

TRIPOGON MALABARICA (POACEAE: CHLORIDOIDEAE: CHLORIDEAE:
TRIPOGONINAE), A NEW SPECIES FROM KERALA, INDIA

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ABSTRACT

A new species of Poaceae, **Tripogon malabarica** Thoiba & Pradeep from Malabar Wildlife Sanctuary, Western Ghats of Kerala, India, is described and illustrated.

KEY WORDS: *Tripogon*, Poaceae, new species, Western Ghats, India.

RESUMEN

Se describe e ilustra una nueva especie de Poaceae, **Tripogon malabarica** Thoiba & Pradeep de los Malabar Wildlife Sanctuary, Western Ghats de Kerala, India.

INTRODUCTION

The genus *Tripogon* Roem. & Schult. (Poaceae: Chloridoideae: Chlorideae: Tripogoninae) is represented by 44 species distributed in Africa, Australia, and Temperate and Tropical Asia (Clayton et al. 2006). The genus is known to have 20 species in India, which includes the recently described four new species (Murugesan & Balasubramaniam 2008; Newmaster et al. 2008; Kabeer et al. 2009; Chorghe et al. 2013). With the addition of the present species, the total number of species in India has become 21.

The authors, during the course of revisionary studies on Eragrostidinae s.l. in South India came across an interesting population of *Tripogon* growing along steep granitic cliffs in Malabar Wildlife Sanctuary, Kakkayam along the Western Ghats of Kerala, in South India. Critical studies revealed it to be an undescribed species of *Tripogon*, though they showed some similarities with *T. lisboae* and *T. vellarianus* (Table 1).

TAXONOMIC TREATMENT

Tripogon malabarica Thoiba & Pradeep, sp. nov. (**Figs. 1–2**). TYPE: INDIA. KERALA. Kozhikode Dt.: Malabar Wildlife Sanctuary, Kakkayam, 990 m elev., 11°33.037'N, 075°55.024'E, 19 Sep 2013, *Thoiba Kottekkattu 134436* (HOLOTYPE: BRIT; ISOTYPES: CALI, K, MH).

Tripogon malabarica is closely allied to *T. lisboae* Stapf and *T. vellarianus* Pradeep but differs in having linear, coriaceous, villous leaf sheaths; 13–14 mm long spikelets with 4–7 florets; lemma with straight or geniculate, scabrid awn and keeled palea with a subulate apex.

Tufted perennial herb. Culms 25–65 cm high; nodes glabrous. Leaf blades 30–70 × 0.2–0.8 cm, linear-lanceolate, margins slightly scabridulous or scabrid, upper surface pubescent with short white papillose hairs, glabrous abaxially. Leaf sheaths linear-lanceolate, coriaceous, villous adaxially, 10–18 cm long, apex pubescent with a tuft of 2.5–3.5 mm long hairs at both ends; ligules indistinct. Racemes terminal, 15–40 cm long, with 30–55 spikelets; rachis stout, glabrous. Spikelets 13–14 mm long, linear, distant, dorsiventrally flattened, 4–7-flowered; callus bearded. Lower glumes 2.5–4 × 1–1.5 mm, coriaceous, ovate-lanceolate, 1-keeled, 1-nerved, keels slightly scabrid, with acuminate apex. Upper glumes 4.5–6 × 1–1.5 mm, lanceolate, coriaceous, 1-keeled, scabrid, 3-nerved, acute at apex. Lemmas 5 × 1.5–2 mm, ovate-lanceolate, 3-nerved, slightly keeled, scabrid; 1-awned, 3 mm long, scabrid, sometimes slightly geniculate towards apex. Paleas 3–5 × 1–1.5 mm, obovate, hyaline, 2-keeled, ciliate, apex subulate, rachilla 1 mm long, glabrous. Lodicules 2, c. 0.25–0.5 mm long, truncate apex coarsely 3-toothed. Stamens 3; anthers 1.5–2 mm long, oblong; filaments 1 mm long, slender, glabrous. Ovary 0.5–0.75 × 0.25–0.5 mm, obovate, styles 2, slender, hyaline, 0.5–0.75 mm long; stigma 0.75 mm long, plumose, creamy white. Grain not seen.

