

Seasonal variability of some *Enteromorpha* species in Kanyakumari region, the southern coast of Tamil Nadu

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Abstract

The present report deals with the study of seasonal variation of some *Enteromorpha* species in Kanyakumari region, the southern coast of Tamil Nadu. Kanyakumari region was divided into four stations namely Kanyakumari, Chinna Muttam, Arockiapuram and Vattakottai. Monthly survey was carried out regularly from January 2007 to December 2010. The seaweed species were enumerated at random using a quadrat (0.5m²). A total of three species of *Enteromorpha* were collected in the study area such as *Enteromorpha compressa*, *Enteromorpha flexuosa* and *Enteromorpha linza*. The frequency and density were calculated and all the *Enteromorpha* species showed a similar pattern of seasonal variation. Among the species collected the highest frequency (53.75%) and density (5.53) were observed in *Enteromorpha linza* during summer season and the lowest frequency (37.50%) in *Enteromorpha compressa* and density (1.26) in *Enteromorpha flexuosa* were recorded during post-monsoon season. From the present investigation, it was concluded that all the *Enteromorpha* species (Chlorophyceae) exhibited the maximum frequency and density during the summer season followed by the declined trend was observed in the successive seasons. During the post-monsoon season the frequency and density of *Enteromorpha* species (Chlorophyceae) was minimum in the selected region of southern coast of Tamil Nadu.

INTRODUCTION

Seaweeds are the extraordinary sustainable resources in the marine ecosystem which have been used as a source of food, feed and medicine. It was estimated that about 90% of the species of marine plant are algae and about 50% of the global photosynthesis is contributed from algae [1]. Approximately 841 species of marine algae found in both inter-tidal and deep water regions of the Indian coast [2]. India ranks first among all countries bordering the Indian Ocean ahead of Australia and South Africa in the number of recorded specific and intra-specific seaweed taxa [3]. The distribution of marine macro algae is mainly controlled by light and point of attachment. As a result, seaweeds are most commonly found in the intertidal and subtidal zones and more frequently on rock shores than on sand or shingle shore [4]. The seaweed genus *Enteromorpha* shows much attention in recent years as they have the potential to supplant native vegetation. Very few attempts were made earlier to study the distribution of *Enteromorpha* occurring in Kanyakumari area [5,6,7]. An attempt has been taken in the present study to investigate the distribution of *Enteromorpha* species at different stations of Kanyakumari region along the southern coast of Tamil Nadu to provide the seasonal variability pattern found in *Enteromorpha* species according to marine environmental conditions related to its distribution.

MATERIALS AND METHODS

The Kanyakumari region in the southern coast of Tamil Nadu extends from Kanyakumari in the south to Vattakottai in the north. The entire study area was categorized into four stations namely Kanyakumari (S₁), Chinna Muttam (S₂), Arockiapuram (S₃) and Vattakottai (S₄). The survey of *Enteromorpha* species from the intertidal area was carried out during low tide. For the sampling of *Enteromorpha* species transect lines and a quadrat (0.5m²) was used. Samples were selected at random as per requirement. This was carried out by selecting sampling points in the area using

quadrat. Sampling points were selected in such a manner that every species of the study area has good chance of being selected. The number of quadrats was determined as per the area selected. For this purpose the whole station (For example station S₁) was divided into four segments namely segment A, segment B, segment C and segment D. Quadrats were placed every three meters on four segments. Each segment was 250m long in which 80 quadrats were placed. The number quadrats were varying according to the tidal height. *Enteromorpha* species present in the quadrats were observed, counted and number of individuals in each species was noted for quantitative assessment such as frequency and density.

RESULTS AND DISCUSSION

Totally there were three species of *Enteromorpha* namely *Enteromorpha compressa*, *Enteromorpha flexuosa* and *Enteromorpha linza* collected from Kanyakumari region (Fig.1) and all the species found in the study area were observed throughout the year. Though all the members of *Enteromorpha* showed similar patterns of seasonal distribution, with respect to frequency and density high level of variability was observed between the seasons and stations. Among the four seasons studied, all the taxa of *Enteromorpha* were observed during summer with high frequency and density in the study area.

A well marked declining in the frequency and density were recorded in the subsequent seasons of pre-monsoon and monsoon. The post-monsoon season was noted to be poor growth of *Enteromorpha* members which showed the lowest frequency and density in the present study. Among those species which were observed in all the four stations, the species *Enteromorpha linza* showed the highest frequency (53.75%) and the species *Enteromorpha compressa* showed the lowest frequency (37.50%) during summer in Kanyakumari region, while during the post-monsoon season *Enteromorpha flexuosa* was observed to be the highest frequency (37.50%) and *Enteromorpha compressa* was with the lowest frequency (16.25%) as shown in Table 1.

Fig. 1 : *Enteromorpha* species of different stations of Tirunelveli region.



a. *Enteromorpha compressa* (L.) Nees.



b. *Enteromorpha flexuosa* (Wulfen) J. Ag.



c. *Enteromorpha linza* (L.) J. Ag.

Even though the members of *Enteromorpha* showed the similar pattern of seasonal distribution, high level of the variability was recorded with respect to density between the seasons and stations. In *Enteromorpha* species, *Enteromorpha linza* showed the highest density (5.53) during summer and the lowest density (2.63) during post-monsoon season. *Enteromorpha flexuosa* showed the lowest density (1.26) at post-monsoon and the highest density (2.28) at summer season. From the present observations, it was noted that both frequency and density of all the *Enteromorpha* taxa varied with seasons and stations. All the taxa of *Enteromorpha* exhibited an uniform pattern of increase in frequency and density during summer followed by decrease in frequency and density in the successive seasons and the rate of increase or decrease varied with taxa and stations.

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Table 1. Seasonal variability of *Enteromorpha* species in the Kanyakumari region

S.No.	Name of the Seaweeds	Post-monsoon		Summer		Pre-monsoon		Monsoon	
		F	D	F	D	F	D	F	D
1.	<i>Enteromorpha compressa</i>	25.00	1.43	37.50	2.72	33.75	2.48	32.50	1.96
2.	<i>Enteromorpha flexuosa</i>	37.50	1.26	46.25	2.28	42.50	2.09	33.75	1.57
3.	<i>Enteromorpha linza</i>	30.00	2.63	53.75	5.53	47.50	3.97	36.25	2.92

F - Frequency

D - Density

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