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Algal Biodiversity of the Ruparel River of the Alwar District of Rajasthan

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Abstract

Algae are the gems of the biological world. They have the tremendous kinds of the function in the ecosystem. They play a variety of the role in the food chains and in the biogeochemical cycles. In this research paper, we have try to work to elucidate the algae biodiversity of the Ruparel River of the Alwar district of Rajasthan. The river is the epimeheral and they had the flow of the water in the monsoon area. One can see the tremendous growth of the algae during the monsoon and the winter seasons. Overall, 14 genera of the algae are identified in the water of the Ruparel River. They belongs to the several classes, some of the recognized classes of the algae are as follows these are the chlorophyta, euglenophyta, chrysophyta, cryptophyta, and the cyanophyta. Some of the genera's of the other minor classes are also seen in the water. However, seasonal variations of the algae diversity can be seen very clearly. The genera's are very rich in the monsoon and they are lower in the winter, tremendous decline can be seen in the summer seasons. The algae play a crucible role in the aquatic ecosystem. They form the typical biogeochemical cycles and they are sources of the food chains. However, due to the several kinds of the anthropogenic activity the composition of the algae are decline and the water purity need to be conserve.

Keywords: *Biodiversity, chlorophyta, chrysophyta, declines, euglenophyta, monsoon, Ruparel rivers, summers, winters, xanthophyta*

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INTRODUCTION

Algae are the pioneer's organisms of the plant world. They are ubiquitous in the plant world. They have the range of the thallus from the unicellular to the multicellular thallus. The ranges of the thallus are very large and diverse. They have the distribution generally in the presence of the water. The water may be the fresh water or in some of the cases it may be the phaeophyta are oceanic water. The members of the Rhodophyta and the phaeophyta are limited to the oceanic water. Algae play a dense and the very main role in the biogeochemical cycles of the aquatic ecosystem, the biodiversity of the algae of the several places of the world has been investigated by the workers. Here, in this research article, we are working the biodiversity of the Ruparel river of the Alwar district of Rajasthan [1-6]. The Ruparel river is the ephemeral rivers of the city; however, as large amount of the water can be seen in the monsoon and in the winter seasons, the river produces maximum in the winter seasons and in the monsoon season, the productivity of the river ecosystem is very low in the summers. In this research article, we are trying to find out the algae biodiversity of the river [7-10]. The Ruparel river is located in the ends of the city Alwar. Alwar is near the Delhi and it is the important places of the Rajasthan. The seasonal various in the algae composition can be seen in the river. The river flowing in the large amount of the aquatic fauna and the flora. Some of the members of the eugelenophyta, chlorophyta, chrysophyta, cryptophyta, and cyanophyta are observed in the river. In the monsoon seasons, the amount of the algae is on high and peak. In the summers, due to the desiccation tremendous decline in the algae divert can be observed [11-14].

MATERIALS AND METHODS

Algal taxa's were samples during the summers, winters, monsoon seasons, the samples were collected from the different localities from the rivers, some of them were collected from the bottom and some of them from the margins and some of them were collected from the middle of the rivers. The

samples were collected in the polythene bags, 4% formalin were added to the bags. They were brought to the laboratory and they investigated by the different means. The microscopic observation were taken and they were photographed by the stereo camera. The genera's of the algae were identified by the several monographs were used for the study, some of them were the like the Prescott and the Kutzing, George 1976, Lund 1960, Belcher and Swale 1976, were used for the identification of the algae.

