A REPORT

ON

SURVEY OF MARINE ALGAL RESOURCES OF TAMILNADU

1971 - 1976

Organisations

CENTRAL SALT & MARINE CHEMICALS RESEARCH INSTITUTE

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

DEPARTMENT OF FISHERIES GOVT. OF TAMILNADU

C O N T E N T S

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FOREWORD

This report brings out the marine algal resources of the Tamil Nadu coast as the outcome of the Marine Algal Survey undertaken during 1971-76 as a co-ordinated project by the three organisations : Department of Fisheries, Government of Tamil Nadu, The Central Marine Fisheries Research Institute and the Central Salt & Marine Chemicals Research Institute. The survey was conducted both intensively covering all the marine algal species and extensively covering a wide coastline in the intertidal and sub-tidal beds. Though found in moderate quantities in comparison with the rich seaweed beds in the world, the marine algal resources estimated now are found to be quite considerable. Inspite of the fact that some of the economic seaweeds have been commercially exploited from this region, there is still a possibility for greater harvesting and utilization of the brown algae particularly the species of Sargassum and Turbinaria for alginate industry and the species of Gracilaria for agar industry in our country. However, resources of Gelidiella acerosa need to be conserved. The scope for harnessing other available marine algal resources and their proper utilization, say for extractives, fertilizer, etc. are indicated. The concerted effort of the collaborating organizations in this venture is greatly appreciated.

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LIST OF TABLES

LIST OF FIGURES

Seaweed Survey of Tamil Nadu 1971-76

Chapter No.	Figure No.	Particulars
I	1	Coastal Map
II	1	Coastal Map
	2 to 14	Profile diagrams of potential sampling stations.
	15 to 20	Horizontal distribution diagrams of important seaweeds.
	21 to 27	Vertical distribution diagrams of estimated seaweeds.
	28 to 39	Substrate, Cover and Density diagrams of potential sampling stations.
III	1	Coastal Map
	2 to 12	Profile diagrams of potential sampling stations.
	13 to 17	Horizontal distribution diagrams of important seaweeds
	18 to 21	Vertical distribution diagrams of estimated seaweeds.
	22 to 31	Substrate, cover and Density diagramsof potential sampling stations.
IV	1	Coastal Map
	2 to 27	Profile diagrams of potential sampling stations.
	28 to 34	Horizontal distribution diagrams of important seaweeds
	35	Vertical distribution diagrams of estimated seaweeds.
	36 to 60	Substrata, Cover and Density diagrams of potential sampling stations.
V	1	Coastal Map.
	2 to 5	Profile diagrams of potential sampling stations.
	6 to 8	Horizontal distribution diagrams of important seaweeds.
	9	Vertical distribution diagrams of estimated seaweeds.
	10 to 12	Substrate, Cover and Density diagrams of potential sampling stations.

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PROJECT PERSONNEL

1. Central Salt & Marine Chemicals Research Institute

Planning and Organization

Director : Dr.D.J.Mehta

Participants	Designation	Sectors attended
Dr.K.Subbaramaiah	Scientist-in-Charge, CSMCRI Marine Algal Research Station, Mandapam.	I, II, III & V.
Dr.V.Krishnamurthy	Scientist-in-Charge (1971-72), CSMCRI Marine Algal Research Station, Mandapam	I
Dr.K.Rama Rao	Scientist	II, III, IV & V.
Shri M.R.P. Nair	Scientist	I, II, III, IV & V.
Shri P.C.Thomas	S.S.A.	III
Shri P.V.Subba Rao	J.S.A.	V
Shri M. Sakthival	S.L.A.	I, II, III, IV & V.
Shri S.M.N.Jainulabdeen	Plant Collector	I, II, III, IV & V.
Shri A. Sathaku	Plant Collector	III, IV & V.
Shri M. Nandagopal	Field Assistant	I, II, III, IV & V.
Shri M.Antony Rayappan	Field Assistant	I & II.
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Shri M.Michael Dass	Field Assistant	III.
		Six persons on Field Duty.

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Dr. K. Rama Rao,
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Shri M.R.P. Nair,
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2. Central Marine Fisheries Research Institute

Directors : Dr. E.G. Silas
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Participants	Designation	Sectors attended
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Dr.M.Umamaheswara Rao	Asstt.Fisheries Scientist	I & II.
Dr.P.S.Kuriakose	Scientist-S	I, II & III.
Shri Shivalingam	Scientist-S	III.
Shri Kaliaperumal	Scientist-S	I(in part), II, III, IV & V.
Shri Kalimuthu	Tech.Asstt. (II-3)	I, III, IV & V.
Shri J.R.Ramalingam	Tech.Asstt. (T-II)	V
Shri N. Selvaraj	Tech.Asstt. (T-II)	IV
Shri Narayanasamy	Tech.Asstt. (T-II)	I
Shri Dhanraj	Tech.Asstt. (T-II)	I
Shri Mohideen	Supporting Staff(II)	I, II, III, IV & V.
		Three persons on Field Duty.

DATA PROCESSING

STATISTICAL ANALYSIS OF THE I-SECTOR

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Assistant Fisheries Scientist

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Shri M.Paramasivam	Senior Research Assistant, Marine Biological Station, Krusadai Island at Mandapam.	I, II, III, IV & V.
Shri Kaliaperumal	Research Assistant	I (in part)
Shri A.Dasman Fernando	Driver	I & II
Shri Chusan	Driver	I & II.
Shri Anthony Pitchai	Driver	II.
Shri Dhanavelu	Sub.Asstt.Inspector of Fisheries	I, II, III & IV.
Shri S.Latif	Sub.Asstt.Inspector of Fisheries	V.

Boat crew

Four persons excluding the boat crew on field work in I & II Sectors.

Two persons excluding the boat crew on field work in III & IV Sectors.

Two persons only on field work in V Sector.

INTRODUCTION

Historical :

Earlier work on the Marine Algal Resources of India has been extensively reviewed (Thivy, 1960; Desikachary, 1967; Umamaheswara Rao, 1970; Krishnamurthy, 1971). Estimates of the seaweeds were given for some regions of the Madras and Kerala coasts by Koshy and John (1948), Chacko and Malupillai (1958), Thivy (1951, 1960), Desai (1967), Varma and Krishna Rao (1962) and Umamaheswara Rao (1968). Of these the assessment of the resources were made systematically and accounts of the methods followed were given by the latter two groups of workers. Varma and Krishna Rao (1962) gave an estimate of 19 tons wet Gelidiella, about 335 tons wet Gracilaria and 660 tons wet Sargassum in 234.25 sq.km. area between Dhanushkodi and Hare Island in the Gulf of Mannar. The standing crop of different seaweeds and sea grasses was estimated covering the coral reef and lagoon areas in Palk Bay side of the coastline, near Mandapam over an area of 3.58 sq.km.by Umamaheswara Rao (1968). The total quantities varied from 1041.69 tons wet in 1965 to 864.77 tons wet in 1976. The fall in the standing crop in the latter year was attributed to the collections of Gracilaria lichenoides made from this area during the year.

Recent estimates of the seaweeds based on the landings are also of much value. Umamaheswara Rao(1968) gave harvest figures yearwise for Pamban, Periyapattanam and Kilakkarai during 1966-68; 15.19 tons for Pamban in 1966 and 141.97 and 329.24 tons for all the three places during 1967 and 1968 respectively. The harvest figures for the various seaweeds gathered near Periyapattanam for the year 1967 were given as : Gelidiella acerosa 51.05 tons, Gracilaria lichenoides 15.50 tons and Sargassum spp. 5.0 tons, totalling 71.55 tons for all these seaweeds. Subba-ramaiah et al. (1975) put the harvested estimates of Gelidiella acerosa at 150 tons.

A study of the seaweed drift in the Indian coast was carried out by a team of workers from the CSMCRI. Krishnamurthy et al. (1967) and Krishnamurthy (1967) gave

the estimated figures for Idinthakarai and Pamban (15 km coast) as 78 tons (54.262 tons of Sargassum, 2.825 tons of other alginate seaweeds, 4.075 tons of Gracilaria, 1.637 tons of Hypnea and 1.7 tons of other agarophytes and 11.33 tons of other seaweeds).

Prior to the establishment of the indigenous seaweed based industries some of the economic seaweeds particularly Gelidiella acerosa were mainly exported to the far East and the U.S.A. In 1967 alone 198.04 tons were exported, although during the three years 1966-68 the export in all amounted to 452.88 tons (value Rs 13, 71,951).

CHARACTER OF THE STUDY

The present survey of the marine algal resources of Tamil Nadu was undertaken as a co-ordinated project jointly by the Central Salt & Marine Chemicals Research Institute, the Central Marine Fisheries Research Institute and the Department of Fisheries, Government of Tamil Nadu. This formed part of the principal area of investigations of the Central Salt & Marine Chemicals Research Institute approved by the National Committee on Science & Technology. The technical details and methodology used in the survey were worked out by Dr.K.Subbaramaiah, Dr.V.Krishnamurthy of the Central Salt & Marine Chemicals Research Institute and Dr.M.Umamaheswara Rao of the Central Marine Fisheries Research Institute.

The main aim of the survey is to determine the standing crop of the seaweed resources of the region and their distribution. The survey also included the collection of basic supplementary data on seagrasses, plankton, bottom fauna, and hydrology. The data collection on the sea shore was carried out by all the three organisations jointly. The other aspects of work were shared as follows :

1. CSMCRI

   (i) General planning and organisation of the field work and study,

   (ii) Mapping of the shore surveyed including the profiles,

   (iii) Systematic identification of the species of marine algae and their distribution,

   (iv) Estimation of the standing crop of the seaweeds (except the I Sector), and

   (v) Preparation of the reports.

2. CMFRI

(i) Estimation of the standing crop of the I-Sector,

(ii) Plankton and bottom fauna analysis,

(iii) Part of hydrology (salinity and dissolved oxygen).

3. Department of Fisheries, Tamil Nadu

(i) Part of hydrology (nutrients),

(ii) Chemical analysis of bottom sediments,

(iii) A 32-footer launch, and two divers to collect samples in the I and II sectors. The divers for the remaining three sectors and most of the survey equipments were provided by the CSMCRI.

This report deals only with the seaweed resources and is divided into two parts : I - An evaluation of the seaweed resources including the methods of survey, and II - Details of the estimates, coastline, profiles, distribution of seaweeds, the substrata cover and density of the samples, and practical considerations.

PART - I

M E T H O D S

A sampling method for the survey of the Marine Algae both in the intertidal and sub-tidal regions was devised taking into consideration the heterogenous distribution of the marine algal vegetation growing attached to a discontinuous and patchy substratum. The coastline between Mandapam and Colachel was covered in five years, during the favourabl season in a year, each being referred to as a sector. The area within a sector was divided into sampling stations at intervals of 3 km. At each sampling station three transects were established one at the centre and one each on either side at a distance of 100 m. Along the three transects which lie perpendicular to the shoreline depthwise samples at intertidal, 0, 0.5, 1.0, 1.5, 2.0 and 4.0 m depths were taken by the divers (skin diving only). A plumbline was used to fix the depths. A party moved from the shore into the sea along the transect previously aligned by erecting two poles on the shore until a particular depth was reached for fixing a sampling point. A canoe or Catamaram was employed for

working at greater depths. At the same time the vertical distances of the sampling points from the base-line were recorded with the help of sextent. These data were used in preparing a profile of the sea bottom at each sampling station and for the area calculation of each depth zone. In addition, the shore partly made a compass coastline survey along the shore marking the sampling stations from which a shore map of the sector was prepared. At all sampling points the nature of the substratum and the percentage cover of different seaweeds and seagrasses found in the 1.0 m metal quadrat were noted and all the seaweeds therein were collected. Each quadrat sample was sorted out into the different species of seaweeds and fresh weights of these were recorded seperately. And the different seaweeds and the sea grasses were preserved in herbarium, and in 5% formalin. Seaweed species weighing 5 g wet and above were considered for estimation, while the others (i.e. weighing less than 5 g wet) were indicated as rare.

Sectorwise, the sampling data was subjected to statistical analysis in order to give specieswise resource estimates with errors. The area, density and standard error of the samples at the various depth zones were calculated seperately, and the standing crop estimated. The estimates of all the zones were added to get the total estimates of the standing crop (wet) of a sector.

EVALUATION OF SEAWEED RESOURCES

During the five years from 1971-76 survey of the marine algal resources was done covering the coast from Athankarai to Rameswaram in the Palk Bay 45 km and from Thonithurai (Mandapam) to Melmidalam (Colachel) mainland, and the adjoining islands in the Gulf of Mannar (413 km) in five sectors. The area surveyed within the various sectors are located in Ramanathapuram, Tirunelveli and Kanyakumari Districts as follows :

I Sector - the mainland coast from Rameswaram to Athankarai in the Palk Bay between 9° 17' - 9° 20' N, 79° 19' - 79° 0'E); the mainland coast from Thonithurai (Mandapam) to Kilakkarai and the offshore islands, viz. Shingle, Krusadai, Pullivasal, Pulli, New, Manoli, Hare, Valai and Appa islands in the Gulf of Mannar (between 9° 16' - 9° 8' N and 79° 14' - 78° 47' E);

II Sector - the mainland coast from Kilakkarai to Mukkaiyur and the adjoining offshore islands, viz. Upputhanni, Suli, Nallathanni, Yanaiparai, Palliamuni and Nandamukhi islands (between 9° 13' - 9° 06' N and 78° 47' - 78° 28' E);

III Sector - the mainland coast from Mukkaiyur to Punnakkayal (Tuticorin) and the adjoining offshore islands, viz. Karaya, Challi and Van islands (between 9° 06' - 8° 38' N and 78° 28' - 78° 08' E);

IV Sector - the coast from Punnakkayal (Tuticorin) to Cape Comorin (Kanyakumari) between 8° 38' - 8° 05' N and 78° 08' - 77° 32' E); and

V Sector - the coast from Cape Comorin (Kanyakumari) to Melmidalam (Colachel) between 8° 05' - 8° 11' N and 77° 32' - 77° 09' E).

In the I Sector the survey was done twice at different times in the year as follows : In the Gulf of Mannar I Survey 20th April, 1971 to 11th November 1971, II Survey 17th November, 1971 to 6th May, 1972 and in the Palk Bay I Survey 18th May 1971 to 18th June 1971, II Survey 18th August 1971 to 8th September 1971, whereas in sectors II to V, the survey was done only once during the season as follows : II sector December 1972 to February 1973, III sector October 1973 to February 1974, IV sector November 1974 to January 1975 and V sector November to December, 1975. The survey generally extended from the intertidal region on the shore to a depth of 4.0 m in the sub-tidal region beyond which the vegetation was very sparse. The estimates of the standing crop for the individual seaweeds were grouped together under the heads agarophytes, alginophytes and others. In the I sector the seaweed estimates were so arrived as to include the higher values from out of the two surveys made.

RESOURCES

The tonnage of the standing crop (wet) for the whole coastal area of 17,125 ha is 22,044 tons, consisting 1,709 tons agarophytes, 10,266 tons alginophytes and 10,069 tons others. The groupwise standing crop for the various sectors consisted of : I sector - agarophytes 1,180 tons, alginophytes 8,998 tons, others 7,143 tons, total 17,322 tons; II sector - agarophytes 184 tons, alginophytes 168 tons, others 160 tons, total 512 tons; III sector - agarophytes 176 tons, alginophytes 10 tons, others 437 tons, total 623 tons; IV sector -agarophytes 145 tons, alginophytes 24 tons, others 2,273 tons, total 3,438 tons; V sector - agarophytes 24 tons, alginophytes 69 tons, others 56 tons, total 149 tons. The percentage of the

total estimated standing crop of these groups in each sector can be compared : I sector agarophytes 69.07, alginophytes 87.65, others 70.94; II sector - agarophytes 10.75, alginophytes 1.63, others 1.60; III sector - agarophytes 10.28, alginophytes 0.10, others 4.34, IV sector - agarophytes 8.46, alginophytes 9.94, others 22.57, V Sector - agarophytes 1.43, alginophytes 0.67, others 0.55. The mean density (mean biomass wet as kg/m^2) of the seaweeds is found to be 0.129 for the whole area and for I - V sectors 0.206, 0.028, 0.014, 0.198, 0.025 respectively. These values represent mean productivity of the standing crop which is maximum in the I sector and decreases in the order IV, II, III and V sectors.

The estimated standing crop in tons (wet) of the important economic seaweeds and their distribution are given below :

Agarophytes

1. Gelidiella acerosa	74; I-70, II-4 and absent in III, IV & V sectors.
2. Gracilaria edulis	345; I-322, II-3, III-20 and absent in IV & V sectors.
3. G. corticata, G. compressa, G. crassa, G. debilis, G. fergusonii, G. foliifera, & G. spp.	629; I-471, II-6, III-2, IV-126 and V-24.
4. Gracilaria spp. (Total of 2 & 3)	974; I-793, II-9, III-2, IV-126, V-24.
5. Hypnea musciformis	293; I-Nil, II-166, III-115, IV-12 and V-Nil
6. Hypnea pannosa H. spicifera H. spinella H. valentiae H. spp.	505; I-458, II-5, III-39, IV-3 and V-0.2.
7. Hypnea spp. (total of 5 & 6)	798; I-458, II-171, III-154, IV-15, and V-0.2.

