

Habitat Diversity of the Genus *Physolinum* Printz, Burdwan, West Bengal (India)

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Abstract

Habitat is the very important aspect of all living creatures, starts from animals to plants and from cryptogams to phanerogams. Algae are the very promising biological organism in all ecosystem especially in marine or fresh water habitat but also even in terrestrial -sub aerial habitat. Terrestrial habitat is basically depend upon some basic component like minerals nutrients, organic matter, water and air by different composition and sub aerial habitats depend upon the existing substratum. The present communication deals with four different form of genus *Physolinum* Printz. Taxa has great diversity in their habitats and also their morphological character, pigment composition and growth pattern. Habitat diversity is not yet reported from this area.

Key words : *Physolinum*, Habitat Diversity, Burdwan

Introduction

Habitat diversity and its ecological significance starts from the nineteenth century Hariot (1889), Printz (1920) Brook (1981). Great contribution had been done by the sub aerial and others divers habitats by Thompson and Wujek (1997), Neustupa (2005) and Rindi et al (2006). Significant effort were carried out in subtropical and temperate forest by Handa and Nakano (1998), Mikhailyuk (1999), Kharkongor and Ramanujam (2014). In Indian context very little bit work have been done by few workers in different states Bruhl and Biswas (1923), Panikkar and Sindhu (1993), Chandra and Krishnamurthy (2000) and Saharia (2005). The district Bardhaman is a transitional zone between the Bihar plateau, which constitutes a portion of peninsular shield in the west and the Ganga-Brahmaputra alluvial plain in the north and east Towards south, the alluvial plain merges with the Kasi-Subarnarekha-Baitarani deltaic plains. This district lies mainly between the Ajoy, the Bhagirathi and the Damodar rivers. It is bounded on the north by the districts of Santal Pargonas, Birbhum and Murshidabad, on the east by Nadia. on the south by Hooghly, Bankura and Purulia an on the west by Dhanbad (Bihar) Geographically the district is located between north latitude 22°56' to 23° 53' and east longitude 86° 48' to 88° 25'. The present area of the district is 7001.4 sq km. Climate condition of the district is warm and humid. The genus *Physolinum* is the most common sub-aerial alga in both tropical and temperate climate., I have been collected this taxa from cementing rock and bark of the tree. Both habitats having different colour composition in different time of the season, In early winter the colour of the alga is green but in mid winter the colour would change into orange red. Cellular composition and size variants is also good observation in this study.

Material and Method

The specimens were collected from different sub aerial habitats of Burdwan district of west Bengal. Specimens were preserved in 4% formalin; pH, temperature and details ecological notes were recorded simultaneously. Photography were made using GWF (Bando 1988) as mountant from both preserved and live specimens. Microphotograph were taken by Leica DM 1000 with EC 4 camera. Standard literature are consulted for this purpose, Fritsch (1935), Smith (1950), and Wehr and Sheath (2003).

Results and Discussion

Tree bark and cementing wall is the very common place for the growth of the subaerial plant. Tree

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barks were found in different colour in different season, Primarily the colour was green and in course of time the colour had been changed to yellow to deep orange depend upon the host or substratum. Yellow colour noticed especially in smooth bark whereas orange colour in rough bark. Survey explore the distribution specificity and physiological alteration of the organism in different season which gives us a clue in respective niche .Observation is given accordingly. Sunlight, relative humidity, and rainfall were the important factors which played a major role in determining the diversity and distribution of subaerial algal communities

Rock- sample : Green form

Plant body with less branched or unbranched, Cells are elliptical or barrel shaped, length is more than two times than width L. 29-37 μm , W.8-12 μm , cell wall is much stratified , Partitioned wall more or less transverse, no constriction. Cell contains distinct discoid chloroplast. Mature intercalary cells containing spherical aplanospore.

Field No. PM 19 ,Dated 05.9.2017 , pH 6.5 , temperature 230 C , PM 37 ,Dated 05.12..2018 , pH 6 , temperature 160 C Locality : Burdwan

Tree bark - sample : Green form

Plant body with branched habit, Cells are markedly moniliform , celle length is 21-27 μm and width 13-15 μm , sometimes length is more or less same as width. Cell wall is not stratified, showing distinct constriction containing distinct discoid chloroplast. Cell contains distinct parietal laminate chloroplast. Terminal and intercalary cells are involved for the formation of aplanospore.

