



Plant Archives

Journal homepage: <http://www.plantarchives.org>
DOI Url : <https://doi.org/10.51470/PLANTARCHIVES.2022.v22.no1.038>

OCCURRENCE OF *RICCIA CAVERNOSA* HOFFM. IN SATPUDA RANGE OF MAHARASHTRA, INDIA

Tanveer A. Khan^{1*}, Revan Y. Chaudhari² and Shakila A. Bagwan³

¹Department of Botany, H. J. Thim College of Arts and Science, Mehrun, Jalgaon, Maharashtra, India

²Biologist Ideal Organization, Jalgaon (M.S.) India.

³Department of Botany, Bharti Vidyapeeth Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalaya Kadegaon, Sangli Maharashtra, India

*Email: tanveerkhan04@gmail.com

(Date of Receiving : 23-11-2021; Date of Acceptance : 25-02-2022)

ABSTRACT

Khandesh region of Maharashtra part of Satpuda ranges exhibits unique topographical and climatic conditions that support rich bryoflora. The paper reports for the first time populations of *Ricciaca vernosa* Hoffm. of the family Ricciaceae from a new locality, Satpuda range in the Khandesh region of Maharashtra, India and second distributional records for Maharashtra. This paper describes the *Riccia cavernosa* Hoffm. along with images and the distributional pattern in the Satpuda range of Khandesh region.

Keywords: *Riccia cavernosa* Hoffm, Satpuda range, Khandesh region.

Introduction

The genus *Riccia* (Mich.) L. (Order Marchantiales; family Ricciaceae) was recognized by Micheli in 1729 'Nova Plantarum Genera' in honor of an Italian Botanist, P.I. Ricci. Thereafter it was validated by Linnaeus in 1753 (Bag *et al.*, 2007). *Riccia* is normally distributed thallose liverwort throughout the world. Genus *Riccia* is distinctive rosette making and diversified terrestrial liverwort (excepting some water forms), exhibits very simple and primitive morphological and anatomical characters. *Riccia* includes 150 species worldwide (Daniel *et al.*, 2014) at present 36 valid species of this genus are described from India (Singh, 2014) of these only 8 species are known to occur in Maharashtra (Shirke, 2002).

Satpuda range of Khandesh region is an ignored geographical area by Indian bryologist. Khandesh region comprises of three districts Nandurbar, Dhule and Jalgaon. It lies between 20° 8' and 22° 7' North latitude and 73° 42' and 76° 28' East longitude. Khandesh covers an entire area of 26,703.36 sq. km extending nearly 257.44 Km along. Satpuda range of Khandesh region lies at the North Western corner of the Deccan plateau, in the valley of the Tapti river, and is restricted in the North by the Satpuda ranges, in the east by the Berar (Vidarbha) region, in the south by the hills of Ajanta, belonging to the Marathwada region of Maharashtra, and in the West by the Northern most ranges of the Western Ghats, and outside that the coastal plain of Gujarat. Along the entire Northern frontier, the district is restricted by the Satpuda ranges, a mountainous tract from 48.27-64.36 km wide.

The climate of Satpuda range is supportive to the luxuriant growth of bryophytes. These species occurs in the rainy season and in winter season during the month of July-February, endures moderate winters and dies out on the onset of the summers. Mostly the *Riccia cavernosa* Hoffm. Shows terricolous habitat. Very little information is available regarding bryoflora of Khandesh range of Maharashtra (Tanveer & Javed, 2018, 2021 and Tanveer & Shakila 2021).

Materials and Methods

Satpuda ranges, which is one of the major hotspot of plants in Khandesh region. While working on bryoflora of Khandesh region of Maharashtra State, we undertook frequent collection tours in every season during the month of October-December to collect Specimens. The outcome of the collection tour was the new taxa of *Riccia cavernosa* Hoffm. is the second distributional records for Maharashtra and first records for Khandesh region of Satpuda range. The morpho taxonomical and anatomical analysis of the population was pursued after selecting fresh and previously preserved plants in 4% formalin (Bowers, 1964). External features of thalli were studied under stereo microscope. Hand sections of thalli were mounted in glycerine and observed under light microscope. All taxa have been identified with the help of available literature (Kashyap, 1929, 1932; Bapna & Kachroo 2000 and Chaudhary *et al.*, 2008 and Bagwan & Kore, 2015) identification and confirmation of specimens by expert opinion. The voucher specimens are deposited at the Department of Botany, H.J. Thim College of Arts and Science Mehrun Jalgaon, Maharashtra.

