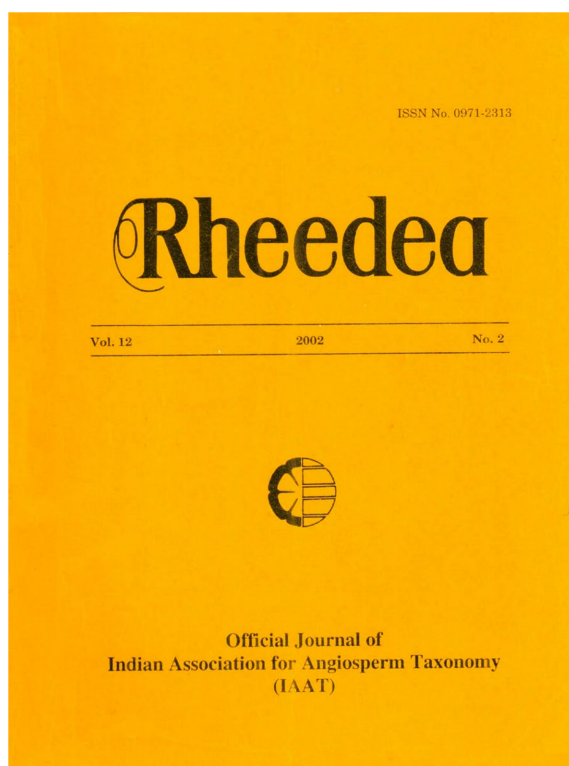




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**On the identity of *Ischaemum copeanum*
Sreek. *et al.* and *Ischaemum keralensis* Sreek. *et al.*
(Poaceae) from Kerala, India**

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Abstract

The Poaceous species *Ischaemum keralensis* Sreek. *et al.* is merged with *I. copeanum* Sreek. *et al.* The original description of this highly variable species is emended based on the study of the variants and illustrations are provided.

INTRODUCTION

The species *Ischaemum copeanum* and *I. keralensis* belonging to the Poaceae were originally described and published by Sreekumar *et al.* (1985) based on two consecutive collections, viz., Sreekumar 71838 and 71839 respectively, made on 24th November 1981 from Cherkala, in the outskirts of Cannanore District (now Kasaragode District) of Kerala State, India.

The above species were allied to *I. burmanicum* Bor in having a triad of spikelets with the median sessile and awned, and the laterals pedicelled and unawned at the base of the raceme. The two species were distinguished from one another on the basis of the nature of lower leaves – sessile vs. petiolate, nature of inflorescence – peduncles fascicled vs. non-fascicled, and number of racemes per peduncle – binate vs. solitary. *I. copeanum* in having sessile lower leaves, inflorescence of 1 or 2 peduncles and binate racemes, and *I. keralensis* was described as having petiolate lower leaves, inflorescence of a fascicle of 5-8 peduncles, and solitary racemes.

The present authors, during the course of their study of endemic plants of Kerala, observed these species as widely distributed in the northern districts of Kannur (Cannanore) and Kasaragode. They made extensive explorations of these districts from 1996 to 1999 and made several collections from different localities including the Type locality.

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After consulting the protologues of the two species and the *Flora of Kerala-Grasses* (Sreekumar & Nair, 1991), the authors made detailed study of the collected specimens. Their studies showed that they were specimens of either *I. copeanum* or *I. keralensis*, but none of them matched perfectly with the original diagnosis of either of them and some characters of the two species overlapped. The authors personally compared the specimens with the type specimens of both the species available at CAL and MH, and got them compared with the Isotypes of both available at K through the kind help of Thomas A. Cope; and felt that the two represent variants of one and the same species. After comparing 12 numbers of the present authors' collections, including those from the Type locality, Cope also agreed with them that *I. copeanum* and *I. keralensis* conspecific and showed variations of unimaginable nature in lower leaves, the number of peduncles per inflorescence, the number of racemes per peduncle, and the structure of spikelets.

The fact that the Type collections of *I. copeanum* and *I. keralensis* made on the same date and from the same locality are with consecutive collection numbers convinced the authors that Sreekumar *et al.* created the two species out of two collections of one and the same taxon which showed wide range of variations.

