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Riccia cavernosa Hoffm. (Ricciaceae, Marchantiales, Hepaticopsida), an addition to Bryoflora of South India

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ABSTRACT

Riccia cavernosais collected from Sri Krishnadevaraya University Botanic Garden and Siddarampuram forest Nursery, Ananthapuramu district, Andhra Pradesh, is reported here as a new distributional record for South India.

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The genus *Riccia* (Mich.) L. (Ricciaceae; Marchantiales, Hepaticopsida), comprised of 150 species worldwide (Daniel *et al.*, 2014), are the most common thalloid terrestrial liverworts distributed throughout the world. By habit they distinctly form rosettes and show very simple morphological characters. The genus *Riccia* is represented by 36 species in India, of which 18 are reported from different parts of South India (Singh, 2014).

As a part of our exploration of bryophytes in Andhra Pradesh, during 2016 and 2019 we could collect curious specimens belonging to the genus *Riccia* from Sri Krishnadevaraya University Botanical Garden and Siddarampuram forest nursery located in Ananthapuramu district, Andhra Pradesh. After critical microscopic examination, they found belonging to *Riccia cavernosa*, which till date has not been recorded in any locality of South India (Daniels 2010; Dandotiya *et al.*, 2011; Uwe Schwarzi, 2013; Sandhyarani *et al.*, 2014 and ENVIS: Bryophytes of Kerala, 2019) and hence form a new distributional record for the region.

Bryophyte explorations were conducted in all districts of Andhra Pradesh during 2016 to 2019 including Ananthapuramu district. Specimens from the soil were scraped manually with the help of bent and sharpened flat spoon and placed in zip lock polythene cover with labeled field number. Field observations were recorded in the field notes and live photographs were taken by using DSLR-Camera (Nikon D-3300). Collected materials were brought to the laboratory, made air dried at room temperature and preserved in brown paper packets (12 × 18 cm) with detailed labels on them. Critical examination of the specimens was done by using temporary slides and plant parts were separated by using micro forceps (Varin) VR-15 curved, VR-11 straight with fine sharp edges. Slides were observed under light microscope (Olympus CH20i), light stereo microscope (Olympus SZ61) and micro measurements were taken using ocular micrometer (ERMA) 19 mm, 100 segments in 1 cm. Photographs were taken by using Moto g3 turbo equipped with 13 MP camera, 4 x wide digital zoom, different dimensions were measured and identified belonging to *Riccia*

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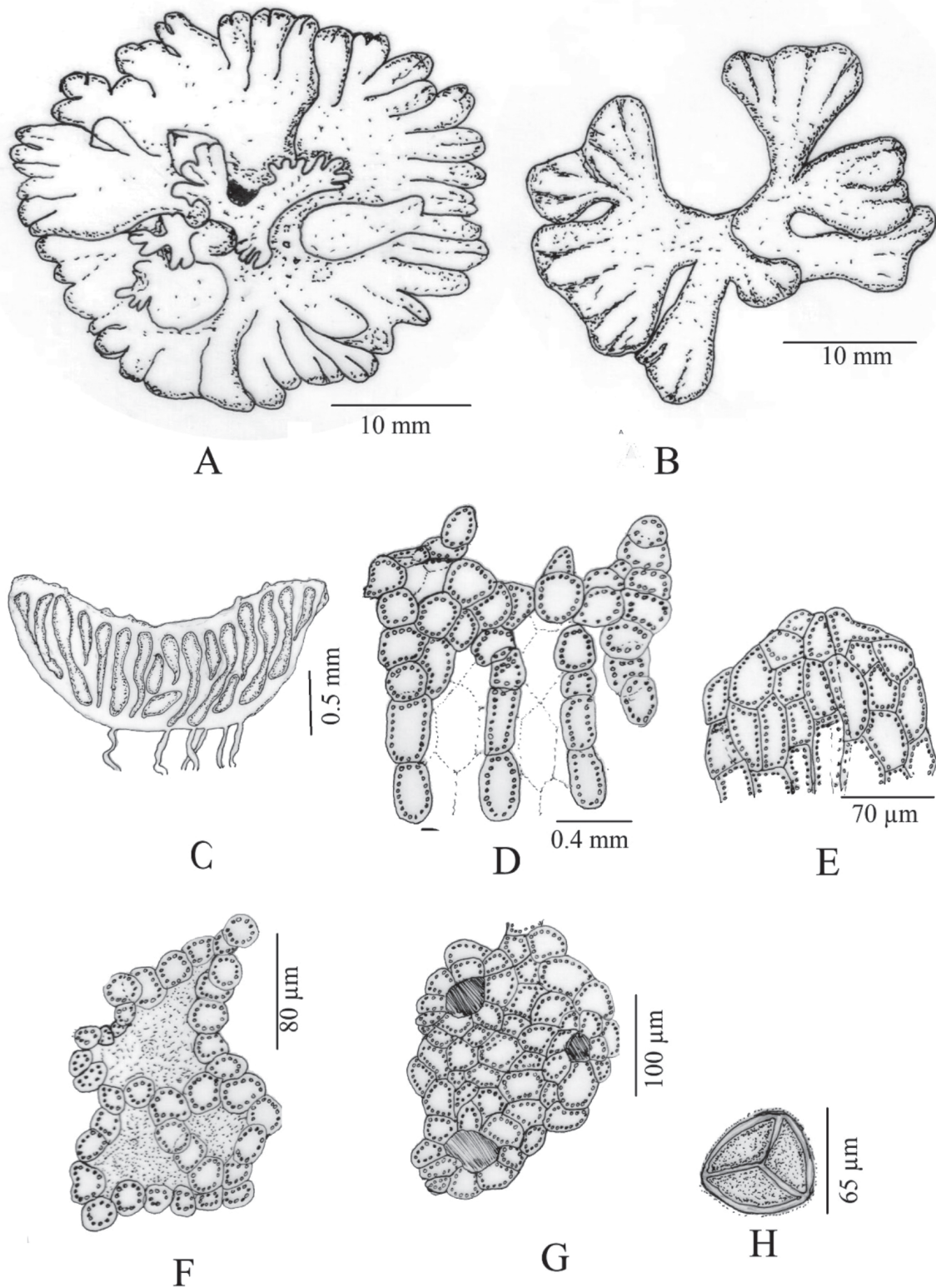


