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Diversity of Mosses in Chittorgarh District of Rajasthan, India

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Abstract: The present study is the first systematic survey of Mosses of Chittorgarh District of Rajasthan, India. Extensive field surveys were made for the collection of the mosses during present investigation. A total of 24 species of mosses distributed under 5 orders, 7 families and 12 genera were recorded. Pottiales is the most dominant order with 9 species belonging to 4 genera.

Keywords: Keywords: Mosses, Chittorgarh, Rajasthan

INTRODUCTION

Bryophytes are the small nonvascular embryophytes that grow in damp and moist shady places. They are the simplest and the most primitive of the land plants. Bryophytes are a heterogenous group of plants unified by the lack of lignified vascular tissues and a life cycle with a dominant gametophyte and a short-lived sporophyte. The sporophyte is dependent on the gametophyte for life. There are 25,000 (Crum, 2001) described species of Bryophytes occurring on every continent and in every location habitable by photosynthetic plants throughout the world, making it the largest group of land plants except for the flowering plants. Bryophytes consist of three major groups Mosses, Liverworts and Hornworts. among the three group mosses is the largest one.

The present study focus towards the Chittorgarh district, we find that practically no work has been carried out with special reference to Mosses. The present exploration of the entire district was undertaken to collect, identify and inventorize the moss flora of Chittorgarh district. The Chittorgarh district offers suitable conditions for bryodiversity.

Study Area

India can be divided largely into two main parts. The Tropic of Cancer that passes roughly through the central part of India, has brought about this division. The part of India to the north of this latitude has roughly temperate type of climate while, the part to the south of the Tropic of Cancer more or less enjoys tropical type of climate. The present study area lies in Chittorgarh district within the State of Rajasthan and thus it lies in region north to the Tropic of Cancer and occupies the Western part of India. Chittorgarh district is located between 23° 32' and 25° 13' north latitude and 74° 12' and 75° 49' east longitude covering an area of 10,856 sq.km. (3.17% of the Rajasthan State). It has an average elevation of 394 metres (1292 ft.) above Sea Level.

Chittorgarh district is generally characterized by undulating topography with hills belonging to the Aravalli Range. These hills are scattered all over the area. The average elevation of the district Chittorgarh from the mean sea level is 408 m. The district has the regional slope from south to north. The height varies from 317m to 637m above mean sea level.

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METHODOLOGY

Present work is based on the field collection of fresh mosses from the study area. Most of the places where visited several times during different seasons of the year, especially following rains when mosses flourish well due to high humidity and optimum temperature. Surveys were carried out in all possible habitats and microhabitats, like dense forests, degraded forests, marshy pockets, wells, step wells, dams, canals, buildings, fluvial streams, non-fluvial streams, caves, and crevices.

Plants from various habitats and localities were collected by scraping out from the substrate with the help of a sharp-edged knife. Terrestrial species were collected with the substratum and the bulk of the soil particles were removed. The field data were recorded in the field book, such as the date of collection, locality, altitude, habitat etc. The material was brought to the laboratory in sealed polythene bags, plastic boxes and blotting paper packets for their investigation.

RESULTS AND DISCUSSION

As a result of the extensive field visit for exploration of mosses followed by detailed taxonomic study a total of 24 species of mosses belonging to 5 orders, 7 families and 12 genera were collected. Order Pottiales is the most dominant order with 9 species belonging to 4 genera. The data present in Table-1revealed that family Funariaceae is represented by *Funaria hygrometrica* and *Physcomitrium cyathicarpum*, family Fissidentaceae is represented by *Fissidens sylvaticus*, *Fissidens crenulatus* and *Fissidens curvatao-involutus*, family Eropodiaceae is represented by *Eropodium mangiferae*, family Pottiaceae is the largest family and is represnted by *Hydrogonium consanguineum*, *Hydrogonium arcuatum*, *Hyophila involuta*, *Hyophila rosea*, *Hyophila comosa*, *Hyophila spatulata*, *Weissia controversa*, *Weissia longifolia* and *Anoectangium clarum*, family Bryaceae is represented by *Brachymenium exile*, *Brachymenium indicum*, *Bryum capillare*, *Bryum paradoxum*, *Bryum cellulare* and *Bryum caespiticum*, family Plagiotheciaceae is represented by *Stereophyllum anceps* and *Stereophyllum ligulatum* and family Entodontaceae is represented by *Entodon laetus*. It seems to be general rule that mosses flourish best in the crevices where shade and moisture may be more frequently available. In the study area bryophytes can be distributed in diverse habitats out of which10 are found on rocks (Lithocolous), 14 on moist soil floors on clayey slopes on ditches (Terricolous), 4 on brick, walls (Calcicolous) and 3 on Angiospermic plants (Phycocolous).

Table 1: Showing distribution of the Mosses in different habitats in the present study area

S. No.	Species	Lithoco-lous	Terrico-lous	Calcico-lous	Phycoco-Lous
1.	*Funaria hygrometrica* Hedw.	+	-	+	-
2.	*Physcomitrium cyathicarpum* Mitt.	+	-	+	-
3.	*Fissidens sylvaticus Griff. Var. zippelianus (D. & M.) Gangulee*	+	+	-	-
4.	*Fissidens crenulatus* Mitt.	-	+	-	-
5.	*Fissidens curvato – involutus* Dix.	-	+	-	-
6.	*Erpodium mangiferae* C. Muell.	-	-	-	+
7.	*Hydrogonium consanguineum* (Thwait. *et* Mitt.) Hilp.	-	+	+	-
8.	*Hydrogonium arcuatum* (Griff.) Wijk *et* Marg.	-	+	-	-
9.	*Hyophila involuta* (Hook.) Jaeg.	+	+	-	-
10.	*Hyophila rosea* Williams.	-	+	-	-
11.	*Hyophila comosa* Dix. *et* varde.	-	+	-	-
12.	*Hyophila spatulata* (Harv.) Jaeg.	+	-	-	-
13.	*Weissia controversa* Hedw.	+	-	-	-
14.	*Weissia longifolia* Mitt.	+	-	-	-
15.	*Anoectangium clarum* Mitt.	+	-	+	-
16.	*Brachymenium exile* (Doz. *et* Molk) Bosch *et* Lac.	-	+	-	-
17.	*Brachymenium indicum* Doz. *et* Molk.	-	+	-	-
18.	*Bryum capillare* L. ex Hedw.	+	-	-	-
19.	*Bryum paradoxum* Schwaegr.	-	+	-	-
20.	*Bryum cellular* Hook.	+	+	-	-
21.	*Bryum caespiticium* L.ex. Hedw.	-	+	-	-
22.	*Stereophyllum anceps* (Bosch *et* Lac.) Broth.	-	-	-	+
23.	*Stereophyllum ligulatum* Jaeg.	-	+	-	-
24.	*Entodon laetus* (Griff.) Jaeg.	-	-	-	+
		10	14	4	3

(+) Present, (–) Absent

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