Seaweed Res. Utiln.
17 : 79-86, 1995

DISTRIBUTION OF ALGAE AND SEAGRASSES IN THE ESTUARIES AND BACKWATERS OF TAMIL NADU AND PONDICHERY

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Abstract

Resources survey of algae and seagrasses in 63 estuaries and backwaters existing from Madras to Athankarai in Tamil Nadu and Pondichery was made during 1988-89. Among these water bodies, only 44 supported vegetation. Totally 36 species of algae belonging to 23 genera under the groups Chlorophyta, Phaeophyta, Rhodophyta and Cyanophyta, and 5 species of seagrasses belonging to 3genera were recorded from these estuaries. The agar yielding seaweeds *Gracilaria arcuata* and *G. verrucosa* and carrageenan yielding seaweed *Hypnea valentiae* occurred in harvestable quantities in some estuaries.

Introduction

The occurrrence of Algae along the east and west coast of India and also Lakshadweep and Andaman-Nicobar islands has been reported by several workers. Though there are several esturaries and backwaters along the Indian coast, information on the distribution of algae and seagrasses is available only for six estuaries occurring at Tamil Nadu (Kannan and Krishnamurthy, 1978; Chennubhotla and Kaliaperumal, 1987), Andhra Pradesh (Umamaheswara Rao, 1987), Kerala (Balakrishnan Nair *et al.*, 1982) and Goa (Jagtap, 1986). An attempt was made to survey the algae and seagrasses growing in the estuaries and backwaters of east coast from Madras to Athankarai in Tamil Nadu and Pondichery. The data obtained from this survey are presented in this paper.

Materials and Methods

During the year 1988-89, survey of the algae and seagrasses occurring in 57 estuaries and backwaters from Madras to Athankarai in Tamil Nadu and 6 estuaries in Pondicherry and Karaikkal regions was conducted. Algae and seagrasses were collected randomly at different places of the estuaries and backwaters. They were sorted out, identified and liquid specimen of all species prepared.

Results

The substratum of the estuaries and backwaters was muddy or sandy with or without oyster beds. The maximum depth varied from 0.5 to 2.0 m in many of the estuaries. The number of algal genera and species occuring in the estuaries and backwaters of different coastal districts of Tamil Nadu from Madras to Athankarai and Pondichery & Karaikkal are given in Table 1. Totally 36 species of algae of 23 genera were recorded of which 6 genera and 13 species belong to

Table 1. Number of algal genera and species recorded from the estuaries and backwaters of different coastal districts of Tamil Nadu and Pondichery - Karikkal

Name of the District/ State	Chlorphyta		Phaeophyta		Rhodophyta		Cyanophyta		Total	
	Genera	Species	Genera	Species	Genera	Species	Genera	Species	Genera	Species
Chengai-Anna	4	5	1	1	3	3	2	2	10	11
South	4	8	1	1	5	5	2	2	12	16
Thanajavur	4	9	3	3	4	5	3	3	14	20
Pudukottai	3	3	-	-	-	-	1	1	4	4
Ramanathapuram	2	3	3	3	6	9	2	2	13	17
Pondicheery & Karikkal	3	6	1	1	3	3	1	1	8	11

Chlorophyta, 5 genera and 6 species to Phaeophyta, 9 genera and 14 species to Rhodophyta and 3 genera and 3 species to Cyanophyta. Five species of seagrasses viz. *Cymodocea serrulata*, *Halophila beccarii*, *H.ovalis*, *H. stipulacea* and *Halodule uninervis* were collected from these estuaries and backwaters.

The survey in the estuaries and backwaters of Chengai Anna District was carried out during August 1988. Totally 6 estuaries were surveyed and all of them had vegetation. A total number of 11 algal species and 1 species of seagrass were recorded (Table 2). During the survey conducted in September '88 at 7 estuaries in South Arcot District, there was no vegetation in one estuary namely Coleroon (Pazhayar). Totally 12 genera and 16 species of algae and 2 genera and 3 species of seagrasses were collected from the other 6 estuaries (Table 3).