In the light of those observations it is confirmed that *I. copeanum* and *I. keralensis* are conspecific and hence the latter is merged with the former based on the rule of priority (ICBN, 2000), *I. copeanum* was published on September 23, 1985. J. Bombay Nat. Hist. Soc. 82(2) and *I. keralensis* was published on September 30, 1985 [Adansonia 7(2)]. Thus *I. copeanum* has priority over *I. keralensis* by seven days.

The variations, which the present authors observed, necessitated a redrafting of the diagnosis of *I. copeanum*. The emended diagnosis is given below supported with detailed illustrations.

Ischaemum copeanum Sreek. *et al.*, J. Bombay Nat. Hist. Soc. 82 (2): 390-392. 1985 *emend. Descr.*, Ravi *et* Mohanan.

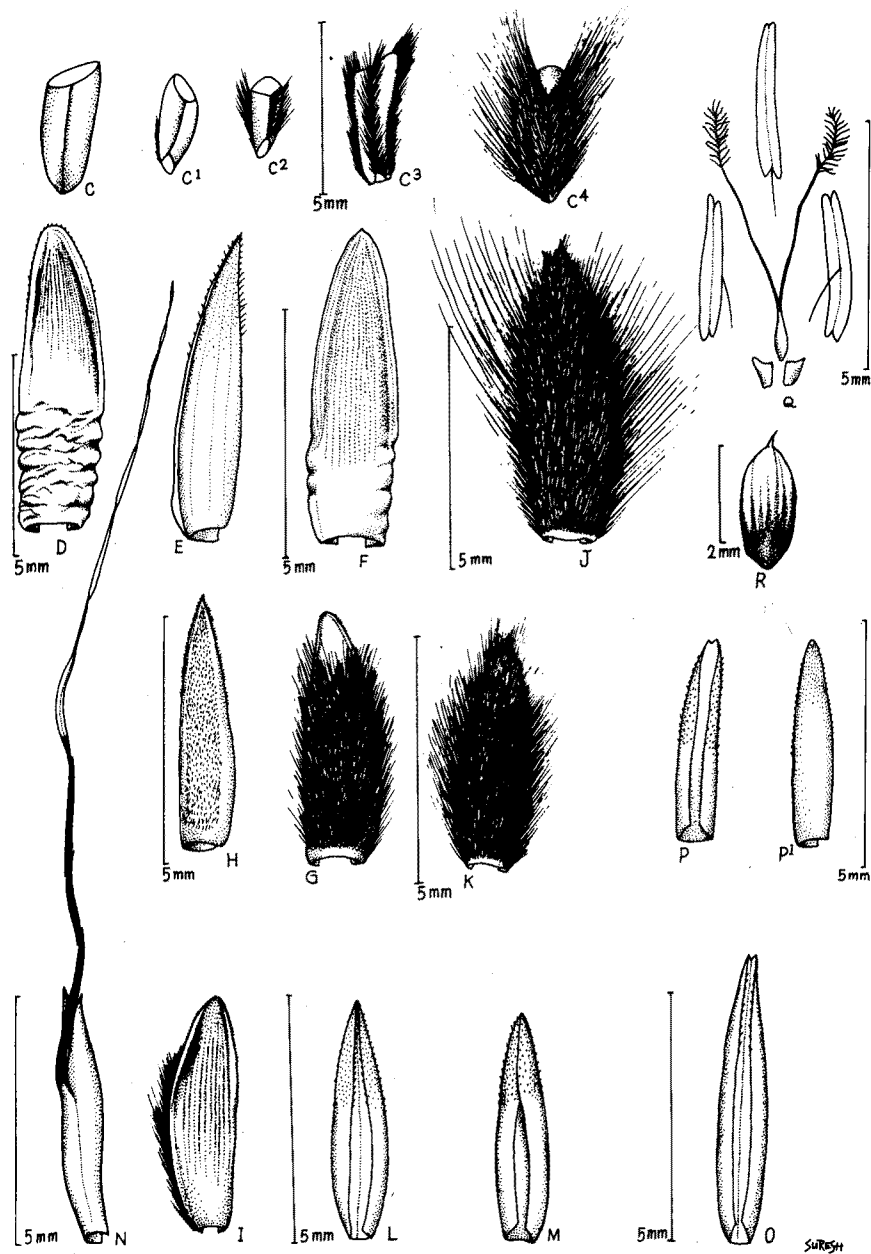
I. keralensis Sreek. *et al.*, Adansonia 7 (2): 135-137. 1985.

