



Original Research Article

doi: <https://doi.org/10.20546/ijcrbp.2021.810.006>

Riccia discolor Lehm. & Lindenb. and *Riccia frostii* Austin are new distributional records for Khandesh region on Maharashtra

Tanveer A. Khan^{1*}, Javed V. Khan²

¹Department of Botany, H. J. Thim College of Arts and Science, Mehrun, Jalgaon-425 001, Maharashtra, India

²Department of Biotechnology, PGCSTR, Jalgaon-425 001, Maharashtra, India

*Corresponding author; e-mail: tanveerkhan04@gmail.com

Article Info

Abstract

Keywords:

Bryoflora
Khandesh region
Riccia (Mich.) L.
Satpuda range

During bryoflora exploration of Satpuda range of Khandesh region of Maharashtra, two taxa *Riccia discolor* Lehm. & Lindenb. and *Riccia frostii* Austin were collected from various habitats for the first time. This paper describes species diversity, distributional pattern in the study area and description along with the field photographs are also provided. These species have been reported for the first time from Satpuda range of Khandesh region of Maharashtra.

• Received: 4 September 2021 • Revised: 17 September 2021 • Accepted: 3 October 2021 • Published Online: 6 October 2021

Introduction

The genus *Riccia* (Mich.) L. (family Ricciaceae) is typical rosette forming and diversified terrestrial liverwort (except few aquatic forms), exhibits very simple and primitive morphological and anatomical characters. *Riccia* comprises 150 species worldwide (Daniel et al., 2014) at present 36 valid species of this genus are reported 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 consists of three districts Jalgaon,

Dhule and Nandurbar. It lies between 20° 8' and 22° 7' North latitude and 73° 42' and 76° 28' East longitude. Khandesh covers a total area of 26,703.36 sq. km stretching nearly 257.44 Km along. Khandesh lies at the Northwestern corner of the Deccan plateau, in the valley of the Tapti river, and is bounded 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 beyond that the coastal plain of Gujarat. Along the whole Northern frontier, the district is bounded by the Satpuda ranges, a mountainous tract

from 48.27-64.36 km wide. In Khandesh, the bulk of annual rainfall is received during south-west monsoon. Here July is the wettest month of the year. The humidity is above 70% except monsoon season, while in summer it is only 20-25% in the afternoons. Hence the climate is supportive to the luxuriant growth of bryophytes.

During bryoflora explorations of Khandesh region of Maharashtra state, 02 interesting specimens belonging to *Riccia* (Mich.) L. were collected from wet hill slope and margins of water courses. Close examination with the help of literature and specimens reveal that they were not recorded earlier from Khandesh region. All of them have been identified as *Riccia discolor* Lehm. & Lindenb. and *Riccia frostii* Austin which proved to be first report for Satpuda range of Khandesh region of Maharashtra.

Materials and methods

The plant materials were collected from different localities from Khandesh region during rainy season and after rainy seasons during 2020-2021. Collected plant material was preserved in dry and wet form as well. External morphology was studied under Stereoscopic binocular microscope. For morpho-anatomical study dried herbarium specimens were soaked in water for about 2 hours prior to their microscopic study. Hand cut sections were mounted in 50% aqueous glycerin and anatomical features were studied under compound microscope.

Identification of specimens was carried out with relevant available literature (Kashyap, 1929, 1932; Bapna and Kachroo, 2000; Chaudhary et al., 2008; Bagwan and Kore 2015). Very little information is available regarding bryoflora of Khandesh range of Maharashtra (Tanveer and Javed, 2018). Preserved specimens were deposited in Bryological Herbarium of Department of Botany, H. J. Thim College of Arts and Science Mehrun, Jalgaon (Maharashtra) India.

Taxonomic treatment

Riccia discolor Lehm. & Lindenb. in Lehmann, Nov. Stirp. Pug. 4: 1. 1832. *R. himalayensis* Kashyap, J. Bombay Nat. Hist. Soc. 24: 349. 1916. *R. gollanii* Lev. ex Steph., Sp. Hepat. 6: 2. 1924 (Fig. 1A).

Thallus dioecious, overlapping, bluish green 1-2

forked with median groove along whole thallus, lobes oblong. Female thallus larger than male. 4-15 mm long; 2-8 mm broad. Male thallus 2-8 mm long; 2.5 mm broad. Air space narrow, epidermal cells oval, papillate. Thallus 4 times broad as high; Ventral scale small, semilunar, purple beyond the thallus margin. Rhizoids both simple and tuberculate. Archegonia on median furrow, protruding out from thallus. Capsule in 1-2 rows. Spores brown 80-120 μ in diameter, reticulate, 6-10 areole on outer surface, tri-radiate mark inconspicuous.