The survey was conducted in 15 estuaries and backwaters of Thanjavur District during October and December and '88. Except in one estuary namely Ambuliaru, vegetation was found in all other estuaries. A total number of 20 algal species belonging to 14 genera and 3 species of seagrasses belonging to 2 genera were collected from the other 14 estuaries and backwaters (Table 4). The algae and seagrasses survey was made from 10 estuaries and backwaters in Pattukkottai District during February '89. There was no vegetation in 5 estuaries, which are Kattaru (Manora), Varaikal river (Parathavanpatnam), Vellaru (Pattankadu), Mimisal Aru (Mimisal) and Periyaru (Semmankottai). From the other 5 estuaries, 4 species of algae belonging to 4 genera, and 3 species of seagrasses belonging to 2 genera were recorded (Table 5). Out of the 19 estuaries and backwaters surveyed in Ramanathapuram District during February '89, there was no vegetation in 12 estuaries. They are : Pasipatnam Aru (Pasipatnam), Thammaperumal Aru (Thondi), Thondi Aru (Thondi), Manimutharu (Thondi), Pallaveettummunai Aru (Nambuthalai), Chittaru (Nambuthalai), Pidarimunai Aru (Numbuthalai), Kattaru (Soliakudi), Mattumunai Aru (Manakudi), Nayaru (Tiruppalakudi), Kaviyaru (Tiruppalakudi) and Peeyaru (Tiruppalakudi). Altogether 17 species of algae classified under 13 genera and 4 species of seagrasses classified under 3 genera were collected from the remaining 7 estuaries and backwaters (Table 5).

During the period August and October '88, survey was carried out in the estuaries of Pondichery and Karaikkal regions respectively. Three estuaries were surveyed in each region. Eleven species of algae belonging to 8 geners and 2 species of seagrasses belonging to 1 genus occurred in both regions of Pondichery and Karaikkal (Table 6).

Discussion

The present survey carried out from Madras to Athankarai shows that 19 estuaries occur in Ramanathapuram District and 6 estuaries in Chengai-Anna District and Pondichery-Karaikkal regions. Maximum number of 20 algae was recorded in Thanjavur District and minimum number of 4 algae in Pattukkottai District. In general, members of Chlorophyta occurred more in number than other groups of algae in al estuaries. The present investigation reveals that harvestable quantity of agar yielding seaweeds *Gracialria arcuata* occurs in Athankarai estuary of Ramanathapuram District (Table 5) and *G. verruucosa* in some estuaries of Chengai-Anna,

Table 2. List of algae and seagrasses occurring in the estuaries and backwaters of Chengai Anna District.

S.No.	Algae	Name of the estuary and place					
		Muttukadu	Idaiyar (Kalpakkam)	Sadras (Pudupattinam)	Paramakeni	Kadapakkam (Alamparaikuppam)	Thenpakkam (Marakaranam)
	Green algae						
1.	Enteromorpha compressa	+		+	+		
2.	Ulva lactuca			+			
3.	Chaetomorpha aerea	+			+	+	+
4.	C. linoides		+				
5.	Chaetomorpha sp		+		+		
	Brown algae						
6.	Rosenvingea intricata					+	
	Red algae						
7.	Gracilaria verrucosa	+			±	±	
8.	Hypne valentiae	+	±	+	+	±	
9.	Polysiphonia sp	+	+		+		+
	Blue-green algae						
10.	Lyngbya majuscula	+					
11.	Phormidium sp			+			
	Seagrasses						
1.	Halophila stipulacea	+	+		+	+	+

± Occur in harvestable quantity

Table 3. List of algae and seagrasses occurring in the estuaries and backwaters of South Arcot District.