Annuals, culms slender, creeping in the lower portions with geniculate and diffuse flowering branches up to 50 cm long and often stilt-rooted at the base; nodes sparsely villous to glabrous. *Leaves* all along the culms, lower sessile to petiolate with the petioles up to 5 cm long; sheath up to 7 cm long, keeled on the back, glabrous to mostly beset with long and weak up to 4mm long bulbous-based hairs; ligules subtriangular to oblong, membranous, 1-4.5 mm long, prominently nerved with 1-2 nerves, keeled on the back, truncate to truncate-lobed at the apex and villous on the outside; blade triangular-ovate to lanceolate or ovate-elliptic, up to 7 x 2 cm, rounded to cordate, hastate or even sagittate at the base and acute to shortly acuminate at the apex and glabrous to sparsely hairy with bulbous-based hairs. *Inflorescence* solitary to mostly a fascicle of 2-9 peduncles exerted from a spathe-like sheath bald at the apex; each peduncle ensheathed at the base by a close-fitting, slightly flattened sheath with a reduced

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Fig. 1. *Ischaemum copeanum* Sreek. et al.: A & A1. Habit – of two separate plants; B, B1 & B2. Spikelet clusters from the base, middle and apex respectively of a solitary raceme; B3, B4 & B5. Spikelet clusters from the base, middle and apex respectively of a binate raceme; B6 – B9. Spikelet clusters from different plants.

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Fig. 2. *Ischaemum copeanum* Sreek. et al.

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acicular blade. *Racemes* solitary or binate, up to 5 cm long with the spikelets of the lowermost node of solitary raceme in a triad and those of the other nodes of the same raceme and of all nodes in a binate racemes in pairs. In a triad, the median sessile awned is flanked by two pedicelled awnless spikelets, sometimes all awned or awnless on the median and one of the laterals awned. In pairs, the sessile is awned and the pedicelled awnless, sometimes both awnless, *Joints of rachis* crustaceous to subcrustaceous, subturbinate to linear-clavate, 3-5 mm long, glabrous to densely woolly, sometimes so densely as to conceal its outline. *Sessile spikelet* slightly obliquely oblong-lanceolate to elliptic-lanceolate, 3.5-7.5 mm long including 0.5-2 mm long, glabrous to densely woolly-hairy callus. *Lower glume* slightly obliquely oblong-lanceolate to elliptic-lanceolate, 3-7 x 1-2 mm, crustaceous to subcrustaceous or coriaceous, and laterally incurved and rounded to angled on the margins in the lower half, coriaceous to subcoriaceous and laterally flattened and sharply angled and scabrid on the margins in the upper half, acute to subacute or sometimes shortly notched at the apex, deeply transversely corrugate or not on the back to laterally nodulose or not on the margins in the lower half and glabrous to densely woolly-hairy on the outside up to above the middle, sometimes so densely as to conceal its outline, and 11-15-nerved. *Upper glume* coriaceous to subcoriaceous, lanceolate in profile, boat-shaped, 3-6.5 mm long, acute to subacute at the apex, 5-7 - nerved, keeled on the back along the mid-nerve, glabrous or puberulous on the outside from below the middle upwards, prominently so on the keel and shortly ciliate on the margins above the middle upwards. *Lower lemma* subcoriaceously hyaline, linear-lanceolate, 3-6 mm long, 3-nerved, incurved on the sides, acute to subacute at the apex and minutely scaberulous on the outside except towards the lower half, paleate and male. *Lower palea* subcoriaceously hyaline, linear-lanceolate, 4-6 mm long, 2-nerved, incurved on the sides, acute to subacute at the apex and minutely scaberulous on the outside except towards the lower half. *Upper lemma* thinly hyaline, linear-elliptic to lanceolate in profile, 3-5-nerved, shortly notched to mostly deeply cleft at the apex with acute lobes, awnless to mostly awned from the sinus, paleate and bisexual. Awn when present up to 18 mm long with a column up to 7 mm long. *Upper palea* thinly hyaline, oblong-elliptic in profile, 3-5.75 mm long, 2-nerved, incurved on the sides, shortly notched at the apex and minutely scaberulous on the outside except towards the base. *Pedicelled spikelet* slightly obliquely oblong-lanceolate to lanceolate; pedicel 1-1.5 mm long, glabrous to densely woolly, sometimes so densely as to conceal its outline. *Lower glume* slightly obliquely oblong-lanceolate to lanceolate, 3.5-6 x 1-2 mm, crustaceous to coriaceous or subcoriaceous, laterally incurved and rounded to sharply angled on the margins in the lower

