

Distributional Records and A Note On *Cyathodium* Genus from Alaldari Waterfall and Rest Part of Satpuda Ranges, Maharashtra, India

Vitthal N. Rathod

P.G. Department of Botany, JET's Z.B.Patil College, Deopur, Dhule, Maharashtra, India

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ABSTRACT

Present survey of Bryophytes was carried out from on *Cyathodium cavernarum* Kunze and *Cyathodium tuberosum* Kash of species of the Marchantialian taxon collected from Alaldari Waterfall at Amali near Sakri, Maharashtra. Plant thallus yellowish green to light greenish or fluorescent green, thin, delicate, Occurs in moist areas of both deep forest on soil, wet rocks, walls and termite mount in the moist deciduous, semi-evergreen and evergreen forest. Liverworts were formerly placed in the division Bryophyta with the mosses.

Keywords: *Cyathodium*, Moist, Alaldari, Liverwort, Mosses

I. INTRODUCTION

Khandesh is a geographic region in Central India, which includes parts of the north western portion of [Maharashtra](#). The old West Khandesh is the district Dhule today. This district is situated at the foot of the Satpuda hill. The mountain range of Sahyadri has reached the western side of this district. Besides, the mountains of Galna situated. The division of Dhule district on 1st July 1998 resulted in the existence of Nandurbar District. The Satpuda region of banks and residual hills of the Sahyadri spurs with eastward trending streams in between and, western region with a westerly aspect below the Sahyadri scarps. The Satpura region -North of the Tapi, the whole length of the rich muddy plain is bounded by the steep

southern face of the Satpuras, now with only a few scattered [Bhil tribe](#) hamlets, was once peopled.

It is bounded to the north by the Satpura Range, to the east by the Berar (Varhad) region, to the south by the Hills of Ajanta (Marathwada region) 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 this study, an attempt was made to find out the status of the genus *Cyathodium* Kunze in this region. The worldwide distributed *Marchantia* lian member *Cyathodium* Kunze shows 13 valid species out of which 9 species are known from the Indian sub-continent (Singh, 2016).

The present article represents morpho-taxonomical and anatomical variations observed in a species of the taxon *Cyathodium cavernarum* Kunze and *Cyathodium tuberosum* Kash from deep vally, Satpuda range in the Alaldari region of Maharashtra.

These species occur in the rainy season during the month of September- October, endures moderate winters and dies out on the onset of the summers. Mostly the genus *Cyathodium* shows Terricolous habitat.

Very little information is available regarding bryoflora of Khandesh range of Maharashtra (Tanveer 2021).

II. MATERIALS AND METHODS

Alaldari waterfall is the biggest biodiversity area in Satpuda ranges. Although working on bryophytic flora of Satpuda region of Maharashtra. I was collected the material during the month of September-October. The result of the material it was observed that the 02 new Bryophytic species like *Cyathodium cavernarum* Kunze and *Cyathodium tuberosum* Kash are the distributed in this area. The morpho-taxonomical, I preserved plants material in 0.4% formalin. Peripheral characters of thalli were studied under electronic microscope. Needle sections of thalli were straddled in glycerine and observed under an electronic microscope. All taxa have been identified with the help of available literature, identification and confirmation of specimens by expert opinion. The material is deposited at the Department of Botany, JET's Z. B. Patil College, Dhule, Maharashtra.

Taxonomic Account

Cyathodium cavernarum Kunze in Lehm., Pugillus 6:17 1844; Schiffn., Ann. Bryol. 11: 132-134. 1938; Khanna, J. Burma Res. Soc. 16: 4. 227.1927. *Cyathodium mexicanum* Steph., Hep. 6: 4. 1917. *Cyathodium barodae* Chav., Bryologist 11: 57.f. 1-13. 1937; Amer. J. Bot. 24: 484-492. F. 1-83. 1937.

Cyathodium africanum Mitt., J. Linn. Soc. 22: 298. 1887.

Plant 2-10 mm long, 2-5 mm broad delicate, yellowish green or green, restricted to caves or in dank places or in open moist protected places; thalli often dichotomously branched and may appear fan-shaped, dorsal epidermal cells thin walled, chlorophyllose, lower epidermal cells larger and chlorophyllose. Air chambers usually in a single row, partition between air chambers 1-2 cells high with chloroplasts, chloroplasts few and large; pores on dorsal surface bounded by 2-3 concentric rings of 4-6 cells each; rhizoids smooth walled; ventral scales simple, filamentous or small plate, with mucilage papillae. Monoecious; male receptacles lateral to terminal, disc shaped or cushioned; Involucre globose, bilipped; foot of 2-4 cells, seta of one row of cells, capsule ovoid, wall unistratose, cells in upper part with semiannular or annular thickening bands but in lower parts cells lack thickenings; operculum two tiered, outer tier of 4-6 cells and inner tier of 8-10 cells; spores 41-70 µm in diameter, brownish-black, isopolar, spiny, spines 3-4 mm high; elaters 8-12 in a capsule, 225- 450 µm long, 2-3 spirals, reddish brown. (Photo-I)

Distribution: Rare. In Alaldari vally, on hoarse, rocky substrate or hill slopes.

Exisiccata- Alaldari- 09, 10, Gautala Forest- 14,15

Cyathodium tuberosum Kash, New phytol. 13:210. 1914; Liverw W. Himalayas Punjab Pl. 1-53. Pl. 10. f.1-11. 1929; Khanna. J. Burma Rec. Soc. 17: 270. 1927. *Cyathodium penicillatum* Steph., Spec. Hep. 6:4. 1917. *Cyathodium pectinatum* Goeb., Organogr. 2: 650. 1915; Schiffn., Ann. bryol. 12:128. f. 32-35. 1939. Plate-I Dioecious, pale green or green, small, delicate 5-10 mm long, 2-5 mm wide, dichotomously branched, densely overlapping, lobes linear, male plants narrow more or less branched, linear lobes; female plants linear; dorsal surface flat, usually dorsal pores lacking, but may be present in well-developed female plants, ventral pores many, large simple bounded by 2-3 concentric rings of 4-5 cells each, elongated

antero-posteriorly and rounded towards base; mid-rib not differentiated, thallus consist of a ventral layer of cells separated from upper single-layered epidermis by a row or series of air chambers, divided by vertical partitions (2-4 cells high); air chambers empty, epidermal cells bear chloroplasts; thalli bear tubers densely covered with rhizoids; rhizoids on ventral surface smooth, thin or thick walled, scales of simple cell rows of 3-6 cells in a row or plate like. Male plants small, male receptacle lateral, cushion shaped or in fork between two lobes and circular or terminal and disc shaped, they may be sessile or subsessile or shortly stalked. Female plants large; involucre many with 1-4 sporogonia in each; involucre ovoid, open by a circular or elliptic mouth, margins purplish, involucre with scales and rhizoids. Foot of two lobed cells; seta of one row of cells, capsule globose, wall one layered; operculum two-tiered outer tier of 4 thick-walled cells, the inner tier consists of upto 12 thin-walled cells; spores 40-62 μm , spherical, dark brown, spiny; elaters 30-45 in a capsule, 3-spirals, sometimes 1-2 spirals, upto 500 μm long. (Photo-II)

Distribution: Rare. In Alaldari vally, on hoarse, ~~rock~~ strewn substrate or hill slopes.

Exisiccata- Alaldari- 12, 13, Gautala Forest- 17,18.

The photograph shows the plant body and appearance



Cyathodium cavernarum
Kunze



Cyathodium tuberosum
Kash,

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