

## ADDITIONS TO THE GRASSES (POACEAE) OF TELANGANA FROM KAWAL TIGER RESERVE, ADILABAD DISTRICT, INDIA

Alok Chorghe<sup>1</sup>, K. Chandra Mohan<sup>2</sup>, P.S. Annamma<sup>3</sup>, M. Bhanja<sup>4</sup> & E. Venkatesh<sup>5</sup>

<sup>1,2,3</sup> Botanical Survey of India, Deccan Regional Centre, Hyderabad Telangana 500048, India

<sup>4</sup> Telangana Forest Department, Aranya Bhavan, Hyderabad, Telangana 500004, India

<sup>5</sup> Department of Botany, Osmania University, Hyderabad, Telangana 500007, India

<sup>1</sup> alok\_chorghe23@yahoo.co.in (corresponding author),

<sup>2</sup> kolaganicm@gmail.com, <sup>3</sup> anna87shine@gmail.com,

<sup>4</sup> mrbhanja@gmail.com, <sup>5</sup> venkateshbotanyou@gmail.com

Kawal Tiger Reserve, located between 19°15'–19°20'N & 78°32'–79°12'E in Adilabad District of Telangana State, is spread in an area of 893km<sup>2</sup>. The reserve is one of the recently declared tiger reserves (in April 2012). It has a dry deciduous forest type with several small grasslands. In our recent field survey, we could collect three grass specimens, which on critical study were identified as *Dimeria orissae* Bor, *Iseilema holei* Haines and *Spodiopogon rhizophorus* (Steud.) Pilger. A perusal of the literature revealed that these species were not reported from Telangana (Bor 1960; Pullaiah et al. 1992; Pullaiah 1997; Pullaiah & Karuppusamy 2008; Reddy et al. 2008; Kabeer & Nair

2009) and hence reported as new distributional records for Telangana. Each species is provided with a detailed description and images to facilitate identification.



ISSN 0974-7907 (Online)  
ISSN 0974-7893 (Print)

### OPEN ACCESS

Genus *Dimeria* R. Br., represented by 39 species in India (Kabbeer & Nair 2009), has three species in Telangana (Pullaiah 1997). *Dimeria orissae* Bor is reported only from Odisha and Tamil Nadu (Bor 1960; Karthikeyan et al. 1989; Kabbeer & Nair 2009).

### *Dimeria orissae*

Bor in Kew Bull. 1952: 579. 1952 & Grass. Burma, Ceylon, India & Pakistan 142. 1960; S. Moulik, Grass. & Bamb. India 1: 283. 1997 (Images 1a; 2).

Tufted annuals. Culms erect, 25–60 cm high, nodes hairy. Leaf blades linear-lanceolate, 3–10 × 0.3–0.5 cm, sparsely tubercle-based hairy; ligules truncate, membranous, 0.5mm long; leaf sheaths 1–3 cm long. Racemes 2–3, 3–6 cm long; peduncle up to 20cm long; rachis triquetrous, flat on back, 0.5–0.7 mm wide, winged, ciliate along margins. Spikelets elliptic-oblong, 4.2–4.7 × 0.5–0.7 mm, hairy; callus bearded; pedicel truncate, 0.25–0.3 mm. Lower glumes linear-lanceolate, 3.5–3.7 × 0.3–0.4 mm, acute at apex, ciliate, keeled throughout, keel narrowly winged just below the tip. Upper glumes linear-



DATA DEFICIENT	LEAST CONCERN	NEAR THREATENED	VULNERABLE	ENDANGERED	CRITICALLY ENDANGERED	EXTINCT IN THE WILD	EXTINCT
DD	LC	NT	VU	EN	CR	EW	EX

*Dimeria orissae*



DOI: <http://dx.doi.org/10.11609/JoTT.o3879.7589-94>

Editor: B. Ravi Prasad Rao, Sri Krishnadevaraya University, Anantapuramu, India.