S.No.	Algae	Name of the estuary and place					
		Pennaiyaru (Thalikkuda)	Gadilam (Cuddalore)	Uppanar (Cuddalore)	Vellar (Parangipettai)	Vellar-Coleron (Muzhukkuthurai)	Pitchavaram
	Green algae						
1.	Enteromorpha compressa			+	+	+	+
2.	E. intestinalis				+		
3.	Enteromorpha sp			+			
4.	Ulva lactuca			+	+		
5.	Chaetomorpha aerea	+	+			+	
6.	C. linoides			+	+		
7.	Chaetomorpha sp			+			
8.	Cladophora sp					+	+
	Brown algae						
9.	Padina boergesenii				+		
	Red algae						
10.	Gracilaria verrucosa		±	+		±	+
11.	Hypnea valentiae			+	+	+	
12.	Ceramium sp			+			
13.	Spyridia fusiformia		+	+		+	
14.	Polysiphonia sp					+	
	Blue-green algae						
15.	Lyngbya majuscula		+	+			+
16.	Phormidium sp		+	+	+		+
	Seagrasses						
1.	Halodule uninervis				+		
2.	Halophila beccarii			+			
3.	H. stipulacea			+	+	+	+

Table 4. List of algae and seagrasses occurring in the estuaries and backwaters of Thanjavur District.

S.No.	Algae	Name of the estuary and place													
		Uppanar (Thirumullaivasal)	Kaveri (Poompuhar)	Ammanar (Chinankudi)	Uppanar (Tranquebar)	Nandalar (Chandrapadi)	Vettar (Nagore)	Upanar (Nagapattinam)	Vellaiyar (Velanganni)	Puduaru (Vilunthamavadi)	Arichandran Aru (Vettaikaran Iruppu)	Arichandran Aru	Vettar (Pusphavanam)	Koraiyaru (Muthupet)	Erikkaraiyiruppu (Adiramapattinam)
	Green algae														
1.	Enteromorpha compressa	+			+		+	+	+					+	+
2.	E. intestinalis	+							+		+	+	+	+	
3.	E. plumosa		+												
4.	Chaetomorpha aereas			+	+	+			+	+		·	+		
5.	C. antennina							+							
6.	C. linoides						+								+
7.	Chaetomorpha sp				+										
8.	Cladophora fascicularis		+	+	+	+	+							+	
9.	Chara hydropitys		+												
	Brown algae														
10.	Padina boergesenii	+													
11.	Rosenvingea sp	+													
12.	Chnoospora implexa						+								
	Red algae														
13.	Gracilaria verrucosa	+			+						+	+	+		
14.	Gracilariopsis megaspora				+					+		+	+		
15.	Hypnea valentiae	+	+		+	+					+				
16.	Polysiphonia unguiformis	+													
17.	Polysiphonia sp							+							
	Blue Green algae														
18.	Lyngbya majuscula	+	+	+	+	+									
19.	Phormidum sp						+		+		+				
20.	Oscillatoria sp		·											+	
	Seagrasses														
1.	Halodule uninervis	+													
2.	Halophila becarii	+													
3.	H. ovalis	+													

± Occur in harvestable quantity

South Arcot, Thanjavur and Ramanathapuram Districts of Tamil Nadu and Pondichery region (Tables 2 to 6). These resources can be exploited for the production of agar. The carrageenan yielding seaweed *Hypnea valentiae* is growing in exploitable quantity in Edaiyar and Kadapakkam in Chengai-Anna District (Table 2) and Sunnambarau (Chinnaveerampattinam) in Pondichery (Table 6). This resource can be used for starting carrageenan extraction in India in addition to the natural resources occurring along the Indian coast. The results of the presant study emphasize the need for a similar survey from Rameswaram to Kanyakumari coastline in Tamil Nadu and all other maritime states in order to assess the seaweed resources of estuaries and backwaters of India. Such information should be very useful to the Indian seaweed industries. Studies on the seasonal changes in the occurrence, growth and fruiting behaviour of algae in each estuary may also be undertaken.

Acknowledgements

The authors wish to express their sincere thanks to Dr. P.S.B.R. James, Director, Central Marine Fisheries Research Institute, Kochi and Shri. M.S. Rajagopalan, Head, Fishery Environment Management Division, CMFRI, Kochi for their interest in undertaking this survey and for the facilities provided.

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