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DISTRIBUTION PATTERNS OF ALGAE IN DIFFERENT HABITATS AT REWA DISTRICT (M.P.)

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ABSTRACT: Rewa is also known as the land of white tigers. District Rewa and its surrounding area are large number of natural and manmade water bodies, Most of the running waters have shown natural and tropical condition. Whereas, most of the confined waters represented by manmade reservoirs, Talab and tanks. In present investigation these habitats proved themselves to have favorable conditions for luxuriant growth of a number of algal forms. A total number 245 species belonging to 88 Genera of different algal groups have been identified from present aquatic, sub aquatic and different habitats. The main algal group and their species composition have shown the following dominating trend as their number of species is concerned.

Chlorophyceae>Cyanophyceae>Bacillariphyceae>Euglenophyceae>Rhodophyceae

KEYWORDS :Distribution Patterns, Climate, Habitats, Algal forms, Genera, species

INTRODUCTION

The distribution of organisms and their interaction with environment is called as "pattern" (Hutchinson 1953). Therefore, many forms found in an ecosystem exhibit a number of arrangements in the standing crop of species and contribute a definite pattern of diversity. Thus, variety of species and their relative abundance in different localities forms a structural pattern in a community. The term habitat or ecological niche includes not only the physical space occupied by a species but also its functional role in the community conditions.

The organism occurring in fresh water environment may be classified as to their habitats and life forms i.e. Bentho: inhabiting on bottom, periphyton: attached on stems and leaves of rooted plants, plankton: floating micro-organism, nekton: swimming organisms and Neuston organisms resting on the water surface.

MATERIAL AND METHODS

The algal forms belonging to different group of algae were collected continuously month wise one full year from different localities at Rewa. Fresh algal materials have been used for preparing slides and Draw Camera-Lucida Diagram for identification of algal materials. Identification of algal forms have been made with the help of different monographs regarding different groups of algae and related literature viz Agarkar 1975 , Agarkar & Agarkar 1977 Desikachary 1959, 1966 and Singh 1982 .

OBSERVATION

In present study a number of algal forms were collected from different ecological habitats. During the entire course of present study species of algal forms were collected from the different investigated water bodies. The various species recorded in present investigation have a number of distribution patterns in relation to different habitats. They have also shown a relation with seasonal as well as spatial changes. The members belonging to class Chlorophyceae, Cyanophyceae, Bacillariophyceae, Euglenophyceae and Rhodophyceae have shown not only condition and wide distribution but also incontinuous distribution and different degree of abundance. It is apparent that some algal species were recorded from a large number of localities while some have been documented to every class were noted to occurring common, abundant and rare in selected stations.

Among chlorophyceae Ankistrodesmus falcatus, kirchneriella lunar Selenastrum gracile Dimorphococcus lunatus, Dictyospharium pulchellum, Oocytis elliptica, Pediastrum duplex, P.simplex, P.ovatam, Scenedesmus quadricauda, S.arcuatus, S.dimorphus, Pithophora polymorpha, Coleochaete nitellarum, Oedogonium randhawae, O. undulatam, Spirogyra parvula, S.cylinrica, S.microspora, Netrium digitus, Gonatozygon aculeatum, Closterium ehrenbergii, C. kuetzingii,

Pleurotaenium trabecla, Euastrum bidentatum, Cosmarium javanicum, C.kuetzingii, Pleurotaenium, C.regnelli, and Chara zeylanica were found to be present in every lake investigated in present study. Hence, they have shown a wide distribubtion in comparative to other Chlorophyceans. Whereas, Chlorella vulgaris, Gloeotaenium loitlesbergerianum, Tetraedon trigonium, Nephrocytium lunatum, Hydrodictyon reticulatum, Uronema gigas, Nephrocytium lunatum, Uronema gigas, Microspore quadrata Cladophora glomerata ,Drapernaldiopsis indica, oedogonium borisianum, Mougeotia indica, M. nummuloides, Zygnema normanii, Z czurdae, spirogyra deadalea, S. pseudoneglecta, Cosmarium obsoletum, Euastrum subtellatum, have shown a restricted and rare occurring as they have been collected from a certain water body. Other Chlorophycean have shown moderate distribution and have been documented from two or more water bodies. About 44% of the total chorophyceans representing present water bodies have been noted to be planktonic, 40% floating, 9% epiphytic and epizoic, about 7% were recorded from other sub-aquatic habitats.

