

## **DIVERSITY OF FRESH WATER ALGAE IN TRIVENISANGAMAM OF NIZAMABAD DISTRICT, TELANGANA STATE. INDIA**

**B. Ramesh and M. Aruna\***

Department of Botany, Telangana University, Dichpally, Nizamabad, (T.S). India

---

**ABSTRACT:** *Kandakurthi is a village in Renzal mandal of Nizamabad district where we find Trivenisangamam, the confluence of River Godavari, River Manjeera and River Haridra. The aim of the present study is to explore the algae from different sites of Trivenisangamam. In order to study the algal biodiversity algal samples were collected from four sites in sterilized bottles and were brought to the laboratory. All the collected samples were preserved in 4% formalin and were examined under binocular microscope for identification. Identification was done with the help of standard literature. The genera identified majorly belonged to the classes, Chlorophyceae, Cyanophyceae Charophyceae and Bacillariophyceae. Observations revealed that Chlorophycean members were dominant followed by Cyanophycean and Bacillariophycean members.*

**KEYWORDS:** Algal Biodiversity, Trivenisangamam, Renzal Mandal, Nizamabad

---

### **INTRODUCTION**

Triveni sangamam is a holy place in Renzal Mandal of Nizamabad district in Telangana State. Triveni Sangamam is confluence of River Godavari, River Manjeera and River Haridra . The study period Sept2013 to Dec 2014 observations were made and different groups of algae were identified. Algae are major producer of organic compounds. It has an important position in aquatic food chain. Since algae indicate the levels of pollution in water bodies as bio indicator and it also helps to determine the quality and conservation of water (Palmer, 1980), but not much attention has been paid with reference to their occurrence and distribution in different lotic and lentic water bodies. Considerable amount of work has been done on Trivenisangamam about systematic survey, distribution, productivity and ecology of algae in different habitats.

India is a land of many rivers. Trivenisangamam is holy place in Telangana State. In India, the studies on river ecosystems have attracted the attention of quite a few investigators in last few decades, e.g. Roy (1955), Choko and srinivasan (1955), Kudesia and Sharma (1981) and Mathur (1990) Raghuwanshi et.al(2011). The Trivenisangamam has not received little attention from botanists, ecologists and specially algologists as such and moreover the scientific approach was not holistic. Even in dealing with the floristic pattern, habitats of various algal groups were overlooked. Algae play an important role to purify the water by photosynthesis. In other words it helps in the process of rejuvenation of rivers (Sharma. 2005). .(Pandey,1973; kumar et.al 1974; Prasad and Suxena,1980; Mohan et.al 1989). A number of investigations were carried out on fresh water lakes of Peninsular and continental Antarctica. Hirano,1965; Heywood,1977; Longton,1973; Seaburg et.al1979; Iyengar and Venkatraman 1951 observed seasonal succession of the Coover river of Madras with special reference to Diatomaceae. Cyanophycean diversity has been extensively studied throughout India. (Tiwari et.al 2001; Pattnaik and Adhikary,2002; Chatterjee and Keshri, 2005).

However, industrialization has also posed threat to water quality by effluent discharge and sewage disposed in Trivenisangamam by the confluence of three rivers Godavari, Manjira and Haridra. This has led to eutrophication and change in ecosystem Trivenisangamam. In the present study algal flora of Trivenisangamam was studied and the biodiversity was measured.

## **MATERIALS AND METHODS**

### **Study Site**

The main aim of the present study is to explore the algae from different sites of Triveni Sangamam during the period Sept-2013 to Dec-2014. During this period total four sampling sites namely joining point of river Godavari (S1), joining point of river Manjira (S2), joining point of river Haridra (S3), and Kandakurthi ghat (S4) were selected for the phyecological study of Trivenisangamam.



**OVER VIEW OF TRIVENISANGAMAM**

### **Mode of Collection**

Periodic collection was made at monthly intervals from four sampling sites of Trivenisangamam, throughout the investigation period. Algal samples were collected in sterilized bottles from the surface and bottom by using samplers.



### **Preservation**

All those collected algal samples were preserved in 4% formalin solution and deposited in hydro biology laboratory of Dept. of Botany Telangana university.

