



# *Themeda helferi* (Panicoideae: Poaceae): A new record for India

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## Abstract

*Themeda helferi* Hack. (Panicoideae: Poaceae) collected from the forests of Prakasam and Vishakapatnam districts of Andhra Pradesh, India, is being reported as a new record to India. A full description, notes, illustration, photographs and a distribution map along with comparative analysis with allied species, *T. quadrivalvis* (L.) Kuntze are provided.

**Keywords:** Andhra Pradesh, India, new record, Poaceae, Panicoideae, *Themeda helferi*, Vishakapatnam

## Introduction

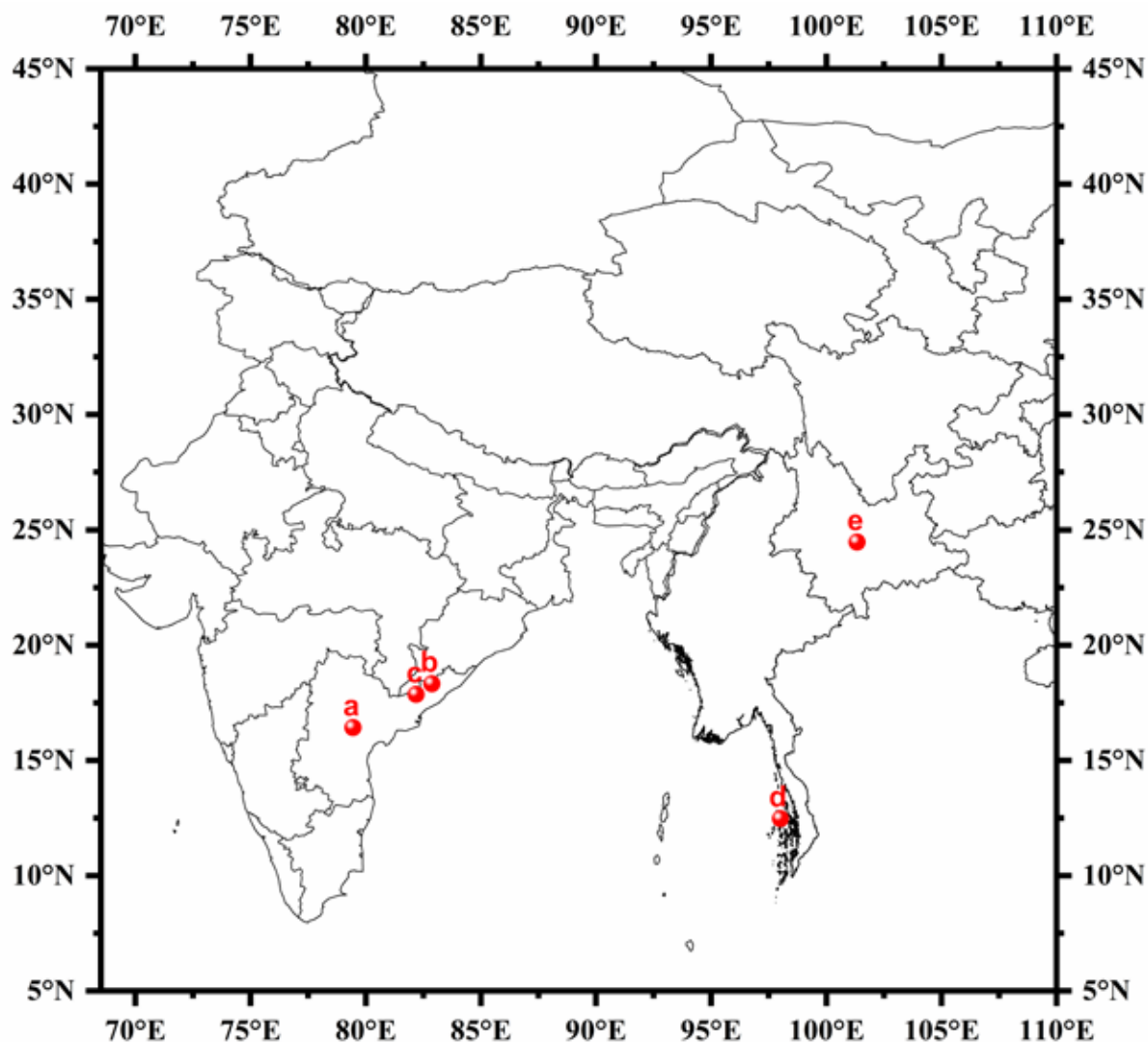
The genus *Themeda* Forssk. comprising c. 29 species is distributed in Africa, temperate and tropical Asia, Australia, Pacific, North and South America (Clayton *et al.*, 2006; Veldkamp, 2016). The genus is represented by 20 species (Bor, 1960, Karthikeyan *et al.*, 1989, Kabeer & Nair, 2009, Chorghe *et al.*, 2016) in India. Of which, six are endemic, viz., *Themeda mooneyii* Bor (Andhra Pradesh and Odisha), *T. huttonensis* Bor (Assam), *T. odishae* Chorghe *et al.* (Odisha), *T. pseudotremula* Potdar *et al.* (Maharashtra), *T. sabarimalayana* Sreek. & V.J. Nair (Kerala & Tamil Nadu) and *T. saxicola* Bor (Odisha); and two species, *Themeda triandra* Forssk. and *T. quadrivalvis* (L.) Kuntze are found throughout India (Singh *et al.*, 2015; Chorghe *et al.*, 2016).

