

Phytoplankton diversity in the upstream region of Achankovil river of Kerala

MEERA KRISHNAN, PRAVEEN DHAR T, SREEJAI R AND SREEJA THANKAPPAN

Mahathma Gandhi College, Thiruvananthapuram, Kerala, Research Center, Kerala University

Received: December, 2019; Revised accepted: February, 2020

Phytoplanktons are the self-feeding organism of the major group of the planktonic community and a key part of oceans, seas and freshwater ecosystems. Phytoplankton serves as the base of the aquatic food web. The phytoplanktons serve as major component of energy flow in food chain. Water quality and other biotic communities in water control the Phytoplankton diversity and density. Distribution of Phytoplankton and their variation at different zones of water body is affected by physicochemical parameters of water. Study of Phytoplankton provides a relevant and convenient point of focus for research on the mechanism of eutrophication and its adverse effect on aquatic ecosystem (Shinde *et al.*, 2012). The present investigation focused on the excavation of algal diversity of upstream region of a fresh water river Achankovil of Kerala.

The river Achankovil originates from the hills of Achankovil and also known as Achankovilaaru. The river is about 128 kilo metres long and is brimming with flora and fauna on its either bank. The water samples were collected from the upstream of the Achankovil river in forest division, once in a Month, from November to October 2019. Water samples were collected during the morning time. Phytoplanktonic forms were collected by plankton net Number -20 silk bolting cloth. Phytoplankton sampleS were allowed to settle by adding Lugol's Iodine and adding 4% of formalin for the preservation. Macro algae and attached micro algae were collected by manually. Microscopic observation was done by light microscope and algae were identified with the help of Fresh water algal key established by Desikachary (1959), Prescott (1982) and Philipose (1967).

Present research investigations explore the phytoplanktonic diversity of upstream region of Achankovil river. The study revealed that thirty different forms of micro and macro algae were

present in the five different sites of study area. The algal groups present were Chlorophyceae, Bacillariophyceae, Cyanophyceae and Euglenophyceae. Chlorophyceae was dominant group comprising twelve different genera over the rest groups and constituted 40% of the total population. The second predominant group was the ten genera belongs Bacillariophyceae with 33.3 %, and seven genera of Cyanophyceae with 23.3 % and least reported was the one genera of Euglenophyceae having 3.3 per cent.

Table 1: Class wise distribution of Phytoplankton genus in Achankovil river

Algal class	Name of algae	
Chlorophyceae	Ankistrodesmusfalcatus	
	Bulbochaetesp	
	Cosmariumobsoletum	
	Cosmariummanipurense	
	Cosmariummargaritatum	
	Gonatozygonaculeatum	
	Pediastrum boryanum	
	Scenedesmus quadricauda	
	Spirogyra sp.	
	Staurastrumsp.	
	Cholrellasp.	
	Micrasterias radians	
	Bacillariophyceae	Cymbellasp.
		Fragilaria sp
Naviculapupula		
Naviculasalinarum		
Nitzschiafrustulum		
Nitzschialinearais		
Surirellarobusta		
Tabellariaflocculosa		
Synedra ulna		
Gomphonemasp.		
Cyanophyceae	Anabaena spherca	
	Lyngbyaarboricola	
	Lynbyabirgei	
	Spirulina sp.	
	Oscillatoria cortiana	
Euglenophyceae	Merismopedia elegans	
	Merismopediatenuissima	
	Euglena sp.	