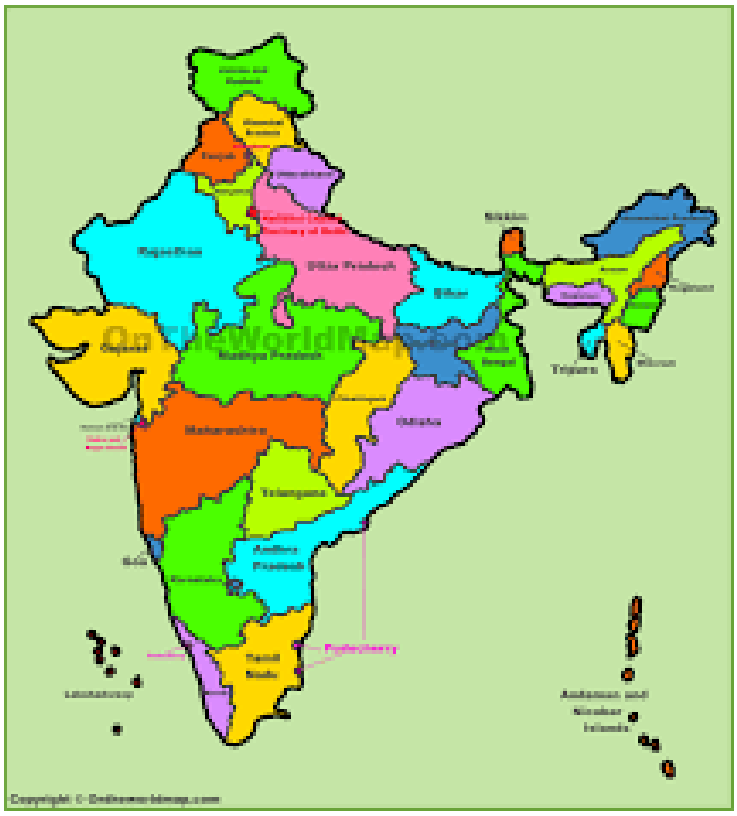

Fig. 1: *India Map Presenting All States (Source: Geography Map).*

Fig. 2: *Rajasthan Map Presenting All Cities (Source: Geography Maps).*

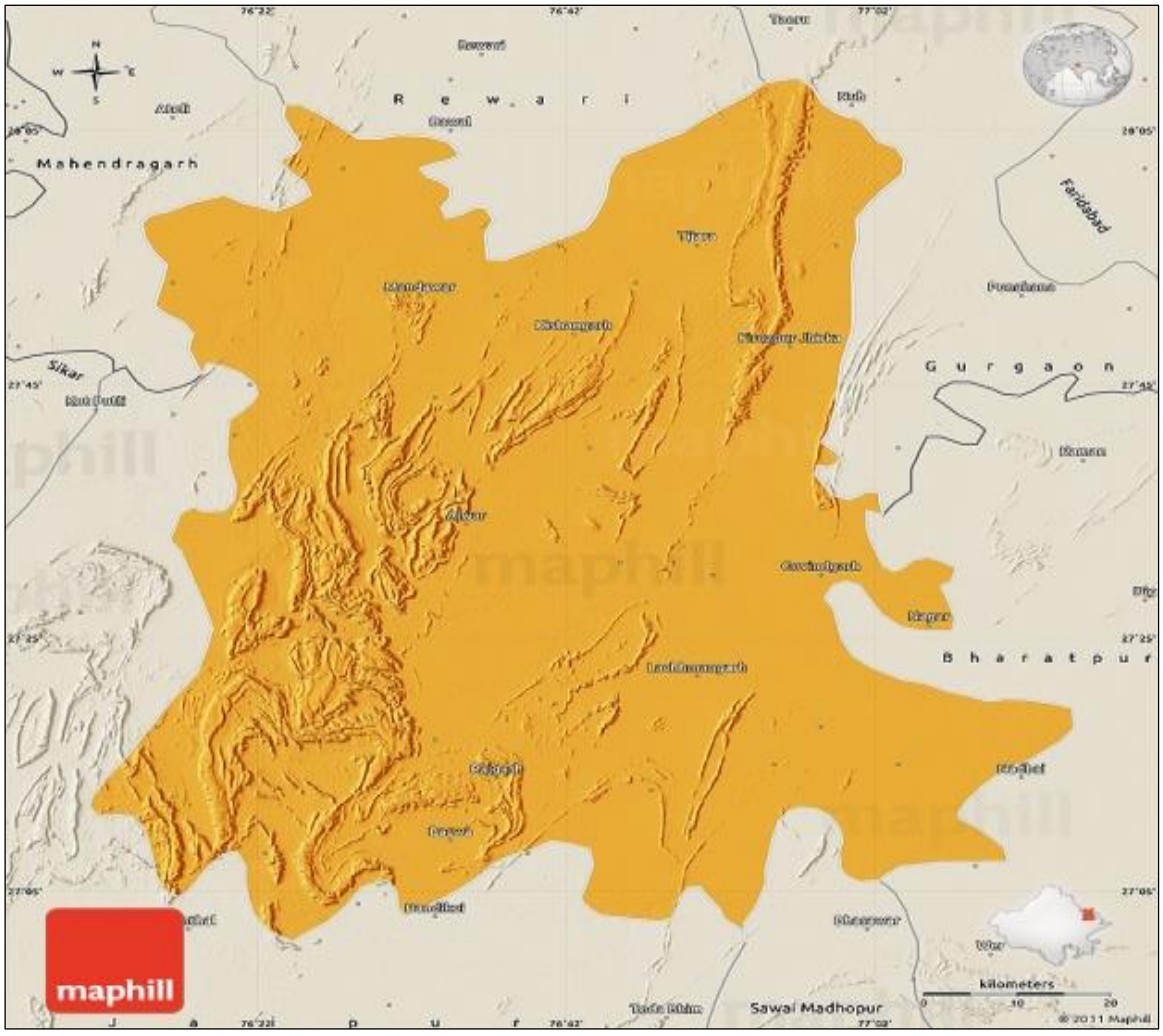

Fig. 3: *Alwar Maps Showing Rivers and Mountains (Sources: Geography Maps).*

RESULT AND DISCUSSION

The analysis of the algae in the Ruparel river shows the presence of the several kinds of the filamentous algae in the water body. They are from the several classes, some of the genera's were of the cyanophyta and some of the genera's were of the chlorophyta and some of them belongs to the euglenophyta chrysophyta, cryptophytes euglenophyta. The sites of the rivers also contain several amounts of the microalgae and some of the diatoms. Some of the genera which are found during the analysis are as follows.