TABLE 1. Diagnostic morphological differences between *Tripogon lisboae*, *Tripogon vellarianus*, and *Tripogon malabarica*.

	<i>Tripogon lisboae</i>	<i>Tripogon vellarianus</i>	<i>Tripogon malabarica</i>
Culms	20–60 cm high	30–90 cm high	25–65 cm high
Ligule	an eciliate membrane	indistinct or absent	indistinct, a fringe of hairs at the ends of leaf-sheath; hairs 2–3.5 mm long
Leaf-sheath	linear, flat or convolute, rigid and glabrous	linear, closely clasping, rigid and glabrous	linear-lanceolate, coriaceous, villous adaxially
Racemes	7–25 cm long	30–40 cm long	15–40 cm long
Spikelets	3–12-flowered	8–10-flowered	4–7-flowered
Lower glume	asymmetrical, membranous, 1 mm long, scabrid	symmetrical, membranous, 4–5 mm long, glabrous	symmetrical, coriaceous, 1.5–4 mm long scabrid
Upper glume	elliptic, 3–3.5 mm long, subcoriaceous, 1-nerved, slightly scabrid, mucronate at apex	elliptic-lanceolate, 6–7.5 mm long, membranous, 3-nerved, glabrous, acute at apex	lanceolate, 2–6 mm long, coriaceous, 3-nerved, scaberulose, acute at apex
Lemma	3–5 mm long, 2-fid, 1-awned, awns 1–2 mm long, glabrous, straight	5–10 mm long (excluding awn), 2-fid, 1-awned, awns 3 mm long, glabrous, straight	4–5 mm long (excluding awn), 2-fid, 1-awned, awns 3 mm long, scabrid, straight or geniculate at maturity
Palea	2–4 mm long, oblong, keels scaberulose, obtuse at apex	4–8 mm long, narrowly elliptic, winged, keels puberulous, acute at apex	2–4.5 mm long, oblong-lanceolate, keels scaberulose, subulate at apex
Caryopsis	narrowly oblong, terete	not seen	not seen

Distribution.—Presently *Tripogon malabarica* is known only from the Malabar Wildlife Sanctuary, Kakayam in Kozhikode district of Kerala.

Ecology and Phenology.—This species grows from 950–1500 m elevation on steep granitic cliffs (Fig. 2), road cuts and wet rocky hillsides and found growing in association with *Chlorophytum malabaricum* Baker, *Pouzolzia auriculata* Wight, *P. bennetiana* Wight, *Impatiens scapiflora* Heyne ex Roxb., *I. gardneriana* Wight, *Kleinia grandiflora* (Wall. ex DC.) Rani, *Themeda triandra* Forssk., and *Panicum* spp.; flowering late July to November.

KEY TO SPECIES OF *TRIPOGON* IN SOUTH INDIA

1. Culms thickened below by the persistent leaf-sheaths; leaves < 2 cm long, equitant, rigid, pungent _____ **T. pungens** C.E.C. Fisch.
1. Culms not thickened below by the persistent leaf sheaths; leaves > 2.5 cm long, not equitant, not rigid or pungent.
 2. Lemma cleft at apex into 2 lobes, awned in the cleft; lobes awned or not.
 3. Central awn of the lemma flexuous, capillary, and several times as long as lemma _____ **T. capillatus** Jaub. & Spach
 3. Central awn of the lemma straight or curved, not more than twice as long as the lemma.
 4. Annuals; rachilla internodes 2mm; lemma apex 3-awned _____ **T. cope** Newmaster, V. Balas., Murug. & Ragup.
 4. Perennials; rachilla internodes 1mm; lemma apex 1-awned.
 5. Upper glumes 5.5–7 mm long; awns of the lemmas 6–8 mm long, straight or curved _____ **T. wightii** Hook.
 5. Upper glumes 8–9.5 mm long; awns of the lemma 10.5–12 mm long, always straight _____ **T. velliangiriensis** Murug. & V. Balas.
 6. Perennials with wiry roots forming tufts; leaf blade glabrous or scabrid; lower glumes asymmetrical.
 7. Leaves and culms glaucous, leaves 5–20 cm long, involute, filiform; ligule very short but definite, ciliate _____ **T. jacquemontii** Stapf
 7. Leaves and culms not glaucous, leaves 30–60 cm long, 4–8 mm wide, usually flat, sometimes rolled; ligule obsolete _____ **T. lisboae** Stapf
 6. Perennials with fibrous roots, forming a close turf; leaf blade glabrous or villous adaxially; lower glumes symmetrical or asymmetrical.
 8. Leaves flat, ligules indistinct; lower glume symmetrical.
 9. Ligules indistinct, a fringe of hairs at the ends of leaf sheath; spikelets with 4–7 florets; lemma 4–5 mm long; keels of palea scaberulose, subulate at apex _____ **T. malabarica** Thoiiba & Pradeep
 9. Ligules indistinct or absent; spikelets with 8–10 florets; lemma 5–10 mm long; keels of palea puberulous, acute at apex _____ **T. vellarianus** Pradeep
 8. Leaves flat to convolute, ligules membranous, lower glume asymmetrical.
 10. Ligules membranous; lemma base glabrous, median awn as long as or shorter than the lemma; inflorescence 20–45 cm long; spikelets with 5–8 florets _____ **T. sivarajanii** Sunil