Figure 1. *Riccia cavernosa* Hoffm. *Deutschl.* A. Complete thallus, B. Partial Thallus, C. T.S. of Thallus, D. Epidermal cells and assimilation tissue, E. Epidermal dome, F. Air chambers, G. Epidermal cells with pores, H. Spore.

cavernosa by using standard floras. Technical description, voucher specimens, illustration are provided for the species and specimens were deposited in Sri Krishnadevaraya University Herbarium (SKU), Ananthapuramu. Abbreviated names used for the collectors are: AS (Ananthaneni Sreenath) and BR (Boyina Ravi Prasad Rao).

Botanical description

Riccia cavernosa Hoffm. *Deutschl. Fl.* 2: 95 1796. (Figure 1).

Monoecious thallus, medium-sized to large in complete regular rosettes up to 30 mm across; brightgreen to yellowish green; often becoming tinged with light red along the margins, older parts lacunose (cavernose) when dry, margins yellowish, spongy. Branches repeatedly furcate, shortly to deeply divided, and overlapping, oblong to obovate, apex obtusely rounded, shortly emarginate, thallus margins rounded, obtuse; ventral surface rounded, green. Scales absent. Dorsal surface porous, appears spongy with large air cavities, each air chamber cells 4 to 6-sided, walls slightly bulging, up to 80-105 x 50-55 µm. Assimilatory tissue up to 0.8 mm thick, air chambers generally in a single storey, appearing to be several storeys in section, due to obliquely sloping cavities, bounded by unistratose walls of chlorophyllous cells; storage tissue occupying ventral part of thallus, rhizoids present both tuberculate and smooth. Gametophytic stages are not visualized; in cross section capsules numerous in 1-3 rows slightly projecting ventrally. Spores light brown to dark brown, reticulate, globosely triradiate to sub globose, mark on proximal view, 68-85 µm in diameter.

Habitat: The species naturally grows on moist sandy soil in nursery areas and few thalli appear in rainy season.

Specimens examined: India, Andhra Pradesh, Ananthapuramu District, Sri Krishnadevaraya University Botanical Garden, 02 September 2019, 51629 SKU, BR & AS & Siddarampuram forest nursery, 04 October 2019, 57006, SKU, BR & AS.

Distributions: World - Africa, Australia, Bangladesh, Europe, Iran, Macronesia, Nepal, North America, Pakistan, Russia, South America and *India* - Himachal Pradesh, Madhya Pradesh, Nagaland and Rajasthan.

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