Date of publication: 26 July 2015 (online & print)

Manuscript details: Ms # o3879 | Received 11 November 2013 | Final received 07 July 2015 | Finally accepted 10 July 2015

Citation: Chorghe, A., K.C. Mohan, P.S. Annamma, M. Bhanja & E. Venkatesh (2015). Additions to the grasses (Poaceae) of Telangana from Kawal Tiger Reserve, Adilabad District, India. *Journal of Threatened Taxa* 7(9): 7589–7594; <http://dx.doi.org/10.11609/JoTT.o3879.7589-94>

Copyright: © Chorghe et al. 2015. Creative Commons Attribution 4.0 International License. JoTT allows unrestricted use of this article in any medium, reproduction and distribution by providing adequate credit to the authors and the source of publication.

Funding: Botanical Survey of India & Telangana Forest Department.

Competing interests: The authors declare no competing interests.



Acknowledgements: The authors are thankful to the Telangana Forest Department for providing logistic support, Dr. P. Singh, Director, Botanical Survey of India, Kolkata for facilities, Dr. P. Venu, Scientist-G, Botanical Survey of India, Hyderabad for support and also Dr. P.V. Prasanna, Scientist-F, Botanical Survey of India, Hyderabad for valuable comments and for going through the manuscript.

lanceolate, 4.2–4.5 × 0.5–0.6 mm, acute at apex, ciliate throughout, keeled, keel narrowly winged just below the tip. Florets 2, epaleate, lower one barren, upper bisexual. Lower lemma oblong, hyaline, 1.7–2 × 0.1–0.2 mm. Upper lemma linear-lanceolate, 3.2–3.5 × 0.8–1 mm, hyaline, cleft at apex into 2 lobes, awn 11–15 mm long. Anthers 2, 0.75 mm. Caryopsis linear, 2 mm long.

Specimens examined: BSID 3933, 26.x.2013, Indanpalli Range, Kawal Tiger Reserve, Telangana, India (19°10'35.3"N & 78°51'47.9"E) elevation at 231m, coll. Alok Chorghe, P.S. Annamma & Chandra Mohan; BSID 3962, 27.x.2013, Thadlapet Range (19°05'39.3"N & 79°06'09.1"E) at 194m, coll. Alok Chorghe, P. S. Annamma & Chandra Mohan (Image 5).

Flowering & Fruiting: September–October.

Habitat: Grassy patches

Occurrence: Rare.

Distribution: Odisha, Tamil Nadu, and now from Telangana.

Genus *Iseilema* Andersson is represented by seven species in India, and three in Telangana. *Iseilema holei* Haines was previously reported from Bihar (Haines 1924) and Maharashtra (Naik 1998).



Image 1. a - *Dimeria orissae* Bor: Habit; b - *Iseilema holei* Haines: Habit; c - *Spodiopogon rhizophorus* (Steud.) Pilg.: Habit; d - Raceme.

### *Iseilema holei*

Haines, Bot. Bihar & Orissa 1055, 1924; Bor, Grass. Burma, Ceylon, India & Pakistan 188. 1960 (Images 1b; 3)