Results and Discussion

Due to human interference, anthropogenic activities and grazing animals the bryoflora from Satpuda range of Khandesh get disturbed. Considering the ecological importance, sensitivity and vulnerability of bryophytes to changing environment, it is most essential to enlist bryophyte through periodical survey and revision. Therefore proper documentation is needed for conservation of these ecologically important plants before their extinction.

Riccia L. is the largest genus among the thallose Hepaticae in India and found on damp loamy and sandy soil in different localities of Satpuda range of Khandesh during study. *Riccia cavernosa* Hoffm. was collected from various habitats for the Second distributional records for Maharashtra and first time reported from Satpuda range of Khandesh region of Maharashtra. Data available about this species is meager but field surveys will play important role to enhance knowledge about the Indian bryology, particularly in Satpuda range of Khandesh region of Maharashtra. While exploring the study area *Riccia cavernosa* Hoffm. have been collected from satpuda range of Khandesh region detailed descriptions are given below:

Riccia cavernosa Hoffm., *Deutschl. Fl.* 2: 95.1796 emend. Raddi, *Opusc. Sci. (Bologna)* 12: 351. 1818. *R. robusta* Kashyap, *J. Bombay Nat. Hist. Soc.* 24: 348. 1916; Bagwan and Kore, *Plant Science Today*2(4): 187-191. 2015. (Fig.1).

Thallus monoecious, dichotomously branched, overlapping with linear to obcordate segments, terrestrial. Dorsal surface olive green up to 3-6 mm long; lobes oblong, obtuse, 1-2 mm broad. Dorsal surface porous, appears

spongy with large cavities, probably due to increase in air space. Air chambers in 2-3 strata, wide and polyhedral, epidermis soon prominently lacunose, ventral tissue present in median of thallus, flanked by large air chambers. Ventral scales absent, rhizoids both tuberculate and smooth. Gametophytic stages are not visualized. Sporophytes are projecting ventrally. Spores light brown to dark brown, reticulate, triradiate mark on proximal view, 80-100µm in diameter. Very few 1-2 thalli in rainy season are observed. Frequently occurs in the region. Restricted to some spots in field may be endemic.

Locality: Occasional. In Khandesh region collected from the cache of Tapi river or in wet patches, along hill slopes.

Habitat: Terricolous

Distribution in India: INDIA (Western Himalaya: Himachal Pradesh; Eastern Himalaya: West Bengal Hills; Gangetic plains: Uttar Pradesh; Central India: Madhya Pradesh; Punjab & West Rajasthan: Rajasthan (Singh *et al.*, 2010).

Distribution in Maharashtra: Second distributional records for Maharashtra and first record for Satpuda range of Maharashtra.

Field notes: Thallus spongy, larger than *Riccia crystalline* easily detected with the help of hand lens.

GPS reading: N 20°94'29.98" E 75°56'77.69" (Elevation 272.4m)

Specimen examined: India: Maharastra: Jalgaon Dist., Mehrun bit, *TAK* 93; Tapi river, *TAK* 127; Nandurbar Dist., Molgi, *TAK* 153.