Explanation to Fig. 2. *Ischaemum copeanum* Sreek. et al.: C-C4. Joints of rachis of different racemes; D – F. Floral parts from specimens of Fig. 1: D. Lower glume of sessile spikelet; E. Upper glume of sessile spikelet; F. Lower glume of pedicelled spikelet; G – I. Floral parts from the specimen of Fig. 1, B5: G. Lower glume of sessile spikelet; H. Upper glume of sessile spikelet; I. Lower glume of pedicelled spikelet; J & K. Floral parts from specimen of Fig 1, B9: J. Lower glume of sessile spikelet; K. Lower glume of pedicelled spikelet; L – P. Floral parts from the sessile pikelet of specimen of Fig. 1, B5: L. Lower lemma ; M. Lower palea; N. Upper lemma of sessile awned spikelet; O. Upper lemma of sessile unawned spikelet; P & P1. Upper palea; Q. Lodicules, stamens & pistil; R. Grain.

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half, coriaceous to subcoriaceous, laterally flattened and sharply angled and scabrid on the margins in the upper half, acute to subacute or shortly notched at the apex, transversely corrugate or not on the back to laterally nodulose or not on the margins in the lower half and glabrous or densely woolly hairy on the outside up to above the middle, sometimes so densely as to conceal its outline, and faintly 9-11-nerved. *Upper glume* coriaceous to subcoriaceous, oblong-lanceolate in profile, boat-shaped, 3-6 mm long, 3-5 nerved, keeled on the back on the mid-nerve, glabrous or puberulous on the outside, prominently so on the keel and shortly ciliate on the margins above the middle upwards. *Lower lemma*, *Lower palea* and *Upper palea* similar to those of the sessile spikelet, but usually slightly smaller. *Upper lemma* thinly hyaline, lanceolate, 3.5-5.5 mm long, 3-nerved, incurved on the sides, minutely scaberulous on the outside except towards the base and shortly notched at the apex, paleate and bisexual. *Lodicules* 2, c. 0.75 mm long. *Stamens* 3; anthers 2-3.25 mm long. *Ovary* c. 0.75 mm long; styles 1.5-2 mm long; stigmas 2-2.75 mm long. *Grains* ellipsoid, c. 2.5 x 1 mm, shortly apiculate and brown.

Specimens examined: INDIA, Kerala, Kannur Dist.: Bakkalam, $\pm$ 30 m, 12 Dec. 1996, Ravi 33716, 33717 & 33720 (TBGT); 33719 & 33721 (K & TBGT); *Ibid.*, 27 Oct. 1999 Ravi 41479 (K & TBGT); 41482 (TBGT); *Ibid.*, 29 Nov. 1998, Ravi, 39675, 39677 & 39679 (TBGT); Ezhimala, $\pm$ 50 m, Ravi 33732 (TBGT) 33735, (K & TBGT); *Ibid.*, 12 Dec. 1996, Ravi 37089 & 37090 (K & TBGT); Mangad, $\pm$ 30 m, 12 Dec. 1997, Ravi 37081 (K & TBGT); Kalyasseri, $\pm$ 30 m 12 Dec., 1996. Ravi 37082 (TBGT); Taliparamba, $\pm$ 30m. Ravi 37084 (TBGT); Mannantheri, $\pm$ 100 m, 28 Nov. 1998, Ravi 39665 (TBGT); Kayalode, $\pm$ 65 m. 28 Nov. 1998, Ravi 39669 (TBGT); Mavilayil, 50 m, 28 Nov. 1998, Ravi, 38670 (K & TBGT); Haji Motta, $\pm$ 30 m, 29 Nov. 1998, Ravi 39673 (TBGT); Kasaragode Dist. Cherkala (Thekkil Ambatt) $\pm$ 50 m, 20 Oct. 1999, Ravi 41546, 41547 & 41550 (TBGT), Ravi 41548, 41549 & 41553 (K & TBGT).

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