

Chlorophycean Diversity of Selected Ponds in Ettur nagaram Wildlife Sanctuary, Warangal District, Telangana, India

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ABSTRACT

The present investigation was mainly aimed for to know the Chlorophyceean diversity of selected ponds in Eturnagaram wildlife sanctuary, Warangal District of Telangana, India. The study was carried out for 6 months survey of Chlorophyceean taxa, which deals with the planktonic, epithelic and benthic algae of ponds were studied. The total 38 taxa of Chlorophyceean members have been recorded. This study was carried out during the months from 2015 December to May 2016. The samples were taken from five fixed ponds during the dry season of the year.

Key Words

Wildlife sanctuary, Ponds, Chlorophyceae, Diversity

Introduction

Indigenous fresh water systems are the hot spot of diverse and rare algal components as a result of varying micro habitats. Diversity in these localities is determined by habitat modification, harvest of native species and accidental introduction of exotic species. Algae, the principle primary producers, are photosynthetic thallophytes, usually microscopic, unicellular, and colonial or multi cellular organisms which perform the maximum quantum of photosynthetic activity than any living organisms in this world. Many forms spread throughout the water body and cause turbidity of water and algal blooms (Girish Kumar, 2014). Knowledge regarding the ecology of pond water is important tool for their systematic study (Ambili et al. 2015). The planktonic study is a very useful tool for the assessment of water quality and productivity of any type of water body and also contributes to understanding of lentic water bodies (Pawar et.al 2006). The maintenance of healthy aquatic ecosystem is dependent on the biological diversity of the ecosystem and the abiotic properties of water (Harikrishnan, et.al, 1999).

Algae are a large and diverse group of simple, typically autotrophic organisms, ranging from unicellular to multicellular forms (Casamatta et al., 1999). In aquatic ecosystems phytoplankton play an important role in the ecology of water bodies through primary production. Studies on planktonic composition are necessary to acquire basic knowledge on the biodiversity status of a water body. Algal flora varies from season to season and an important feature of freshwater algal flora is its cosmopolitanism. Latha and Ramachandra Mohan (2010), Leela *et al.*, (2010), Ramadosu and Sivakumar (2010) and Chinnaiah et al., (2011) studied on various fresh water bodies and described different algal groups and its population.

Materials and methods**Location**

Eturnagaram Wildlife Sanctuary is home to some scenic terrains, gorgeous tigers and rare species. Explore some interesting landscapes here. Eturnagaram Wildlife Sanctuary, located in the southern state of Andhra Pradesh, is a haven for wildlife enthusiasts and nature lovers from across the globe. The sanctuary is situated in Eturnagaram village of Warangal District and it is approximately 250 kilometers away from the capital city of Hyderabad. Sprawling across 806 square km, this is one of the oft-visited and oldest sanctuaries in the country. Situated at a meeting point of the borders of Maharashtra, Andhra Pradesh and Madhya Pradesh, Eturnagaram Wildlife Sanctuary boasts of scenic terrains, undulating landscapes and a plethora of exotic species of flora and fauna. About 3/4ths of the area occupied by the sanctuary is plain land and the rest is defined by small hills, plateaus, springs and small streams. This protected region is flush with tropical forms of vegetation, dry deciduous trees, shrubs, herbs and plenty of grasses covering a major portion of its landscapes. The Eturnagaram Wildlife

Sanctuary is also known for its tall trees like those of Teak, which shoot up to a height of 60 feet and more.

Dayyam Vagu is a perennial source of water in the Eturnagaram Wildlife Sanctuary. It divides the sanctuary into two halves and provides valuable resources for the animal and plant life within. Home to plenty of varieties of avian life, birds, fish, reptiles, animals and insects; Eturnagaram Wildlife Sanctuary has an important place in the eco-tourism map of India. (Map 1).

In the present work an attempt has been made to assess the *Chlorophycean* diversity of selected ponds in Eturnagaram wildlife sanctuary, Warangal District of Telangana, India. Comparative study of various stations of the ponds are unique. This type of study in this wildlife sanctuary is first time in the history. As the area of research is rich with various water resources, it is quite possible that there could be some difference in algal composition among the different ponds. The selected ponds are located in Bhuttaram (Station I), Royyur (Station II), Ettur (Station III), Santhigudem (Station IV) and Kannayigudem (Station V).

Phytoplankton collection

Phytoplankton samples were collected monthly from the four selected stations of the river for a period of six months, December 2015 to May 2016. The collections were made early in the morning by using a standard plankton net (No.25) with 30cm mouth diameter and length of 1m. 100 liter of surface water was filtered and the filtrate was put into a clean labeled plastic containers. The volume of the concentrate was adjusted to 25ml and it was preserved immediately with 4% formalin for further analysis.

