



RESEARCH COMMUNICATION

Isachne veldkampii var. *malabarica* (Poaceae) - a new wetland variety from Northern Kerala, India

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Abstract

Isachne veldkampii var. *malabarica*, a new variety is described from the wetlands of Kasaragod, Kerala. It can be distinguished from *Isachne veldkampii* Bhat & Nagendran by the presence of two types of leaves - ligulate and non-ligulate, 1–4 spikelets in each panicle branch and 2 florets which are either both pistillate, both bisexual or upper pistillate and lower bisexual. Description along with figures, illustrations and distribution map are provided.

Keywords

Amplexicaul, caryopsis, glandular, heteromorphic floret, Isachneae, ligulate, Micrairoideae

Introduction

Isachne R.Br. is the most widespread genus of the subfamily Micrairoideae, comprising of about 110 species worldwide (1). Historically, the genus is placed in the tribe Panicoideae, but recently included in the tribe Isachneae (2). The genus is classified into two sections - plants with homomorphic florets (lower and upper florets almost similar in shape, size and texture) were placed under sect. *Albentes* and those with heteromorphic florets (lower and upper florets dissimilar in shape, size and texture) were placed under sect. *Isachne* (3–4). The systematic status of *Isachne* in the subfamily is highly dynamic since the beginning of its classification, rendering its position still unresolved.

As per the records, in India, the genus is represented by 34 species and Kerala accounts for 13 taxa including the recently published *Isachne manilaliana* Sunil, K.M.P. Kumar & V.P. Thomas (5). The high risk of habitat destruction of these grass taxa along with the endemism shown by species like *I. bhatii* P.Biju, Josekutty & Augustine demands conservatory attention (6).

During a floristic exploration associated with the ongoing research in the lateritic plateaus and wetlands of Kasaragod district of Kerala, the authors collected a specimen of *Isachne* from an isolated area of Seethangoli. Critical examination of the specimen revealed that it shows traits that are mostly similar to *I. veldkampii* K.G. Bhat & Nagendran while exhibiting some distinctly different traits from its allied taxa and hence proposed here as a variety of *I. veldkampii*.

Materials and Methods

The present work was carried out through field surveys in various geographical locations of Kerala. Analysis of relevant literatures (5–9) and examination of specimens preserved at various herbaria like TBGT, UCBD, MH, K, CMPR, KFRI (Acronyms after Thiers (10).

Taxonomic Treatment

Isachne veldkampii

K.G. Bhat & Nagendran in Curr. Sci. 52(6): 258. 1983 var. malabarica V.S.A. Kumar, Dhanya & P. Biju, var. nov.

Type

India, Kerala, Kasaragod distr., Seethangoli, on the way to Perla 23 m, Sept. 2021, Dhanya & Anil Kumar 350 (holotype UCBD!; isotypes TBGT!, KFRI!)

Diagnosis

The new taxon is distinguishable from *I. veldkampii* Bhat & Nagendran in having both ligulate and non-ligulate leaves, trichome in leaves (pubescent adaxially and glabrous abaxially), presence of both bisexual and unisexual florets and ovate palea.

Creeping decumbent annual. Culms glabrous, 4–9 cm long, spongy, ribbed; nodes glabrous; internodes ribbed, 1–3 cm long, slightly expanded at base, fistular. Leaves of 2 types: ligulate and non-ligulate, broadly ovate or ovate lanceolate, membranous with sparsely dispersed hairs on adaxial side, glabrous abaxially, 1–4 × 0.5–1.2 cm, midrib obscure, cordate at base, acuminate at apex, amplexicaul, hairs in leaf margins varying in both types of leaves, longer towards base and shorter towards apex in ligulate leaves, more or less of equal length in non-ligulate leaves; ligule a fringe of long hairs; leaf sheath glabrous, prominently ribbed, 0.5–1 cm long, slightly detached from base. Panicles exerted from uppermost sheath, 1.5–3.5 cm long; branches 8–13, glandular, 0.3–0.6 cm long; peduncle smooth. Spikelets 1–4 in each branch, secund, ovoid-elliptic, 1–1.5 × 0.3–0.5 mm; pedicel eglandular, 0.4–0.9 mm long, glabrous. Glumes 2; lower glume chartaceous, narrowly elliptic, 0.5–1 × 0.1–0.2 mm, greenish with hyaline incurved margins, 3-nerved, minutely pilose; upper glume chartaceous, broadly elliptic, 0.7–1 × 0.2–0.3 mm, greenish with hyaline incurved margins, 5-nerved, minutely pilose. Florets 2, either both pistillate, both bisexual or upper floret pistillate and lower floret bisexual; rhachilla extension absent; lemma coriaceous, elliptic, plano-convex, 0.9–1.2 × 0.2–0.4 mm, pale green, margins incurved, nerves obscure, sparsely hairy towards apex, white cottony mass at the base; palea coriaceous, ovate, flat, 0.5–1.2 × 0.1–0.2 mm, pale green, margins incurved, glabrous. Lodicules 2, hyaline, 0.1–0.15 × 0.12–0.15 mm. Stamens 3; anther pale yellow, 0.2–0.5 × 0.1–0.2 mm, dorsifixed, bilobed; filament hyaline, 0.5–0.7 mm long. Ovary ellipsoid, 0.12–0.15 × 0.12–0.15 mm, green; style hyaline, 0.1–0.15 mm long; stigma plumose, 0.5–0.6 mm long, whitish. Caryopsis brownish, 0.4–0.8 × 0.3–0.5 mm, ovoid to ovoid-ellipsoid. (Figs. 1–3).



