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STUDIES ON THE DISTRIBUTION OF SEAWEEDS IN THREE DIFFERENT SITES OF KANYAKUMARI COAST

S. R. Jenisha* and R. Medo Merina,

Department of Botany, Women's Christian College, Nagercoil – 629 003, Tamilnadu, India.

Abstract

In the present research, distribution of seaweeds from three different sites of Kanyakumari coast was carried out during the period of 6 months from January to June 2012. Seaweeds were found in the coastal region between tidal and intertidal region up to a depth where 0.01 % photosynthetic light was available. A total of 36 species of seaweeds were recorded. Among them, the seaweeds belongs to Rhodophyceae family was the most dominant member with 17 species followed by Chlorophyceae with 11 species and Phaeophyceae with 8 species. The most common species recorded in Kanyakumari coast were *Gracilaria* sp., *Caulerpa* sp. and *Sargassum* sp. The Site I recorded abundant seaweeds during the study period.

Key words: Coast, Distribution, Months, Seaweeds, Site and Vegetation.

1. Introduction

Seaweeds are large marine benthic macroalgae that are multicellular, macrothallic and thus differentiated from most of the microalgae (Rao and Mantri, 2006). They make a substantial contribution to marine primary production and provide habitat for near shore benthic communities. About 90 % of the species of the marine plants are seaweeds and about 50 % of the global photosynthesis is contributed from seaweeds (Dhargalkar and Neelam, 2005). Although, seaweeds are widely distributed in the coastal regions of many continents (Margret, 2008) approximately 841 species of marine seaweeds found in both inter-tidal and deep water regions of the Indian coast (Oza and Zaidi, 2000). India has a vast coastline of more than 7000 km, which harbours a large diversity of marine algal species (Sahoo *et al.*, 2003) and it ranks first among all countries bordering the Indian Ocean ahead of Australia and South Africa (Sahoo *et al.*,

2001) in the number of recorded specific and intraspecific seaweed taxa. The Southeast coast of Tamilnadu in India is a unique marine habitat with diverse seaweeds.

The knowledge on the taxonomy of seaweeds is of paramount importance. Data on the local flora of each region will help the people to utilize the various commercially important seaweeds. Seaweeds cultivation on commercial scale could augment the supply of seaweed and provide employment to the coastal population which may help in improving their economic condition and thus help in rural upliftment and women's empowerment. The distribution of seaweed varies year to year especially in Kanyakumari coast. With this view in mind, the present work was focused on the study of seaweed diversity at an interval of six months in three different locations of Kanyakumari coast.

2. Materials and Methods

Three sites were chosen and the study was carried during the period of six months from January 2012 to June 2012.

*Corresponding author: S. R. Jenisha

E-mail: jenishasr@gmail.com

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Site I (Southeast coast) is a highly polluted area and tides are high in this region because of manmade constructions. Site II (East coast) is dominated by rocks, waves and tides were high in this region and is practically undisturbed by fishing boats but this area is highly polluted because of human disturbances. Site III (West coast) is flat and sandy even though fishing activities are practiced here the coast is not much polluted. It is located near sunset point. Waves and tides were high in this region.

Seaweeds were collected regularly every month during early morning by detaching a portion from the seaweed bed, kept in polythene bags and transported to the laboratory for further identification. The identification was made using suitable keys (Fritsch, 1979; Chapman & Chapman, 1980). The collected seaweeds were carefully analyzed to study its distribution and abundance. Herbariums were prepared and deposited in Botany Department, Women's Christian College, Nagercoil.

3. Results and Discussion

A total of 36 different species of seaweeds were recorded from all the three sites. The Rhodophyta member was seen abundant with 17 species followed by Chlorophyta with 11 species and Phaeophyta with 8 species. Kanyakumari coast favours the growth of green seaweed. The clear cut dominance of members of Chlorophyceae could be attributed to the simple parenchymatous nature of the fronds. The wave action may also hardly be tolerated by the Chlorophycean members with soft thallus (Thakur, 2005). Likewise red seaweed also showed dominance in all the three sites. Banergee *et al.* (2009) also noticed predominant red seaweeds from Gangetic delta, Northeast coast of India. The occurrence of seaweeds varied between months during the study period. Seaweeds were abundantly recorded during the month of January.

Krishnamurthy (1967) reported that the seaweeds washed ashore during November and December was very less but abruptly increased in January. Variation in the distribution was also noticed between Sites. Site I recorded much

seaweed diversity than other two stations. Site I is a sheltered locality and low tides was experienced here and the vegetation was high in this site but recent studies reported that species richness declines slightly towards more sheltered sites (Thongroy *et al.*, 2007). The difference in the species composition might be due to dynamics of nutritional status or by change in the physico-chemical parameters. In Site I and III the seaweeds were more during the month of January. In Site II maximum number of seaweeds was recorded during the month of March.