Alginophytes

1. Sargassum spp.	9381; I-8145, II-140, III-7, IV-1020 and V-69.
2. Turbinaria spp.	714; I-689, II-25, III-Nil, IV-Nil and V-Nil.
3. Cystoseira trinodes	3.5; I-Nil, II-0.5, III-3, IV and V-Nil.

CONCLUSION

Thus, the present survey reveals that the available and accessible marine algal resources of Tamil Nadu are large (22044 tons) and varied in species composition. Assuming that the vast majority of the seaweeds in the region show the growth of their fronds to maturity within a year, the marine algal resources could perhaps generally be harvested upto 90 per cent of their total biomass each year. This coastal region of Tamil Nadu being highly resourceful has also been exploited by the collectors for the more economic seaweeds. With few exceptions as Gelidiella acerosa further scope for full exploitation and utilisation of the economic species is indicated. In addition, the availability (tonnage) and distribution (location) of the species of marine algae as yet unexplored and under explored from the region are the principal findings of the present survey.

PART - II

DETAILS OF THE ESTIMATES

Estimated standing crop - I sector :

The estimated standing crop of 60 species occurring in the different depth zones in the two surveys is given in Table-1. These estimates for the individual species are arranged groupwise as agarophytes, alginophytes, and others, irrespective of their depth distribution (Table- 2). The groupwise estimates and their relative percentage are arrived by taking the maximum of the total quantities found in either of the two surveys (Table - 3).

The estimated standing crop in tons (wet) of the marine algae differs with season. In the better season the estimates for the more important economic seaweeds are found to be : Gelidiella acerosa 70 tons, Gracilaria edulis 322 tons, Gracilaria corticata 105, other species of Gracilaria 848 tons, Hypnea species 442 tons, Sargassum species 7353 tons, Turbinaria species 630 tons.

The total standing crop in the I sector in 8416 hectares is 17321 tons, comprising 1180 tons agarophytes, 8998 tons alginophytes, 7143 tons others. The most productive region is between 0 and 1.25 m depths with a biomass of about 237 kg/ha for the agarophytes and between 0 and 3.0 m depths with a biomass 566 kg/ha for alginophytes. The average density of the marine algae in the I sector is 2.06 tons/ha.

Estimated standing crop - II, III, IV and V Sectors :

Sectorwise, the biomass sampling data for each species was analysed statistically to get the standing crop estimates with errors. A species may occur in several samples taken at certain depths and is designated as continuous. Besides, it may occur also in single samples at certain other depths and is designated as discrete. In cases where a species occurs both continuously and discretely at one or other depths, these estimates were added together to give the total estimates of a depth zone. The estimates of the various species from the different depth zones put together constitute the estimated standing crop of the marine algae in a sector as a whole. The estimated standing crop of the various species at different depths, and the specieswise estimates (biomass for all the depths) arranged as agarophytes, alginophytes and others, and the groupwise estimates and their relative percentage are given (Tables 4 - 26).

The estimated standing crop in tons (wet) of the more important economic seaweeds in the different sectors is found to be : II sector - Gelidiella acerosa 3.8 -- 4.8, Gracilaria species 8.2 -- 9.9, Hypnea musciformis 119.2 -- 211.2, other Hypnea species 4.8 -- 4.9, Sargassum species 106.7 -- 179.1, Turbinaria species 24.4 -- 25.2. The occurrence of Hypnea musciformis is restricted only to Nallathanni Island mostly at the 2.0 m depth zone. In all, species of Hypnea and Sargassum constitute the vast majority of the standing crop in the Second sector. III sector : Gracilaria species 17.6 -- 26.1, Hypnea musciformis 55.9 -- 173.0, other Hypnea species 23.0 -- 55.6, Sargassum wightii 7.3, Cystoseira trinodis 2.8. The occurrence of Hypnea musciformis and Cystoseira trinodes is restricted to the islands only, mostly at 2.0 m depth zone. Among the economic seaweeds, species of Hypnea and Gracilaria are abundant. These together with Caulerpa scalpelliformis, Champia parvula and Padina gymnospora form the vast majority of the standing crop in the Third sector. IV sector : Gracilaria species 86.229 -- 165.742, Hypnea species 10.752 -- 18.783, Sargassum species 297.510 -- 1743.330. Among the economic seaweeds Sargassum species are abundant. Among others although economically less important, species of Amphiroa Spatoglossum asperum, Enantiocladia prolifora and species of Laurencia form the vast majority of the standing crop in the Fourth sector. V Sector : Gracilaria spp. 19.904 -- 28.581, Sargassum spp. 67.835 -- 69.589. Among the economic seaweeds Sargassum species are abundant. Among others, although economically less important, Valoniopsis pachynema, species of Laurencia, Ulva fasciata, Amphiroa anceps form the vast majority of the standing crop in the Fifth sector. All sectors : Estimated standing crop of all the sectors along with the productive area in hectares and their relative percentages are given (Tables 27 - 28) to indicate an overall picture of the resources of agarophytes, alginophytes and the others. The estimated standing crop of the marine algae can be converted into their biomass dry weight by making deduction for the water loss on drying. The percentage of water loss of the more common Marine Algae was determined experimentally (Table - 29). The standing crop and the area surveyed in the different sectors are : I Sector - 17322 tons, 8416 ha; II Sector - 512 tons, 723 ha;

III sector - 623 tons, 170 ha; IV sector - 3438 tons, 567 ha and V sector-149 tons, 16 ha; Total 22044 tons, 9892 ha. The break-up of the sectorwise seaweed quantities and th area surveyed expressed as a percentage of these for the over all estimates is : I sector - 78.58, 49.15 ; II sector - 2.32, 10.66; III sector - 2.82, 26.58; IV sector - 15.60, 10.11 and V sector - 0.68, 3.50 (Table 30).

COASTLINE

II Sector

The coastline extends to 56.6 km of which 45km are in the mainland and 11.6 km are in the islands and is divisible into 21 sampling stations (Sector II, Fig.1). Of these, 6 in the mainland, viz. 1, 2, 3, 5, 7 and 8 and all in the islands were productive, whereas the remaining ones were devoid of the vegetation. Sampling in 92 quadrats in the mainland and 98 in the island was done covering a maximum vertical distance of 2391 m and 1002 m into the sea respectively. The coast to the south of Valinokkam Bay is sandy with protruded sandstone/rock. And near Mukkaiyur, Mukkaiyur river joins the sea. All the six islands are situated 6 km off the mainland. One sampling station for each of the island was located on the northern side facing the mainland.

III Sector

The coastline extends to 122 km of which 114 km are in the mainland and 8 km are in the islands and is divisible into 41 sampling stations (Sector III, Fig.1). Of these 7 in the mainland, viz. 1, 2, 19, 20, 23, 25 and 29 and all the three in the islands were productive, whereas the remaining were devoid of the vegetation. Out of the 38 sampling stations in the mainland, 9 (30-38) were not approachable and therefore could not be covered in detail. Sampling of 93 quadrats in the mainland and 54 quadrats in the islands was done covering a maximum vertical distance of 4000 m and 301 m into the sea respectively . The coast is mostly sandy, but marshy near Tuticorin. And near Vembar, Vembar river joins the sea and forms the boarder line between the Ramnathapuram and Tirunelveli districts. The rivers, Vaipar near Vaipar and Thamravarni near Punnakkayal and a rivulet Vappalodai near Vappalodai also joins the sea in this sector. All the three islands are situated 12 km off the mainland. One sampling station for each of the island was located on the western side facing the mainland.

Sector IV

The coastline extends to 104 km andis divisible into 42 sampling stations (Sector IV, Fig.1). Of these, 25, viz. 8, 9, 16, 17, 19 to 23, 26, 27, 28, 30 to 42 were productive, whereas the rest were devoid of the vegetation. No island is situated in this sector. Sampling of 408 quadrats was done covering a maximum vertical distance of 414 m into the sea. The coast is mostly sandy. The river Athankarai joins the sea between Vallanvillai and Kuthankuli (i.e. Station Nos. 29 and 30).

Sector V

The coastline extends to 45 km and is divisible into 15 sampling stations (Sector V, Fig. 1). Of these, 3, viz. 1, 2 and 10 were productive, whereas the remaining were devoid of the vegetation. No island is situated in this sector also. Sampling of 51 quadrats was done covering a maximum vertical distance of 711 m into the sea. The coast is mostly sandy, and partly rocky.

THE PROFILES

The profile gradients of the sampling areas are calculated from the sampling depth against sampling distance data (Tables 31 - 35). The shore gradually slopes towards the sea. The profiles of sea bottom which fall within the potential area surveyed are constructed from the angles of intersections recorded with a sextant (Sector II Fig. 2 -- 14, Sector III Fig. 2 -- 12, Sector IV Fig. 2 -- 27, Sector V Fig. 2 -- 5). A steep slope of the shore is noticed in the south of Valinokkam at station number 8 of the II Sector (Sector II, Fig. 8) which supports marine algal vegetation. The shores at Kanyakumari (South) and Muttam in the V sector also show steep slopes.

HORIZONTAL DISTRIBUTION

II Sector

A list of the marine algae collected during the II sector survey includes 74 species in all. Of these, 20 species are in minor quantities and are designated as rare (less than 6 g in a quadrat). These do not figure in the standing crop estimates. The remaining 54 species are found in estimable quantities; 29 species in the mainland and 40 species in the islands. In their distribution 25 species

occur continuously at any depth zone. And 18 species discrete besides being continuous, whereas 29 species are discrete exclusively. Thus, altogether 47 species show discrete distribution (Table - 36).

The horizontal distribution -- the stationwise occurrence of 21 abundant marine algae is shown in diagrams (Sector II, Fig. 15 - 20). Of these, 8 species, viz. Padina gymnospora, Amphiroa fragilissima, Pocockiella variegata, Sargassum ilicifolium, Sargassum plagiophyllum, Sargassum wightii, Gelidiella acerosa and Gracilaria corticata are found both in the mainland and in the islands. Others are localised : 3 species, viz. Turbinaria conoides, Turbinaria ornata and Gracilaria edulis are found in the mainland alone while seven other species, viz. Ulva reticulata, Halimedia gracilis, Lyngbya majuscula, Padina tetrastromatica, Stoechospermum marginatum, Sargassum tenerrimum and Sargassum swartzii in the islands alone.

Species of Sargassum are most widely distributed, being found at all the potential stations except Station No.3. Turbinaria species occur only at two stations, Station No.0 and 1. Gelidiella acerosa is distributed at Station No. 0, 5, 17, 18, 19 and 21, less frequent in the mainland as compared to the islands. Gracilaria edulis and Gracilaria corticata and other agarophytes occur sparsely at Station No. 5, 8, 16 and 18 though Gracilaria edulis occurs in the mainland alone. Among other seaweeds, species of Padina occur at Station No.1, 16, 17, 19, 20 and 21 mostly in the islands. Ulva reticulata occurs in the islands at Station No.17, 19 and 21.

III Sector

A list of the marine algae collected during the III Sector survey includes 52 species in all. Of these 13 species are in minor quantities and are designated as rare (less than 5 g in a quadrat). These do not figure in the standing crop estimates. The remaining 39 species are found in estimable quantities : 32 species in the mainland and 17 species in the islands. In their distribution 3 species occur continuously at any depth zone, and 11 species discrete besides being continuous, whereas 24 species are discrete exclusively. Thus altogether 36 species show discrete distribution (Table - 37).

The horizontal distribution -- the stationwise occurrence of 13 abundant marine algae -- is shown in

diagrams (Sector III Fig. 13 - 17). Of these, 6 species, viz. Gracilaria edulis, Gracilaria foliifera, Sargassum wightii, Hypnea valentiae, Spyridia insignis, and Caulerpa scalpelliformis are found both in the mainland and in the islands. Others are localised : 3 species, viz. Gracilaria corticata, Champia purvula and Grateloupia filicina in the mainland alone, while four other species, viz. Hypnea musciformis Hypnea pannosa, Padina gymnospora and Cystoseira trinodis in the islands alone.

Gracilaria edulis, Gracilaria corticata and/or Gracilaria foliifera occur at Station No.19, 23, 39, 40 and 41. Sargassum wightii occurs at Station No.19 and 40. Cystoseira trinodis occurs in the island at Station No.40 only. Spyridia insignis is most widely distributed being found at Station No.19, 23, 39 and 41.

Sector IV

A list of the marine algae collected during the IV sector survey includes 110 species in all. Of these 27 species are in minor quantities and are designated as rare (less than 5 g in quadrat). These do not figure in the standing crop estimates. The remaining 83 species are found in estimable quantities. In their distribution 12 species occur continuously at any one depth zone, and 43 species discrete besides being continuous, whereas 28 species are discrete exclusively. Thus, altogether 71 species show discrete distribution (Table 38).

The horizontal distribution -- the stationwise occurrence of 36 abundant marine algae -- is shown in diagrams (Sector IV, Fig. 28-34). Enantiocladia prolifera, Corynomorpha prismatica and Laurencia indica are the most widely distributed in the sector. Gracilaria fergusonii and Gracilaria corticata are distributed from Tiruchendur to Cape Comorin, whereas other species of Gracilaria are found less frequently except Gracilaria compressa with limited distribution (in Station No.32, Idinthakarai area). In this Sector, species of Sargassum are well represented in the Idinthakarai area (Station No.33 and 36) and are scarcely represented in other parts. Ulva fasciata, Caulerpa scalpelliformis, Cheilosporium spectabile and Amphiroa anceps are again widely distributed down south of Manapad. Leyringia borgesenii is moderately distributed from Manapad to Cape Commorin.

The region between Manapad to Cape Comorin is more productive in the sector and particularly in the Idinthakarai area.

Sector V

A list of the marine algae collected during the V sector survey includes 38 species in all. Of these 13 species are in minor quantities and are designated as rare (less than 5 g in a quadrat). These do not figure in the standing crop estimates. The remaining 25 species are found in estimable quantities. In their distribution 6 species occur continuously at any one single depth and 7 species discrete besides being continuous, whereas 12 species are discrete exclusively. Thus, altogether 19 species show discrete distribution (Table 39).

The horizontal distribution -- the specieswise occurrence of 13 abundant marine algae -- is shown in diagrams (Sector V, Fig. 6 - 8). Sargassum vulgare, Gracilaria corticata and Ulva lactuca are widely distributed. Certain species occur localized at one or the other sampling station only. Sargassum wightii, Botryocladia leptopoda and Laurencia indica were found at Kanyakumari (Station No.1), whereas Sargassum ilicifolium, Ulva fasciata, Pocockiella variegata, Valoniopsis pachynema, Amphiroa fragilissima, Laurencia paniculata at Kadiapattanam (Station No.10). The Cape Comorin region is more productive in the sector.

VERTICAL DISTRIBUTION

In order to bring out the changes in the standing crop in passing from one depth to another upto 4.0 m, vertical distribution diagrams are drawn. The vertical range together with the variation in density (g/m^2 upto a minimum of 5 g) for each of the species are represented in figures.

II Sector

In the mainland the estimable vegetation consists of 29 species (Sector II, Fig. 21). The 0.5 m depth is most productive with only 5 species. The maximum number of species 14 occur at 1.5 m, and the minimum 3 and 4.0 m. Gracilaria corticata alone shows the maximum vertical range and also the most abundant seaweed, at 0 m. Gelidiella acerosa extends from 0.5 to 1.5 m depth. Species of Sargassum are found discontinuously upto 1.5 m, Sargassum wightii being most abundant at 0.5 m depth.

In all the six islands 40 species are represented. In Upputhanni island the vegetation consists of 14 species (Sector II, Fig. 22). The 1.0 m depth is most productive and rich in species abundance, with 11 species. At 2.0 m depth a

single species is represented and 4.0 m depth is devoid of any seaweeds. Wider vertical range is shown by three brown algae, viz. Stoechospermum marginatum, Colpomenia sinuosa and Padina gymnospora. However, Sargassum tenerrimum is the most abundant seaweed at 1.5 m depth. In Suli island the vegetation consists of 12 species (Sector II, Fig. 23). The 1.0 m depth is most productive and rich in species abundance, with 9 species. At 0 m depth a single species is represented, and the 4.0 m depth is devoid of any seaweeds. Sargassum wightii shows maximum vertical range, and also the most abundant seaweed, at 2.0 m depth. Wider vertical range is shown by Padina tetrastromatica, Ulva reticulata, Pocockiella variegata, Hypnea valentiae, and Padina gymnospora. Gelidiella acerosa extends from 0.5 to 1.0 m depth. In Nallathanni island the vegetation consists of 10 species (Sector II, Fig. 24). The 0 m depth is most productive and rich in species abundance with 6 species. At 2.0 m depth minimum number of 2 species are represented and 4.0 m depth is devoid of any species. Hypnea musciformis shows the maximum vertical range discontinuously from 0 to 2.0 m depth. And Sargassum wightii is the most abundant seaweed, at 0 m depth. In Yanaiparai island the vegetation consists of 21 species (Sector II, Fig. 25). The intertidal is the most productive and rich in species abundance with 11 species. At 2.0 m depth a single species is represented and the 4.0 m depth is devoid of any seaweeds. Wider vertical range is shown by Ulva reticulata, (discontinuously) Turbinaria ornata and Halimeda gracilis. And Gracilaria crassa is the most abundant at the intertidal. In Pallayamunai island the vegetation consists of 12 species (Sector II, Fig. 26). The 0.5 m and 1.0 m depths are the more productive with 5 species are represented and both 0 m and 4.0 m depths are devoid of any species. Wider vertical range is shown by Halimeda gracilis, Amphoroa fragilissima and Padina tetrastromatica (discontinuously). And Halimeda gracilis is the most abundant at 1.0 m depth. In Nandamukhi island the vegetation consists of 11 species (Sector II, Fig. 27). The 0.5 m depth is the most productive, with 5 species. The maximum number of species 6 occur at 0 m depth and a minimum 3, both at 0.5 m and 2.0 m depths. And the 4.0 m depth is devoid of any seaweeds. Sargassum wightii shows the maximum vertical range, followed by Hypnea pannosa (discontinuously), Turbinaria ornata and Caulerpa racemosa. At 0 m depth Gelidiella acerosa is found in a small quantity. And Sargassum wightii is the most abundant species in depths ranging from intertidal to 1.5 m.