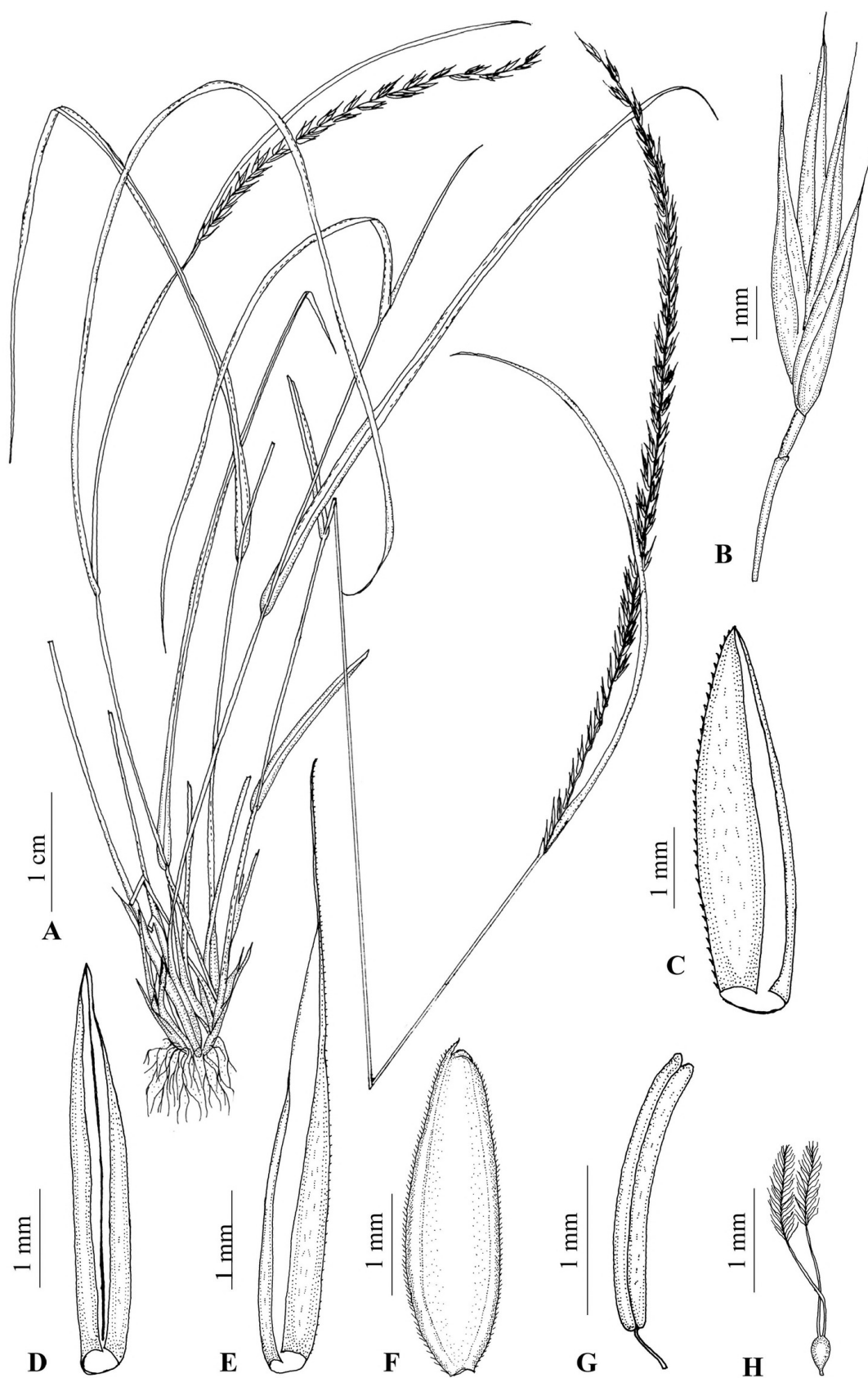


FIG. 1. *Tripogon malabarica* Thoiba & Pradeep. A. Habit. B. Spikelet. C. Lower glume. D. Upper glume. E. Lemma. F. Palea. G. Stamen. H. Pistil. A–H, drawn from holotype.



FIG. 2. Steep granitic cliffs at Malabar Wildlife Sanctuary, Kakkayam, Kozhikode, the natural habitat of *Tripogon malabarica* Thoiba & Pradeep. Photo taken by Thoiba Kottekkattu, 21 Aug 2014.

10. Ligules ciliate, membranous; lemma base bearded, median awn 1.5 times longer than lemma; inflorescence 15–20 cm long; spikelets with 9–10 florets _____ **T. tirumalae**
Chorghe, Rasingam, Prasanna, & Sankara Rao
2. Lemma cleft at apex into 4 or 6 lobes or with a definite lobes between each lateral awn and central; outer lobes if present awned or not.
11. Leaves hairy; ligules inconspicuous; keels of the palea scabrid _____ **T. bromoides** Roth
11. Leaves glabrous or hairy; ligules conspicuous, thin, membranous; keels of the palea ciliate or not.
12. Lemma cleft at apex into 6- lobes.
13. Upper glume 7–9 mm long, notched at apex with small awn between; keels of palea ciliate; stamens 1.3–2 mm long _____ **T. anantaswamianus** Sreek., V.J. Nair, & N.C. Nair
13. Upper glume 3 mm long, acute at apex, deeply 2-lobed with arista 0.5 mm long; keels of palea not ciliate; stamens upto 0.8 mm long _____ **T. borii** Kabeer, V.J. Nair, & G.V.S. Murthy