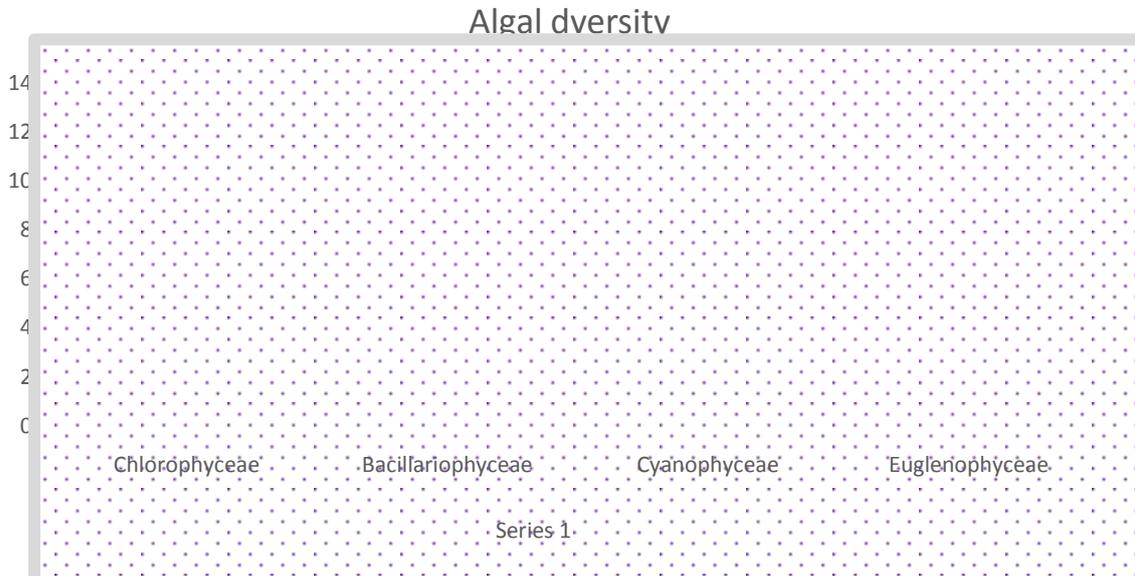


Fig. 1: Class wise Comparison of Phytoplanktonic group

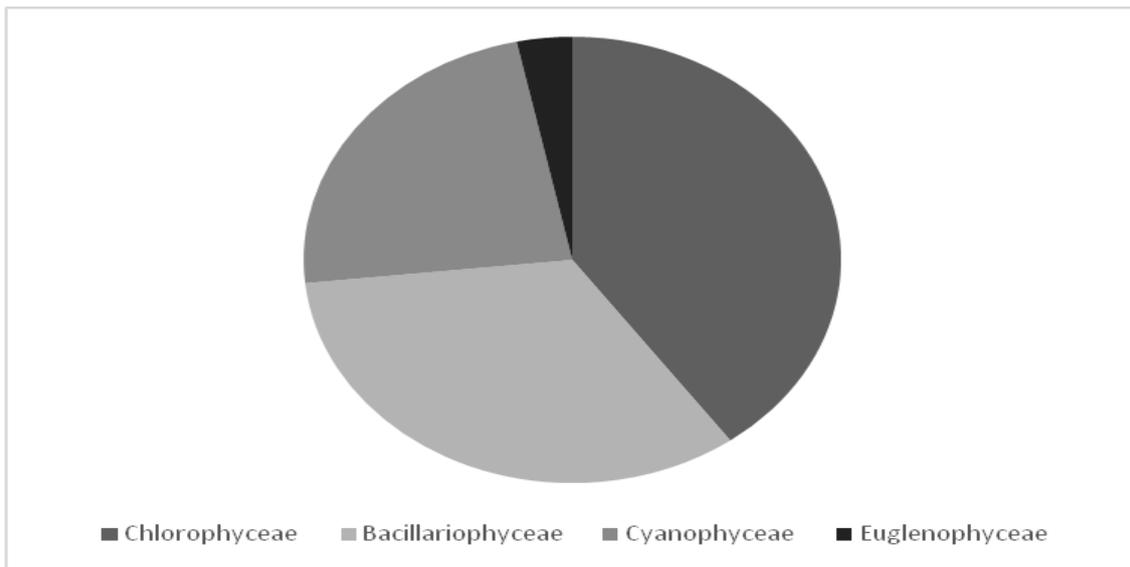


Fig. 2: Percentage wise distribution of Phytoplanktonic group

The algal genera Euglena, Scenedesmus, Navicula and Nitzschia were found in organically polluted water. Presence of pollution tolerant algae like Melosira, Oscillatoria, Pediastrum and Scenedesmus has been considered as indicative of enriched waters, thus providing evidence of pollution of water (Tessy and Sreekumar, 2008). The pollution tolerant algal species found in the Guruvayur pond indicated the deteriorated nature of the water. Euglenophyceae showed less number of species i.e. only two species. Similar results were reported by Nasare *et al.* (2009). Neha *et al.* (2018) studied the distribution of fresh water

microalgae of unexplored localities of some parts of central India. Thirtyfour algal taxa comprising twentyfive genera, in which eighteen unicellular, nine colonials and nine filamentous algae, were identified based on microscopic observation and characters such as average filament length, colonial diameter, shape and cell dimensions. In the upstream region of Achankovil four groups of phytoplanktonic algae were recorded. Among the four groups, Chlorophyceae were dominant over all other groups. Euglenophyceae were present in least number i.e. only one species was recorded.

REFERENCES

- Desikachary, T.V. (1959) Cyanophyta ICAR monograph on algae, New Delhi: India Council of Agricultural Research, pp.686.
- Nasare, P.N., Wadhne, N.S., Harney, N.V. and Sitre, S.R. (2009) Phytoplankton diversity of Khadki lake, Bengali Camp, Bhadrawati District Chandrapur.
- Neha S, Suseela M.R. Kiran T and Rubina Lawrence (2018) Fresh water Algal diversity of Central India, International Journal of Research and Development in Pharmacy and Life Sciences7, (4): 3039-3049
- Philipose, M.T. (1967) Chlorococcales I.C.A.R. New Delhi 1365.
- Prescott, G.W. (1982) Algae of the Western Great lakes Areas. Otto koeltz Science Publishers, Germany, PP-662-962.
- Shinde, S.E., Pathan, T.S. and Sonawane, D.L. (2012) Seasonal variations and biodiversity of phytoplankton in Harsool-Savangi dam, Aurangabad, *Indian, Journal Environmental Biology*. **33** : 741-744.
- Tessy, P.P. and Sreekumar, R. (2008) A report on the pollution algae from the Thrissur Kol wetlands (part of Vembanad-Kol, Ramsar site), Kerala. *Nature, Environment and Pollution Technology* **7**(2): 311–314.