As part of our floristic investigations in Andhra Pradesh state, the authors collected curious *Themeda* specimens in Thummalabayalu forest of Prakasam district; on the way to Janamguda near Araku and P. K. Gudem in Vishakapatnam district. After critical study, these specimens were identified as *Themeda helferi* Hack.

*Themeda helferi* was erected by Eduard Hackel (1889) based on two specimens collected by J.W. Helfer (*Helfer* 6809) now deposited in Kew (K 000245965, K 000245966) and cited its distribution in Tenasserim and Andaman Islands. Bor (1960) cited its distribution in Andaman Islands, which

is followed by subsequent authors (Karthikeyan *et al.*, 1989; Moulik, 1997; Pandey & Diwakar, 2008; Murugan *et al.*, 2016). It may be noted that Helfer's collections from Tenasserim (Myanmar) are mixed up with his collections from Andamans (India) as viewed by Thothathri (1977) and Mathew and Abraham (2001). Due to accidental death of J. W. Helfer, the collections were mixed up and these specimens were ascribed to either Tenasserim or Andamans in subsequent works. Since *Themeda helferi* has not been collected from Andaman Islands since 1860, it is presumed that the specimens were actually collected from Tenasserim, in Myanmar. Further, Chen and Phillips (2006) presented the species distribution only in Yunnan (China) and Tenasserim (Myanmar). Hence, our collections from different localities in Andhra Pradesh are the first from India and form a new record for the country. Since no lectotype is recognized, lectotypification of this species is warranted.

***Themeda helferi*** Hack. in A.D.C. & C.D.C., Monogr. Phan. 6: 665. 1889. *Anthistiria ciliata* var. *helferi* (Hack.) Hook.f., Fl. Brit. India 7 (21): 214. 1897. *Themeda ciliata* subsp. *helferi* (Hack.) A. Camus, Bull. Mus. Natl. Hist. Nat. 26: 424. 1920. *Themeda quadrivalvis* var. *helferi* (Hack.) Bor, Grass. Burm, Ceylon, India & Pakistan: 252. 1960; Karthik. *et al.*, Fl. Ind. Enum. Monocot. 268-269. 1989; Moulik, Grass. Bamb. India. Vol. 1. 233. 1997. *Themeda acualis* B.S. Sun & S. Wang, J. Yunnan Univ. (Nat. Sci. Ed.) 21: 96. 1999. **Fig. 2, 3**