Fig. 1. *Isachne veldkampii* var. *malabarica* **A.** plant in habitat, **B.** Inflorescence, **C.** Ligulate leaf, **D.** Non-ligulate leaf, **E.** Apex of ligulate leaf, **F.** Base of ligulate leaf, **G.** Ligule, **H.** Base of non-ligulate leaf.

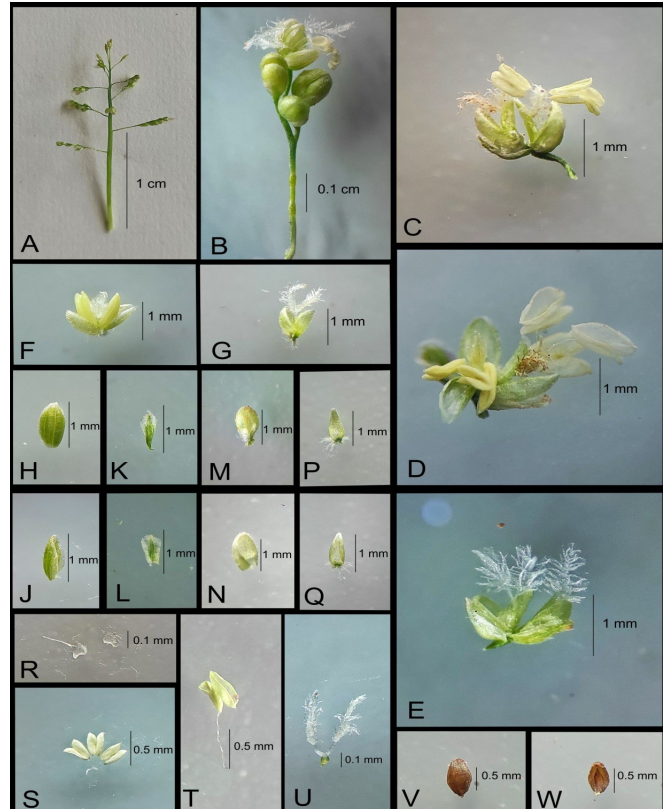


Fig. 2. *Isachne veldkampii* var. *malabarica* **A.** Panicle, **B.** Panicle branch with spikelets, **C.** Spikelet with pistillate and bisexual florets, **D.** Spikelet with both bisexual florets, **E.** Spikelet with both pistillate florets, **F.** Bisexual floret, **G.** Pistillate floret, **H.** Upper glume dorsal view, **J.** upper glume side view, **K.** Lower glume dorsal view, **L.** Lower glume ventral view, **M.** Lemma dorsal view, **N.** Lemma side view, **P.** Palea dorsal view, **Q.** Palea ventral view, **R.** Lodicules, **S.** Stamens, **T.** Single dehiscent stamen, **U.** Pistil, **V.** Grain dorsal view, **W.** Grain ventral view.