Counting

From the collected and concentrated filtrate 1ml of the sample was taken, after shaking the concentrate in order to get an even distribution of planktonic organisms for analysis. The analysis was repeated for 10 times and computed. The average number is expressed in per cubic / meter.

Identification

The collected microalgae were identified by using standard literatures (Desikachary, 1959; Prescott, 1978; Anand, 1998). An artificial key was prepared after observing the important character of all forms collected and their systematic position is given below following Fritsch (1935) classification.

Result and conclusion

In the present investigation there are total 97 algal taxa belonging to 5 class's viz. Chlorophyceae, Bacillariophyceae, Cyanophyceae, Euglenophyceae and Xanthophyceae were found. In the class Chlorophyceae mainly represented by the species of, Micrasterias, Oedogonium, Phytoconis, Spirogyra, Scenedesmus, Pediastrum, Coleochaete, Bulbochaete, Chlorella. From this class 38 taxa of 32 genera of this class were recorded during the study period from various stations (Table 1). It would be obvious from present investigation that, the green algae, in the dominant members, diatoms and blue greens were the predominant members of phyto-cenose of this biotope of five ponds in the wildlife sanctuary.

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Table 1. List of Chlorophycean Algae Found in Different Ponds of Etturagaram Wildlife Sanctuary

Name of the algae	Station I	Station II	Station III	Station IV	Station V
<i>Arthrodesmus fuelebornes</i> , schm	+	+	+	-	+
<i>Botryococcus bracinii</i> Kuetz	+	+	+	+	-
<i>Bulbochaete insignis</i> , pringsh	-	+	-	+	-
<i>Chlorella vulgaris</i> , Beij	-	+	-	+	+
<i>Chlorococcum humicolo</i> (Naeg) Raben	+	-	+	+	-
<i>Coelastrum microporum</i> , Beyne	-	+	-	-	-
<i>Cosmarium botrytis</i> (Menegh)	-	+	-	-	+
<i>Coleochate soluta</i> (Breh)	-	-	-	+	-
<i>Closterium moniliferum</i> (Bory)Ehrenb	+	-	+	+	+
<i>Closterium ceratium</i> (perty)	+	+	+	-	-
<i>Chlamydomonas gigas</i> , Fritsch	+	-	+	-	+
<i>Crucigenia lauterbornei</i>	+	+	+	+	-
<i>Desmidium grevilli</i> (Kuetz)	+	+	+		+
<i>Euastrum spinulosum</i> (Delponte)	+	+	+	+	+
<i>Hyalotheca mucosa</i> (Dill)	-	+	-	-	-
<i>Kirchnerilla lunaris</i> (Kirch) Moebius	-	-	+	-	+
<i>Micrasterias malabuleshwarensis</i>	+	-	-	-	+
<i>Mesotaenium macrococcum</i> (Kuetz) Ray.	-	-	-	+	-
<i>Oedogonium echinospermum</i>	-	+	+	-	+
<i>Oocystis elliptica</i> (west & west)	+	+	+	-	-
<i>Pithophora mooreana</i> (cellins)	+	+	+	+	-
<i>Penium borgeanum</i> (Skiya)	+	+	+	+	+
<i>Pediastrum duplex</i> , meyan	-	-	-	+	+
<i>Pediastrum tetras</i> (Her; Rarrs)	-	+	-	-	+
<i>Pleurotaenium verucosum</i> (Ball) Lund	+	+	+	+	-
<i>Rhizoclonium hieroglyphiarum</i> (west)	+	-	-	-	-
<i>Scenedesmus quadricauda</i> (Jerpín; Brob)	+	-	-	-	+
<i>Staurastrum setigerum</i> (Nordst)	+	+	+	+	-
<i>Stigeoclonium tennue</i> (Rabenb)	+	+	+	+	-
<i>Tetraedron regulare</i> , (pres)	-	+	+	+	+
<i>Tetraspora gelatinosa</i> , vauch, Desvaur	-	+	-	+	+
<i>Thamniochaete huberi</i> (Gay)	+	-	+	+	+
<i>Ulothrix zonata</i> (weber et Mohr, kuetz)	-	-	+	+	-
<i>Zygnema pectinatum</i> , Rao	+	-	-	+	+
<i>Spirogyra decimina</i> (Kuetz)	+	-	+	-	-
<i>Staurastrum setigerum</i> (Nordst)	+	-	-	-	-

+ Present

- Absent

Map 1. Showing the research location

