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PRELIMINARY ACCOUNT ON THE COMPOSITION OF PHYTOPLANKTON IN SARADA AND VARAHA ESTUARINE COMPLEX, VISAKHAPATNAM DISTRICT, ANDHRA PRADESH, INDIA.

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ABSTRACT This present investigation deals with the composition of phytoplankton species of Sarada and Varaha estuarine complex at Visakhapatnam district on the East Coast of India. Two small rivers such as Sarada and Varaha are merging at Bay of Bengal near Vatada. Sampling was conducted in these estuarine habitats during the month of December 2023. A total of 53 micro algal forms were identified in this study. Out of these 53 phytoplankton species, 16 belongs to Chlorophyceae, 6 belongs to Cyanophyceae, 4 belongs to Euglenophyceae, and 26 species related to Bacillariophyceae and remaining one species belongs to Dinophyceae. In this estuarine system Bacillariophyceae is dominant group than remaining classes of algae. During this period of study 2476 cells per liter was observed in the Sarada and Varaha estuarine complex.

KEYWORDS : Sarada and Varaha estuarine complex, Phytoplankton, Visakhapatnam district, East Coast of India.

INTRODUCTION

Estuaries are generally highly productive zones in terms of nutrients support and offers food for various biological organisms in the aquatic ecosystem. phytoplankton plays a crucial role to make estuaries more productive and promote high levels of secondary production (Saifullah et al., 2014). Phytoplankton are the primary producers of the food web from which the energy is transferred to higher organisms through food chain (Ananthan et al., 2004, Tiwari and Chauhan, 2006). Similarly, estuaries support higher levels of biomass for secondary consumers and provide economic opportunities in terms of fishery yields. Various authors (Subramanyam, 1946; Mani, 1992; Sawant and Madhupratap, 1996; Gouda and Panigrahy, 1996; Mohamed et al., 2009, Raj Kumar et al 2009, Narasimha Rao and Prayaga, 2010 and Madhava Rao et. al. 2015) studied the seasonal distribution and composition of phytoplankton in estuarine and mangrove habitats along east coast and west coast of India. The Sarada and Varaha are the two small rivers in east coast of India which merges with Bay of Bengal near Vatada. Few investigators (Narasimha Rao and Venkanna,1996; Narasimha Rao Vanilla Kumari, 1997 and Narasimha Rao, 2008) studied the distribution of mangroves and eco-physiological studies on estuarine algae of Sarada and Varaha estuarine complex. In the present study, an attempt has been made to investigate the composition of the phytoplankton in estuarine habitats of Sarada and Varaha estuarine complex.

MATERIALS AND METHODS

Sarada and Varaha are two small rivers in Visakhapatnam district, AP form as estuarine complex near merging point of Bay Bengal, and lies between the latitudes (17^{o} 22' N) and longitudes (82^{o} 47' E) on the East Coast of India. Water samples were collected during the month of December 2023 for the preliminary studies on the composition of phytoplankton in Sarada and Varaha estuarine complex. Two-liter water samples were collected randomly in six regions of the estuarine complex. And these samples were fixed with 4% formalin to avoid decay of the phytoplankton in water samples. These samples transported to the laboratory and centrifuged at 3000 rpm for fifteen minutes. Phytoplankton counting was made in replicate on sedge wick rafter cell. Species of the phytoplankton species were identified by the keys (Subramanyam, 1946; Desikachary,1959).

RESULTS AND DISCUSSION

In this present investigation a total of 53 micro algal species (Table 1) were identified from the collected water samples of Sarada and Varaha estuarine complex, Visakhapatnam district, East Coast of India. Out of these 53 micro algal forms, 16 species belongs to Chlorophyceae, 6 species belongs to Cyanophyceae, 4 species belongs to Euglenophyceae, and 26 species related to Bacillariophyceae and remaining one species belongs to Dinophyceae (Table 1). On the basis of obtained results on the composition of algae in this estuarine region, class Bacillariophyceae is dominant group followed by Chlorophyceae as reported by Gouda and Panigrahy(1996); Sawant and Madhupratap (1996); Narasimha Rao and Murty, (2010) and Madhava Rao et al (2015). Minimum number of Cyanophyceae species indicates that both river water are less polluted. The composition and presence of phytoplankton rely on the environmental and hydrographical parameters of estuarine waters (Narasimha Rao and Murty,2010). Sedge wick rafter cell analysis indicates that the abundance of phytoplankton in the month of December 2023 was 2476 cells per one liter. The present observation on abundance of phytoplankton agrees with the seasonal abundance of micro algae in Godavari estuary (Narasimha Rao and Murty,2010).

CONCLUSIONS:

Aquatic ecosystem is more productive when comparing with remaining ecosystems, among the aquatic ecosystems, estuarine ecosystems is highly productive one due to presence of more and more organic matters and sediment loads. This organic matter is responsible for production of good growth of phytoplankton and finally in turn to more quantity of fisheries in concerned zones. Present study will provide the baseline information for further investigations on seasonal distribution and abundance of phytoplankton in relation to physico-chemical features of Sarada and Varaha estuarine complex.

Table 1. Composition of Phytoplankton community in Sarada and Varaha estuarine complex, Visakhapatnam district, AP.

	Chlorophyceae
1	*Ankistrodesmus convolutus*
2	*Ankistrodesmus falcatus*
3	*Chlorogonium euchlorum*
4	*Chlamydomonas sps*
5	*Chodatella quadriseta*
6	*Closterium acerosum*
7	*Coelanastrum indicum*
8	*Cosmarium sp*
9	*Gonium pectorale*
10	*Pediastrum duplex*
11	*Pediastrum ovatum*
12	*Pediastrum tetras*
13	*Scenedesmus obliquns*
14	*Scenedesmus quadricauda*
15	*Scenedesmus dimorphus*
16	*Spirogyra sps*
	Cyanophyceae
17	*Anabaena sps*
18	*Oscillatoria limosa*
19	*Spirulina platensis*
20	*Merismopedia sps*
21	*Aphanotheca gigantean*
22	*Microcystis sps*
	Euglenophyceae
23	*Euglena viridis*
24	*Phacus orbiscularis*
25	*Phacus triqueter*
26	*Strombomonas australis*
	Bacillariophyceae
27	*Amphiprora paludosa*
28	*Amphiprora gigantean*
29	*Asterionella japonica*
30	*Coscinodiscus sublineatus*

31	*Cocconeis pediculus*
32	*Cyclotella meneghiniana*
33	*Cymbella cistula*
34	*Hemiaulus sp.*
35	*Leptocylindrus minimus*
36	*Melosira moliniformis*
37	*Melosia dubia*
38	*Navicula gregaria*
39	*Nitzschia closterium*
40	*Nitzschia logissima*
41	*Nitzschia paradoxical*
42	*Nitzschia panduriformis*
43	*Nitzschia sigma*
44	*Pinnularia viridis*
45	*Pleurosigma balticum*
46	*Rhizosolenia stolterfothii*
47	*Rhizosolenia crassispina*
48	*Skeletonema costatum*
49	*Synedra rumpens*
50	*Thalassiosira decipienns*
51	*Thalassiothrix frauenfeldii*
52	*Raphoneis amphiceros*
	Dinophyceae
53	*Ceratium sp*

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