



Dimeria raviana (Poaceae: Panicoideae), a new species from Southern Western Ghats, India

M.S. KIRAN RAJ¹, M. SIVADASAN^{2,4}, A.H. ALFARHAN² & J.F. VELDKAMP³

¹Department of Botany, Sree Narayana College, Cherthala, S. N. Puram P.O., Alappuzha - 688 582, Kerala, India.

²Department of Botany & Microbiology, College of Science, King Saud University, P.O. Box 2455, Riyadh - 11451, Kingdom of Saudi Arabia.

³Naturalis Biodiversity Center, P.O. Box 9517, 2300 RA, Leiden, The Netherlands.

⁴Corresponding author email: drmsivadasan@gmail.com

Abstract

Dimeria raviana, a new species of Poaceae from the Southern Western Ghats of Kerala, India is described and illustrated. It closely resembles *D. fuscescens*, but strikingly differs in having a flattened and winged raceme rachis of 1.0–1.25 mm in width with smooth margins.

Key words: *Andropogoneae*, *Dimeriinae*, Endemic species, Kerala

Introduction

Dimeria Brown (1810: 2014) is an enigmatic member of the Poaceae (*Andropogoneae-Dimeriinae*) (Clayton & Renvoize 1986). This paleotropical genus is with ca. 65 species distributed in tropical Asian regions, and more than 40 species are present on the Indian subcontinent (Bor 1953, 1960, Clayton & Renvoize 1986, Jain 1986, Ravi *et al.* 2001, Kiran Raj & Sivadasan 2008). The genus is characterized by its usually equal and divergent binate racemes with laterally compressed spikelets. The callus is cylindrical, 0.5–1.0 mm long, and the glumes are keeled with margins with no auricles at apex.

During a taxonomic revision of *Dimeria* in peninsular India (Kiran Raj 2008), specimens with some distinct characters hitherto unnoticed in any of the known species were seen at CALI and KFRI. Detailed study revealed the novelty of the taxon which is described herein as a new species. It was collected from evergreen forest margins of the Periyar Tiger Reserve in the Southern Western Ghats in Kerala, India.

Taxonomy

Dimeria raviana Kiran Raj & Sivadasan, *sp. nov.* (Fig. 1)

Type:—INDIA. Kerala: Idukki District, Periyar Tiger Reserve, *s.d.*, 9° 18'–9° 41' N, 76° 55'–77° 25' E, ± 950 m elevation, *Jomy s.n.* (holotype CALI!, isotypes KFRI!).

Dimeria raviana closely resembles *D. fuscescens*, but differs in having a flattened and winged raceme rachis of 1.0–1.25 mm in width, with smooth margins.

Perennials. Culms robust, erect or geniculate from base, up to 70 cm long, sometimes rooting at the lower nodes; nodes shortly bearded. Leaves all along the culm; sheath much longer than internodes, very loose, keeled, smooth, pilose in the upper third with bulbous-based hairs; blade linear-acute, 4.0–15.0 × 0.2–0.4 cm, rounded at base, acuminate at apex, keeled on midrib below, keel continuous with that of the sheath, coarsely scabrid on nerves on both surfaces and margins, with bulbous-based hairs on upper surface and margins; ligule membranous, up to 1 mm long, ciliate on the