### **Identification**

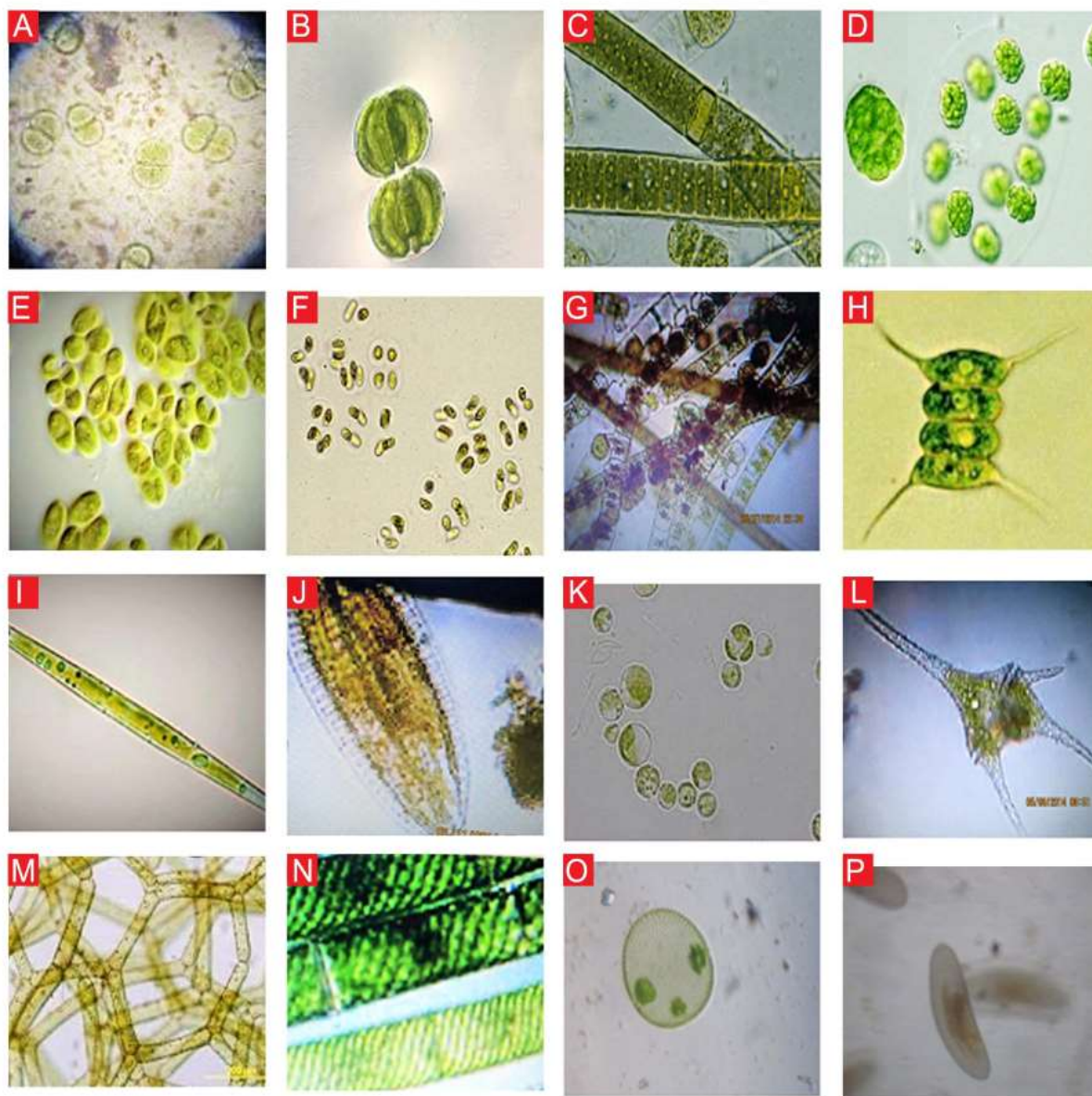
Algal samples were observed under binocular Microscope for further identification.

Identification was done with standard literature and other related research books like Fritsch (1935)Smith(1950),Prescott(1951),A.B.Gore,Desikachary,Venkatraman(1951) and Philipose (1967).

### **Microphotographs**

Microphotographs of identified genera were taken with the help of Canon 16.0 mega pixels digital camera attached to the binocular microscope.