Perennials. Culms robust, tufted, 100–150 cm high; nodes bearded; internodes purplish. Leaf blades linear-lanceolate, 20–50 × 0.3–0.5 cm, flat, acute at apex, glabrous, sparsely ciliate at base; ligules ciliate, 2 mm long; leaf sheaths 5–10 cm long, keeled, glabrous, long ciliate at mouth. Inflorescence a dense panicle, terminal and axillary, subtended by spathe and spatheole, spathe 2–5 cm long, spatheole 0.9–1.2 cm long, tuberculate. Racemes solitary, bear three heteromorphous spikelets; lower four involucral spikelets male, one fertile sessile spikelet and two male pedicelled spikelets; peduncle 3–4 mm long, hairy, tuberculate; rachis carrying sessile spikelet 1.2 mm long, sparsely hairy. Involucral spikelets lanceolate, 3.7–4.5 × 0.7–1 mm, scabrid throughout, sparsely hairy; pedicel 0.7–1 × 0.2–0.3 mm, hairy above. Lower glumes lanceolate; 3.7–4.5 × 0.7–1 mm, scabrid, 5-nerved, 2-keeled, sparsely tuberculate hairy on keels, apex truncate. Upper glumes lanceolate, 3.6–4.2 × 0.6–0.8 mm, glabrous, 3-nerved, 2-keeled, keels winged, wings hairy. Upper lemmas linear-lanceolate, 2.5–3 × 0.2–0.3 mm, hyaline. Stamens 3, anthers 1.2–1.4 mm long. Sessile spikelets linear-lanceolate, 3.5–4 × 0.8 mm, broader at base and narrowed at apex, awned. Lower glumes linear-lanceolate, 3.5–4 × 0.7–0.8 mm, 4-nerved, 2-keeled, apex truncate, scabrid on upper half and glabrous on lower half. Upper glumes linear lanceolate, 3.4–3.7 × 0.6–0.8 mm, acuminate to aristate at apex, arista up to 0.5 mm long, 3-nerved, 2-keeled. Upper lemmas linear, 2.4–3 × 0.1–0.2 mm, awned; awn geniculate, 13–14 mm long. Upper paleas, oblong-lanceolate, 1.8–2 × 0.7–0.8 mm, hyaline nerveless, apex truncate. Caryopsis oblong lanceolate, 1.8–2 × 0.8–1 mm. Pedicelled spikelets linear-lanceolate, 4.3–5.5 × 0.5–0.8 mm, scabrid throughout; pedicel 2 mm long, ciliate. Lower glumes linear-lanceolate, 4–5.3 × 0.6–1 mm, acute at apex, 9-nerved, scabrid, tuberculate on nerves. Upper glumes linear-lanceolate, 4–5 × 0.5–0.7 mm, acuminate at apex, 3-nerved, glabrous, scabrid and tuberculate on nerves. Upper lemmas linear-lanceolate, 3.8–4 × 0.2–0.3 mm, hyaline.

Specimen examined: BSID 3937, 26.x.2013, Indanpalli Range, Kawal Tiger Reserve, Telangana, India (19°10'43.1"N & 78°51'47.3"E) elevation at 246m, coll. Alok Chorghe, P.S. Annamma & Chandra Mohan (Image 6).

Flowering & Fruiting: September–October.

Habitat: On moist grassy patches.

Occurrence: Rare.

Distribution: Bihar, Maharashtra, and now from Telangana.