Field notes: Archegonial neck on median furrow, protruding out from thallus, scales on marginal scales are easily observed from dorsal surface.

Distribution: Occasional. In Khandesh region grow on soft moist soil on the paddy field, on gravelly or hill slopes.

GPS reading: N 21°22'29.30" E 75°29'37.81" (Elevation 419.1 m)

Specimens examined: Jalgaon Dist., Devjiri, TAK 37; Manudevi, TAK 46. Nandurbar Dist., Amlibari ghat TAK 72; Molgi, TAK 83.

Riccia frostii Austin, Bull. Torrey Bot. Club 6: 17. 1875. *R. sanguinea* Kashyap, J. Bombay Nat. Hist. Soc. 24: 349. 1916. *R. microspora* Steph., Sp. Hepat. 1: 43. 1900 (Fig. 1B).

Thallus dioecious, in rosette; male pinkish; female thallus larger than male. 3-6 mm broad 1-2 mm wide. Rhizoids both simple and tuberculate. Scale absent, Cross section three times broader than high, air chambers elongate, epidermal cells thin walled. Antheridia in 1 or 2 rows. Sporangium not observed. Female plants not seen.

Field notes: Male Thallus easily identified due to complete rosette and pink-red color scales absent.

Distribution: Occasional. In Khandesh region collected from the cache of Tapi river or hill slopes.

GPS reading: N 21°8'28.13" E 75°32'29.31" (Elevation 141.8 m)

Specimens examined: Jalgaon Dist., Tapi river, TAK 41; Pal, TAK 76. Nandurbar Dist., Molgi, TAK 91.

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. Two taxa *Riccia discolor* Lehm. & Lindenb. and *Riccia frostii* Austin were collected from various habitats for the first time reported from Satpuda range of Khandesh region of Maharashtra. Data available about these species are meager but field surveys will play important role to enhance knowledge about the Indian bryology, particularly in Satpuda range of Khandesh region of Maharashtra.



Fig. 1: (A) *Riccia discolor* Lehm. & Lindenb.; (B) *Riccia frostii* Austin.

Conflict of interest statement

Authors declare that they have no conflict of interest.

Acknowledgement

The authors wish to express their gratitude to Dr. Afroz Alam, Department of Bioscience, Banasthali University, Rajasthan and Shakila A. Bagwan, Department of Botany, Bharti Vidyapeeth Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalaya Kadegaon, Sangli, Maharashtra they 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

- Bagwan, S. A., Kore, B. A., 2015. Plant Sci. Today, 2(4): 187-191.
- Bapna, K., Kachroo, P., 2000. Hepaticology in India-II. Himanshu Publications, Udaipur-New Delhi, 439p.
- Chaudhary, B., Sharma, T., Bhogra, F., 2008. Bryophyte Flora of North Konkan Maharashtra, Himanshu Publications, Udaipur-New Delhi, 326p.
- 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, 129p.
- Kashyap, S. R., Chopra, R. N., 1932. Liverworts of Western Himalayas and Panjab Plains, Vol. 2, University of Panjab, Lahore, 137p.
- Khan, T. A., Khan, J. V., 2018. Diversity of genus *Plagiochasma* in Satpuda Range of Khandesh Region, Maharashtra, India. Int. J. Curr. Res. Biosci. Plant Biol., 5(11): 50-55.
- Shirke, D., 2002. Check list of bryophytes. In: Ajit, P. Jagtap, Singh, N. P. (Eds.), Biodiversity of the Western Ghats of Maharashtra- Current Knowledge. Bishen Singh Mahendra Pal Singh Publication, Dehra Dun, India, pp. 123-130.
- Singh, S., 2014. An appraisal of Genus *Riccia* in India with a note on diversity and distribution of species. Int. J. Sustain. Water Environ. Syst., 6(1): 35-43.

How to cite this article:

Khan, T. A., Khan, J. V., 2021. *Riccia discolor* Lehm. & Lindenb. and *Riccia frostii* Austin are new distributional records for Khandesh region on Maharashtra. Int. J. Curr. Res. Biosci. Plant Biol., 8(10): 34-37.

doi: <https://doi.org/10.20546/ijcrbp.2021.810.006>