1. **Ulothrix:** This genera belongs to the order ulotricales and it is the best known algal filamentous genera. It is simple unbranched filamentous algae, the chloroplast is large and they are similar to the chlorococcales. They are attached with the rocks when young but later on they are become the free floating.
2. **Chlamydomonas globosa:** The cells of the algae are the biflagellate, the unicellular have the cup like chloroplast, the cells lives in the colony in the forms of the palmelloid forms, the cells are the oval and the half of the body of the cell. They are covered by the chloroplast. They follows the typical of the asexual and the sexual reproduction of the life cycles.
3. **Chlorella vulgeris:** The genus occurs as the small unicells they are present in the from of the palmellid forms, sexual reproduction is not known in the genus, the cells forms the colonies in the forms of the embedded mucilage forms. The asexual spores are of the various kinds and the features have been taken as the point of the taxonomic significances.
4. **Pediastrum:** The genus forms the colony and they are generality in the form of the star like shaped, the peripheral cells

possesses the horn like projections, asexual reproduction occurs by the auto spores formation.

5. **Hydrodyctyon:** The colony are known as the water net some times during the rainy seasons. The whole of the growth of the hydrodicyton blocks the growth of the other aquatic body and they covers the whole of the surfaces.
6. **Oedogonium:** The thallus is the unbranched cells. Asexual reproduction occurs by the fragmentation. The sexual reproduction occurs by the standard growth pattern which is famous for the oedogoniales orders.
7. **Spirogyra:** The characters are of the typical of the as the other algal descriptions in monographs.
8. **Chara:** The characters are of the typical of the as the other algal descriptions in monographs.
9. **Nitella:** The characters are of the typical of the as the other algal descriptions in monographs.
10. **Anabaena:** The characters are of the typical of the as the other algal descriptions in monographs.
11. **Rivularia:** The characters are of the typical of the as the other algal descriptions in monographs
12. **Euglena:** The characters are of the typical of the as the other algal descriptions in monographs.
13. **Lyngbya:** The characters are of the typical of the as the other algal descriptions in monographs.
14. **Zygnema:** The characters are of the typical of the as the other algal descriptions in monographs.

Table 1: *Several Parameters Showing the Changes in the Water Quality.*

Parameters	Winters	Monsoon	Summers
pH	6	8	7
Temperature	15	40-45	25-30
BOD	3.5	7.5	5.5
DO	8.5	6.6	7.5
Salinity ppm	2.5	5.5	7.5

RESULT AND DISCUSSIONS

In the water of the Ruparel river, a number of the genera's are found. They are of the fresh water genera's. The observation of the genus shows that the members of the chlorophyta are abundant and the rest of the genera's belongs to the several minor classes such as the bacillariophyceae, cryptophytes, and cryophytes. Euglena has also been reported in the water. The seasonal variations have been observed in the algal composition of the water. In the monsoon, the algae are the tremendous and they reaches at their peaks whereas in the winter declines in the algal composition can be observed. The summer seasons are very hard and some of the algal genera's goes for the desiccation. So, the tremendous decline of the algal diversity can be seen in the summers. There are several changes can be seen in the pH, turbidity, salinity, and the BOD and DO of the water of the Ruparel rivers. The algae flourish well in the clean water; however, due to the several kinds of the anthropogenic changes the pH, salinity, and the turbidity and the BOD changes according to the contents of the water. During the two decades, the author has their own observation that discharges of the cities as well as several kind of the pollutants enhances the pollution of the water. Theses physiochemical changes of the water results in the changers in the changes in the diversity of the algae. The cyanophyaceae members are abundant in the rainy seasons and the monsoon the chlorophyceae as well as the diatoms and the dinoflagellates can be observed. However, there are several changes in the algae composition during the three to the four decades. So, the river needs to be clean by the government and the public efforts.

CONCLUSION

Overall, this is the short efforts of the algae composition of the Ruparel river of the Alwar distract of Rajasthan. The algae are the pioneer of any kinds of the ecosystem and they play a very crucial role in the aquatic ecosystem. More study are needed for the evaluation of the metabolic composition of the algae.

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