**Fig. 1.** Global distribution of *Themeda helferi* (a. Nallamalais; b & c. Vishakapatnam; d. Myanmar; e. Yunnan)

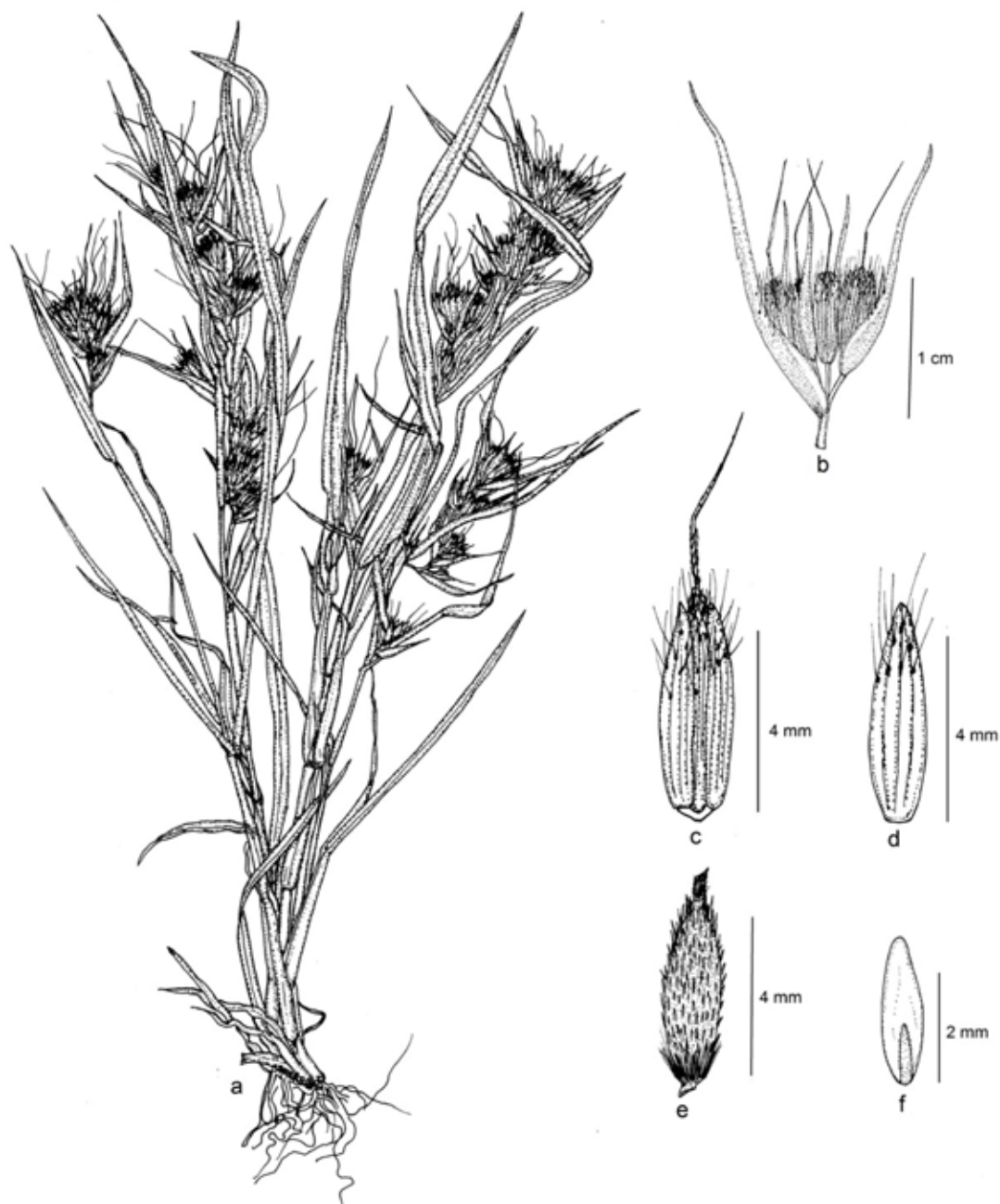
Type: MYANMAR, Tenasserim, *s.d.* J.W. Helfer 6809 (K000245966).