Sector - III

In the mainland the estimate vegetation consists of 32 species (Sector III, Fig. 18). The 1.5 m depth is most productive with only 6 species. The maximum number of species, 14 occur at 0.5 m, and the minimum 3, at 4.0 m. Jania adhaerens shows the maximum vertical range, discontinuously. Caulerpa scalpelliformis is the most abundant species and occurs at 1.5 m depth. Species of Gracilaria extend from 0 m to 1.5 m depth, of which Gracilaria corticata is most abundant at 0.5 m. Sargassum wightii extends from 0.5 m to 1.0 m, being abundant at 1.0 m depth.

In all the three islands 17 species are represented. In Karaya island the vegetation consists of 10 species (Sector III, Fig. 19). The 2.0 m depth is the most productive with a minimum of 4 species, though the species abundance of 8 species is seen at 1.0 m depth. The 0 m, 0.5 m, 4.0 m depths are devoid of any seaweeds. Wider vertical range is shown by three species, viz. Hypnea musciformis, Padina gymnospora and Spyridia insignis. Hypnea musciformis is also the most abundant at 2.0 m depth. In Challi island the vegetation consists of 9 species (Sector III, Fig. 20). The 2.0 m depth is most productive and rich in species abundance with 6 species. At 0.5 m depth two species are represented and 0 m and 4.0 m depths are devoid of any vegetation. Wider vertical range is shown by two seaweeds, Hypnea valentiae and Padina gymnospora. However, Sargassum wightii is the most abundant seaweed at 2.0 m depth. In Van island the vegetation consists of 7 species (Sector III, Fig. 21). The 2.0 m depth is most productive and rich in species abundance, with 5 species. At 1.0 m depth a single species is represented, and 0 m, 0.5 m and 4.0 m depths are devoid of any seaweeds. Wider vertical range is shown by Spyridia insignis, Hypnea musciformis, Gracilaria edulis and Hypnea valentiae. And Caulerpa scalpelliformis is the most abundant, at 2.0 m depth.

Sector IV

In the sector the estimable vegetation consists of 83 species (Sector IV, Fig. 35). The 1.5 m depth is more productive with 50 species. The maximum number of species 63 occur at 2.0 m, and minimum of 34 species at 4.0 m. 16 species show maximum vertical range out of which 7 species, viz. Sargassum wightii, Gracilaria corticata, Laurencia indica, Enantiocladia prolifera, Gracilaria fergusonii, Grateloupia

lithophila, and Corynomorpha prismatica occur at all depths and 9 species, viz. Caulerpa scalpelliformis, Sargassum plagiophyllum, Ulva fasciata, Laurencia flagelliformis, Amphiroa anceps, Hypnea musciformis, Sargassum vulgare, Gelidiopsis variabilis and Agardhiella robusta occur discontinuously. Sargassum plagiophyllum is the most abundant species at 0 m depth and again at 2.0 m depth, whereas Sargassum wightii is the most abundant species showing maximum continuous vertical range. Gracilaria corticata and Gracilaria fergusonii are most abundant at 0.5 m depth, whereas Gracilaria foliifera is abundant from 1.5 m to 2.0 m depth. Hypnea musciformis is most abundant at 0 m depth, and less abundant from 1.0 m to 4.0 m depths. Hypnea spinella occurs at 0 m and 2.0 m depths, being most abundant at 0 m. Hypnea spicifera occurs from 1.5 to 2.0 m, whereas Hypnea valentiae occurs only at 2.0 m depth. Cheilosporium spectabile occurs at 0 m and at 1.0 to 2.0 m depths. 22 species show occurrence only at one single depth of which 8 species at 0 m, 1 species each at 0.5, 1.0 and 4.0 m, 4 at 1.5 m, and 7 at 2.0 m depths. In the whole survey (in all the 5 sectors) maximum sampling density (biomass) was recorded north of Kaduthalai near Idinthakarai, as 13135 g/m^2 constituting 99% the species of Sargassum.

V. Sector :

In the sector the estimable vegetation consists of 25 species (Sector V, Fig. 9). The maximum number of species 11 occur at 0.5 m and minimum 2 species at 2.0 m. 5 species show maximum vertical range, out of which 3 species viz. Laurencia indica, Amphiroa anceps, Gracilaria fergusonii, occur at all depths from 0 to 1.0 m, and 2 species, viz. Gracilaria corticata and Botryocladia leptopoda occur distontinuously. Sargassum vulgare is the most abundant species at 0.5 m depth, whereas Laurencia indica is the abundant species showing maximum continuous vertical range. Gracilaria corticata, Sargassum ilicifolium and Valoniopsis pachynema are most abundant at 1.5 m depth. 13 species show occurrence only at one single depth of which 3 species at 0 m, 0.5 m and 1.0 m depths, 2 species at 1.5 m and 2.0 m, and 2 species at 4.0 m depths.

SUBSTRATA, COVER AND DENSITY

The area under different substrata in the mainland and islands is divisible into sand, mud, rock and coral, and the corresponding percentage cover, biomass and density values at different depths for the sector II, III, IV and V are given (Tables 40 - 43). The maximum standing crop values at any depth zone and the associated cover and the substrata are given below to suggest their relationship.

II Sector

In the mainland the 0.5 m depth zone is more productive with a biomass 22448 - 59678 kg., density 1.932 kg/m^2, cover 10% and sand, coral and rock substrata. In the islands: Upputhanni 1.0 m depth zone is more productive with a biomass 15363 -- 16634 kg., density 0.227 kg/m^2, cover 16.66%, and sand and rock substrata; Shuli 0.5 m depth zone is more productive with a biomass 14363 -- 17082 kg., density 0.59 kg/m^2, cover 33.33%, and sand and rock substrata; Nallathanni 2.0 m depth zone is more productive with a biomass 113424 - 204959 kg., density 0.04 kg/m^2, cover 8.33% and sand substrata;Yanaiparai 1.0 m depth zone is more productive with a biomass 14521-20053 kg., density 0.351 kg/m^2, cover 25% and sand and rock substrata; Palliamuni 1.5 m depth zone is more productive with a biomass 25573-34505 kg., density 0.189 kg/m^2, cover 6.25%, and sand and mud substrata, and Nandamukhi interdial zone is more productive with a biomass 1490--2840 kg., density 0.259 kg/m^2, cover 12.5% and sand substrata.

III Sector

In the mainland 2.0 m depth zone is more productive with a biomass 171572 kg., density 0.479 kg/m^2, cover 7.7%, and sand and mud substrata. In the islands : Karaya 2.0 depth zone is more productive with a biomass 42581--155119 kg., density 0.392 kg/m^2, cover 35%, and sand, coral and rock substrata; Challi 2.0 m depth zone is more productive with a biomass 13102--27315 kg., density 0.33 kg/m^2, cover 41.66% and sand and rock substrata and Van 2.0 m depth zone is more productive with a biomass 119603 -- 250146 kg., density 0.54 kg/m^2, cover 45% and sand and mud substrata.

IV Sector

In this sector 2.0 m depth zone is more productive with a biomass 645287--2281800 kg., density 0.606 kg/m^2, cover 33.8%, and sand and rock substrata.

V Sector

In this sector 1.5 m depth zone is more productive with a biomass 103161-112219 kg., density 3.025 kg/m^2, cover 16.66% and sand and rock substrata. The highest mean density value was recorded here because of thick population in the potential area.

The substrata cover and density values given here are based on the productive area only, and do not cover the entire area surveyed.

The nature of substratum, cover and density (g/m^2wet) of the marine algae at each station where the marine algae are found, are diagramatically shown (Sector II, Figs. 28-39; Sector III, Figs. 22-31; Sector IV, Figs. 36-60; Sector V, Figs. 10 - 12).

No analysis of the substrate and percentage cover of the marine algae in the I sector was made. However, the marine algae have been listed according to their occurrence in the sector found both in estimable quantities (5 g/m^2 and above), and as rare (less than 5 g/m^2). In all 155 species recorded are distributed as follows : In the Gulf of Mannar mainland 57 species, Gulf of Mannar islands 123 species and in the Palk Bay 48 species (Table 44). Thus the I sector represents the richest marine algal beds in quantities as well as their variety of the species.

PRACTICAL CONSIDERATIONS

The resources of the marine algae given in the present survey are most reliable as they are based on the sampling method devised to estimate the intertidal and sub-tidal populations at the same time, employing divers to take out the samples. However, it is evident that some of the smaller seaweeds like *Gelidiella acerosa* resources appear low. These can only be estimated properly by taking the samples more closely in the sampling area. The resources estimates for the few species, viz. *Gelidiella acerosa*, *Gracilaria edulis*, species of *Sargassum*, and species of *Turbinaria* will fall much short of their gross production primarily because of heavy commercial harvesting that might have preceeded the time of the survey. The loss by other avenues e.g. herbivory may not be much. It is likely that these species hardly reach their *stady stata* levels. The resources can be better understood, if resurveys are undertaken.

Michanek (1975) classified the Indian Seaweed Resources as moderate considering the richest seaweed beds anywhere in the world which exceed a million ton mark. As already pointed out this survey reveals the resources of several hitherto little known economic seaweeds.

The regrowth and recouperation of economic seaweeds from the Mandapam region have been studied only recently. Although species of Sargassum are known to take two years for recouperation (Chauhan and Krishnamurthy, 1968) on the Gujarat coast, the reports of 4 year recouperation period for Sargassum spp., and 2-3 years for Gracilaria spp., (Varma 1962) are equivocal. As pointed out by Umamaheswara Rao (1968), Raju and Thomas (1971) and Rama Rao and Subbaramaiah (1979), many seaweeds including species of Sargassum, Gracilaria and Gelidiella acerosa attain their maximum size in Mandapam region in a few months (within a year). Therefore it is suggested that on the available evidence, the marine algae would stand systematic harvesting upto 90 per cent of their biomass, annually. However, indescriminate harvesting of any species will deplete the resources. Now the Gelidiella acerosa resources need conservation and planned harvesting practices.

Besides a few seaweeds exploited from this region, several marine algae found in abundance should now be harvested and utilized. From the findings it would appear that besides the species of Sargassum, Turbinaria and Gracilaria which are being exploited, many others, viz. Hypnea valentiae (Rama Rao and Krishnamurthy 1978), Laurencia papillosa, Acanthophora spicifera, Gelidiella indica, and Gracilaria corticata (Subba Rao et al. 1977). Padina gymnospora (Chennubhotla et al. 1977) from Mandapam region have been shown to be the resources for the phycocolloids. Many of the abundant species should be likewise examined from the point of view of their utilization. In addition, the seaweeds can be made use of as manure and fertilizer or as fuel in the neighbouring coastal areas.

Significantly estimable quantities of the seaweeds are found in the survey upto a depth of 4.0 m. The deeper waters which lie in continuity with the coastal belt are not productive of the marine algae. However, seaweeds have been found entrangled in fishing nets at greater depths in the offshore waters. Rare deep water forms are also found occassionally in the drift. Therefore, it would be worthwhile investigating the off-shore waters for the marine algal resources that may form the deep-sea beds.

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Table - 1

Marine Algal Survey in the I Sector 1971-72

Mainland and Islands between Thonithurai (Mandapam) and Kilakkarai, & Mainland between Rameshwaram and Athankarai.

Depthwise Estimated Standing Crop (Kg fresh weight)

Sr. No.	Species	Depth in	I Survey				II Survey			
			Gulf of Mannar Mainland	Gulf of Mannar Islands	Palk Bay	Total	Gulf of Mannar Mainland	Gulf of Mannar Islands	Palk Bay	Total
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1.	Gelidiella acerosa	Intertidal	-	43	142	185	155	-	-	155
		0.0	-	2525	460	2985	-	15153	894	16047
		0.5	4820	34797	842	40459	-	6823	8718	15541
		1.0	670	-	671	1341	-	-	4777	4777
		1.5	4259	-	11521	15780	-	2309	-	2309
		2.0	-	-	9328	9328	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	....	9749	37365	22964	70078	155	24285	14389	38829
2.	Gracilaria edulis	Intertidal	-	-	-	-	-	71	-	71
		0.0	-	-	-	-	-	126274	398	126672
		0.5	-	30305	-	30305	160	77781	-	77941
		1.0	-	127588	13422	141010	-	-	-	-
		1.5	-	8180	-	8180	-	-	-	-
		2.0	97550	26550	-	124100	-	-	-	-
		4.0	-	18788	-	18788	-	-	-	-
	Total		97550	211411	13422	322383	160	204126	398	204684
3.	Gracilaria corticata	Intertidal	-	-	101	101	6026	-	-	6026
		0.0	-	-	14365	14365	32755	-	-	32755
		0.5	507	-	13051	13558	-	-	16345	16345
		1.0	-	1365	6760	8125	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	50102	-	50102
		4.0	-	6263	-	6263	-	-	-	-
	Total	....	507	7628	34277	42412	38781	50102	16345	105228

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
4.	Other Gracilaria sp.	Intertidal	11139	-	-	11139	-	-	-	-
		0.0	32988	72817	8143	113948	-	-	2386	2386
		0.5	59116	42302	-	101418	-	92791	5448	98239
		1.0	-	43968	-	43968	-	-	-	-
		1.5	-	1154	-	1154	-	1155	-	1155
		2.0	37247	37577	-	74824	-	25051	-	25051
		4.0	-	-	1602	1602	-	-	-	-
	Total	...	140490	197818	9745	348053	-	118997	7834	126831
5.	Hypnea sp.	Intertidal	-	7	-	7	193	85	-	278
		0.0	185	35356	-	35541	5526	33673	2088	41287
		0.5	1523	110531	-	112054	-	293384	6810	300194
		1.0	-	37833	-	37833	291	52148	-	52439
		1.5	-	93505	-	93505	-	27704	16566	44270
		2.0	23945	43839	-	67784	-	-	-	-
		4.0	-	-	21628	21628	3277	-	-	3277
	Total	...	25653	321071	21628	368352	9287	406994	25464	441745
	Grand Total		273949	775293	102036	1151278	48383	804504	64430	917317
Alginophytes										
1.	Sargassum sp.	Intertidal	119	-	4969	5088	8508	1062	-	9570
		0.0	49251	180992	70291	300534	133178	263068	-	396246
		0.5	32222	4593176	83360	4708758	71905	230613	62111	364629
		1.0	5030	128836	171125	304991	250361	55216	54713	360290
		1.5	5324	1212083	170249	1387656	236491	235490	3313	475294
		2.0	5320	284956	355610	645886	189072	576175	-	765247
		4.0	-	-	-	-	-	-	-	-
	Total	...	97266	6400043	855604	7352913	889515	1361624	120137	2371276

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
2.	Turbinaria sp.	Intertidal	-	-	646	646	-	71	-	71
		0.0	924	-	52084	53008	-	167523	1392	168915
		0.5	74466	204688	103568	382722	27487	4094	74097	105678
		1.0	97914	-	27515	125429	-	-	119412	119412
		1.5	-	-	26241	26241	-	4617	103535	108152
		2.0	7095	-	34978	42073	-	-	6036	6036
		4.0	-	-	-	-	-	-	-	-
	Total	...	180399	204688	245032	630119	27487	176305	304472	508264
3.	Padina sp.	Intertidal	409	503	-	912	103	170	-	273
		0.0	2218	61453	538	64209	25226	63137	5567	93930
		0.5	4821	105754	1684	112259	9015	45714	26969	81698
		1.0	-	31698	1006	32704	9880	4090	868	14838
		1.5	-	62335	-	62335	7383	8081	-	15464
		2.0	-	12526	-	12526	46884	-	-	46884
		4.0	-	-	-	-	-	-	-	-
	Total	...	7448	274269	3228	284945	98491	121192	33404	253087
4.	Hormophysa sp.	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	15995	-	15995
		0.5	-	-	-	-	-	2729	-	2729
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	18724	-	18724
5.	Cystoseira trinodis	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	33673	-	33673
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	33673	-	33673
	Grand Total		285113	6879000	1103864	8267977	1015493	1711518	458013	3185024