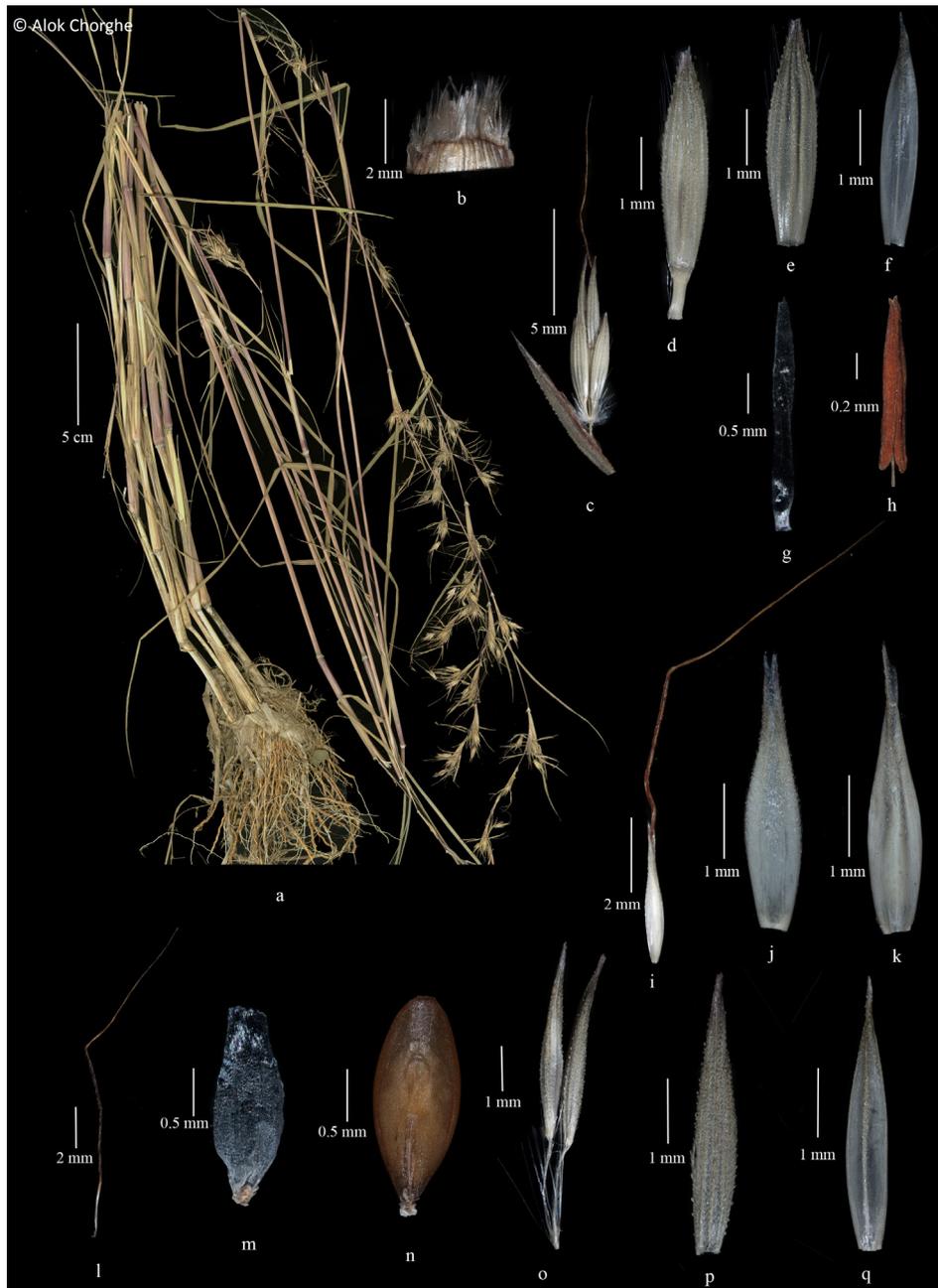
Image 2. *Dimeria orissae* Bor: a - Habit; b - Rachis; c & d - Spikelet; e - Lower glume; f - Upper glume; g & h - Upper lemma; i - Caryopsis.

Genus *Spodiopogon* Trin., is represented by five species in India (Bor 1960; Kabeer & Nair 2009) and hitherto not reported from Telangana. *Spodiopogon rhizophorus* (Steud.) Pilger is distributed in Gujarat, Karnataka, Kerala, Maharashtra, NagarHaveli, Rajasthan and Tamil Nadu states (Karthikeyan et al. 1989; Kabeer & Nair 2009).

#### *Spodiopogon rhizophorus*

(Steud.) Pilger in Engl. & Prantl, Nat. Pflanzenfam. ed. 2. 14e: 119. 1940; Bor, Grass. Burma, Ceylon, India & Pakistan: 246. 1960; S. Moulik, Grass. Bamb. India 1: 326. t. 66. 1997. *Andropogon rhizophorus* Steud., Syn. Pl. Glumac. 1: 381. 1854 (Images 1c,d; 4)

Tufted annuals. Culms erect, 90–150 cm high; nodes glabrous, internodes purplish. Leaf blades broadly



**Image 3.** *Iseilema holei* Haines. a - Habit; b - Ligule; c - Raceme; d - Involucral spikelet; e - Lower glume; f - Upper glume; g - Lemma; h - Anther; i - Sessile spikelet; j - Lower glume; k - Upper glume; l - Upper lemma; m - Upper palea; n - Caryopsis; o - Pedicelled spikelets; p - Lower glume; q - Upper glume.

lanceolate, 10–25 × 2–4 cm, acute at apex, apex aristate, sparsely tuberculate hairy on both sides, margin scabrid, pseudopetiolate, pseudopetiole 1–12 cm long; ligules membranous; leaf sheath 6–15 cm long, apex auricled. Panicle densely villous, 6–13 × 2–4 cm, with spathe like sheath below panicle; peduncle 10–20 cm long. Racemes 1–3 per node, 1–4 cm long. Spikelets paired, one sessile, other pedicelled, homogamous, pedicelled spikelets smaller in size. Sessile spikelets oblong-lanceolate, 4–5 ×