**MICROSCOPIC VIEW OF FEW ALGAL GENERA IDENTIFIED  
IN TRIVENISANGAMAM**



A) *Chroococum*    B) *Cosmarium*    C) *Oscillatoria*    D) *Pandorina*  
E) *Oosystis*    F) *Gleocapsa*    G) *Anabaena*    H) *Senidesmus*  
I) *Synedra*    J) *Navicula*    K) *Chlorella*    L) *Dinoflagellates*  
M) *Hydrorhynchon*    N) *Spirogyra*    O) *Volvox*    P) *Cymbella*



**RESULT AND DISCUSSION**

As phycological study of water samples the presence of algal groups are very abundant in all sites. These algal members indicate the levels of water pollution in the river as bio-indicators. And also indicate quality and conservation of water. Observation of phycological studies of water samples revealed the abundant growth of three groups of algae belongs to

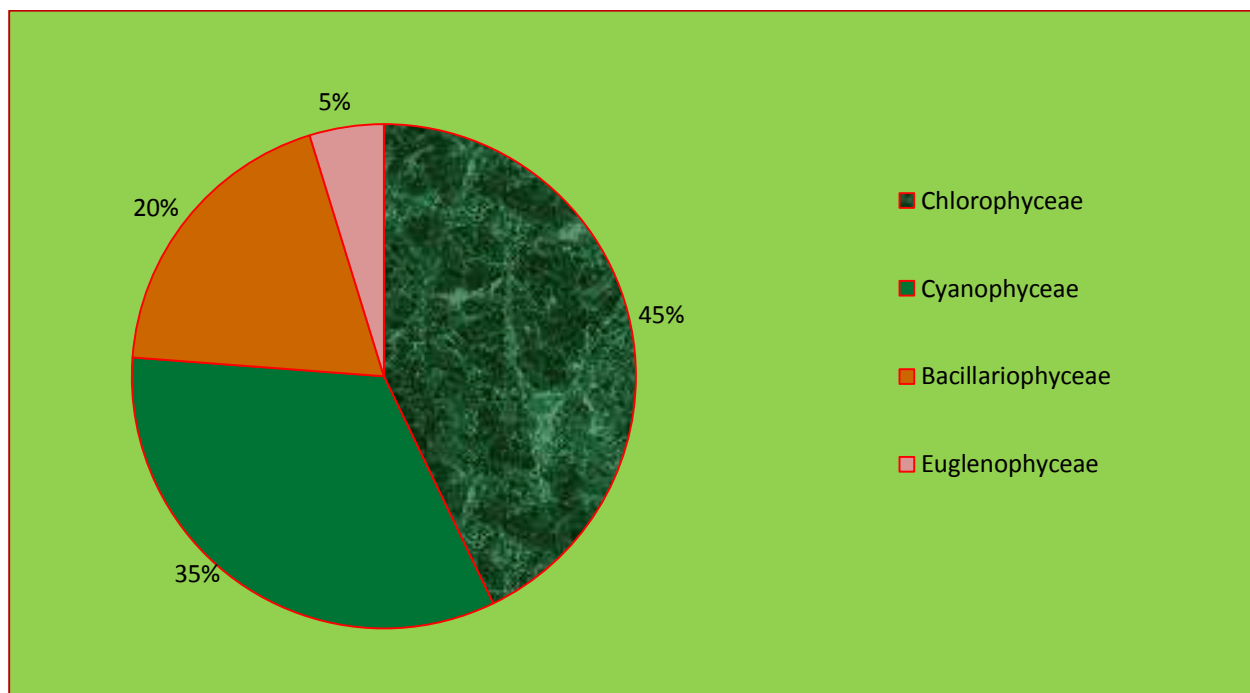
*Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae* altogether 35 genera 40 species algae were recorded in present investigation. Most of the algal genera identified majorly belonged to the classes ,Chlorophyceae,Bacillariophyceae,Cyanophyceae and Euglenophyceae.

Observation revealed that Chlorophyceae members were dominant followed by Cyanophycean and Bacillariophycean members.

Among these *Chlamydomonas, Volvox, Pediastrum, Spirogyra, Cladophora, Desmids*, were found to be abundant.