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Other Seaweeds										
1.	Enteromorpha spp.	Intertidal	-	-	-	-	-	56	-	56
		0.0	3234	4630	-	7864	-	37882	2882	40764
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	3234	4630	-	7864	-	37938	2882	40820
2.	Ulva spp.	Intertidal	1175	-	9231	10406	-	-	-	-
		0.0	16910	5051	13981	35942	-	74922	398	75320
		0.5	22708	50489	11368	84565	-	192406	45766	238172
		1.0	-	17383	9731	27114	-	40900	63397	104297
		1.5	-	5772	- 971	55772	-	11544	59636	71180
		2.0	-	31314	-	31314	-	75153	-	75153
		4.0	-	-	-	-	-	-	-	-
	Total	...	40793	110009	44311	195113	-	394925	169197	564122
3.	Chaetomorpha spp.	Intertidal	89	28	-	117	-	-	-	-
		0.0	-	-	- 4609	4609	721	-	-	721
		0.5	-	-	211	211	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	13852	-	13852
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	89	28	4820	4937	721	13852	-	14573
4.	Cladophora spp.	Intertidal	-	-	-	-	77	184	-	261
		0.0	-	421	-	421	-	2525	-	2525
		0.5	-	2729	-	2729	-	-	-	-
		1.0	-	10225	-	10225	-	2046	-	2046
		1.5	-	1154	-	1154	-	-	-	-
		2.0	-	-	-	-	6917	-	-	6917
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	14529	-	14529	6994	4755	-	11749

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
5.	Rhizoclomium	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	154	154	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	154	154	-	-	-	-
6.	Bryopsis	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	5070	5070	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	1280	1280	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	6350	6350	-	-	-	-
7.	Caulerpa sp.	Intertidal	22	-	-	22	39	-	-	39
		0.0	185	2526	307	3018	240	147319	5269	152828
		0.5	38185	258591	3789	300565	-	88697	8718	97415
		1.0	17269	223930	2349	243548	291	40900	37169	78360
		1.5	533	39248	42243	82024	2768	218173	19713	240654
		2.0	2662	-	121257	123919	3074	109598	12070	124742
		4.0	8508	-	16022	24530	-	-	-	-
	Total	...	67364	524295	185967	777626	6412	604687	82999	694038
8.	Codium spp.	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	6314	-	6314	-	39566	-	39566
		0.5	-	62771	-	62771	-	40937	-	40937
		1.0	-	14315	-	14315	-	-	-	-
		1.5	-	1154	-	1154	-	-	-	-
		2.0	-	31314	-	31314	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	115868	-	115868	-	80503	-	80503

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
9.	Halimeda gracilis	Intertidal	2409	-	-	2409	-	-	-	-
		0.0	4990	66504	615	72109	-	203300	-	203300
		0.5	76115	441442	211	517768	-	901306	21793	923099
		1.0	35544	161557	-	197101	-	289370	294841	584211
		1.5	-	49638	-	49638	-	527545	954181	1481726
		2.0	585305	12525	-	597830	-	175357	253488	428845
		4.0	-	-	-	-	-	-	-	-
	Total	...	704363	731666	826	1436855	-	2096878	1524303	3621181
10.	Halimeda macroloba	Intertidal	-	-	-	-	6	-	-	6
		0.0	-	842	-	842	641	-	-	641
		0.5	19750	10917	-	30667	1539	-	7355	8894
		1.0	5030	59306	-	64336	-	47035	3040	50075
		1.5	2662	15007	2560	20229	3922	10389	2485	16796
		2.0	46115	194145	5830	246090	7686	18789	57377	83852
		4.0	67115	-	-	67115	-	-	7265	7265
	Total	...	140712	280217	8390	429319	13794	76213	77522	167529
11.	Udotea flabellum	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	682	-	682	-	-	-	-
		1.0	-	-	-	-	2325	-	-	2325
		1.5	-	30013	-	30013	3692	-	-	3692
		2.0	-	112730	111930	224660	10760	-	-	10760
		4.0	-	-	28838	28838	19622	-	-	19622
	Total	...	-	143425	140768	284193	36399	-	-	36399
12.	Microdictyon spp.	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	3692	-	-	3692
		2.0	-	-	-	-	13066	-	-	13066
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	16758	-	-	16758

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
13.	Dictyosphaeria	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	421	-	421	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	1023	-	1023	-	-	-	-
		1.5	-	1154	-	1154	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	2598	-	2598	-	-	-	-
14.	Valoniopsis	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	2946	-	2946	4004	-	-	4004
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	2946	-	2946	4004	-	-	4004
15.	Avrainvillea	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	842	-	842	-	-	-	-
		0.5	-	8187	-	8187	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	9029	-	9029	-	-	-	-
16.	Dictyota	Intertidal	-	-	-	-	26	-	-	26
		0.0	185	-	-	185	641	14311	-	14952
		0.5	-	2047	-	2047	110	19786	-	19896
		1.0	-	3067	-	3067	582	19428	868	20878
		1.5	533	8080	-	8613	82138	2309	-	84447
		2.0	-	3131	-	3131	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	718	16325	-	17043	83497	55834	868	140199

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
17.	Pocockiella variegata	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	421	615	1036	81	-	-	81
		0.5	-	1365	-	1365	-	4094	-	4094
		1.0	-	5112	7382	12494	-	17383	-	17383
		1.5	-	1154	23041	24195	2307	93503	-	95810
		2.0	-	-	31480	31480	-	65759	-	65759
		4.0	-	-	-	-	-	-	-	-
		...	-	8052	62518	70570	2388	180739	-	183127
18.	Stoechospermum marginatum	Intertidal	-	-	-	-	103	-	-	103
		0.0	-	-	1383	1383	1762	-	-	1762
		0.5	-	-	-	-	1099	-	-	1099
		1.0	-	4090	-	4090	5812	4090	-	9902
		1.5	-	1154	-	1154	416	-	-	416
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	5244	1383	6627	9237	4090	-	13327
19.	Zonaria schimpere	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	37882	-	37882
		0.5	-	-	-	-	-	28656	-	28656
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	- 1891	-	-	1891	-	-	-	-
	Total	...	1891	-	-	1891	-	66538	-	66538
20.	Zonaria creneta	Intertidal	-	-	101	101	-	-	-	-
		0.0	-	-	461	461	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	27521	27521	-	-	-	-
		2.0	-	-	34978	34978	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	63061	63061	-	-	-	-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
21.	Spatoglossum asperum	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	1684	-	1684
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	50102	-	50102	-	-	-	-
	Total	...	-	50102	-	50102	-	1684	-	1684
22.	Colpomenia sinuosa	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	23518	-	23518
		1.5	-	-	-	-	-	16161	-	16161
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	39679	-	39679
23.	Hydroclathrus clathratus	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	842	-	842
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	842	-	842
24.	Iyengaria steltata	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	2525	-	2525
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	2525	-	2525

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
25.	Chnoospora fastigiata	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	1684	-	1684
		0.5	-	-	-	-	-	27974	-	27974
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	29658	-	29658
26.	Galaxaura oblongata	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	5773	-	5773
		2.0	-	-	-	-	-	3131	-	3131
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	8904	-	8904
27.	Gelidium spp.	Intertidal	-	-	-	-	19	-	-	19
		0.0	-	-	-	-	560	-	-	560
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	692	-	-	692
		2.0	-	-	-	-	-	-	4527	4527
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	1271	-	4527	5798
28.	Chondrococcus hornemanii	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	817	817
		0.5	-	1365	-	1365	-	3548	29962	33510
		1.0	-	-	-	-	-	6135	5798	11933
		1.5	-	-	-	-	-	-	-	-
		2.0	887	-	-	887	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	887	1365	-	2252	-	9683	36577	46260

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
29.	Amphiroa fragilissima	Intertidal	-	-	-	-	142	-	-	142
		0.0	1848	-	-	1848	-	18520	-	18520
		0.5	9134	47760	-	56894	-	1366	15800	17166
		1.0	1509	8180	11073	20762	-	10225	2606	12831
		1.5	11181	25396	12161	48738	16612	13852	1657	32121
		2.0	7094	43839	103768	154701	104527	12525	67899	184951
		4.0	28359	-	21638	49987	819	-	-	819
	Total	...	59125	125175	148630	332930	122100	56488	87962	266550
30.	Amphiroa spp.	Intertidal	-	-	-	-	-	14	-	14
		0.0	-	-	-	-	1121	-	-	1121
		0.5	-	2047	-	2047	-	-	-	-
		1.0	-	-	-	-	8428	-	-	8428
		1.5	-	-	-	-	-	110819	-	110819
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	2047	-	2047	9549	110833	-	120382
31.	Cheilosporium spectabile	Intertidal	-	-	-	-	309	-	-	309
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	309	-	-	309
32.	Jania spp.	Intertidal	-	-	-	-	780	-	-	780
		0.0	-	51771	154	51925	2322	-	-	2332
		0.5	-	-	1852	1852	6266	-	-	6266
		1.0	-	-	-	-	1162	-	-	1162
		1.5	-	-	12801	12801	923	-	-	923
		2.0	-	-	183052	183052	7686	-	-	7686
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	51771	197859	249630	19139	-	-	19139

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
33. Grateloupia										
		Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	515	-	-	515
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	6263	-	6263	-	-	-	-
	Total	...	-	6263	-	6263	515	-	-	515
34. Halymenia										
		Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	2045	-	2045	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	4726	-	-	-	-	-	-	-
	Total	...	4726	2045	-	6771	-	-	-	-
35. Gelidiopsis										
		Intertidal	-	-	20	20	180	-	-	180
		0.0	-	-	-	-	160	-	-	160
		0.5	-	-	-	-	-	-	5448	5448
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	20	20	340	-	5448	5788
36. Agardhiella										
		Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	125255	-	125255	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	125255	-	125255	-	-	-	-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
37.	Champia	Intertidal	-	-	-	-	393	85	-	478
		0.0	-	9260	-	9260	961	-	-	961
		0.5	-	682	-	682	-	-	-	-
		1.0	-	6135	-	6135	-	4090	-	4090
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	16077	-	16077	1354	4175	-	5529
38.	Centroceras clavulatum	Intertidal	-	-	-	-	64	-	-	64
		0.0	-	1684	-	1684	-	-	-	-
		0.5	-	1365	-	1365	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	3049	-	3049	64	-	-	64
39.	Spyridia	Intertidal	-	-	-	-	-	170	-	170
		0.0	- 647	-	-	647	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	3781	-	-	3781	-	-	-	-
	Total	...	4428	-	-	4428	-	170	-	170
40.	Nitophyllum	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	2045	-	2045
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	9327	9327	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	9327	9327	-	2045	-	2045

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
41.	Vanvoorstia spectabilis	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	4094	-	4094	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	4094	-	4094	-	-	-	-
42.	Acanthophora	Intertidal	-	-	-	-	2617	127	-	2744
		0.0	1663	12627	14289	28579	38029	34094	199	62322
		0.5	-	3411	-	3411	-	40938	-	40938
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	1663	16038	14289	31990	30646	75159	199	106004
43.	Chondria	Intertidal	-	-	-	-	-	-	-	-
		0.0	9240	-	-	9240	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	26622	-	-	26622	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	35862	-	-	35862	-	-	-	-
44.	Laurencia	Intertidal	521	-	-	521	3351	-	-	3351
		0.0	-	842	9218	10060	1281	1263	-	2544
		0.5	-	14328	-	14328	-	3411	1636	5047
		1.0	-	15338	-	15338	-	-	-	-
		1.5	-	42712	-	42712	461	-	1657	2118
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	521	73220	9218	82959	5098	4674	3293	13060

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
48.	Other filmentous red	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	923	-	-	923
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	923	-	-	923
49.	Iyngbya	Intertidal	-	14	-	14	-	-	-	-
		0.0	739	842	-	1581	-	-	-	-
		0.5	-	17057	-	17057	-	-	-	-
		1.0	-	-	2105	2105	-	102251	-	102251
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	12289	-	-	12289	-	-	-	-
	Total	...	13028	17913	2105	33046	-	102251	-	102251
50.	Phormidium	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	1263	994	2257
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	-	1263	994	2257
	Grand Total	...	1079404	2471462	900226	4551092	371571	4066985	1996711	6435267

Total of all seaweeds (Total productive area 8415.8137 ha) = 17321940

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
45.	Leveillea	Intertidal	-	-	-	-	64	-	-	64
		0.0	-	-	-	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	-	-	64	-	-	64
46.	Polysiphonia	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	230	-	-	-	-	-
		0.5	-	-	-	-	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	-	230	230	-	-	-	-
47.	Roschera glomerulata	Intertidal	-	-	-	-	-	-	-	-
		0.0	-	-	-	-	-	-	-	-
		0.5	-	8187	-	8187	-	-	-	-
		1.0	-	-	-	-	-	-	-	-
		1.5	-	-	-	-	-	-	-	-
		2.0	-	-	-	-	-	-	-	-
		4.0	-	-	-	-	-	-	-	-
	Total	...	-	8187	-	8187	-	-	-	-

Table - 2

Marine Algal Survey in I Sector 1971-72

Mainland & Islands between Thonithurai (Mandapam) and Kilakkarai and Mainland between Rameswaram and Athankarai wise Species/estimated standing crop (tons fresh weight)

Groups	Species	I Survey				II Survey			
		Gulf of Mannar Mainland	Gulf of Mannar Island	Palk Bay	Total	Gulf of Mannar Mainland	Gulf of Mannar Islands	Palk Bay	Total
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Agarophytes	1. Gelidiella acerosa	9.749	37.365	22.964	70.078	0.155	24.285	14.389	38.829
	2. Gracilaria edulis	97.550	211.411	13.422	322.383	0.160	204.126	0.398	204.684
	3. Gracilaria corticata	0.507	7.628	34.277	42.412	38.781	50.102	16.345	105.228
	4. Other Gracilaria spp.	140.490	197.818	9.745	348.053		118.997	7.834	126.831
	5. Hypnea sp.	25.653	321.071	21.628	368.352	9.287	406.994	25.464	441.745
	Total	273.949*	775.293	102.036*	1151.278	48.383	804.504*	64.430	917.317
Alginophytes	1. Sargassum spp.	97.266	6400.043	855.604	7352.913	889.515	1361.624	120.137	2371.276
	2. Turbinaria spp.	180.399	204.688	245.032	630.119	27.487	176.305	304.472	508.264
	3. Padina sp.	7.448	274.269	3.228	284.945	98.491	121.192	33.404	253.087
	4. Hormophysa spp.						18.724		18.724
	5. Cystoseira spp.						33.673		33.673
	Total	285.113	6879.000	1103.864	8267.977	1015.493	1711.518	458.013	3185.024
Other seaweeds	1. Enteromorpha spp.	3.234	4.630		7.864		37.938	2.882	40.820
	2. Ulva spp.	40.793	110.009	44.311	195.113		394.925	169.197	564.122
	3. Chaetomorpha spp.	0.089	0.028	4.820	4.937	0.721	13.852		14.573
	4. Cladophora spp.		14.529		14.529	6.994	4.755		11.749

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Other Seaweeds	5. Rhizoclonium			0.154	0.154				
	6. Bryopsis			6.350	6.350				
	7. Caulerpa sp.	67.364	524.295	185.967	777.626	6.412	604.687	82.939	694.038
	8. Codium spp.		115.868		115.868		80.503		80.503
	9. Halimeda gracilis	704.363	731.666	0.826	1436.855		2096.878	1524.303	3621.181
	10. Halimeda Macroloba	140.712	280.217	8.390	429.319	13.794	76.213	77.522	167.529
	11. Udotea Flabellum		143.425	140.768	284.193	36.399			36.399
	12. Microdictyon spp.					16.758			16.758
	13. Dictyosphaeria		2.598		2.598				
	14. Valoniopsis		2.946		2.946	4.004			4.004
	15. Avrainvillea		9.029		9.029				
	16. Dictyota	0.718	16.325		17.043	83.497	55.834	0.868	140.199
	17. Pocockiella variegata		8.052	62.518	70.570	2.388	180.739		183.127
	18. Stoechospermum marginatum		5.244	1.383	6.627	9.237	4.090		13.327
	19. Zonaria chimperi	1.891			1.891		66.538		66.538
	20. Zonaria crenata			63.061	63.061				
	21. Spatoglossum asperum		50.102		50.102		1.684		1.684
	22. Colpomenia sinuosa						39.679		39.679
	23. Hydroclathrus calthratus						0.842		0.842
	24. Iyengaria stellata						2.525		2.525
	25. Chnoospora fastigiata						29.658		29.658
	26. Galaxura oblongata						8.904		8.904
	27. Gelidium					1.271		4.527	5.798
	28. Chondrococcus hornemanii	0.887	1.365		2.252		9.683	36.577	46.260
	29. Amphiroa fragilissima	59.125	125.175	148.630	332.930	122.100	56.488	87.962	266.550
	30. Amphiroa sp.		2.047		2.047	9.548	110.833		120.382

.	2.	3.	4.	5.	6.	7.	8.	9.	10.
ther seaweeds									
	31. Chielosporium spectabile					0.309			0.309
	32. Jania		51.771	197.859	249.630	19.139			19.139
	33. Grateloupia		6.263		6.263	0.515			0.515
	34. Halimenia	4.726	2.045		6.771				
	35. Gelidiopsis			0.020	0.020	0.340		5.448	5.788
	36. Agardhiella		125.255		125.255				
	37. Champia		16.077		16.077	1.354	4.175		5.529
	38. Centroceras clavulatum		3.049		3.049	0.064			0.064
	39. Spyridia	4.428			4.428		0.170		0.170
	40. Nitophyllum			9.327	9.327		2.045		2.045
	41. Vanvoorstia spectabile		4.094		4.094				
	42. Acanthophora	1.663	16.038	14.289	31.990	30.646	75.159	0.199	106.004
	43. Chondria	35.862			35.862				
	44. Laurencia	0.521	73.220	9.218	82.959	5.093	4.674	3.293	13.060
	45. Leveillea					0.064			0.064
	46. Polysiphonia			0.230	0.230				
	47. Roschera glomerulata		8.187		8.187				
	48. Other filmentous red					0.923			0.923
	49. Lyngbya	13.028	17.913	2.105	33.046		102.251		102.251
	50. Phormidium						1.263	0.994	2.257
	Total	1079.404*	2471.462	900.226	4451.092	371.571	4066.985*	1996.711*	6435.267
	Grand Total	1638.466	10125.755	2106.126	13870.347	1435.447	6583.007	2519.154	10537.608

* In giving groupwise estimates for the I Sector only these quantities were included based on their abundance among both the surveys.

