

Hydatellaceae: a new family to Indian flora with a new species

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Abstract

The occurrence of the family, Hydatellaceae, so far thought to be restricted to Australia, Tasmania and New Zealand, is reported for the first time in India. Apart from a brief discussion on its affinities, a new species of *Trithuria* is also described.

The family Hydatellaceae has been treated as one of the two tribes (Tribe Trithurieae) of Centrolepidaceae, until Hamann (1976) separated it into a distinct family to include two genera, *Hydatella* Diels and *Trithuria* Hook. f. It differs from Centrolepidaceae in having vessels only in roots, anomocytic stomata, dithecous anthers, monosulcate pollen, anatropous ovules, presence of distinct antipodals in the embryo sac, cellular endosperm formation, copious perisperm and a 'seed lid' or operculum on the seedcoat (in Centrolepidaceae, vessels occur also in stem, grass type stomata, monothealous anthers, ulcerate pollen, orthotropous ovules, absence of antipodals in embryo sac, nuclear endosperm formation and absence of perisperm and operculum).

The members of this family are minute and moss-like in appearance with basally tufted, linear leaves lacking sheaths, each producing several culms and terminal, bracteate inflorescence. Flowers are naked (without perianth) and unisexual. Male and female flowers might occur on the same inflorescence or on different ones. Male flowers are represented by single stamens and females by single pistils.

Indeed, this family is closely similar to Centrolepidaceae, but Hamann (1975, 1976) has already demonstrated how misleading these could be while interpreting phylogeny. It is quite possible that they could be totally unrelated. On the other hand, it seems to be more akin to Restionaceae rather than Centrolepidaceae. However, the affinities of this family continue to be a riddle and hence Cronquist (1981) and Dahlgren et al. (1985) preferred to keep it under a separate order, Hydatellales.

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This family has been, so far, thought to be endemic to Australia, Tasmania and New Zealand (Cronquist, l. c.; Dahlgren et al., l. c.; Cooke 1987, Cook 1990) and has not been recorded from anywhere else. So, the present record of this family in India, naturally, raises some very interesting questions of phytogeography of this taxon. One of the possibilities, is that it is a relic of the ancient Gondwana flora, which has been missed out by earlier authors because of their size and deceptive look (like a moss plant). The other possibility is that it is recent introduction to India, but this becomes doubtful because this plant, in all likelihood, is incapable of such long range dispersal. Its presence in remote areas preclude human intervention in its introduction. The prolonged disjunct distribution might have lead to independent evolution leading to the formation of the new species that is described below.

It was during one of our recent collection trips in the Sindhudurg District of Maharashtra that we collected a strange looking specimen. With the help of literature we placed it in the genus *Trithuria* of Hydatellaceae. As the specimen was not matching with any of the three known species of the genus, it is being described here as a new species. The specific name is after the Konkan region from where the type specimen was collected.

