsis oblong.

Habitat & Ecology: Scarce in open forest slopes near rocky areas.

Flowering & Fruiting: August–October.

Distribution: Endemic to South India (Andhra Pradesh, Kerala, Tamil Nadu)

Specimens examined: Telangana, Nagarkurnool District, Mallelatheertham, B. Sadasivaiah 2136; Vatavarlappally, A. Ramakrishna & B. Sadasivaiah

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