

**A NEW SUBSPECIES OF *DIMERIA HOHENACKERI* HOCHST. EX MIQ.  
(POACEAE) FROM INDIA**

M.S. KIRAN RAJ, M. SIVADASAN<sup>1\*</sup>, P. DILEEP<sup>2</sup> AND A.H. ALFARHAN<sup>1</sup>

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

*Keywords: Dimeria hohenackeri* subsp. *kodaguensis*; Endemic taxon; Peninsular India; Poaceae.

**Abstract**

A new subspecies, viz. *Dimeria hohenackeri* Hochst. ex Miq. subsp. *kodaguensis* Kiran Raj, Sivad. & Dileep from South Karnataka of the Southern Western Ghats in Peninsular India is described and illustrated. It mainly differs from *D. hohenackeri* Hochst. ex Miq. subsp. *hohenackeri* in having mat-forming habit with leaves crowded at culm-base, spikelets 3–4 mm long and glumes not widely divergent during anthesis.

**Introduction**

The palaeotropical genus *Dimeria* R. Br. with about 65 species is mainly adapted to humid or semi-arid habitat and distributed from Indian subcontinent to Malesiana, northern Australia and Madagascar (Bor, 1960; Clayton *et al.*, 2006; Kiran Raj and Sivadasan, 2008; Kiran Raj *et al.*, 2013, 2015a; Teerawatananon *et al.*, 2014). The genus is most peculiar in the tribe Andropogoneae by its solitary, laterally compressed spikelets and flat or filiform rachis without joints. Majority of the taxa (ca. 34 spp., 3 subsp. and one variety) are confined to Peninsular India with 26 endemics (Kiran Raj *et al.*, 2015b). Moreover, the monotypic genus *Nanooravia* Kiran Raj & Sivad. belonging to the bitypic subtribe Dimeriinae, is also endemic to this region, indicating it to be the centre of diversity of the subtribe (Kiran Raj, 2008; Kiran Raj *et al.*, 2015b). The infra-tribal classification of Andropogoneae and especially the systematic position of Dimeriinae are enigmatic and still controversial (Clayton and Renvoize, 1986; Simon, 2007) due to the lack of sufficient data from the representative taxa.

Interesting specimens of *Dimeria* were collected during botanical explorations in Southern Western Ghats in Karnataka, India, and detailed study showed them to be representing new taxon related to *Dimeria hohenackeri*. It is described herein as a new subspecies of *Dimeria hohenackeri* Hochst. ex Miq. The species belongs to *Dimeria* sect. *Capillares*, with distribution extending from lowland grassy slopes of Western Ghats in Maharashtra through Karnataka to Kerala in Peninsular India. *Dimeria* sect. *Capillares* is distinguished by capillary raceme-rachis with distantly arranged spikelets, and is endemic to Indian subcontinent (Kiran Raj *et al.*, 2015b). Detailed description of the new subspecies with other relevant information including illustration is provided for easy identification of taxon in field. A key to the subspecies of *D. hohenackeri* in India is also provided.

---

\*Corresponding author. Email: drmsivadasan@gmail.com

<sup>1</sup>Department of Botany & Microbiology, College of Science, King Saud University, P.O. Box 2455, Riyadh-11451, Kingdom of Saudi Arabia.

<sup>2</sup>Department of Botany, Regional Institute of Education (RIE), Mysore-570 006, Karnataka, India.

***Dimeria hohenackeri* Hochst. ex Miq. subsp. *kodaguensis* Kiran Raj, Sivad. & Dileep, **subsp. nov.** (Fig. 1).**

**Diagnosis:** *Dimeria hohenackeri* subsp. *kodaguensis* closely resembles subsp. *hohenackeri*, but differs in having mat-forming culms and branching at the extreme lower nodes, leaves crowded at culm-base, racemes 2–3 in number, spikelets 3–4 mm long and glumes not widely divergent during anthesis.

**Type:** India, Karnataka: Kodagu Dist., Chettalli, on the way to Madikeri from Siddapura, 3 Dec 2002, *Kiran Raj CU 92982* (*Holotype*: CALI!; *Isotype*: KFRI!).