Scenedesmus quadricauda, S. dimorphus, Mougeotia drouetii, Spirogyra margaritata, S.parvula, Closterium nematodes, Pleurotaenium eherenbergii, Cosmarium subtumidum, recorded from all the investigated lotic waters, while other members inhabiting in lotic water have shown a discontinuous distribution.

The most common Chlorophyceans inhabiting lentic and lotic waters were represented by Chlamydomonas snowii, C. polypyrenoideum, Chlorococcum humicola, Dimorphococcus lunatus, Coelastrum microporum, Scenedesmus arcuates, S.dimorphus, S.quadricauda, Mougeotia sphaerocarpa, M.transeaui, Zygnema sphaerica, S. subsala, Netrium digitus, Gonatozygon aculeatum, closterium nematodes, C.moniliferum, C.kuetzingi, C.eerenbergii, Euastrum denticulatum, E. irregular, Pllurotaenium trabecula, Euastrum rostrum, Cosmarium javancum, auriculatum, C. regnelli, C. subtumidum, Micrasterias pinnatifida M. radians, Onychonema leave.

Oocytis elliptica, Ankistrodesmus falcatus, Kircheriella lunaris, Selenastrum gracile, Dictyosphaerium pulchellum, Dimorphococcus lunatus, Pediastrum microporum Scenedesmus quadricauda, S.arcuatus, S.dimorphus, Pithophora polymorpha, Coleochaete nitellarum, Oedogonium randhawae, O. udulatum, spirogyra neglecta, S. paludoso, S. brunnea, S. cylinderica, Netrium digitus, Gonatozygon aculeatum, Closterium kuetzingi, C. eherenbergii, C.lanceolatum, pleurtaennium trabecula, Euastrum bidentatum, cosmarium javanicum, C.auriculatum, C.regnelli, and Chara zeylanica have been recored as the algal members forming the major bulk of lentic chlorophyceae.

The cyanophyceans documented form present investigated waters have also exhibited wide as well as restricted patterns of distribution. Microystis flos-aquae, Dactylococcopsis fascicularis, Aphanocapsa pulchera, Oscillatoroia princeps, O. amphibian, Anabaena spiroides, A. sphaerica, and Gloeotrichia natans were recorded from most of the lentic and lotic waters; hence, they have exhibited a wide distribution among Cyanophycean members.

Aphanothece stagnia, Merismopedia glauca, M. marsonii, M. elegans, M. tenuissima, Spirulina prineps, S. gigantea, S. laxissima, Oscillatoria chalybea, O. calcuttensis, O. pseudogeminata, O. ambiguum, phormidium favosum, microcoleus chthnoplastes, Lyngbya spiralis, Anabaenopsis circularis, Anabaena volzii, A. circinalis, Nodularia spumigena, Scytonema myochrous and Gloeotrichia intermedia were recorded only from lentic water stations. Whereas, Aphanocapsa koordersi, A. littoralis, oscillatoria limosa, O. annae, O. subfuscum, Lyngbya limnetica, L. rubida L. major, Anabaenopsis tanganyikae, Nostioc species, Scytonema pascheri, S. bohnerii, Rivularia aquatic, and Nostochopsis lobatus were documented only from lentic waters.

Microcystis species, Aphanothece sps., Merismopedia sps., Dactylococcopsis sps., Oscillatoria sps., spirulina sps., Anabaena sps. and Gloeotrichia sps. Have contributed the main bulk of Cyanhyceans in present study. About 20% Cyanophyceans were recorded to be planktonic, 28% free floating, 21% inhabiting inhabiting in moist soil, 9% epiphytic, 4% litophytic, while other 16% members were found to be inhabiting as fixed forms on other objects.