Table - 3

Marine Algal Survey in the I Sector 1971-72

Mainland and Islands between Thonithurai (Mandapam) & Kilakkarai & Mainland between Rameshwaram and Athankarai

Groupwise Estimated Standing Crop (tons fresh weight) & their percentage

Mainland and Islands	Productive Area Hectares	Agarophytes Standing Crop	%	Alginophytes Standing Crop	%	Other Seaweeds Standing Crop	%	Total of all seaweeds Standing Crop
Gulf of Mannar								
Main land	1713.3500	273.949	11.564	1015.493	42.869	1079.404	45.566	2368.846
Islands	4356.2737	804.504	6.846	6879.000	58.542	4066.985	34.611	11750.489
Palk Bay	2346.1900	102.030	3.186	1103.864	34.467	1996.711	62.346	3202.605
TOTAL	8415.8137	1180.483	6.815	8998.357	51.948	7143.100	41.237	17321.940

Table - 4

Marine Algal Survey in the II Sector 1972-73
Mainland between Kilakkarai and Kukkaiyur
Depthwise Estimated standing Crop (kg fresh weight)

Sr.	Species	Depth	Under continuous distribution					Under discrete distribution			Total standing crop	
			Area Sq.m.	Mean density/ g/m^2 & standard error $\bar{x} \pm se$		Standing Crop Lower limit	Standing Crop Upper limit	Area sq. m.	Mean density g/m^2	Standing crop	Lower limit	Upper limit
1	2	3	4	5		6	7	8	9	10	11	12
AGAROPHYTES												
1.	Gelidiella acerosa	0.5	--	--		--	--	1450	30.00	43	43	43
		1.0	--	--		--	--	1900	6.66	127	127	127
		1.5	17700	95	28	1185	2177	--	--	--	1185	2177
	Total					1185	2177			170	1355	2347
2.	Gracilaria corticata	Intertidal	--	--	--	--	--	1400	10	14	14	14
		0.0	1600	907	319	940	1961	--	--	--	940	1961
		0.5	--	--		--	--	1900	13.33	25	25	25
		1.5	--	--	--	--	--	10200	16.66	170	170	170
		2.0	--	--	--	--	--	15050	1.66	25	25	25
	Total					940	1961			220	1174	2195
3.	GRACILARIA DEBILIS	0.0	--	--	--	--	--	1600	26.66	27	27	27
		0.5	--	--	--	--	--	1450	1.66	3	3	3
		1.5	10200	85	30	561	1173	--	--	--	561	1173
		2.0	--	--	--	--	--	15050	5.0	75	75	75
	Total					561	1173			105	666	1278
4.	HYPNEA MUSCIFORMIS	0.0	--	--	--	--	--	1600	6.66	11	11	11
		4.0	--	--	--	--	--	74700	23.33	1743	1743	1743
	Total									1754	1754	1754
5.	Gelidiopsis respens	0.0	1600	50	--	80	80	--	--	--	80	80
	GRAND TOTAL										5029	7654

1	2	3	4	5		6	7	8	9	10	11	12
ALGINOPHYTES												
1.	Sargassum ilicifolium	2.0	5300	175	17	837	1017	--	--	--	837	1017
2.	Sargassum plagio-phyllum	Inter-tidal	--	--	-	--	--	1400	6.66	9	9	9
		0.0	1600	5	0	8	8	--	--	--	8	8
		1.0	14700	72.5	33.5	573	1578	--	--	--	573	1578
		1.5	7500	142	74.9	507	1630	--	--	--	507	1630
	Total					1088	3216				1097	3225
3.	Sargassum wightii	0.0	16800	100	54.4	756	2563	--	--	--	756	2563
		0.5	21250	1260	870	8160	45390	--	--	--	8160	45390
		1.5	11550	42	20.8	245	725	--	--	--	245	725
	Total					9161	48678				9161	48678
4.	Turbinaria conoides	0.5	--	--	--	--	--	19800	700.00	13860	13860	13860
		1.5	--	--	--	--	--	200	86.66	17	17	17
	Total									13877	13877	13877
5.	Turbinaria ornata	1.0	--	--	--	--	--	14700	70.0	1029	1029	1029
		1.5	7500	32.5	8.6	179	308	--	--	--	179	308
	Total					179	308				1208	1337
	Grand Total										26180	68134

1	2	3	4	5		6	7	8	9	10	11	12
OTHER SEAWEEDS												
1.	Enteromorpha compressa	Inter-tidal	1400	150		210	210	--	--		210	210
2.	Caulerpa cupressoides	4.0	--	--	-	--	--	74700	30.0	2241	2241	2241
3.	Caulerpa scalpelliformis	0.5	--	--	--	--	--	1450	96.66	140	140	140
4.	Caulerpa peltata	1.0	--	--	--	--	--	7500	78.33	588	588	588
		1.5	--	--	--	--	--	24600	33.33	820	820	820
		2.0	--	--	--	--	--	228400	10.00	2284	2284	2284
	Total									3244	3244	3244
5.	Caulerpa taxifolia	1.0	--	--	--	--	--	14700	11.66	171	171	171
6.	Udotea flabellum	4.0	--	--	--	--	--	600	13.33	8	8	8
7.	Microdictyon tenuis	1.5	3500	165	81	294	861	--	--	--	294	861
		2.0	77300	100	64	2782	12677	--	--	--	2782	12677
	Total					3076	13538				3076	13538
8.	Valoniopsis pachynema	0.5	--	--	--	--	--	1450	166.6	242	242	242
9.	Sphacelaria furcigera	Inter-tidal	1400	40	--	56	56	--	--	--	56	56
10.	Dictyota dichotoma	0.0	1600	10	--	16	16	--	--	--	16	16
11.	Padina gymnospora	0.0	--	--	--	--	--	15000	16.66	250	250	250
12.	Pocockiella variegata	1.5	13700	35	10.6	334	624	--	--	--	334	624
		2.0	15050	93.3	30.5	945	1863	--	--	--	945	1863
	Total					1279	2487				1279	2487

1	2	3	4	5	6	7	8	9	10	11	12
13. Zonaria crenata	1.0	14700	32.5	1.75	452	503	--	--	--	452	503
	1.5	7500	90	42.4	357	993	--	--	--	357	993
	2.0	5300	60	28.2	168	467	--	--	--	168	467
Total					977	1963				977	1963
14. Amphiroa fragilissima	1.5	3500	130	85	157	752	--	--	--	157	752
	2.0	77300	305	183	9430	37722	--	--	--	9430	37722
Total					9587	38474				9587	38474
15. Jania adhaerens	0.0	1600	16.5	1.5	24	29	--	--	--	24	29
16. Chondrococcus hornemanii	2.0	--	--	--	--	--	15080	3.83	50	50	50
17. Champia parvula	0.0	--	--	--	--	--	1600	3.3	5	5	5
18. Centroceras clavulatum	2.0	--	--	--	--	--	77300	33.33	2576	2576	2576
19. Ceramium sp.	1.5	--	--	--	--	--	3500	106.00	373	373	373
Grand Total										24973	66521

Total of all seaweeds : Total productive area 167.455 ha 56182 142 309

Table - 5

Marine Algal Survey in the II Sector 1972-73

Upputhanni Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total standing crop	
			Area sq.m.	Mean density g/m^2 and standard error $\bar{x} \pm se$	Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Agarophytes											
1.	Gracilaria corticata	1.0	-	-	-	-	70342	26.66	1876	1876	1876
2.	Gracilaria foliifera	1.0	-	-	-	-	70342	1.66	117	117	117
	Grand Total									1993	1993
Alginophytes											
1.	Cystoseira trinodes	1.0	-	-	-	-	70342	6.66	469	469	469
2.	Sargassum tenerrimum	1.5	-	-	-	-	70342	166.6	11780	11780	11780
3.	Sargassum wightii	1.0	-	-	-	-	70342	10.00	703	703	703
	Grand Total									11892	11892
Other Seaweeds											
1.	Codium tomantosum	1.0	-	-	-	-	70342	33.3	2345	2345	2345
2.	Dictyota dichotaoma	1.0	-	-	-	-	70342	3.33	586	586	586
3.	Padina gymnospora	1.0	-	-	-	-	70342	10.0	351	351	351
		1.5	-	-	-	-	70342	16.6	1172	1172	1172
	Total								1523	1523	1523

1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
4.	Padina pavonica	1.0	-	-		-	-	70342	6.66	468	468	468
5.	Pocockiella variegata	1.0	-	-		-	-	70342	16.6	1172	1172	1172
6.	Stoechospermum marginatum	0.5	-	-		-	-	15562	50.0	778	778	778
		1.0	70342	90	7	5838	6823	-	-	-	5838	6823
	Total									778	6616	7601
7.	Copomenia sinuosa	0.5	-	-	-	-	-	15562	5.0	78	78	78
		1.0	70342	22.5	2	1442	1724	-	-	-	1442	1724
	Total									78	1520	1802
8.	Hydroclathrus clathratus	0.5	-	-	-	-	-	15562	8.33	130	130	130
9.	Laurencia paniculata	2.0	-	-	-	-	-	70342	1.66	74	74	74
	Grand Total										14434	15701
	Total of all seaweeds ... (Total productive area .. 200445 sq.m.) 20.0445 ha.										29319	30586

Table -6

Marine Algal Survey in the II Sector 1972-73

Suli Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr.	Species	Depth	Under continuous distribution				Under discrete distribution			Total standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$	Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
	Agarophytes										
1.	Gelidiella acerosa	0.5	-	-	-	-	26662	1.66	44	44	44
		1.0	-	-	-	-	20587	20.00	412	412	412
	Total								456	456	456
2.	Gracilaria edulis	0.5	-	-	-	-	26662	66.66	1777	1777	1777
3.	Gracilaria foliifera	0.5	-	-	-	-	26662	6.66	178	178	178
4.	Hypnea valentiae	0.5	-	-	-	-	26662	16,66	443	443	443
		1.0	-	-	-	-	20587	63.3	1304	1304	1304
		1.5	-	-	-	-	5787	6.66	38	38	38
	Total									1785	1785
	Grand Total									4196	4196
	Alginophytes										
1.	Sargassum wightii	0.5	26662	352.5	102	6679	9398	-	-	-	6679	9398
		1.0	-	-	-	-	-	20587	133.3	2745	2745	2745
		1.5	5737	210	135	430	1479	-	-	-	430	1479
		2.0	15525	302	210	1436	7956	-	-	-	1436	7956
	Total										11290	21578

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Other seaweeds											
1.	Ulva reticulata	0.5	-	-	-	-	-	26662	16.66	444	444	444
		1.0	-	-	-	-	-	20587	133.33	2745	2745	2745
		1.5	-	-	-	-	-	5737	40.00	229	229	229
	Total										3418	3418
2.	Caulerpa racemosa	1.0	-	-	-	-	-	5737	66.66	1732	1732	1732
3.	Caulerpa sertularioides	1.0	-	-	-	-	-	5737	3.33	69	69	69
4.	Dictyota dichotoma	2.0	-	-	-	-	-	15525	16.66	289	289	289
5.	Padina gymnospora	0.5	-	-	-	-	-	26662	66.66	1777	1777	1777
		1.0	20587	100	36.3	1537	2785	-	-	-	1537	2785
		2.0	-	-	-	-	-	15525	66.66	1035	1035	1035
	Total										4349	5597
6.	Padina tetrasnomatica	0.0	-	-	-	-	-	8437	1.66	14	14	14
		0.5	-	-	-	-	-	26662	100	2666	2666	2666
		1.5	-	-	-	-	-	5737	33.33	191	191	191
	Total										2871	2871
7.	Pocockiella variegata	0.5	-	-	-	-	-	26662	13.33	355	355	355
		1.0	-	-	-	-	-	20587	26.66	549	549	549
		1.5	-	-	-	-	-	5737	33.33	191	191	191
	Total										1095	1095
	Grand Total										13433	14681

Total of all seaweeds (Total productive area 76980 sq.m.)
7.695 ha.

Table -7

Marine Algal Survey in the II Sector 1972-73

Nallathanni Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr.	Species	Depth	Under continuous distribution					Under discrete distribution			Total standing crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$		Standing Crop Lower limit	Upper limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
Agarophytes												
1.	Gelidiella acerosa	0.5	-	-	-	-	-	35175	6.66	234	234	234
2.	Gracilaria corticata	0.5	-	-	-	-	-	35175	5	176	176	176
3.	Gracilaria edulis	0.5	-	-	-	-	-	35175	6.66	234	234	234
4.	Hypnea musciformis	0.0	-	-	-	-	-	22612	30.0	678	678	678
		1.0	-	-	-	-	-	575362	6.66	3831	3831	3831
		2.0	3979800	40	11.5	113424	204959	-	-	-	113424	204959
	Total										117933	209468
5.	Hypnea valentiae	0.5	-	-	-	-	-	35175	50.00	1759	1759	1759
	Grand Total										120336	211871
Alginiphytes												
1.	Sargassum plagiophyllum	0.0	-	-	-	-	-	22612	3.33	75	75	75
2.	Sargassum wightii	0.5	35175	490	212	9426	25044	-	-	-	9426	25044
		1.0	-	-	-	-	-	575362	100	57536	57536	57536
	Total										60962	82580
	Grand Total										67037	82655

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Other Seaweeds											
1.	Padina gymnospora	0.5	-	-	-	-	-	35175	16.66	586	586	586
2.	Padina pavonica	0.0	-	-	-	-	-	22612	23.33	528	528	528
3.	Colpomenia sinuousa	0.0	-	-	-	-	-	22612	10.0	226	226	226
	Grand Total										1340	1340

Total of all seaweeds (Total productive area ... 4612949 sq.m.)
461.2949 ha. 188713 295866

Marine Algal Survey in the II Sector 1972-73

Yanaipparai Island

Depthwise Estimated standing crop (kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total standing crop	
			Area Sq.m.	Mean density (g/m^2) and Standard error $\bar{x} \pm se$		Standing crop Lower limit	Upper limit	Area sq.m.	Mean density (g/m^2)	Standing crop	Lower limit	Upper limit
1	2	3	4	5		6	7	8	9	10	11	12
AGAROPHYTES												
1.	Gelidiella acerosa	Interdial	--	--		--	--	1800	33.33	60	60	60
		0.5	--	--		--	--	72030	23.33	1680	1680	1680
	Total										1740	1740
2.	Gracilaria crassa	Intertidal	--	--		--	--	1800	333.33	581	581	581
		Intertidal	--	--		--	--	1800	50	90	90	90
		0.0	--	--		--	--	43365	10	434	434	434
	Total										524	524
3.	Hypnea valentiae	Intertidal	1800	45	10.7	62	100	--	--	--	62	100
		0.0	--	--		--	--	43365	20	867	867	867
	Total										929	967
	Grand Total										3774	3812
ALGINOPHYTES												
1.	Sargassum wightii	0.5	--	--		--	--	72030	16.66	1201	1201	1201
		1.0	49245	107.5	46.2	3081	7569	--	--	--	3081	7569
2.	Turbinaria ornata	0.0	--	--	--	--	--	43365	93.33	4047	4047	4047
		0.5	--	--	--	--	--	72030	40.00	2881	2881	2881
		1.0	--	--	--	--	--	49245	26.66	1313	1313	1313
	Total										8241	8241
	Grand Total										12523	17011

1	2	3	4	5	6	7	8	9	10	11	12
OTHER SEAWEEDS											
1.	**Ulva reticulata**	Intertidal	--	--	--	--	1800	63.33	60	60	60
		0.5	--	--	--	--	72030	40.00	2881	2881	2881
		1.0	--	--	--	--	4924	10.00	492	492	492
	Total									3433	3433
2.	Caulerpa racemosa	0.0	--	--	--	--	43365	6.66	289	289	289
3.	Codium tomantosum	0.5	--	--	--	--	72030	36.66	2641	2641	2641
4.	Halimeda gracilis	0.0	43365	100	36.3	3239	5867	--	--	--	3239	5867
		0.5	--	--	--	--	72030	43.33	3121	3121	3121
		1.0	--	--	--	--	49245	66.66	8206	8206	8206
	Total									14566	17194
5.	Udotea flabellum	2.0	--	--	--	--	38387	16.66	643	643	643
6.	Colpomenia sinuosa	Intertidal	--	--	--	--	1800	60	108	108	108
7.	Hydroclathrus clathratus	Intertidal	--	--	--	--	1800	43.33	78	78	78
8.	Dictyota dichotoma	0.5	--	--	--	--	72000	10	720	720	720
9.	Padina pavonica	Intertidal	--	--	--	--	1800	60	108	108	108
		0.0	--	--	--	--	43365	20	867	867	867
	Total									975	975

