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Indian Murainagrass *Ischaemum ciliare* (Poaceae), a new record for the flora of Telangana State, India

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ABSTRACT: *Ischaemum ciliare* Retz., was collected from Pakhal Wildlife Sanctuary, Warangal district Telangana, India and reported as an addition to the Flora of Telangana. The detailed description and photo plats are provided for easy identification.

KEYWORDS: Addition, Grass, Flora, *Ischaemum*, Palatable, Poaceae, Telangana.

I. INTRODUCTION

The genus *Ischaemum* L. belongs to the family Poaceae, subfamily *Panicoideae*, tribe *Andropogoneae*, subtribe *Ischaeminae*. It is a tropical and subtropical genus consists about 80 species distributed worldwide (Gorde *et al.* 2016; Raole *et al.* 2011, Bokil *et al.*, 2021). In India, it is represented by 61 species (Bokil *et al.* 2020 & 2021; Kellongs *et al.* 2020; Prasanna *et al.* 2020), of which 36 are endemic (Singh & Rao 2008; Abhijit & Krishnamurthy 2019). The genus is characterized by sessile spikelet dorsally compressed, lower glume chartaceous to coriaceous, convex, 2-keeled or rounded on flanks, often rugose, sometimes winged, entire or bi-lobed, upper glume with or without an awn, pedicelled spikelet as large as the sessile, dorsally or laterally compressed, often asymmetrical, occasionally bisexual with the upper lemma weakly awned (Clayton & Renvoize, 1986). Current document on this Indian murainagrass are prerequisite to know the wild palatable grasses in the state.

A. LITERATURE SURVEY

In the recent years, the state floras such as Flora of Telangana: The 29th State of India (Pullaiah, 2015) and Flora of Telangana State (Reddy & Reddy, 2016) include 208 grass species and 198 grass species, respectively. In addition, Reddy (2018) has reported additional grasses (30 species) with additional information, with the total species of Poaceae reported being 228. *Ischaemum ciliare* Retz. was not reported from Telangana State by Pullaiah (2015), Reddy & Reddy (2016) and Reddy (2018).

II. MATERIALS AND METHODS

During the plant explorations under the project Grasses of Telangana State, a murainagrass was collected from Pakhal Wildlife Sanctuary, Telangana. After the review of literature (Bor, 1960) grass specimen identified as *Ischaemum ciliare* Retz. (Figures 1 & 2.) and it was not reported in the Flora of Telangana (Pullaiah, 2015; Reddy & Reddy, 2016). The specimens (BSID012050) were processed and deposited at BSID, Hyderabad. The micro morphological observations were made under a dissecting microscope Olympus SZ 61 and images captured using a microscope mounted camera Magcam DC5 (Magnus 5.1 mp, 1/25' CMOS Sensor).

III. TAXONOMIC TREATMENT

Ischaemum ciliare Retz., Obs. Bot. 6: 36. 1791; Hook.f., Fl. Brit. India 7: 133. 1896. *I. ciliare* Retz. var. *wallichii* Hack, in DC., Monogr. Phan. 6: 227. 1889. *I. aristatum* L., Sp. Pl. 1049.1753; Hook. f., Fl. Brit. India 7: 226.1896. *I. aristatum* L. var. *wallichii* (Hack.) Bor in Indian For. Rec. (Bot.) 1: 3, 98. 1938. Kellong. & al., Checklist of the grasses of India 391. 2020; Prasanna & al., Poaceae in Mao & Dash (eds.) Fl. Plants of India- an annotated checklist –



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Monocotyledons 386. 2020. *I. indicum* (Houtt.) Merr. in J. Arnold. Arbor. 19: 320. 1938; Bor, Grasses Burma, Ceylon, India & Pakistan: 180. 1960; S. Moulik, Grass. Bamb. India 1: 292. 1997.