**Paratypes:** India, Karnataka: Shimoga Dist., Jersopa, + 250 m, 28 Dec 2003, *Kiran Raj CU 92880* (CALI!); Shimoga Dist., Jersopa, 13 Dec 2013, *P. Dileep 9311* (MH!).

Annuals. Culms procumbent, 12–25 cm long, crowded at base and mat-forming, nodes bearded at upper half of culm. Leaves confined to base of culm; sheath much shorter than internodes, keeled in the upper half, rounded below, striate, smooth, shining and glabrous in the lower two thirds, pilose in the upper third with bulbous-based hairs; ligules membranous, up to c. 1 mm long, truncate and fimbriate at apex; leaf blade linear-acuminate, 3–5 × 0.2–0.4 cm, abaxially keeled on the midrib with the keel continuous with that of the sheath, acuminate at apex, rounded at base, coarsely scabrid on the nerves on both surfaces and margins, bulbous-based hairs on upper surface and margins. Racemes 2–3, sub-digitate, 4–6 cm long, peduncle long exerted from spatheole; rachis terete or angled, c. 0.2 mm wide, glabrous, tough, with alternately arranged pedicelled spikelets; pedicels c. 1 mm long, lip cupuliform, terete below, glabrous; each raceme with 15–20 spikelets. Spikelets linear-oblong, 3–4 mm long; callus very short, c. 0.3 mm long, densely bearded, often spreading at right angles to the rachis; lower glume coriaceous, oblong-acuminate, 3.0–3.5 mm long, abaxially rounded and keeled towards apex, not winged, sparsely hairy along the keel towards apex, margins hyaline; upper glume coriaceous, linear-acuminate, 3.5–4.0 mm long and 1.0–1.5 mm wide, strongly compressed, straight on back, keeled at apical one-third, wingless, with few long hairs along the keel at apex; glumes not widely divergent during anthesis. Lower floret empty; lower lemma very hyaline, oblanceolate, c. 1.5 mm long, 1-nerved, margin ciliate towards apex. Upper floret bisexual; upper lemma elliptic, 2.0–2.5 mm long, bifid at apex with acute lobes, sub-hyaline, awned from the sinus, awn up to 12 mm long with a dark twisted c. 3.5 mm long column; palea lanceolate, c. 0.5 mm long, hyaline; lodicules 2, small, truncate, apically toothed. Stamens 2; anthers 1.2–1.5 mm long, yellowish brown. Ovary oblong; styles 2; stigmas plumose. Grain 1.5–1.8 mm long, oblong-elliptic, slightly compressed, hilum basal, linear-punctiform; embryo about one-third the length of grain, without epiblast and with a scutellate tail.

**Flowering and Fruiting:** October–December.

**Habitat:** Grassy slopes along the forest margins, alt. 250–300m.

**Distribution and Conservation status:** India, Southern Western Ghats in Karnataka. Known only from the type locality. In the absence of data on distribution and abundance, it is currently categorized as belonging to Data Deficient (DD) (IUCN, 2012; IUCN, 2014).

**Etymology:** The infraspecific epithet is indicative of name of the type locality – Kodagu, in Karnataka State, India.

**Notes:** *Dimeria hohenackeri* is quite distinct from all other species of the genus by its characteristic 3–5 slender racemes, capillary rachis, distantly placed, stalked spikelets and slender awns. *Dimeria hohenackeri* subsp. *kodaguensis* mainly differs from *D. hohenackeri* subsp. *hohenackeri* in having mat-forming culms with leaves crowded at culm-base and racemes 2–3 in number. Distinguishing morphological features of the two subspecies are provided in Table 1, and a key to the subspecies of *Dimeria hohenackeri* is provided below.