1	2	3	4	5	6	7	8	9	10	11	12
10.	Padina tetra-stromatica	0.0	--	--	--	--	43365	66.66	2891	2891	2891
11.	Pocockiella variegata	0.5	--	--	--	--	72030	23.33	1680	1680	1680
		1.0	49245	35	10.5	1201	2245	--	--	1201	2245
	Total									2881	3925
12.	Stoechospermum marginatum	Intertidal	--	--	--	--	1800	20	36	36	36
		0.0	--	--	--	--	43365	30	1301	1301	1301
	Total									1337	1337
13.	Chnoospora implexa	1.0	--	--	--	--	49245	6.66	228	228	228
14.	Centroceras clavulatum	Intertidal	--	--	--	--	1800	1.66	3	3	3
15.	Acanthophora spicifera	Intertidal	--	--	--	--	1800	13.33	23	23	23
	Total									30816	34468
	Grand Total									47113	55311

Total of all seaweeds (total productive area -- 204027 sq.m.)
20.4027 ha

Table - 9

Marine Algal Survey in the II Sector 1972-73

Palayamunai Island

Depthwise Estimated Standing Crop (Kq. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error x ± se	Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Agarophytes											
1.	Gracilaria crassa	0.5	-	-	-	-	7700	16.66	128	128	128
2.	Gracilaria edulis	0.5	-	-	-	-	7700	100.00	770	770	770
	Grand Total									898	898
Alginophytes											
1.	Sargassum ilicifolium	1.0	-	-	-	-	27775	6.66	185	185	185
	Total									185	185
Other Seaweeds											
1.	Codium tomantosm	1.0	-	-	-	-	27775	66.66	1882	1882	1882
2.	Halimeda gracilis	0.5	-	-	-	-	7700		411	411	411
		1.0	-	-	-	-	2775		5555	5555	5555
	Total									5966	5966
3.	Udotea flabellum	2.0	-	-	-	-	25700	11.66	2887	2887	2887
4.	Dictyota dichotoma	0.5	-	-	-	-	7700	30.00	231	231	231
5.	Padina tetrastromatica	1.0	-	-	-	-	27775	5.0	139	139	139
		2.0	-	-	-	-	247500	18.33	4537	4537	4537
	Total									4647	4647

-2-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
6.	Pocockiella variegata	2.0	-	-	-	-	-	25700	16.66	4125	4125	4125
7.	Amphiroa fragilissima	1.0	-	-	-	-	-	27775	11.66	324	324	324
		1.5	159500	155	28	20256	29188	-	-	-	20256	29188
	Total										20580	29512
8.	Laurencia papillosa	0.5	-	-	-	-	-	7700	30.00	231	231	231
9.	Lyngbya majuscula	1.5	-	-	-	-	-	159500	33.33	5317	5317	5317
	Total										45865	54797
	Total of all seaweeds ..... (Total productive area ..... 442475 sq.m.) 44.2475 ha.										46948	55880

Table - 10

Marine Algal Survey in the II Sector 1972-73

Nandamukhi Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total Standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$	Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Agarophytes											
1.	*Gelidiella acerosa*	2.0	-	-	-	-	825	26.66	22	22	22
2.	*Gracilaria* sp.	0.5	-	-	-	-	1350	28.33	38	38	38
3.	*Hypnea pannosa*	Intertidal	-	-	-	-	9225	35.00	323	323	323
		0.0	825	55	35.3	16	74	-	-	-	16	74
		1.5	-	-	-	-	-	450	18.33	8	8	8
		2.0	66	-	-	-	-	1500	5.0	7	7	7
	Total										31	89
	Grand Total										414	472
Alginophytes											
1.	Sargassum wightii	Intertidal	-	-	-	-	-	9225	28.33	261	261	261
		0.0	825	47	28.2	15	62	-	-	-	15	62
		0.5	1350	117	58.3	79	237	-	-	-	79	237
		1.0	-	-	-	-	-	750	10.00	7	7	7
		1.5	-	-	-	-	-	450	100.00	45	45	45
	Total										407	612

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
2.	Turbinaria ornata	Intertidal	9225	135	40	876	1614	-	-	-	876	1614
		0.0	-	-	-	-	-	825	63.33	52	52	52
		0.5	-	-	-	-	-	1350	66.66	90	90	90
		1.0	-	-	-	-	-	750	50.00	37	37	37
	Total										1055	1793
	Grand Total										1462	2405
Other Seaweeds												
1.	Ulva reticulata	Intertidal	-	-	-	-	-	9225	18.33	169	169	169
		0.0	-	-	-	-	-	825	18.33	15	15	15
	Total										184	184
2.	Caulerpa racemosa	0.5	1350	205	35.7	229	325	-	-	-	229	325
		1.0	750	92.5	27	49	90	-	-	-	49	90
		1.5	-	-	-	-	-	450	96.33	43	43	43
	Total										321	458
3.	Caulerpa scalpelliformis	0.5	-	-	-	-	-	1350	25.3	34	34	34
		1.0	-	-	-	-	-	750	233.3	175	175	175
	Total										209	209
4.	Padina tetrastromatica	Intertidal	9225	42.5	8.8	311	473	-	-	-	311	473
		0.0	-	-	-	-	-	825	10.33	-	15	15
	Total										326	488
5.	Zonaria variegata	2.0	-	-	-	-	-	1500	31.66	47	47	47
6.	Chondrococcus hornemanii	2.0	-	-	-	-	-	1500	6.66	10	10	10
	Grand Total										1097	1396
	Total of all seaweeds ..... (Total productive area .... 14100 sq.m.)										2973	4273

Table - 11

Marine Algal Survey in the II Sector 1972-73
Mainland between Kilakkarai & Mukkaiyur
Specieswise Estimated standing Crop (tons fresh weight)

Group	Species	Standing Crop Lower Limit	Standing Crop Upper Limit
Agarophytes	1. Gelidiella acerosa	1.355	2.347
	2. Gelidiopsis repens	0.080	0.080
	3. Gracilaria corticata	1.174	2.195
	4. Gracilaria debilis	0.666	1.278
	5. Hypnea musciformis	1.754	1.754
	Total	5.029	7.654
Alginophytes	1. Sargassum ilicifolium	0.837	1.017
	2. Sargassum flagiophyllum	1.097	3.225
	3. Sargassum wightii	9.161	48.678
	4. Turbinaria conoides	13.877	13.877
	5. Turbinaria ornata	1.208	1.337
	Total	26.180	68.134
Other Seaweeds	1. Enteromorpha compressa	0.250	0.250
	2. Caulerpa cupressiodes	2.241	2.241
	3. Caulerpa peltata	0.588	0.588
	4. Caulerpa scalpelli-formis	3.244	3.244
	5. Caulerpa taxifolia	0.171	0.171
	6. Udotea flabellum	0.008	0.008
	7. Microdictyon tenuis	3.076	13.538
	8. Valoniopsis pachynema	0.242	0.242
	9. Sphacelarea turcesera	0.056	0.056
	10. Dicyota dichotoma	0.016	0.016
	11. Padina gymnospora	0.250	0.250
	12. Pocockiella variegata	1.279	2.487
	13. Zonaria creneta	0.977	1.963
	14. Chondrococcus horne-manii	0.050	0.050
	15. Jania adhaerens	0.024	0.029
	16. Amphiroa fragilissima	9.587	38.474
	17. Champia purvula	0.005	0.005
	18. Centroceras clavulatum	2.576	2.576
	19. Ceramium sp.(Rhodophyta)	0.373	0.373
	Total	24.973	66.521
	Grand Total	56.182	142.307

Table - 12

Marine Algal Survey in the II Sector 1972-73

Islands between Kilakkarai & Mukkaiyur

Specieswise Estimated Standing Crop (tons fresh weight)

Sr. No.	Species	Upputhanni Island Standing crop		Sulii Island Standing crop		Nallathanni Island Standing crop		Yanaipar Island Standing crop		Palliamunai Island Standing crop		Nandamukhi Island Standing crop		Total Standing crop	
		Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	Agarophytes														
1.	Gelidiella Acerosa	--	--	0.456	0.456	0.234	0.234	1.740	1.740	--	--	0.022	0.022	2.452	2.452
2.	Gracilaria crassa	--	--	--	--	--	--	0.581	0.581	0.128	0.128	--	--	0.709	0.709
3.	Gracilaria corticata	1.876	1.876	--	--	0.176	0.176	--	--	--	--	--	--	2.052	2.052
4.	Gracilaria edulis	--	--	1.777	1.777	0.234	0.234	0.524	0.524	0.770	0.770	--	--	3.305	3.305
5.	Gracilaria foliifera	0.117	0.117	0.178	0.178	--	--	--	--	--	--	--	--	0.295	0.295
6.	Gracilaria sp.	--	--	--	--	--	--	--	--	--	--	0.038	0.038	0.038	0.038
7.	Hypnea musciformis	--	--	--	--	117.933	209.468	--	--	--	--	--	--	117.933	209.468
8.	Hypnea pannosa	--	--	--	--	--	--	--	--	--	--	0.354	0.412	0.354	0.412
9.	Hypnea valentiae	--	--	1.785	1.785	1.759	1.759	0.929	0.967	--	--	--	--	4.473	4.511
	Total	1.993	1.993	4.196	4.196	120.336	211.871	3.774	3.812	0.898	0.898	0.414	0.472	131.611	223.242

1. 2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Alginophytes														
1. Cystoseira trinodes	0.469	0.469	-	-	-	-	-	-	-	-	-	-	0.469	0.469
2. Sargassum ilicifolium	--	--	-	-	-	-	-	-	0.185	0.185	-	-	0.185	0.185
3. Sargassum plagiophyllum	--	--	-	-	0.075	0.075	-	-	-	-	-	-	0.075	0.075
4. Sargassum swartzii	--	--	-	-	-	-	4.282	8.770	-	-	-	-	4.282	8.770
5. Sargassum tenerrimum	11.720	11.720	-	-	-	-	-	-	-	-	-	-	11.720	11.720
6. Sargassum wightii	0.703	0.703	11.290	21.578	66.962	82.580	-	-	-	-	0.407	0.612	79.362	105.473
7. Turbinaria ornata	--	--	-	-	-	-	8.241	8.241	-	-	1.055	1.793	9.296	10.034
Total	12.892	12.892	11.290	21.578	67.037	82.655	12.523	17.011	0.185	0.185	1.462	2.405	105.389	136.726

1 2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Ulva reticulata	--	--	3.418	3.418	-	-	3.433	3.433	-	-	0.184	0.184	7.035	7.035
2. Caulerpa sertularioides	--	--	0.069	0.069	-	-	-	-	-	-	-	-	0.069	0.069
3. Caulerpa scalpelliformis	--	--	-	-	-	-	-	-	-	-	0.209	0.209	0.209	0.209
4. Caulerpa racemosa	--	--	1.372	1.372	-	-	0.289	0.289	-	-	0.321	0.458	1.982	2.119
5. Codium tomantosum	2.345	2.345	-	-	-	-	2.641	2.641	1.852	1.852	-	-	6.838	6.838
6. Halimeda gracilis	--	--	-	-	-	-	14.566	17.194	5.966	5.966	-	-	20.532	23.160
7. Udotea flabellum	--	--	-	-	-	-	0.643	0.643	2.887	2.887	-	-	3.530	3.530
8. Colpomenia sinuosa	1.520	1.802	-	-	0.226	0.226	0.108	0.108	-	-	-	-	1.854	2.136
9. Hydroclathrus clathratus	0.130	0.130	-	-	-	-	0.078	0.078	-	-	-	-	0.208	0.208
10. Chnoospora implexa	--	--	-	-	-	-	0.228	0.228	-	-	-	-	0.228	0.228
11. Dictyota dichotoma	0.586	0.586	0.259	0.259	-	-	0.720	0.720	0.231	0.231	-	-	1.796	0.796

Table - 13

Marine Algal Survey in the II Sector 1972-73

Mainland and Islands between Kilakkarai and Mukkaiyur

Groupwise Estimated standing crop (tons fresh weight) & their percentage

Mainland and the Islands	Productive area hectares	Agarophytes Standing crop Lower limit	Agarophytes Standing crop Upper limit	%	Alginophytes Standing crop Lower limit	Alginophytes Standing crop Upper limit	%	Other seaweeds standing crop Lower limit	Other seaweeds standing crop Upper limit	%	Total of all seaweeds standing crop Lower limit	Total of all seaweeds standing crop Upper limit
Mainland	167.45	5.029	7.654	7.0	26.180	68.134	47.0	24.973	66.521	46.0	56.182	142.309
Upputhanni	20.04	1.993	1.993	7.0	12.892	12.892	43.0	14.434	15.701	50.0	29.319	30.586
Salli	7.69	4.196	4.196	12.0	11.290	21.578	46.0	18.433	14.681	52.0	28.919	40.455
Nallathanni	461.29	120.336	211.871	68.0	67.037	82.655	31.0	1.340	1.340	1.0	188.713	295.866
Yanaiparai	20.40	3.774	3.812	7.0	12.523	17.011	29.0	30.816	34.488	64.0	47.113	55.311
Palliamunai	44.25	0.898	0.898	2.0	0.185	0.185	0.5	45.865	54.797	97.5	46.948	55.880
Nandamukhi	1.41	0.414	0.472	12.0	1.462	2.405	53.0	1.097	1.396	35.0	2.978	4.273
Total	722.55	136.640	230.896	36.0	131.569	204.860	33.0	131.958	188.924	31.0	400.167	624.680

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Table - 14

Marine Algal Survey in the III Sector 1973-74
Mainland between Mukkaiyur and Punnakkayal (Tuticorin)
Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution: Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$	Standing Crop: Lower Limit	Standing Crop: Upper Limit	Under discrete distribution: Area Sq.m.	Mean density (g/m^2)	Standing Crop	Total Standing Crop: Lower Limit	Total Standing Crop: Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
	Agarophytes										
1.	Gelidiopsis repens	1.0	-	-	-	-	600	8.33	5	5	5
2.	Gelidiopsis variabilis	0.5	-	-	-	-	600	50.0	30	30	30
3.	Gracilaria corticata	0.0	-	-	-	-	650	11.66	8	8	8
		0.5	2950	522.3	468	163	2924	-	-	-	163	2924
	Total									171	2932
4.	Gracilaria crassa	0.5	-	-	-	-	600	6.66	4	4	4
		1.5	-	-	-	-	9350	5	47	47	47
	Total									51	51
5.	Gracilaria edulis	0.5	-	-	-	-	600	5	3	3	3
		1.5	9350	134.5	77.4	1034	1981	-	-	-	534	1981
	Total									537	1984
6.	Gracilaria foliifera	0.5	-	-	-	-	600	6.66	4	4	4
7.	Hypnea valentiae	Intertidal	-	-	-	-	550	3.33	2	2	2
		1.5	-	-	-	-	9350	8.33	78	78	78
	Total									80	80
	Grand Total									878	5086

-2-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Alginophytes											
1.	Sargassum wightii	0.5	-	-	-	-	-	600	26.66	16	16	16
		1.0	-	-	-	-	-	600	135.33	80	80	80
	Grand Total										96	96
Other Seaweeds												
1.	Enteromorpha prolifera	0.5	-	-	-	-	-	2350	5.0	12	12	12
2.	Chaetomorpha littorea	Inter-tidal	-	-	-	-	-	600	80.0	48	48	48
		0.0	2850	14.5	1.76	29	36	-	-	-	29	36
	Total										77	84
3.	Cladophora fascicularis	Inter-tidal	-	-	-	-	-	600	26.66	16	16	16
4.	Caulerpa sertulariodes	"	-	-	-	-	-	550	1.66	1	1	1
		1.0	-	-	-	-	-	600	28.33	17	17	17
	Total										18	18
5.	Caulerpa scalpelliformis	1.0	8000	197.5	90.2	858	2302	-	-	-	858	2302
		1.5	41600	1800	634.2	48489	101271	-	-	-	48489	101271
		2.0	-	-	-	-	-	357450	160	57192	57192	57192
	Total										106539	160765
6.	Halimeda macroloba	0.5	-	-	-	-	-	600	63.33	38	38	38
		1.0	-	-	-	-	-	600	28.33	17	17	17
	Total										55	55
7.	Udotea flabellum	1.0	-	-	-	-	-	4700	16.66	78	78	78
8.	Padina gymnospora	0.0	-	-	-	-	-	300	13.33	4	4	4
9.	Padina tetrastromatica	0.0	-	-	-	-	-	300	5.0	2	2	2

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
9.	Padina tetrastromatica	0.5	-	-	-	-	-	600	5.0	5	5	3
	Total								5	5	5
10.	Pocockiella variegata	1.0	-	-	-	-	-	23450	40.0	938	938	938
		1.5	9350	56.6	19	352	707	-	-	-	352	707
	Total										1290	1645
11.	Spatoglossum asperum	0.5	-	-	-	-	-	600	56.66	34	34	34
		1.0	-	-	-	-	-	600	23.33	14	14	14
	Total										48	48
12.	Jania adhaerens	0.0	-	-	-	-	-	300	26.66	8	8	3
		0.5	600	67.5	8.7	35	46	-	-	-	35	46
		1.0	-	-	-	-	-	3300	23.33	77	77	77
		2.0	-	-	-	-	-	357450	3.33	1190	1190	1190
	Total										1310	1321
13.	Grateloupia filicina	0.0	35250	320	68.7	8858	13701	-	-	-	8858	13701
14.	Sarconema filiforme	4.0	-	-	-	-	-	48750	6.66	325	325	325
15.	Solieria robusta	4.0	48750	32.5	8.7	1160	2008	-	-	-	1160	2008
16.	Champia parvula	2.0	-	-	-	-	-	357450	316.66	113190	113190	113190
17.	Centroceras clavulatum	0.0	-	-	-	-	-	650	33.33	22	22	22
		0.5	-	-	-	-	-	45200	66.66	3013	3013	3013
	Total										3035	3035
18.	Spyridia insignis	1.0	-	-	-	-	-	600	6.66	4	4	4
		1.5	-	-	-	-	-	27450	5.0	137	137	137
		4.0	48750	17.5	1.8	765	941	-	-	-	765	941
	Total										906	1082