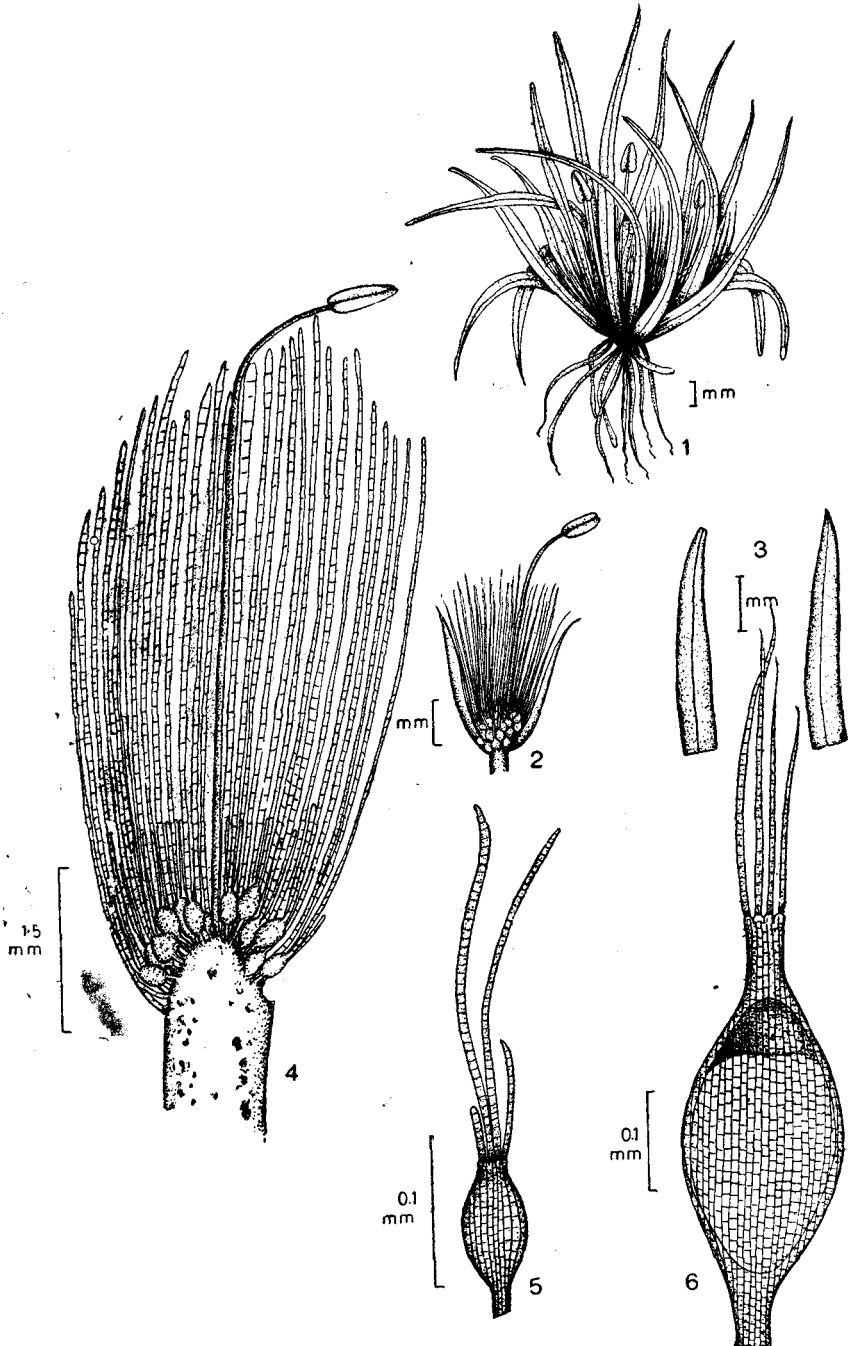
Trithuria konkanensis S. R. Yadav et M. K. Janarthanam *sp. nov.*

Haec species ab affinis *T. lanterna* D. Cooke et *T. bibracteata* Stapf ex D. Cooke capitulis pedunculatis, floribus masculis in omnes capitula solitariis, filis longioribus et stigmatibus pilosis differt.

Typus: India, Maharashtra, Sindhudurg dist., Achirane inter Phonda et Vaibhavadi, 20.9.1993, S. R. Yadav & M. K. Janarthanam 1001 (Holotypus CAL; Isotypus BSI). (Fig. 1)

Annual herbs, up to 1.3 cm high, green to red in colour. Roots fibrous, unbranched. Stem reduced. Leaves tufted, numerous, linear, up to 12 × 0.8 mm, erect or spreading, flattened, entire, acute at apex, 1-nerved, green to red coloured, aerenchymatous; uniseriate hairs present among leaves. Capitula numerous, scapose (stalked), crowded among leaves; stalk up to 2 mm long, grooved; bracts 2, linear, up to 5 × 0.6 mm, 1-nerved, leaf like. Flowers unisexual, naked. Male flowers solitary with red coloured stamens, one per capitulum, at the centre, surrounded by female flowers; filaments stout, up to 6 mm long; anthers basifixed, up to 1 mm long, oblong-elliptic, 2-lobed. Female flowers 15-20 per capitulum, each represented by a solitary pistil; ovary ovoid, upto 0.1 mm long, triquetrous, variously stalked; stigmatic hairs 2-5 (-6), uniseriate, at different stages of growth, up to 5 mm long, red in colour. Fruits up to 0.3 mm long, ovoid with three longitudinal ribs, stigmatic hairs persistent. Seeds translucent with dark tip

Hydatellaceae with a new species from India



Figs. 1-6 *Trithuria konkanensis* S. R. Yadav & M. K. Janarthanam sp. nov. 1. Habit; 2. Capitulum; 3. Bracts; 4. V. S. of Capitulum (bracts removed); 5. Female flower; 6. Fruit.

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Ecology: The species grows in temporarily inundated sandy-gravelly area. Species of *Utricularia*, *Eriocaulon*, *Cyperus* and *Dimeria* are found associated with it in the type locality.

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