A profound variation in the distribution of the seaweeds in the same and different locality was also recorded by Devi *et al.* (2004). The nature of the substratum, hydrological parameters, nutrient availabilities and biotic factors such as competition of parasites, epiphytes, symbionts, grazers, diseases, space and light also determines the algal distribution (Lapointe and Tenore, 1981; Lapointe *et al.*, 1984).

A rich number of *Gracilaria*, *Caulerpa* and *Sargassum* species were noticed throughout the study period. *Amphiroea foliacea* and *Corallina boetero* was noticed only in Station III and *Amphiroea foliacea* was noticed in only in Site III throughout the study period. This simple study may interest other researchers to collect seaweeds from Kanyakumari coast not only to study the distribution, but also it will pave way for further research in seaweed because these seaweed contain more than 60 trace elements in a concentration much higher than in terrestrial plants.

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Table - 1: Distribution of Seaweeds of Kanyakumari coast during the study period

Name of the Seaweeds	Site I						Site II						Site III					
	Jan	Feb	Mar	Apr	May	Jun	Jan	Feb	Mar	Apr	May	Jun	Jan	Feb	Mar	Apr	May	Jun
<i>Bryopsis plumosa</i> (Hudson) C. Agardh	+++	-	-	-	+++	+++	+	-	-	-	++	-	-	-	-	-	-	+
<i>Caulerpa peltata</i> J.V. Lamouroux	++	-	++	-	-	-	+	+++	-	-	++	-	+	-	-	-	++	-
<i>Caulerpa racemosa</i> (Forsskal) J. Agardh	++	+++	+++	-	++	-	-	+	+++	-	-	-	+	-	+++	-	-	-
<i>Caulerpa scalpelliformis</i> (R. Brown ex Turner) C. Agardh	+	++	+++	-	+++	-	+	-	-	-	-	-	-	-	-	-	-	-
<i>Caulerpa fergusonii</i> (G. Murray)	-	-	-	++	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Chaetomorpha antennina</i> (Bory de Saint – Vincent) Kutzing	-	-	-	-	++	-	-	-	-	-	-	-	+	-	-	-	-	-
<i>Chaetomorpha aerea</i> (Dillwyn) K.	+++	-	-	-	+++	-	-	-	-	-	-	-	+	-	-	-	-	++
<i>Halimeda macroloba</i> Decaisne	-	+	-	-	-	-	-	-	++	-	-	-	-	-	-	-	-	-
<i>Ulva fasciata</i> Delile	-	-	+	++	-	-	++	+	+++	-	-	+++	++	-	-	-	-	++
<i>Ulva lactuca</i> Linnaeus	-	+	-	-	-	++ +	-	-	+++	++	+++	-	-	-	-	-	-	-
<i>Valonia utricularis</i> (Roth) C. Agardh	++	-	-	-	++	-	+	+		++	-	-	-	+++	++	+	-	-
<i>Amphiroea fragilissima</i> (Linnaeus) Lamouroux	-	-	-	-	-	-	-	-	-	-	-	-	+++	+++	+++	+++	++	+++
<i>Laurencia indica</i> Hauck	+	-	-	-	-	+	-	-	+++	-	+++	-	+	-	-	-	-	-
<i>Corallina boeteroi</i> Montage ex Kutzing Hauck	-	-	-	-	-	-	-	-	-	-	-	-	++	-	-	-	+++	+++
<i>Cryptonemia undulata</i> Sonder	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gracilaria corticata</i> J. Agardh	+++	++	+++	+++	++	++	++	+	-	-	-	+	-	-	-	-	-	-
<i>Gracilaria foliifera</i> (Forsskal) Borgesen	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gracilaria corticata</i> var. <i>corticata</i> J.Ag.	+	++	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Gracilaria fergusonii</i> J. Agardh	-	-	-	-	+++	-	-	-	++	-	-	-	+	-	-	-	+++	-
<i>Grateloupia lithophilla</i> Borgesen	+	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Grateloupia filicina</i> (C. Agardh) Lamouroux	+++	-	-	-	+++	+++	-	-	-	-	-	-	+	-	-	-	-	-