Annuals or perennials, slender, stoloniferous. Culms decumbent to geniculate, 20–85 cm high; nodes densely bearded, at times lower ones rooting. Leaf blade oblong to linear-lanceolate, 4–18 × 0.4–0.6 cm, acuminate at apex, narrowly tapering or truncate at base, sparsely to densely white hairy, margins serrulate, sometimes wavy; ligule ovate, 1.5–2 mm long, membranous, hyaline; leaf sheath terete to keeled, 3–14 cm long, glabrous to villous hairy. Racemes usually 2, from tip of peduncle, 2.5–5.5 × ca. 0.8 cm, hairy; peduncle ca. 33 cm long; rachilla joints triquetrous, 2–2.5 mm long, slightly bulged above middle, furrowed inside at middle, hairy (1–1.5 mm long) on outer margins; spikelets arranged one above the other, pores distinct from ventral side; entire spikelet disarticulating; callus bearded, joints and pedicels fragile; pedicels ca. 2.5 mm long, similar to joints, hairy only on outer margins. Sessile spikelets ovate-lanceolate, oblong, 4–5 × 2–2.5 mm; callus shortly bearded; joints and pedicels slightly bulged above middle. Lower glume ovate-oblong, 3–4.5 × 1–1.6 mm, margins entire and inflexed from base to above, apex notched, 6–9 nerved, keeled; keel winged from middle to above, margins serrulate, 2–4 bristles on both wings, below cartilaginous-coriaceous, 2–3 shallowly longitudinal pits on dorsal surface from middle to above. Upper glume boat shaped, 5–5.5 × 1–1.4 mm, coriaceous at base, hump below the middle, margins inflexed from base to above, apex acute-acuminate, 5-nerved, keeled on the dorsal from middle to above; serrulate along the keel margins; tuft of hairs at the base of the keel, 1–1.8 mm long; awned, 3–5 mm long, barbellate and compressed. Florets 2, lower usually sterile, upper hermaphrodite. Lower lemma ovate-lanceolate, 3–3.8 × 0.5–1 mm, margins inflexed from base to above, membranous winged above, 3–4 nerved, lateral nerves not reaching up to apex, coriaceous, apex acute, hyaline wing from middle to apex. Lower palea elliptic-lanceolate, 3–3.8 × 0.5–0.8 mm, curved, coriaceous-chartaceous, keeled, keel scaberulous, margins hyaline winged just below to apex, apex acute. Upper lemma ovate-oblong, 2.5–3 mm, margins ciliate, apex deeply cleft, 3-nerved, lanceolate -elliptic lobes, hyaline winged below to apex, awned; awn arising from sinus to dorsal, 14–20 mm long, column margin serrulate, awn geniculate, twisted and barbellate. Upper palea elliptic-lanceolate, 3–3.8 × 0.4–0.8 mm, hyaline, keeled, keel scaberulous, apex bifid-emarginate. Lodicules 2, ca. 0.8 × 0.5 mm, truncate, membranous. Ovary oblong, ca. 1.5 × 0.3 mm. Pedicelled spikelet ovate-oblong, 4–5 × 1–1.8 mm; pedicel ca. 1.8 mm long. Florets two, lower male, upper hermaphrodite. Lower glume boat shaped, 3.5–4.3 × 1–1.8 mm, chartaceous above and subcoriaceous below, margins entire and inflexed, 2–3 wrinkled (shallowly depressions), apex acute, keeled; keel winged, ca. 0.5–0.6 mm width, margins serrulate. Upper glume ovate-lanceolate, boat shaped, 4–5 × 0.8–1.3 mm, margins entire and inflexed from base to apex, coriaceous, small bulge or hump in lower half, apex acuminate, keeled; keel winged above middle with ca. 0.3 mm width, margins serrulate; tuft of hairs ca. 1.7 mm long on abaxial surface base of the keel. Lower lemma ovate-lanceolate, 3.5–4 × 0.5–1 mm, margins inflexed from base to above, membranous winged above, 3–4 nerved, lateral nerves not reaching up to apex, coriaceous, apex acute, hyaline wing from middle to apex. Lower palea elliptic-lanceolate, 3–3.8 × 0.5–0.8 mm, curved, coriaceous-chartaceous, keeled, keel scaberulous, margins hyaline winged just below to apex, apex acute. Upper lemma ovate-oblong, 2.5–3 mm, margins ciliate, apex deeply cleft, 3-nerved, lanceolate -elliptic lobes, hyaline winged below to apex, awned; awn arising from sinus to dorsal, 14–20 mm long, column margin serrulate, awn geniculate, twisted and barbellate. Upper palea elliptic-lanceolate, 3–3.8 × 0.4–0.8 mm, hyaline, keeled, keel scaberulous, apex bifid-emarginate. Stamens 3, ca. 2.3–0.9 mm. Lodicules 2, ca. 0.8 × 0.5 mm. Ovary oblong, ca. 1.5 × 0.3 mm.

Flowering and Fruiting: October–March.

Habitat: Open grasslands and forest fringes.

Distribution: Andhra Pradesh, Assam, Bihar, Dadra and Nagar Haveli, Goa, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Tamil Nadu, Telangana, Tripura, Uttar Pradesh and West Bengal.

Specimen examined: India. Telangana, Warangal district, Pakhal Wildlife Sanctuary, Ashoknagar Beat, (N 17.96823°, E 79.98077°, 269 msl, 30.03.2021, *S. Nagaraju* BSID 012050).