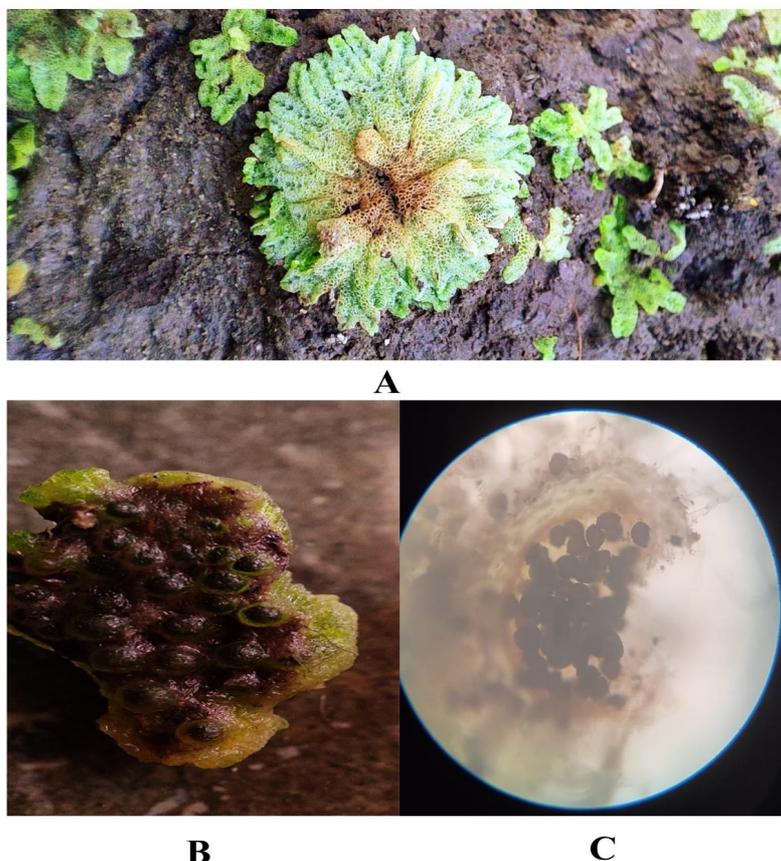


Fig. 1 : *Riccia cavernosa* Hoffm. (A) Dorsal view (B) Ventral view (C) Sporophyte with spore

Acknowledgement

The authors wish to express their gratitude to Dr. Afroz Alam, Department of Bioscience, Banasthali University, Rajasthan, who confirmed the identity of the species and also providing the literature. Thanks are also due to the Principal, H.J. Thim College, Jalgaon, for providing laboratory and library facilities.

References

- Bag, A.K.; Singh, S. and Bhattacharya, S. (2007) *Riccia* of West Bengal. *Bull Bot Surv India*, 49: 173-186.
- Bagwan, S.A. and Kore, B.A. (2015) Species diversity of genus *Riccia* in Satara district (Maharashtra) India. *Plant Science Today*, 2(4): 187-191.
- Bapna, K. and Kachroo, P. (2000). *Hepaticology in India-II* Himanshu Publications, Udaipur-New Delhi. 439.
- Chaudhary, B.; Sharma, T. and Bhogra, F. (2008). Bryophyte flora of North Konkan Maharashtra, Himanshu Publications, Udaipur-New Delhi. 326.
- Daniel, M.A.; Denise, P.; Rinaldo, P. (2014). Addition to the Ricciaceae flora of Rio Grande do sul including two remarkable records for the Brazilian liverwort flora. *Phytotaxa*, 161(4): 294-300.
- Kashyap, S.R. (1929) *Liverworts of western Himalayas and Panjab plains*. Vol. 1, University of Panjab, Lahore, 129.
- Kashyap, S.R. and Chopra, R.N. (1932). *Liverworts of western Himalayas and Panjab plains*. Vol. 2, University of Panjab, Lahore. 137.
- Khan, T.A. and Khan, J.V. (2018). Diversity of Genus *Plagiochasma* in Satpuda Range of Khandesh Region, Maharashtra, India. *International Journal of Current Research in Bioscience and Plant Biology*, 5(11): 50-55.
- Khan, T.A. and Bagwan, S.A. (2021). *Cyathodium cavernarum* Kunze and *Cyathodium tuberosum* Kash are new distributional records for Khandesh region of Maharashtra. *Bioscience Discovery*, 12(4): 201-203.
- Khan, T.A. and Khan, J.V. (2021). *Riccia discolor* Lehm. & Lindenb. And *Riccia frostii* Austin are new distributional records for Khandesh region on Maharashtra, *International Journal of Current Research in Biosciences and Plant Biology*, 8(10): 34-37.
- Shirke, D. (2002). *Check list of bryophytes*. In: *Biodiversity of the Western Ghats of Maharashtra- Current Knowledge*. Ajit P. Jagtap and N.P. Singh (Eds) Bishen Singh Mahendra Pal Singh Publication, Dehra Dun, India. 123-130.
- Singh, S.K.; Bag, A.K. and Bhattacharya, S.G. (2010). *Riccia* (Hepaticae: Ricciaceae) of West Bengal. *Taiwania*, 55: 99-109.
- Singh, S. (2014). An appraisal of Genus *Riccia* in India with a note on diversity and distribution of species. *Int. J. Sustain Water Environ Sys.*, 6(1): 35-43.