12. Lemma cleft at the apex into 4- lobes.
14. Culms 10–20 cm tall; lower glumes shallowly lobed on one-side above the middle; central lobes of the lemmas ovate-acute _____ **T. narayanae** Sreek., V.J. Nair, & N.C. Nair
14. Culms 24–70 cm tall; lower glume deeply lobed on one-side below the middle; central lobes of the lemmas lanceolate _____ **T. ravianus** Sunil & Pradeep

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REFERENCES

- CHORGHE, A., L. RASINGAM, P.V. PRASANNA, & M.S. RAO. 2013. *Tripogon tirumalae* (Poaceae), a new species from the Seshachalam Hills of Andhra Pradesh, India. *Phytotaxa* 131(1):17–22.
- CLAYTON, W.D., M.S. VORONTSOVA, K.T. HARMAN, & H. WILLIAMSON. 2006 onwards. GrassBase—the online world grass flora. Available at <http://www.kew.org/data/grass.db.html>. Accessed 10 Aug 2013.
- KABEER, K.A.A., V.J. NAIR, & G.V.S. MURTHY. 2009. *Tripogon borii*—a grass species new to science from India. *Bull. Bot. Surv. India* 50:115–118.
- MURUGESAN, M. & V. BALASUBRAMANIAM. 2008. *Tripogon velliangiriensis* (Poaceae)—a new species from Tamil Nadu, India. *Indian J. Forest.* 31:109–111.
- NEWMASER, S.G., V. BALASUBRAMANIAM, M. MURUGESAN, & S. RAGUPATHY. 2008. *Tripogon cope* (Poaceae: Chloridoideae), a new species supported by morphometric analysis and a synopsis of *Tripogon* in India. *Syst. Bot.* 33:695–701.



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