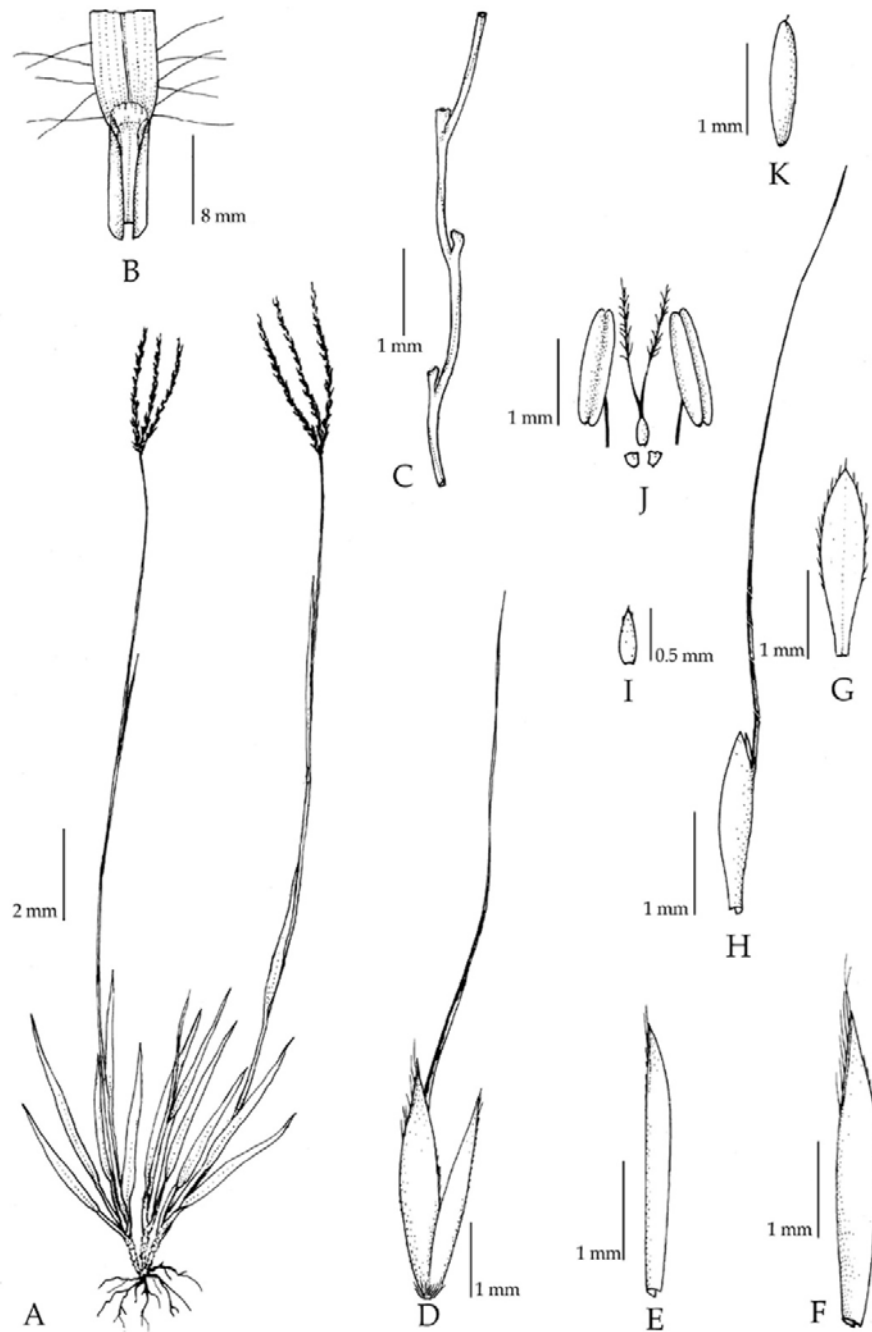


Fig. 1. *Dimeria hohenackeri* Hochst. ex Miq. subsp. *kodaguensis* Kiran Raj, Sivad. et Dileep, **subsp. nov.**:  
 A. Habit with inflorescence; B. Junction of leaf-sheath and lamina showing ligule; C. A portion of rachis with pedicels; D. Spikelet; E. Lower glume; F. Upper glume; G. Lower lemma; H. Upper lemma with awn; I. Palea; J. Lodicules, Stamens & Pistil; K. Grain (Drawings by Kiran Raj from holotype).