**Phycological Analysis of Water Samples****List of Algal Species Identified in River Majira**

<i>CHLOROPHYCEAE</i>	<i>Pediastrum duplex, Pediastrum simplex</i> <i>Chlorella vulgaris, Oocystis spp, Volvox spp</i> <i>Scenedesmus acuminatus, Euastrum spp</i> <i>Hydrodictyon reticulatum, Staurastrum spp</i> <i>Selenastrum bibrainum, Closterium acutum</i> <i>Chlamydomonas spp, Cosmarium corda</i> <i>Pandorina morum, Ankistrodesmus falcatum, Cosmarium</i> <i>cyclecum, Chara coralina, Nitella mirabilis,</i>
<i>CYANOPHYCEAE</i>	<i>Chroococcus minimus, Gloeocapsa spp, Microcystis</i> <i>aeruginosa, Anabaena spp, Oscillatoria amphigranulata,</i> <i>Anabaenopsis spp., Nostoc, Spirulina spp, Cylindrospermum</i> <i>spp, Scytonema spp.</i> <i>Oscillatoria limnosa, Lyngbya major,</i>
<i>BACILLARIOPHYCEAE</i>	<i>Cyclotella spp, Synedra ulna, Navicula cuspidate, Pinnularis</i> <i>gibba, Cymbella affinis, Nitzschia acicularis, Amphora spp,</i> <i>Melosira spp. Pinnularia viroidis, Pinnularia</i> <i>clasterium, Pinnularia tabulate.</i>
<i>EUGLENOPHYCEAE</i>	<i>Euglena acus, Euglena viridis</i>

**Graphical Representation of Algal genera****REFERENCES**

- Chacko, P.I. and Srinivasan, R.**, Observation on hydrobiology of the major river of Madras State, South India, *Contr. Fresh Biol. Stn. Madras*, 13: 1-16 (1955). 5.
- Chatterjee, S. & Keshri, J.P. 2005.** Boozia (Cyanophyta) in West Bengal, India with the **Desikachary, T.V. 1959.** "Cyanophyta." Pub. By *Indian Council Ed Agricultural Research*. New Delhi
- Fritsch, F.E. 1935.** The structure and reproduction of the algae. *Vol I*. University Press
- Heywood, R.B. 1977.** Limnological survey of Ablation Point area, Alexander island. *Antarctica- Phil. Trans. Roysl- Soc. London. B* 279. 39-54.
- Hirano, M. 1965.** Fresh water Algae in Antarctic regions. In *P. Ven- Meighen. P. Van Dye and J. Schell.* (eds). *Biogeography and Ecology in Antarctica*.
- Iyengar, M.O.P and Venkatraman, G. 1951.** The ecology and seasonal succession of the river coover at Madras with special reference to Diatomatiaceae. *J. Madras Univ.* 21: 140-192.
- K. Raghuwanshi et.al (2011)** Biodiversity of Narmada river vol 6(1) 91-93.
- Kudesia, V.P. and Sharma, S.**, Physicochemical Characteristics of river Kali Nadi at Meerut. *IAWPC Tech. Allual* 8: 168 (1981).
- Kudesia, V.P. and Sharma, S.**, Physicochemical Characteristics of river Kali Nadi at Meerut. *IAWPC Tech. Allual* 8: 168 (1981).
- Kumar, H.D., L.M. Bisaria, B.G Bhandari and V. Sharma. 1974.** Ecological studies of algae isolated from effluent a refinery fertilizer factory and a brewery. *Indian. J. Environ. Health.* 16 (3): 247-265
- Longton, R. E. 1973.** A Classification of terrestrial vegetation near M-C Murdo sound

**M.Aruna et.al** J.Of.Pharm.and Chemical research 2014(1).235-238.

**Mathur, M.**, An ecological study of the algal flora of the river Narmada at Hoshangabad. Ph.D. thesis (1990)

**Palmer, C.M.**, Algae and water Pollution Castle house publication Ltd., U.S.A., 1-123 (1980).

**Pandey, S.N. 1973.** Studies on distribution peridiocity and some ecological aspects of

**Pattanaik, B. 7 Adhikary,P. 2002.** Blue green algal flora at some archeological sites and monuments of India. *Feddes Reported* 113. 289-300.

**Philipose, M.T. 1959.** The chlorococcales. I.C.A.R. New Delhi.

**Prasad B.N. and M. Suxena 1980.** Ecological study of blue green algae in the river Gomti. *Indian. J. Environ Health*, 22 (2): 151-168

**Prescott, G.W. 1951.** Algae of western great lake areas. Cranbook Institute of Sciences

**Roy, H.**, Plankton ecology of river Huoghli (West Bengal) *Ecology* 36: 169-175 (1955).

**Sharma. P.D.**, Environmental Biology and Toxicology. 290-91 (2005).

**Tiwari, O.N. Dha, D.W, Tiwari, G.L and Singh, P.K. 2001.**