Figure 1: A. Habit; B. Basal sheath with woolly; C. Node; D. Ligule; E&F. Joint; G. Portion of inflorescence.

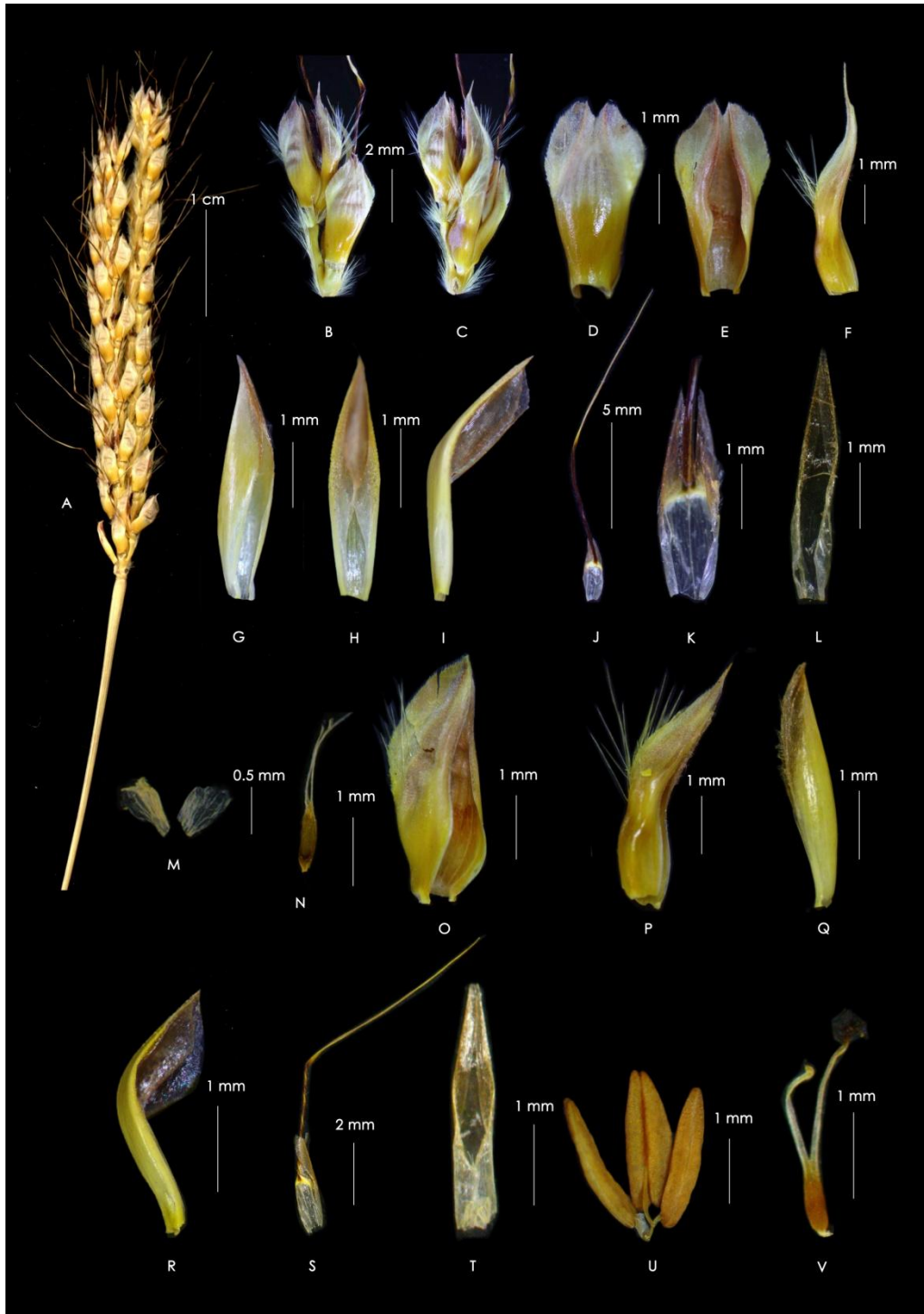


Figure 2: A. Inflorescence; B&C. Abaxial and adaxial view of paired spikelets (sessile & pedicelled); D-N. Sessile spikelet; D&E. Abaxial and adaxial view of lower glume; F. Upper glume; G. Lower lemma; H&I. Adaxial and side view of lower palea; J. Upper lemma; K. Enlarged view of upper lemma; L. Upper palea; M. Lodicules; N. Pistil; O-V. Pedicelled spikelet; O. Lower glume; P. Upper glume; Q. Lower lemma; R. Lower palea; S. Upper lemma; T. Upper palea; U. Stamens; V. Pistil.



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