**Table 1. Distinguishing morphological features of the subspecies of *Dimeria hohenackeri*.**

| Characters | <i>D. hohenackeri</i> subsp. <i>hohenackeri</i>               | <i>D. hohenackeri</i> subsp. <i>kodaguensis</i>                   |
|------------|---|---|
| Habit      | Culm up to 60 cm long, slender, erect, not tufted.            | Culm up to 25 cm long, crowded, procumbent, mat-forming.          |
| Leaves     | Scattered all along the culm                                  | Crowded at base of the culm                                       |
| Pedicele   | c. 1.5 mm long  | c. 1 mm long  |
| Glumes     | Widely divergent during anthesis, lower glume 4.0–4.5 mm long | Not widely divergent during anthesis, lower glume 3.0–3.5 mm long |

**Key to the subspecies of *Dimeria hohenackeri***

1. Culm 35–60 cm long, slender, erect; leaves scattered along the culm; racemes 3–5; spikelets 30–40 in each raceme; glumes widely divergent during anthesis, lower glume 4.0–4.5 mm long. ***D. hohenackeri* subsp. *hohenackeri***
- Culm 12–25 cm long, profusely crowded, procumbent; leaves crowded at base of culm; racemes 2–3; spikelets 15–20 in each raceme; glumes not widely divergent during anthesis, lower glume 3.0–3.5 mm long. ***D. hohenackeri* subsp. *kodaguensis***

**Acknowledgements**

Authors are grateful to Dr. J. F. Veldkamp, Naturalis Biodiversity Center, Leiden, the Netherlands for providing copies of relevant literature. The first author is indebted to the University Grants Commission (UGC), New Delhi for granting a Minor Research Project in 2013 and to Dr. K. Anirudhan, Principal, Sree Narayana College, Cherthala for constant encouragement. The second and fourth authors gratefully acknowledge encouragement and support by the Deanship of Scientific Research, King Saud University, through the research group project No. RGP-135. The third author is thankful to the Head, Department of Studies in Botany, University of Mysore, India and also to the Principal, Regional Institute of Education, Mysore, Karnataka for providing necessary facilities.

**References**

- Bor, N.L. 1960. The grasses of Burma, Ceylon, India and Pakistan. Pergamon Press, London, 137 pp.
- Clayton, W.D. and Renvoize, S.A. 1986. Genera Gramineae: Grasses of the World. Kew Bull. Additional Ser. **13**: 1–389.
- Clayton, W.D., Vorontsova, M.S., Harman, K.T. and Williamson, H. 2006 (onwards). Grass Base- The Online World Grass Flora. <http://www.kew.org/data/grasses-db.html>. Accessed on 23 August 2015.
- 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 2015)
- 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. and Sivadasan, M. 2008. A new species of *Dimeria* R. Br. (Poaceae-Panicoideae-Andropogoneae) from Goa, India. Novon **18**(2): 183–186.

- Kiran Raj, M.S., Sivadasan, M., Alfarhan, A.H. and Veldkamp, J. F. 2015a. *Dimeria raviana* (Poaceae-Panicoideae), a new species from South Western Ghats, India. *Phytotaxa* **195**: 193–196.
- Kiran Raj, M.S., Sivadasan, M., Veldkamp, J.F., Alfarhan, A.H. and Amal Tamimi, A.S.M. 2015b. A revised infrageneric classification of *Dimeria* R. Br. (Poaceae-Andropogoneae). *Bangladesh J. Plant Taxon.* **22**(1): 47–54.
- Kiran Raj, M.S., Sivadasan, M., Veldkamp, J.F., Alfarhan, A.H. and Thomas, J. 2013. *Nanooravia gen. nov.*, subtribe Dimeriinae (Poaceae-Panicoideae-Andropogoneae) from India. *Nord. J. Bot.* **31**: 161–165.
- Simon, B.K. 2007. Grass Phylogeny and Classification: Conflict of Morphology and Molecules. *Aliso* **23**(1): 259–266.
- Teerawatananon, A., Boontia, V., Chantarasuwan, B., Hodgkinson, T.R. and Sungkaew, S. 2014. A taxonomic revision of the genus *Dimeria* (Poaceae: Panicoidea) in Thailand. *Phytotaxa* **186**: 137–147.

*(Manuscript received on 5 November 2015; revised on 17 December 2015)*