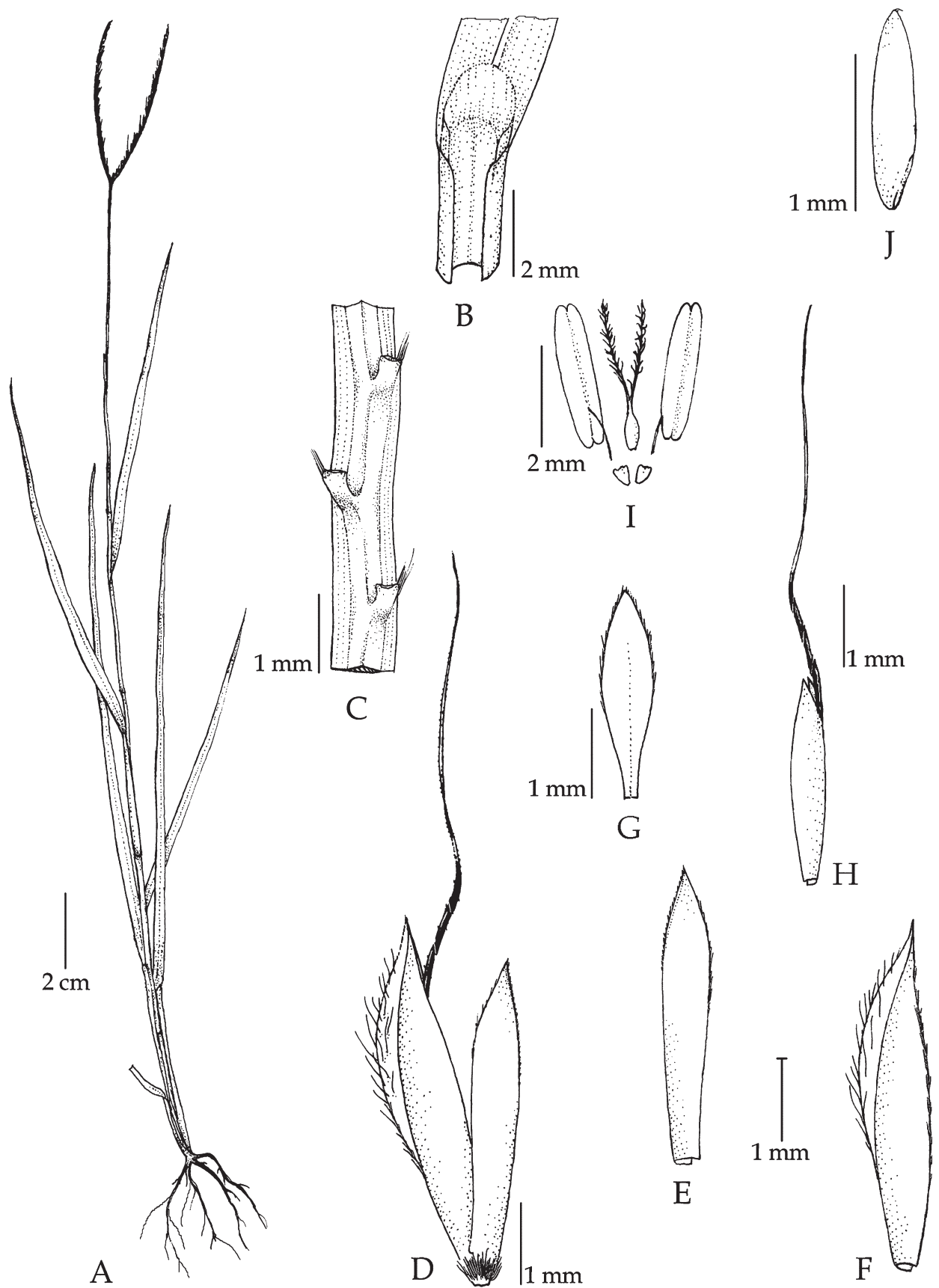


FIGURE 1. *Dimeria raviana* A. Habit with inflorescence. B. Leaf-sheath mouth portion with ligule. C. A portion of raceme-rachis with pedicels. D. Spikelet. E. Lower glume. F. Upper glume. G. Lower lemma. H. Upper lemma with awn. I. Lodicules, stamens & pistil. J. Grain. Drawings by M. S. Kiran Raj from *Jomy s.n.* (holotype CALI).

truncate apex. Peduncle long-exserted. Racemes 5–12 cm long; rachis flattened, 1.0–1.25 mm wide, margins broadly winged, straight, carrying alternately arranged pedicellate spikelets; pedicels ca. 0.5 mm long, compressed, concave above, sparsely hairy. Spikelets linear oblong, 4.5–5.0 mm long, closely appressed to rachis with the lower glume widely spreading at anthesis; callus ca. 0.5 mm long, bearded on the lower edge. Lower glume coriaceous, 4.2–4.5 mm long, linear-oblong, acuminate at apex, straight on back and keeled towards apex, thin to hyaline at sides, scabrid all along the back. Upper glume coriaceous, 4.7–5.0 mm long, oblong-elliptic, acute at apex, strongly compressed, straight on the back, keeled, broadly winged on the upper half. Lower floret empty. Lower lemma thinly hyaline, oblanceolate, 1.5–2.0 mm long, acute at apex, 1-nerved, ciliate on margins towards apex. Palea absent. Upper floret complete, bisexual. Upper lemma hyaline, elliptic-obtuse, 2.6–3.0 mm long, bifid at apex with acute lobes, awned from the sinus; awn 12–14 mm long with a dark twisted 3 mm long column. Palea absent. Lodicules 2, small. Stamens 2, anthers 2.5–3.0 mm long. Styles 2, short; stigma plumose.

Phenology:—September–December.

Habitat:—Margins of evergreen forests.

Distribution and conservation status:—Known only from the type locality which is on the Southern Western Ghats in Kerala state, India. No earlier or later collections of the species are available, and hence it is considered to be very rare. Further explorations are to be made for collection of specimens and to assess status as per IUCN guidelines and criteria (IUCN 2012, 2014). As it has not been evaluated against the criteria, it is categorized as ‘Not Evaluated’ (NE).

Etymology:—The species is named in honour of Prof. N. Ravi, formerly the Head of the Department of Botany, Sree Narayana College, Kollam, Kerala and a well-known agrostologist of South India, who stimulated the revision of *Dimeria* in peninsular India. He was a source of inspiration for several of his students to pursue plant taxonomy as a field of specialization.