Field No. PM 23 ,Dated 05.9.2017 , pH 6.5 , temperature 230 C , PM 46 ,Dated 05.12..2018 , pH 6 , temperature 160 C Locality : Burdwan

Rock- sample : Red form

Plant body unbranched or very few lateral short branched , cells fusiform ,lenght is 31-36 μm and width 11-12 μm , Cell wall is stratified, partition wall with short constriction Cell containing compact discoid chloroplast with good haematochrome pigment. Lateral cell is isodiametric

Field No. PM 51, Dated 06.01.2018 , pH 6 , temperature 130 C , PM 62 ,Dated 27.02..2018 , pH 6 , temperature 150 C Locality : Burdwan

Tree bark - sample : Green form

Plant body with short lateral branched , cells typical moniliform ,lenght is 20--22 μm and width 13-16 μm , Cell wall is less stratified, partition wall with deep constriction Cell containing parietal laminate chloroplast with good haematochrome pigment. Lateral cell is developed sporangium.

Field No. PM 64, Dated 06.01.2018 , pH 6 , temperature 110 C , PM 67 ,Dated 27.02..2018 , pH 6.5 , temperature 170 C Locality : Burdwan

Acknowledgements

Author expressed gratefully thanks to UGC, New Delhi for financial assistance; to the Department of Botany, RRR Mahavidyalaya , The University of Burdwan for providing laboratory facilities. I also thankful to our revered teacher Prof. P. Sarma for various helps during this research work .

References

1. Bando, T. "A revision of the genera *Docidium*, *Haplotaenium* and *Pleurotaenium* (Desmidiaceae. Chlorophyta) of Japan", Jour. Sci. Hiroshima Univ. Ser. B. Div. 2. , 1988, vol- 22(1), pp. 1-63.
2. Brook, A. J. "The Biology of Desmids" Botanical Monographs. No. 16. Black-Well Scientific Publications. Oxford, England. 1981.pp. 276.

3. Bruhl, P. and K. Biswas , " Indian bark algae" , Journal of the Department of Science of Calcutta University, 1923, vol-5, pp.1-22.
4. Chandra, S. and V. Krishnamurthy, " Studies on succession of subaerial algae in culture", Indian Hydrobiology, 2000, vol-3, pp. 24-38
5. Fritsch, F. E.. "The structure and reproduction of the algae" , Macmillan Co., New York, 1935, Vol. 1. pp. 791.
6. Handa, S. and T. Nakano , " Some corticolous algae from Miyajima Island, Western Japan", Nova Hedwigia, 1998, vol- 46, pp. 165-186.
7. Hariot, P, " Notes sur le genre Trentepohlia Martins " Journals of Botany, 1889, vol - 3, pp. 128-149
8. Kharkongor, D. and P. Ramanujam . "Diversity and species composition of sub aerial algal communities in forest areas of Meghalaya, India", International journal of Biodiversity, 2014, vol-ID-456202, pp.1-10
9. Mikhailyuk, T.I. , " Eusuberial algae of kaniv nature reserve (Ukraine)", Ukrainskii Botanicheskii Zhurnal, 1999, vol-56, pp. 507-513.
10. Neustupa, J. " Investigations on the genus Phycopeltis (trentepohliaceae, Chlorophyta) from South-East Asia, Including the description of two new species", Cryptogamie Algologie , 2005, vol-26, pp. 229-242.
11. Panikkar M.V.N and P.Sindhu, " Species of Trentepohlia from Kerala " Journal of Econ. Taxo. Bot. 1993, vol- 17, pp.199-204.
12. Printz , H . " Subaerial algae from South Africa " , Kongelige Norske Videnskabers Selskabs Sjrifter 1920, vol-1, pp. 3-41
13. Rindi, F., W.D. Guiry and J.W. Lopez-Bautista, " New records of Trentepohliales (Ulvophyceae, Chlorophyta) from Africa", Nova Hedwigia, 2006, vol- 83, pp. 431-449.
14. Saharia, S. " New records of trentepohlia from Assam, India " , Advances in Plant Sciences, 2005, vol- 15, pp. 911-912
15. Smith, G.M. " The freshwater algae of the united states, Mcgraw Hill, USA, 1950, pp. 719.
16. Thompson , R.H. and D.H.Wujek . " Trentepohliales ; Cephaleuros, Phycopeltis and Stomotochroon morphology, taxonomy and ecology" , Science Publishers, Enfield ,NH, USA, 1997,
17. Wehr, J. D. and Sheath, R. G. "Freshwater algae of North America ecology and classification", Academic Press, London, 2003. pp. 918.