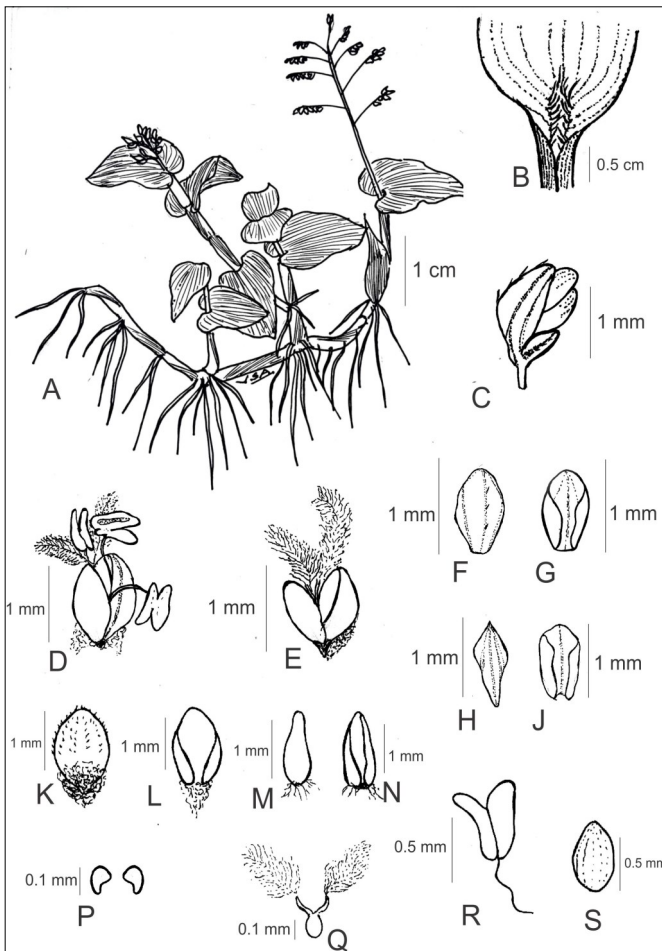


Fig. 3. *Isachne veldkampii* var. *malabarica*. **A.** Habit, **B.** Base of ligulate leaf, **C.** Spikelet, **D.** Bisexual floret, **E.** Pistillate floret, **F.** Upper glume dorsal view, **G.** Upper glume ventral view, **H.** Lower glume dorsal view, **J.** Lower glume ventral view, **K.** Lemma dorsal view, **L.** Lemma, ventral view, **M.** Palea dorsal view, **N.** Palea ventral view, **P.** Lodicules, **Q.** Pistil, **R.** Stamen, **S.** grain.

The new variety closely resembles the typical variety in nerve pattern of glumes (5-nerved upper glume and 3-nerved lower glume), glabrous nodes and leaf sheaths, glandular panicle branches, elliptic palea and lemma with woolly hairs (cottony mass) at the base. The description of *I. veldkampii* reported from Kerala (7) does not match with the original description of the taxon provided (11). The original description has been considered here for comparative evaluation (Table 1).

Table 1. Comparison between *Isachne veldkampii* and *I. veldkampii* var. *malabarica*

Characters	<i>I. veldkampii</i>	<i>I. veldkampii</i> var. <i>malabarica</i>
Leaf lamina	Broadly ovate	Broadly ovate to ovate-lanceolate
Leaf trichomes	Glabrous on both surfaces or scabrous above on nerves	Pubescent adaxially, glabrous abaxially
Types of leaves	Only non-ligulated leaves	Ligulated and non-ligulated leaves
Leaf margin	Serrulate	Different in both types of leaves Ligulated leaf: long hairs from base to short hairs at apex Non-ligulated leaf: more or less equal length for hairs from base to apex
Ligules	Absent	A fringe of hairs, if present.

Panicles	0.7–1.2 cm long, 1–3 spikelets in each branch	1.5–3.5 cm long, 1–4 spikelets in each branch
Florets	2, both bisexual	2, both pistillate, both bisexual or upper pistillate and lower bisexual
Upper glume	5-nerved, minutely pilose	5-nerved, minutely pilose
Lower glume	3-nerved, pilose	3-nerved, minutely pilose
Palea	elliptic	ovate

Isachne veldkampii var. *malabarica* is a sparsely distributed wetland grass. It has a distribution along wetlands and survives in partially submerged conditions. It exhibits highly scattered distribution in small patches. Extensive rooting from the lower nodes may serve for trailing. Several representative plants were analysed from each of the observed population and the noted characters were found to be consistent.

Etymology

The varietal epithet corresponds to the Malabar region in the Northern Kerala from where the specimen has been collected.

Phenology

June to October.

Habitat and Distribution

Isachne veldkampii var. *malabarica* is known only from the type locality, Seethangoli of Kasaragod district, Kerala at 23 m of elevation (Fig. 4.). It grows with scattered population

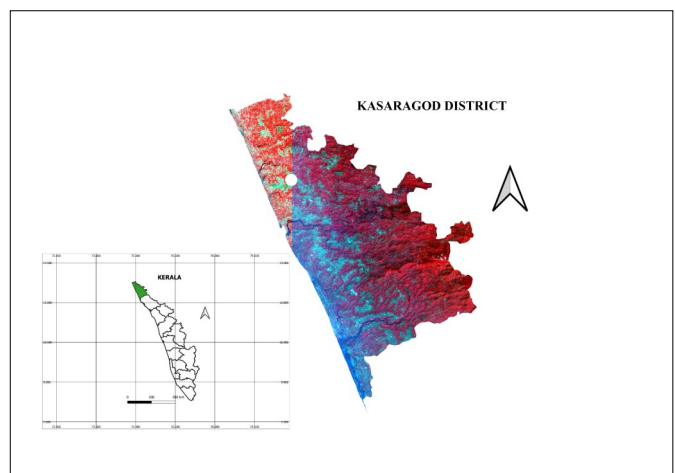


Fig. 4. Distribution of *Isachne veldkampii* var. *malabarica* in Kasaragod, Kerala.

in wetlands associated with small streams. Only a few populations have been observed, each scattered in a range of 5–20 m. It grows in association with *Commelina* spp. The type locality, Seethangoli is on the way to Perla, towards the border of Karnataka state and is rich in lateritic plateaus having herbaceous vegetation.

Conservation status

There are scattered patches of four populations, each having 5–10 individuals, occupying an area of less than 1 km². The species is highly susceptible to grazing and stamping by cattle. Following the IUCN Red list criteria (12), *Isachne veldkampii* var. *malabarica* is assessed as Critically Endangered (CR) in the category [B2a,b(v)].

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Authors contributions

The authors contributed equally to the present work.

Compliance with ethical standards

Conflict of interest: Authors do not have any conflict of interests to declare.

Ethical issues: None

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