Bacillariophyceans have exhibited a continuous and wide distribution pattern of diversity. Synedra ulna, Navicula Viridula. N.cryptocephala, Gomphonema subapicatum, Dinnularia acrosphaerica Cymbella tumida, C. aspera, and Nitzchia palea have been found to be appeared not only as most dominating forms in all the investigated water bodies but also widely distributed forms amongs Bacillariophyceans. However , cymbella tumida Gyrosingma attenuatum, Rhopalodia gibba have been recorded to be restricted in lentic waters. It is interesting to note that most of the Bacillariophyceans were found to have planktonic nature, while a few members were also collected from certain subaquatic habitats.

Among Euglenophyceans only phatalea, and Trachelmonas hispida have shown their restricted and lentic habitats whereas the other planktonic Euglenophyceans have exhibited their occurrence in most of the investigated water bodies.

The most dominating and forming the main strength of Euglenophyceans in present study may be recognized as Euglena acus, E. elastic, E. Oxyuris phacus meson, P. curivcauda, P. orbicularis and P. platalea. Most of the Euglenophyceans recorded as planktonic forms. Batrachospermum moniliformae, and compsopogon aeruginosus, have represented Rhodophyceae and were collected only from lotic stations as lithophytic and floating forms respectively.

RESULT AND DISCUSSION

The chlorophyceans forming the largest combination of algal species have represented about 53% of the total species whereas cyanophyceans, was ranking second constituted 34% species. The Bacillariophyceans and Euglenophyceans contributed 7.0% and 4.5% respectively, while Rhodophyceans have been noted to the most rare group of algal species that constituted 0.83% of the total composition.

125 species of Chlorophyceae belonging 48 genera have been collected from littoral, limnetic, subaquatic and epiphytic habitats. They were noted to occur in all the seasons and in most of every kind of aquatic condition with summer peak and a decline in monsoon About 44% Chlorophyceans have been recorded as planktonic, 40% free floating 9% epiphytic and epizoic, and about 7% were subaquatic.

The most dominant group among Chlorophyceans was order conjugales which represented 72 species belonging to is genera. Next to conjugales chlorococcales appeared as second largest algal group which is represented by a number of 29 species belonging to is genera.

A number of 84 species belonging to 24 genera have represented the group Cyanophyceae at present waters. Its order Nostocales seems to be the most abundant group that is represented by 15 Genera and 64 species. While the order stigonematal was represented by only one species i.e. Nostochopsis lobatus recorded only from Chachai fall.

Among Bacillariophyceans 17 species of 11 genera have been documented in present study. The most common are Melosira granulata, Cymbella tumida, C. aspera, Synedra capitata, S. tabulate, S. ulna, Navicula cuspidata, pinnularia species, Rhopalodia gibba, Gyrosigma attenuatum, Gomphonema subapicatum and Nitschzia specieswere recorded as the most common and abundant from most of the water bodies. Luxuriant growth of diatoms was noticed during winter and post winter months. The presence of maximum diatoms in winter months wass also recorded by a number of workers i.e. Roy (1955), Laxminarayan (1965), Vankateshwaralu (1969).

Euglenophyceans were observed throughout the year and were represented by 10 species belonging to 03 genera at present sampling sites. Most of the Euglenophyceans except Trachelmonas hispidahave been recorded from all the lentic and lotic water bodies. The maximum number of species recorded post monsoon onwards. The same trend was also reported by Chakravarty et.al.(1959), venkateshwaralu (1969).

Class Rhodophyceae was represented by three members namely Batrachospermum, moniliformae ,Compsopogon aeruginosus and Aerochaetium indica (singh el.al. 1982) A lithopytic member of this group Batrachospermum moniliformae and Aerochaetium indica where recorded only from Chachai fall while Compsopogon aeruginosus noted from Bichiya river near Jayntikunj. These forms which have been observed to flourish only in winter months.

The present study further reveals that the high algal Vegetation reached during summer and early monsoon month. More or less same behavior of algal species was also reported by Munawa (1947).

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