Annuals. Culms solitary or caespitose, erect or geniculate-ascending, rooting from lowermost nodes, (15–)25–30 cm high. Leaf sheaths glabrous, laterally compressed, half to longer than their internodes; ligule membranous, truncate, ciliolate on upper margins, (1–)2–3 mm long; blades glabrous, 0.3–0.6 × 15–20 cm, acute to acuminate at apex, a few tubercle-based hair on lower margins. Inflorescence paniculate, composed of fascicled racemes, each raceme compact, subtended by a spathe. Principal spathe lanceolate, caudate acuminate at apex, margins membranous-hyaline, with few tuberculate hairs on margins in the middle, 2–3 × 0.2–0.3 cm long; secondary spatheoles similar to principal, but smaller in size, tubercles absent or very less on margins, 1.5–1.8 × 0.15–0.18 cm long.

Spikelets seven in total; of which basal involucrel spikelets four, sessile, sterile or male; companion sterile spikelets two, pedicelled, sterile; fertile spikelet one, sessile, bisexual. Involucrel spikelets: Glumes 2, sub equal to equal in length, lower glume 4–4.5 mm long, glabrous, with few tuberculate ciliate hairs in upper half, upper glume glabrous. Lemmas hyaline. Paleas minute or absent. Stamens 3, anthers 1.7–2 mm long. Companion pedicelled sterile spikelets: reduced to two empty sub equal glumes, 4–4.5(–6) mm long. *Fertile spikelet*: Lower glumes oblong, coriaceous, terete or rounded on dorsal side, 4–5 mm long, densely hispidulous to hispid on the dorsal midline; upper glumes as long as lower glumes, membranous to thinly coriaceous, flat. Lower lemma hyaline; upper lemma reduced to base of awn; principal lemma awn apical, geniculate, column twisted, 3–4 mm long, densely ciliate with stiff hairs. Palea minute



**Fig. 2.** *Themeda helferi* Hack. **a. & b.** Habit; **c.** Close-up of racemes; **d.** Lemma; **e-g.** Different views of fertile spikelets (Photos by B.R.P. Rao & M. Anil Kumar).



**Fig. 3.** *Themeda helferi* Hack. **a.** Habit; **b.** Fascicled racemes cluster; **c.** Cluster of spikelets in individual raceme; **d.** Lower glumes of involucre spikelet; **e.** Sessile fertile spikelet; **f.** Caryopsis (Drawn by M. Anil Kumar).

or absent. Stamens 3. Stigma plumose. Caryopsis oblong, c. 3 mm long.

*Notes:* *Themeda helferi* Hack. is closely similar to *T. quadrivalvis* (L.) Kuntze, but can be easily differentiated from the latter by its dwarf habit, inflorescences usually arising from basal leaf sheaths with sparse tuberculate hairs on upper half of involucre glumes and hispid or hispidulous on dorsal middle line of lower glumes of sessile spikelets.

*Flowering & fruiting:* October – March.

*Distribution:* China, Yunnan (Longling, Zhenkang); Myanmar (Tenasserim), India (Andhra Pradesh).

*Habitat & ecology:* Found along way sides in the moist deciduous forests and forest margins.

*Specimens examined:* INDIA, **Andhra Pradesh**, Vishakapatnam district, way to Janamguda, near Araku, 29.11.2016, B.R.P.Rao, M. Anil Kumar & P. Anjaneyulu 52576 (SKU); near P. K. Gudem,

**Table 1.** Comparison of morphological characters between *Themeda quadrivalvis* and *T. helferi*

Character	<i>Themeda quadrivalvis</i>	<i>T. helferi</i>
<b>Culms</b>	Moderate to robust, 30–200 cm high	Short, 10–30 cm high
<b>Inflorescence</b>	Racemes usually arising from the upper leaf sheaths	Racemes usually arising from the basal leaf sheaths; and hence culms and inflorescence appear equal in height.
<b>Fertile spikelets</b>	Hispidulous or hispid at tip only	Hispidulous or hispid throughout the dorsal surface

15.12.2017, B. R. P. Rao & M. Anil Kumar 52997 (SKU). Prakasam district, Nallamalias, near Thummalabayalu base camp, 27.12.2016, B.R.P. Rao, M. Anil Kumar, A. Sreenath & P. Anjaneyulu 53069 (SKU).

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