Notes:—*Dimeria raviana* resembles *D. fuscescens* Trinius (1832: 335) of *Dimeria* sect. *Dimeria* and both species have stoloniferous rhizomes. However, *D. fuscescens* has an angular or trigonous rachis of ca. 0.5 mm width with ciliate margins. All the specimens studied showed consistency in their vegetative and reproductive characteristic features. A comparison of distinguishing features of *D. raviana* and *D. fuscescens* is given in Table 1.

TABLE 1. Distinguishing features of *Dimeria fuscescens* and *D. raviana*.

Characters	<i>Dimeria fuscescens</i>	<i>Dimeria raviana</i>
Habit	Perennials, much tufted, sometimes with thick root stock	Perennials, not tufted
Racemes	Number of racemes usually two, rarely 3 or 4	Number of racemes always two
Raceme rachis	Triquetrous or angular, 0.3–0.5 mm wide, minutely winged along 3 angles, margin scaberulous	Flat, 1.0–1.25 mm wide, broadly winged along two sides, margin smooth and glabrous.
Pedicel	ca. 1 mm long, glabrous	ca. 0.5 mm long, sparsely hairy along outer angle
Spikelet	At maturity turning to dark-brown in colour	At maturity turning to dark-yellowish
Upper glume	Narrowly winged all along the keel	Broadly winged along upper half of the keel

Acknowledgements

The first author is indebted to the International Association for Plant Taxonomy (IAPT), Vienna for the Plant Systematics Research Grant Award in 2007 during the period of revision of peninsular Indian *Dimeria*. The generous services rendered by Dr. P. Lakshminarasimhan (CAL) who was formerly the Indian Liaison Officer at K by providing cibachrome photographs of type specimens of several species of *Dimeria* are thankfully acknowledged. The authors are grateful towards the Head, Department of Botany, University of Calicut and the Director, Kerala Forest Research Institute, Peechi, Kerala for permitting to study the specimens available at CALI and KFRI respectively. The second and third authors gratefully acknowledge the support by the Deanship of Scientific Research, King Saud University, through the research group project No. RGP-VPP-135. We thank two anonymous reviewers for their constructive comments.

References

- Almeida, M.R. (1970) Three new grasses from the former Bombay Presidency. *Journal of the Bombay Natural History Society* 66: 510–513.
- Bor, N.L. (1953) Notes on Asiatic grasses XI. The genus *Dimeria* R. Br. in India & Burma. *Kew Bulletin* 7: 553–592.
<http://dx.doi.org/10.2307/4117812>
- Bor, N.L. (1960) *The Grasses of Burma, Ceylon, India, and Pakistan (excluding Bambuseae)*. Pergamon Press, London, 767 pp.
- Brown, R. (1810) *Prodromus florae Novae Hollandiae et Insulae van-Diemen*. J. Johnson & Co., London, Vol. 1, viii+145–590 pp.
<http://dx.doi.org/10.5962/bhl.title.3678>
- Clayton, W.D. & Renvoize, S.A. (1986) *Genera Graminum: Grasses of the World*. [Kew Bulletin, Additional Series 13.] Her Majesty's Stationery Office, London, 389 pp.
- IUCN (2012) *IUCN Red List Categories and Criteria: Version 3.1*. Second edition. IUCN, Gland, Switzerland and Cambridge, UK, iv + 32 pp.
- IUCN (2014) *IUCN Standards and Petitions Subcommittee (2014). Guidelines for using the IUCN Red List Categories and Criteria. Version 11*. Prepared by the Standards and Petitions Subcommittee, 87 pp. Available from: <http://www.iucnredlist.org/documents/RedListGuidelines/> (accessed 7 September 2014)
- Jain, S.K. (1986) The grass genera of India – A synoptic account of uses and phytogeography. *Bulletin of the Botanical Survey of India* 28: 229–240.
- Kiran Raj, M.S. (2008) *Taxonomic revision of the subtribe Dimeriinae Hack. of Andropogoneae (Poaceae - Panicoideae) in Peninsular India*. Ph. D. thesis (unpublished). University of Calicut, India, 409 pp.
- Kiran Raj, M.S. & Sivadasan, M. (2008) A new species of *Dimeria* R. Br. (Poaceae-Panicoideae-Andropogoneae) from Goa, India. *Novon* 18 (2): 183–186.
<http://dx.doi.org/10.3417/2006132>
- Nair, N.C., Sreekumar, P.V. & Nair, V.J. (1984) *Dimeria keralae* (Poaceae) – a novelty from Kerala, India. *Journal of the Bombay Natural History Society* 80: 626–629.
- Ravi, N., Mohanan, N. & Kiran Raj, M.S. (2001) Three new species of Poaceae from South India. *Rheedea* 11: 87–96.
- Trinius, C.B. von. (1832) Andropogineorum genera speciesque complures definitionibus novis. *Mémoires de l'Académie Impériale des Sciences de St.-Petersbourg. Sixième Série 6, Sciences Mathématiques, Physiques et Naturelles* 2: 240–337.
<http://dx.doi.org/10.5962/bhl.title.5930>