1–1.5 mm, acute at apex, hairy throughout, hairs pinkish-white. Lower glumes oblong-lanceolate, 4–4.8 × 1.5–1.7 mm, acuminate at apex, 7–9 nerved, hairy, hairs up to 2 mm long pinkish-white in colour. Upper glumes oblong-lanceolate, 3.9–4.5 × 2–2.2 mm, acuminate at apex, sometime saristate, arista up to 0.3 mm long, 9–11-nerved, sparsely hairy. Florets 2, lower male and upper bisexual. Lower lemma soblong-lanceolate, 3–3.5 × 1.6–2 mm, hyaline, truncate at apex, minute hairy. Lower paleas



Image 4. *Spodiopogon rhizophorus* (Steud.) Pilger. a - Habit; b - Pair of spikelets; c - Sessile spikelet; d - Lower glume; e - Upper glume; f - Lower lemma; g - Lower palea; h & i - Upper lemma; j - Anther; k & l - Pedicel spikelet; m - Ovary; n - Caryopsis.

linear-lanceolate, 4–4.4 × 0.5–0.6 mm, hyaline, acute at apex minute hairy. Upper lemmas lanceolate, 2.8–3 × 0.7–0.8 mm, chartaceous, 2-lobed, 1-nerved, lobes acuminate at apex, awn arise from sinus, geniculate, 6–8 mm long. Upper paleas oblong-lanceolate, 2–2.3 × 0.7–0.8 mm, hyaline, chartaceous, obtuse at apex, sparsely hairy, 5–6-nerved. Stamens 2, anthers 2.3–2.7 mm long. Ovary elliptic-oblong, 0.5 × 0.1 mm; stigma plumose, 2.6–2.8 mm long. Caryopsis elliptic-lanceolate, 1–1.2 ×

0.2–0.3 mm.

Specimens examined: BSID 3987, 28.x.2013, Jannaram Range, Kawal Tiger Reserve, Telangana, India (19°09'28.0"N & 079°04'47.5"E) elevation at 250m, coll. Alok Chorghe, P.S. Annamma & Chandra Mohan (Image 7).

Flowering & Fruiting: September-October.

Habitat: Under forest cover

Occurrence: Occasional.



Image 5. Herbarium of *Dimeria orissaе* Bor.



Image 6. Herbarium of *Iseilema holei* Haines



Image 7. Herbarium of *Spodiopogon rhizophorus* (Steud.) Pilger.

Distribution: Gujarat, Karnataka, Kerala, Maharashtra, Nagar Haveli, Rajasthan, Tamil Nadu, and now from Telangana.

References

Bor, N.L. (1960). *The Grasses of Burma, Ceylon, India and Pakistan (excluding Bambuseae)*. Pergamon Press, London, Oxford, New York, Paris, 767pp.

Haines, H.H. (1924). *The Botany of Bihar and Orissa*. London, vi+1350pp.

Kabeer, K.A.A. & V.J. Nair (2009). *Flora of Tamil Nadu-Grasses*. Botanical Survey of India, Kolkata, 525pp.

Karthikeyan, S., S.K. Jain, M.P. Nayar & M. Sanjappa (1989). *Poaceae. Florae Indicae Enumeratio Monocotyledonae*. Botanical Survey of India, Calcutta, 435pp.

Naik, V.N. (1998). *Flora of Marathwada*. Amrut Prakashan, Aurangabad, ii+1182pp.

Pullaiah, T. (1997). *Flora of Andhra Pradesh*. Scientific Publishers, Jodhpur, iii+1349pp.

Pullaiah, T. & S. Karuppusamy (2008). *Flora of Andhra Pradesh*. Scientific Publishers, Jodhpur, iv+628pp.

Pullaiah, T., P.V. Prasanna & G. Obulesu (1992). *Flora of Adilabad District (A.P., India)*. CBS Publishers & Distributors, Delhi, 284pp.

Reddy, C.S., K.N. Reddy & V.S. Raju (2008). *Supplement to Flora of Andhra Pradesh India*. Deep Publication, New Delhi, 148pp.