<i>Gelidium latifolium</i> (Greville) Bornet	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-
<i>Gelidium pusillum</i> (Stackhouse) Le Jolis	-	+	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-
<i>Halymenia venusta</i> Borgesen	+	+	-	-	-	-	-	-	-	-	-	-	+	+	-	-	-	-
<i>Hypnea musciformis</i> (Wulfen) Lamouroux	+++	+++	+++	+++	+++	+++	-	-	-	-	+++	+++	+++	-	-	-	-	-
<i>Gracilaria corticata</i> var. <i>cylindrica</i> (J. Agardh) Umamaheshwara Rao	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Spyridia filamentosa</i> (Wulfen) Harvey	++	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Spyridia hypnoides</i> (Bory de Saint Vincent)	++	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Cytoseria indica</i> (Thivy and Doshi) Mairh	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-	-	-	-
<i>Padina boergicinii</i> Allender & Kraft	-	-	-	-	-	-	+	+	+++	-	+		+++	+++		+	-	-
<i>Padina tetrastromatica</i> Hauck	++	+	-	-	-	-	-	-	+++	-	-	-	++	+++	+++	-	-	+
<i>Sargassum cinereum</i> J. Agardh	-	-	-	-	-	-	-	+++	-	-	++	+	++	-	-	+	+++	+++
<i>Sargassum linearifolium</i> (Turner) C. Agardh	-	-	-	-	-	-	+++	-	-	-	-	-	-	+++	+++	-	++	-
<i>Sargassum vulgare</i> C. Agardh	-	-	-	-	-	-	++	+	-	+	-	-	+	-	-	+	++	++
<i>Stoechospermum marginatum</i> (C. Agardh) Kutzing	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Dictyota bartayresiana</i> Lamouroux	-	-	-	+	-	-	-	-	+++	-	-	-	+	+	-	-	-	-



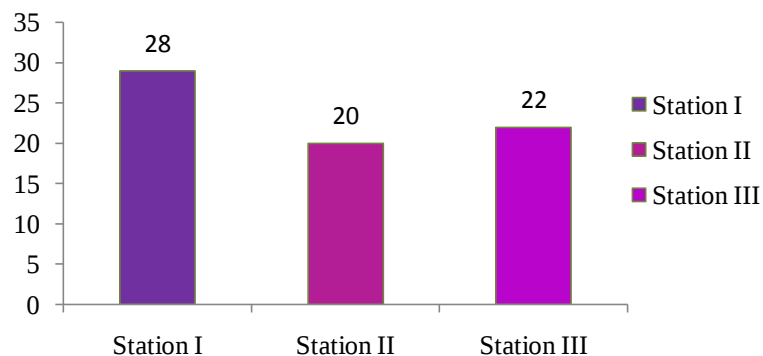


Fig. 1 Total number of seaweeds recorded during the study period

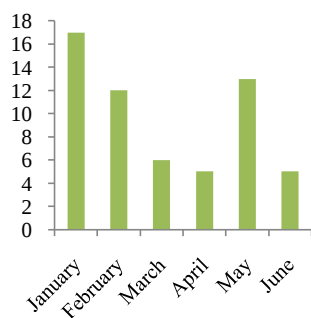


Fig. 2 Site I showing the distribution of seaweeds throughout the study period

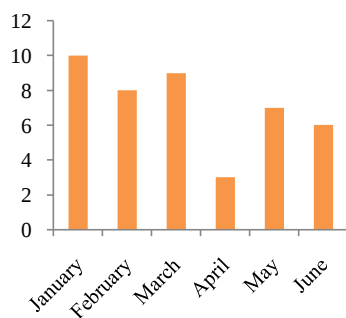


Fig. 3 Site II showing the distribution of seaweeds throughout the study period

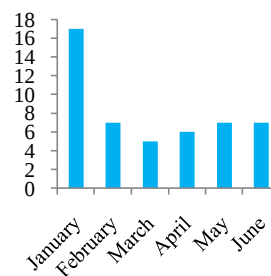


Fig. 4 Site III showing the distribution of seaweeds throughout the study period

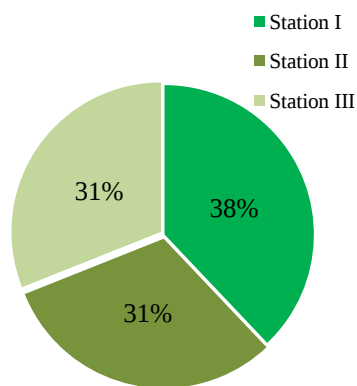


Fig. 5 Distribution of Chlorophyta during the study period

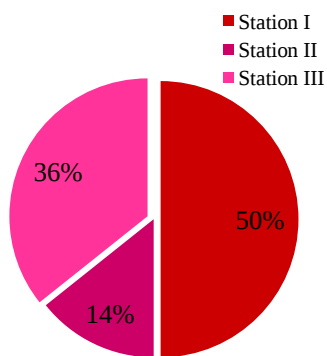


Fig. 6 Distribution of Rhodophyta during the study period

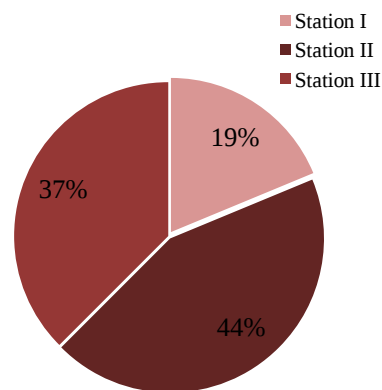


Fig. 7 Distribution of Phaeophyta during the study period



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