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
		0.0	-	-	-	-	-	650	8.33	5	5	5
19.	Acanthophora spicifera	Inter-tidal	8625	82.5	35.27	407	1015	-	-	-	407	1015
20.	Chondria armata	0.0	1850	215	19	363	433	-	-	-	363	433
											770	1448
	Total											
21.	Herposiphonia stuposa	Inter-tidal	-	-	-	-	-	550	25.0	14	14	14
		0.0	-	-	-	-	-	2850	5.0	14	14	14
		0.5	-	-	-	-	-	2350	60.0	141	141	141
											169	169
	Total											
		0.0	-	-	-	-	-	1850	91.66	170	170	170
22.	Laurencia nana	0.5	-	-	-	-	-	600	50.0	30	30	30
23.	Laurencia papillosa	1.5	-	-	-	-	-	9350	6.66	62	62	62
24.	Lyngbya sp.										238332	299276
	Grand Total											

Total of all seaweeds ..... (Total productive area 62.6425 ha.) 239106 304458

Table - 15

Marine Algal Survey in the III Sector 1973-74

Karaya Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution: Area sq.m.	Mean density (g/m^2) and standard error x±se	Standing Crop: Lower Limit	Standing Crop: Upper Limit	Under discrete distribution: Area sq.m.	Mean density (g/m^2)	Standing Crop	Total Standing Crop: Lower Limit	Total Standing Crop: Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Agarophytes											
1.	Gracilaria edulis	1.0	-	-	-	-	51637	3.33	172	172	172
2.	Gracilaria foliifera	1.5	-	-	-	-	75735	1.66	126	126	126
3.	Hypnea musciformis	1.0	-	-	-	-	51637	11.66	602	602	602
		1.5	75735	80 19.8	4559	7558	-	-	-	4559	7558
		2.0	251876	342.5 223.4	29998	142536	-	-	-	29998	142536
	Total									35159	150696
4.	Hypnea pannosa	1.0	-	-	-	-	51637	30	1549	1549	1549
	Grand Total									37006	152543
Other Seaweeds											
1.	Dictyota bartayresiana	1.5	-	-	-	-	75735	1.66	126	126	126
2.	Dictyota maxima	1.0	-	-	-	-	51637	5.00	258	258	258
3.	Padina gymnospora	1.0	51637	77.5 43.8	1740	6263	-	-	-	1740	6263
		1.5	-	-	-	-	75735	23.33	1767	1767	1767
		2.0	-	-	-	-	251876	15.0	3778	3778	3778
	Total									7285	11808

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
4.	Sarconema filiforme	1.0	-	-	-	-	-	51637	6.66	344	344	344
5.	Solieria robusta	1.0	-	-	-	-	-	51637	3.33	172	172	172
		2.0	-	-	-	-	-	251876	1.66	418	418	418
	Total										590	590
6.	Spyridia insignis	1.0	-	-	-	-	-	51637	3.33	172	172	172
		1.5	-	-	-	-	-	77795	5.0	379	379	379
		2.0	-	-	-	-	-	251876	33.3	8387	8387	8387
	Total										8938	8938
	Grand Total										17541	22064
	Total of all seaweeds .. (Total productive area .. 37.9248 ha)										54.547	174.607

Table - 16

Marine Algal Survey in the III Sector 1973-74

Challi Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution					Under discrete distribution			Total standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$		Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
Agarophytes												
1.	Gracilaria edulis	1.0	-	-	-	-	-	59770	6.66	398	398	398
		2.0	61160	37.5	16	1315	3272	-	-	-	1315	3272
	Total										1713	3670
2.	Hypnea musciformis	1.0	-	-	-	-	-	59770	21.66	1295	1295	1295
		2.0	-	-	-	-	-	61160	10.0	612	612	612
	Total										1907	1907
3.	Hypnea valentiae	0.5	-	-	-	-	-	31970	36.66	1172	1172	1172
		1.0	59720	12.5	1.7	645	849	-	-	-	645	849
		1.5	-	-	-	-	-	66720	8.33	555	555	555
	Total										2372	2576
	Grand Total										5992	8153
Alginophytes												
1.	Cystoseira trinoides	0.5	-	-	-	-	-	31970	86.66	2770	2770	2770
2.	Sargassum wightii	2.0	-	-	-	-	-	61160	116.6	7131	7131	7131
	Total										9901	9901

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Other Seaweeds											
1.	Microdictyon tenuis	2.0	61160	12.5	1.7	660	868	-	-	-	660	868
2.	Halimeda macroloba	2.0	-	-	-	-	-	61160	3.33	204	204	204
3.	Padina gymnospora	1.0	59770	155	67.1	5854	13275	-	-	-	5854	13275
		1.5	-	-	-	-	-	66720	6.66	444	444	444
		2.0	61160	150	99	3180	15228	-	-	-	3180	15228
	Total										9478	28947
4.	Solieria robusta	1.0	-	-	-	-	-	59770	8.33	498	498	498
	Grand Total										10840	30517
	Total of all seaweeds ..... (Total productive area .... 21.9620 ha)										26.733	48.571

Table - 17

Marine Algal Survey in the III Sector 1973-74

Van Island

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution					Under discrete distribution			Total Standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$		Standing Crop Lower Limit	Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
Agarophytes												
1.	Gracilaria edulis	1.5	64285	35	17.6	1119	3381	-	-	-	1119	3381
		2.0	-	-	-	-	-	338195	40.0	13527	13527	13527
	Total										14646	16908
2.	Gracilaria foliifera	1.5	-	-	-	-	-	64285	3.33	214	214	214
3.	Hypnea musciformis	1.5	64285	42.5	12.3	1941	3522	-	-	-	1941	3522
		2.0	-	-	-	-	-	338195	50.0	16909	16909	16909
	Total										18850	20431
4.	Hypnea valentiae	1.5	-	-	-	-	-	64285	126.6	8138	8138	8138
		2.0	338195	80	48	10822	43288	-	-	-	10822	43288
	Total										18960	51426
	Grand Total										52670	88979
Alginophytes		-NIL-			-NIL-		-NIL-			-NIL-		-NIL-

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Other Seaweeds											
1.	Caulerpa cupressoides	2.0	-	-	-	-	-	333195	1.66	561	561	561
2.	Caulerpa scaleplliformis	2.0	338195	375	145	77784	175861	-	-	-	77784	175861
3.	Spyridia insignis	1.0	-	-	-	-	-	71272	3.33	237	237	237
		1.5	-	-	-	-	-	64285	3.33	214	214	214
	Total										451	451
	Grand Total										78796	176873
	Total of all seaweeds (Total productive area - 47.3752 ha)										131466	265852

Table - 18

Marine Algal Survey in the III Sector 1973-74
Mainland between Kukkaiyur and Punnakkayal (Tuticorin)
Species-wise Estimated Standing Crop (tons fresh weight)

Group	Species	Standing crop Lower limit	Standing crop Upper limit
Agarophytes	1. Gelidiopsis repens	0.005	0.005
	2. Gelidiopsis variabilis	0.030	0.030
	3. Gracilaria corticata	0.171	2.932
	4. Gracilaria crassa	0.051	0.051
	5. Gracilaria edulis	0.537	1.984
	6. Gracilaria foliifera	0.004	0.004
	7. Hypnea valentiae	0.080	0.080
	Total	0.878	5.086
Alginophytes	1. Sargassum wightii	0.096	0.096
Other seaweeds	1. Enteromorpha prolifera	0.012	0.012
	2. Chaetomorpha littorea	0.077	0.084
	3. Cladophora fascicularis	0.016	0.016
	4. Caulerpa scalpelliformis	106.539	160.765
	5. Caulerpa sertularioides	0.018	0.018
	6. Halimeda macroloba	0.055	0.055
	7. Udotea flabellum	0.078	0.078
	8. Padina tetrastromatica	0.005	0.005
	9. Padina gymnospora	0.004	0.004
	10. Pocockiella variegata	1.290	1.645
	11. Spatoglossum asperum	0.048	0.048
	12. Jania adhaerens	1.310	1.321
	13. Grateloupia filicina	8.858	13.701
	14. Sarconema filiforme	0.325	0.325
	15. Dolritis robusta	1.160	2.008
	16. Champia purvula	113.190	113.190
	17. Centroceras clavulatum	3.035	3.035
	18. Spyridia insignis	0.906	1.088
	19. Acanthophora spicifera	0.005	0.005
	20. Chondria armata	0.770	1.448
	21. Herposiphonia stuposa	0.169	0.169
	22. Laurencia nana	0.170	0.170
	23. Laurencia papillosa	0.030	0.030
	24. Lyngbya majuscula	0.062	0.062
	Total	233.132	299.276
	Grand Total	239.106	304.458

Table - 19

Marine Algal Survey in the III Sector 1973-74

Islands between Mukkaiyur and Punnakkayal (Tuticorin)

Specieswise Estimated Standing Crop (tons fresh weight)

Sr. No. 1.	Species 2.	Karaya Island Standing Crop Lower Limit 3	Karaya Island Standing Crop Upper Limit 4	Challi Island Standing Crop Lower Limit 5	Challi Island Standing Crop Upper Limit 6	Van Island Standing Crop Lower Limit 7	Van Island Standing Crop Upper Limit 8	Total Standing Crop Lower Limit 9	Total Standing Crop Upper Limit 10
Agarophytes									
1.	Gracilaria edulis	0.172	0.172	1.713	3.670	14.646	16.908	16.531	20.750
2.	Gracilaria foliifera	0.126	0.126	-	-	0.214	0.214	0.340	0.340
3.	Hypnea musciformis	35.139	150.796	1.907	1.907	18.850	20.431	55.916	173.034
4.	Hypnea pannosa	1.549	1.549	-	-	-	-	1.549	1.549
5.	Hypnea valentiae	-	-	2.372	2.576	18.960	51.426	21.332	54.002
	Total	37.006	152.543	5.992	8.153	52.670	88.979	95.668	249.675
Alginophytes									
1.	Cystoseira trinodis	-	-	2.770	2.770	-	-	2.770	2.770
2.	Sargassum wightii	-	-	7.131	7.131	-	-	7.131	7.131
	Total	-	-	9.901	9.901	-	-	9.901	9.901
Other Seaweeds									
1.	Caulerpa cupressoides	-	-	-	-	0.561	0.561	0.561	0.561
2.	Caulerpa scalpelliformis	-	-	-	-	77.784	175.861	77.784	175.861
3.	Microdictyon tenuis	-	-	0.660	0.868	-	-	0.660	0.660
4.	Halimeda macroloba	-	-	0.204	0.204	-	-	0.204	0.204
5.	Dictyota bartayresiana	0.126	0.126	-	-	-	-	0.126	0.126
6.	Dictyota maxima	0.258	0.258	-	-	-	-	0.258	0.258
7.	Padina gymnospora	7.285	11.808	9.478	28.947	-	-	16.763	40.755
8.	Sarconema filiforme	0.344	0.344	-	-	-	-	0.344	0.344

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Other Seaweeds									
9.	Solieria robusta	0.590	0.590	0.498	0.498	-	-	1.088	1.088
10.	Spyridia insignis	8.938	8.938	-	-	0.451	0.451	9.389	9.389
	Total	17.541	22.064	10.840	30.517	78.796	176.873	107.177	229.454
	Grand Total	54.547	174.607	26.733	48.571	131.466	265.852		
	Total of all seaweeds : (Total productive area : 107.2620 ha)							212.746	489.030

Table - 20

Marine Algal Survey in the III Sector 1973-74

Mainland and Islands between Mukkaiyur and Punnakkayal (Tuticorin)

Groupwise Estimated Standing Crop (tons fresh weight) and their percentage

Mainland and the Islands	Productive area ha.	Agarophytes Standing Crop		%	Alginophytes Standing Crop		%	Other Seaweeds Standing Crop		%	Total of all Seaweeds Standing Crop	
		Lower Limit	Upper Limit		Lower Limit	Upper Limit		Lower Limit	Upper Limit		Lower Limit	Upper Limit
Mainland	62.6425	0.878	5.086	1.10	0.096	0.096	0.04	238.132	299.276	98.86	239.106	304.458
Karaya Island	37.9248	37.006	152.543	82.70	-	-	-	17.541	22.064	17.30	54.547	174.607
Challi Island	21.9620	5.992	8.153	18.80	9.901	9.901	26.30	10.840	30.517	54.90	26.733	48.571
Van Island	47.3752	52.670	88.979	35.65	-	-	-	78.796	176.873	64.35	131.466	265.852
Total	169.9045	96.546	254.761	28.20	9.997	9.997	1.60	345.309	528.730	70.20	451.852	793.488

Table - 21

Marine Algal Survey in the IV Sector 1974-75

Mainland between Punnakkayal (Tuticorin) and Cape Comorin (Kanyakumari)

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total Standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$		Standing Crop Lower Limit	Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
Agarophytes												
1.	Gelidium micropterum	0.0	1850	120.00	105.30	28	417	-	-	-	28	417
2.	Gelidiopsis repens	0.0	-	-	-	-	-	1100	10.00	11	11	11
		0.5	-	-	-	-	-	2000	15.00	30	30	30
		2.0	-	-	-	-	-	31000	25.00	775	775	775
	Total										816	816
3.	Gelidiopsis variabilis	0.0	16500	75.00	46.00	479	1997	-	-	-	479	1997
		1.0	-	-	-	-	-	1150	160.00	184	184	184
		1.5	-	-	-	-	-	5100	10.00	51	51	51
		2.0	54750	15.00	3.70	619	1024	-	-	-	619	1024
		4.0	-	-	-	-	-	11350	40.00	454	454	454
	Total										1787	3710
4.	Gracilaria compressa	1.5	-	-	-	-	-	8550	170.00	1454	1454	1454
5.	Gracilaria corticata	0.0	19450	148.70	57.00	1783	4001	-	-	-	1783	4001
		0.5	26012	251.25	128.00	3206	9865	-	-	-	3206	9865
		1.0	46100	130.00	13.80	5357	6629	-	-	-	5357	6629
		1.5	169987	62.50	21.08	7041	14207	-	-	-	7041	14207
		2.0	101075	118.57	62.77	5640	18329	-	-	-	5640	18329
		4.0	13700	100.00	63.60	498	2230	-	-	-	498	2230
	Total										23525	55261
6.	Gracilaria crassa	0.0	-	-	-	-	-	550	10.00	5	5	5
7.	Gracilaria fergusonii	0.0	-	-	-	-	-	550	5.00	3	3	3
		0.5	-	-	-	-	-	2100	210.00	441	441	441
		1.0	12150	69.30	28.90	491	1193	-	-	-	491	1193

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Alginophytes											
1.	Sargassum plagiophyllum	0.0	1550	5425.00	3732.00	2624	14193	-	-	-	2624	14193
		0.5	21512	7162.00	4613.00	54846	253320	-	-	-	54846	253320
		1.0	33000	1214.00	896.65	10473	69651	-	-	-	10473	69651
		1.5	12600	2955.00	2673.00	3553	70913	-	-	-	3553	70913
		2.0	69750	4596.60	3634.00	67141	574084	-	-	-	67141	574084
		4.0	-	-	-	-	-	24400	10.00	244	244	244
	Total										138881	982405
2.	Sargassum vulgare	0.0	16950	961.25	617.00	5835	26751	-	-	-	5835	26751
		1.0	3000	2940.00	2633.00	921	16719	-	-	-	921	16791
		1.5	162675	31.66	6.42	4106	6195	-	-	-	4106	6195
		2.0	12350	40.00	13.53	327	661	-	-	-	327	661
		4.0	-	-	-	-	-	7350	30.00	220	220	220
	Total										11409	50546
3.	Sargassum wightii	0.0	1400	17.50	8.84	12	37	-	-	-	12	37
		0.5	9800	220.00	56.80	1599	2713	-	-	-	1599	2713
		1.0	121900	2588.33	1790.15	97298	533736	-	-	-	97298	533736
		1.5	17050	4316.25	3048.00	21624	125560	-	-	-	21624	125560
		2.0	36300	145.00	100.00	1634	8893	-	-	-	1634	8893
		4.0	-	-	-	-	-	25600	500.00	12800	12800	12800
	Total										134967	683739
4.	Sargassum sp.	0.5	3450	5350.00	2085.00	11264	25651	-	-	-	11264	25651
		2.0	-	-	-	-	-	4300	230.00	989	989	989
	Total										12253	26640
	Grand Total										297510	1743330
Other Seaweeds:												
1.	Enteromorpha intestinalis	0.0	700	185.00	60.00	188	172	-	-	-	88	172
2.	Ulva fasciata	0.0	1600	115.00	74.20	65	303	-	-	-	65	303
		0.5	32612	135.71	91.10	1430	7423	-	-	-	1430	7423
		1.0	158025	92.08	34.08	8840	19620	-	-	-	8849	19620
		1.5										

1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
	Ulva fasciata	1.5	149862	26.43	12.22	2130	5792	-	-	-	2130	5792
		2.0	140387	55.00	23.11	4477	10966	-	-	-	4477	10966
		4.0	-	-	-	-	-	11350	40.00	454	454	454
	Total										17405	44558
3.	Ulva lactuca	0.0	2100	25.00	13.00	25	80	-	-	-	25	80
		0.5	-	-	-	-	-	1850	15.00	28	28	28
		1.0	34650	12.50	5.00	260	605	-	-	-	260	605
		1.5	-	-	-	-	-	5100	10.00	51	51	51
		2.0	8750	5.00	-	45	45	-	-	-	45	45
	Total										409	809
4.	Chaetomorpha littorea	0.0	1400	7.50	1.76	8	13	-	-	-	8	13
		0.5	-	-	-	-	-	2100	175.00	368	368	368
	Total										376	381
5.	Chaetomorpha torta	0.5	11250	55.00	31.8	261	976	-	-	-	261	976
		1.0	18300	22.50	5.30	315	508	-	-	-	315	508
		1.5	22400	37.50	22.40	338	1342	-	-	-	338	1342
		2.0	2900	45.00	29.03	46	215	-	-	-	46	215
	Total										960	3041
6.	Cladophora fascicularis	0.5	-	-	-	-	-	1850	100.00	185	185	185
		1.0	4250	60.00	3.53	240	270	-	-	-	240	270
		1.5	11900	25.00	14.28	126	467	-	-	-	126	467
		2.0	1900	17.50	5.25	23	43	-	-	-	23	43
	Total										574	965
7.	Cladophora utriculosa	2.0	-	-	-	-	-	10050	10.00	100	100	100
8.	Spongomorpha indica	0.5	-	-	-	-	-	2100	20.00	42	42	42
		1.5	82800	126.00	112.20	1143	19723	-	-	-	1143	19723
		2.0	6200	30.00	18.03	74	298	-	-	-	74	298
	Total										1259	20063

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
9.	Caulerpa cupressoides	0.5	-	-	-	-	-	1850	15.00	28	28	28
		1.0	4550	32.50	1.76	140	156	-	-	-	140	156
		2.0	37850	30.00	14.10	602	1669	-	-	-	602	1669
		4.0	-	-	-	-	-	7300	15.00	110	110	110
	Total										880	1963
10.	Caulerpa fergusonii	0.5	5250	15.00	7.90	37	120	-	-	-	37	120
		1.0	59075	258.57	122.20	8056	22494	-	-	-	8056	22494
		1.5	147287	220.50	89.80	19250	45703	-	-	-	19250	45703
		2.0	149462	80.45	37.47	6424	17625	-	-	-	6424	17625
		4.0	32000	115.00	74.25	1304	6056	-	-	-	1304	6056
	Total										35071	91998
11.	Caulerpa scalpelliformis	0.0	17050	85.00	75.80	157	2741	-	-	-	157	2741
		0.5	-	-	-	-	-	1850	5.00	9	9	9
		1.0	10250	33.33	16.47	173	510	-	-	-	173	510
		1.5	75737	32.00	14.75	1306	3540	-	-	-	1306	3540
		2.0	343675	52.00	23.01	9967	25776	-	-	-	9967	25776
		4.0	36450	35.00	21.50	492	2059	-	-	-	492	2059
	Total										12104	34635
12.	Caulerpa sedoides	1.0	6000	22.50	1.75	124	145	-	-	-	124	145
		1.5	-	-	-	-	-	8550	10.00	85	85	85
		2.0	-	-	-	-	-	4450	55.00	245	245	245
	Total										454	475
13.	Caulerpa sertularoides	2.0	-	-	-	-	-	10050	5.00	50	50	50
14.	Codium coronatum	1.5	-	-	-	-	-	1050	20.00	21	21	21
15.	Halimeda macroloba	1.5	-	-	-	-	-	6500	220.00	1430	1430	1430
		2.0	48800	32.50	17.50	732	2440	-	-	-	732	2440
		4.0	358125	13.33	6.43	2471	7076	-	-	-	2471	7076
	Total										4633	10946

1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
16.	Halimeda opuntia	0.5	-	-	-	-	-	1850	20.00	37	37	37
		1.0	4100	20.00	3.53	67	96	-	-	-	67	96
		1.5	7800	42.50	8.83	246	375	-	-	-	246	375
		2.0	-	-	-	-	-	2700	10.00	27	27	27
	Total										377	535
17.	Halimeda tuna	0.5	-	-	-	-	-	2100	20.00	42	42	42
		1.0	21600	86.66	48.33	828	2916	-	-	-	828	2916
		1.5	611012	33.21	8.42	16147	25436	-	-	-	16147	25436
		2.0	695812	53.83	20.06	23498	51413	-	-	-	23498	51413
		4.0	628125	125.80	87.62	23981	134054	-	-	-	23981	134054
	Total										64496	213861
18.	Udotea flabellum	2.0	-	-	-	-	-	10050	35.00	352	352	352
19.	Valoniopsis pachynema		-	-	-	-	-	450	15.00	7	7	7
20.	Dictyopteris delicatula	1.0	3200	30.00	14.14	51	141	-	-	-	51	141
		2.0	-	-	-	-	-	28650	80.00	3092	3092	3092
		4.0	144700	46.60	37.41	1330	12156	-	-	-	1330	12156
	To+									3092	4473	15389
21.	Dictyota dichotc	0.0	-	-	-	-	-	850	15.00	13	13	13
22.	Dictyota maxima	1.0	-	-	-	-	-	950	25.00	24	24	24
		1.5	60375	12.50	1.76	648	861	-	-	-	648	861
		2.0	60700	18.30	8.71	582	1639	-	-	-	582	1639
		4.0	-	-	-	-	-	7000	30.00	210	210	210
	Total									234	1464	2734
23.	Padina pavonica	1.5	-	-	-	-	-	3000	10.00	30	30	30
24.	Padina tetrastromatica	0.0	16500	57.50	26.50	512	1386	-	-	-	512	1386
		2.0	-	-	-	-	-	38650	40.00	1546	1546	1546
	Total									1546	2058	2932

1.	2.	3.	4.	5.	6	7.	8.	9.	10.	11.	12.
25.	Pocockiella variegata	0.5	-	-	-	-	1850	5.00	9	9	9
		1.5	-	-	-	-	11650	20.00	233	233	233
		2.0	-	-	-	-	4300	30.00	129	129	129
	Total								371	371	371
26.	Spatoglossum asperum	1.5	8550	195.00	46.00	1274	2060	-	-	1274	2060
		2.0	625025	433.63	246.90	116711	425348	-	-	116711	425348
		4.0	156700	817.30	175.60	100554	155587	-	-	100554	155587
	Total									218539	582995
27.	Stoechospermum marginatum	0.5	1850	470.00	77.80	725	1013	-	-	725	1013
		1.0	5150	82.50	23.00	306	543	-	-	306	543
		1.5	19100	253.00	246.30	134	9542	-	-	134	9542
		2.0	74600	341.00	182.82	11800	39077	-	-	11800	39077
		4.0	11100	135.00	67.20	753	2244	-	-	753	2244
	Total									13718	52419
28.	Levringia borgensenii	0.5	-	-	-	-	-	2100	100.00	210	210	210
		1.0	8050	16.25	6.66	77	184	-	-	-	77	184
		1.5	8550	21.66	10.68	94	276	-	-	-	94	276
		2.0	107100	55.90	19.95	3850	8124	-	-	-	3850	8124
		4.0	-	-	-	-	-	6700	10.00	67	67	67
	Total									277	4298	8861
29.	Iyengaria stellata	1.5	-	-	-	-	-	3000	10.00	30	30	30
30.	Hormophysa triquetra	0.5	-	-	-	-	-	9250	150.00	1387	1387	1387
31.	Liagora pulverulenta	1.0	-	-	-	-	-	4250	25.00	106	106	106
		1.5	-	-	-	-	-	3000	10.00	30	30	30
											136	136
32.	Scinaia bengalica	2.0	-	-	-	-	-	2700	180.00	486	486	486
33.	Asperagopsis taxiformis	0.5	-	-	-	-	-	2100	50.00	105	105	105
		1.5	-	-	-	-	-	5100	10.00	51	51	51
		2.0	-	-	-	-	-	2700	15.00	40	40	40
	Total										196	196

1.	2.	3.	4.	5.		6.	7.	8.	9.	10.	11.	12.
34.	Chondrococcus hornemanii	0.5	-	-	-	-	-	3850	10.00	25	25	25
		2.0	-	-	-	-	-	19050	15.00	286	286	286
	Total										311	311
35.	Amphiroa anastromosans	0.5	-	-	-	-	-	3450	90.00	310	310	310
		1.0	16100	197.50	107.83	1444	4916	-	-	-	1444	4916
		1.5	15050	133.75	87.55	699	3332	-	-	-	699	3332
		2.0	220775	299.16	116.69	24830	76255	-	-	-	24830	76355
		4.0	189000	198.75	168.80	5660	69467	-	-	-	5660	69467
	Total										32943	154380
36.	Amphiroa anceps	0.0	-	-	-	-	-	450	30.00	13	13	13
		1.0	120650	26.25	12.00	1719	4615	-	-	-	1719	4615
		1.5	211550	150.60	112.20	8124	55595	-	-	-	8124	55595
		2.0	353250	220.00	135.80	29744	125686	-	-	-	29744	125686
		4.0	529375	369.00	228.70	74377	316513	-	-	-	74377	316513
	Total										113977	502422
37.	Amphiroa foliacea	1.5	-	-	-	-	-	3850	160.00	616	616	616
		2.0	-	-	-	-	-	4450	135.00	601	601	601
	Total										1217	1217
38.	Amphiroa fragilissima.	0.0	-	-	-	-	-	1100	20.00	22	22	22
		0.5	-	-	-	-	-	2100	50.00	105	105	105
		2.0	72450	198.33	170.47	2018	262720	-	-	-	2018	26720
	Total										2145	26847
39.	Cheilosporium spectabile.	0.0	1500	55.00	17.60	56	109	- 109	-	-	56	109
		0.5	-	-	-	-	-	2550	40.00	102	102	102
		1.0	20050	88.33	51.50	738	2803	-	-	73	738	2803
		1.5	163850	64.28	20.01	7254	13811	-	-	-	7254	13811
		2.0	326062	48.50	15.00	10923	20705	-	-	-	10923	20705
	Total										19073	37530
40.	Jania adhaerens	0.0	16500	30.00	14.10	263	728	-	-	-	263	728
		2.0	-	-	-	-	-	25400	15.00	381	381	381
	Total										644	1109
41.	Jania iyengarii	0.5	-	-	-	-	-	3450	40.00	138	138	138
		1.0	-	-	-	-	-	14050	50.00	702	702	702
	Total										840	840

1	2	3	4	5		6	7	8	9	10	11	12
42.	Cryptonemia coriacea	2.0	14100	90.00	67.25	391	2217	--	--	--	391	2217
43.	Grateloupia filicina	1.0	--	--	--	--	--	1850	10.00	18	18	18
44.	Grateloupia lithophila	0.0	2100	96.25	28.50	142	262	--	--	--	142	262
		0.5	2650	50.00	28.30	58	208	--	--	--	58	208
		1.0	6000	7.50	1.76	34	55	--	--	--	34	55
		1.5	6650	12.50	1.76	71	95	--	--	--	71	95
		2.0	413700	23.00	10.73	5076	13954	--	--	--	5076	13954
		4.0	11350	15.00	3.53	130	210	--	--	--	130	210
	Total										5511	14784
45.	Corynomorpha prismatica	0.0	--	--	--	--	--	1100	255.00	281	281	281
		0.5	5950	244.00	221.00	137	2767	--	--	--	137	2767
		1.0	2900	37.50	8.84	83	134	--	--	--	83	134
		1.5	106025	96.11	41.20	5822	14558	--	--	--	5822	14558
		2.0	652850	142.36	38.95	67511	118368	--	--	--	67511	118368
		4.0	823000	15.82	4.16	9596	16433	--	--	--	9596	16443
	Total										83430	152551
46.	Sarcodia ceylanica	0.5	--	--	--	--	--	1850	30.00	55	55	55
		1.0	17850	142.00	104.00	678	4391	--	--	--	678	4391
		1.5	69325	57.50	33.90	1636	6336	--	--	--	1636	6336
		2.0	59650	66.25	34.70	1882	6022	--	--	--	1882	6022
		4.0	25050	120.00	82.00	952	5060	--	--	--	952	5060
	Total										5203	21864

1	2	3	4	5	6	7	8	9	10	11	12
47.	Agardhiella robusta	0.0	--	--	--	--	--	1050	10.00	10	10	10
		0.5	--	--	--	--	--	2100	260.00	546	546	546
		1.0	--	--	--	--	--	250	25.00	6	6	6
		1.5	413700	150.00	118.53	13020	111091	--	--	--	13020	111091
		4.0	--	--	--	--	--	11350	15.00	170	170	170
	Total										13752	111823
48.	Sarconema filiforme	0.0	--	--	--	--	--	850	570.00	484	484	484
		1.5	--	--	--	--	--	8650	15.00	128	128	128
		2.0	29100	20.00	7.04	377	767	--	--	--	377	767
	Total										989	1379
49.	Solieria indica	0.5	--	--	--	--	--	1850	120.00	222	222	222
		2.0	49950	72.50	37.10	1768	5475	--	--	--	1768	5475
		4.0	--	--	--	--	--	7000	10.00	70	70	70
	Total										2060	5767
50.	Gymnogongrus pygmaeus	0.0	--	--	--	--	--	1150	50.00	57	57	57
51.	Rotryocladia leptopoda	2.0	80950	1021.25	888.00	10787	154554	--	--	--	10787	154554
		4.0	152350	242.00	96.60	22152	51586	--	--	--	22152	51586
	Total										32939	206140
52.	Coelarthrum oppuntia	1.5	--	--	--	--	--	8550	10.00	85	85	85
		2.0	442850	26.42	8.70	7847	15553	--	--	--	7847	15553
		4.0	358125	300.00	127.80	61848	153027	--	--	--	61848	153027
	Total										69780	168665
53.	Champia compressa	1.5	--	--	--	--	--	5100	10.00	51	51	51
		2.0	2700	22.50	1.76	56	65	--	--	--	56	65
	Total										107	116
54.	Champia parvula	0.5	--	--	--	--	--	2100	20.00	42	42	42
		1.5	--	--	--	--	--	3450	10.00	34	34	34
		2.0	18050	10.00	5.00	90	271	--	--	--	90	271
	Total										166	347

1	2	3	4	5	6	7	8	9	10	11	12
55.	Centroceras clavulatum	0.0	--	--	--	--	--	1150	10.00	11	11	12
		0.5	--	--	--	--	--	1750	60.00	105	105	105
		1.0	--	--	--	--	--	950	60.00	57	57	57
		1.5	--	--	--	--	--	3000	20.00	60	60	60
	Total										233	233
56.	Griffithsia tenuis	0.0	--	--	--	--	--	1050	330.00	347	347	347
		2.0	--	--	--	--	--	38650	20.00	773	773	773
	Total										1120	1120
57.	Haloplegma duperrevi	1.0	--	--	--	--	--	11350	45.00	511	511	511
58.	Wrangelia argus	0.5	--	--	--	--	--	550	20.00	11	11	11
		1.0	--	--	--	--	--	4250	20.00	85	85	85
		1.5	--	--	--	--	--	3450	15.00	52	52	52
		2.0	17300	32.50	21.76	186	939	--	--	--	186	939
	Total										334	1087
59.	Acanthophora spicifera	0.0	--	--	--	--	--	5050	60.00	63	63	63
		0.5	--	--	--	--	--	1300	10.00	13	13	13
	Total										76	76
60.	Chondria Armata	1.5	--	--	--	--	--	5050	15.00	76	76	76
		2.0	49950	15.00	3.50	574	924	--	--	--	574	924
	Total										650	1000

1	2	3	4	5	6	7	8	9	10	11	12
61.	Enanticocladia prolifera	0.0	2450	30.00	13.53	40	106	--	--	--	40	106
		0.5	29100	418.75	411.85	201	24171	--	--	--	201	24171
		1.0	24350	83.75	71.35	302	3776	--	--	--	302	3776
		1.5	489275	108.88	63.10	22399	84145	--	--	--	22399	84145
		2.0	882075	102.50	37.03	57749	123076	--	--	--	57749	123076
		4.0	990100	161.40	42.40	118188	201416	--	--	--	118188	201416
	Total										198879	436690
62.	Laurencia cevlanica	0.0	--	--	--	--	--	850	60.00	55	55	55
		1.0	--	--	--	--	--	4250	230.00	98	98	98
	Total										153	153
63.	Laurencia flagelliformis	0.0	1100	173.30	138.00	39	342	--	--	--	39	342
		1.5	--	--	--	--	--	3850	320.00	1232	1232	1232
		2.0	12350	165.00	53.00	1383	2692	--	--	--	1383	2692
		4.0	14050	280.00	141.44	1947	5921	--	--	--	1947	5921
	Total										4601	10187
64.	Laurencia indica	0.0	7300	51.66	32.30	141	613	--	--	--	141	613
		0.5	4650	51.66	22.30	137	344	--	--	--	137	344
		1.0	2900	76.66	45.72	90	355	--	--	--	90	355
		1.5	288412	239.30	85.00	44502	93532	--	--	--	44502	93532
		2.0	366312	152.91	40.30	41250	70790	--	--	--	41250	70790
		4.0	472475	95.00	29.30	31042	58278	--	--	--	31042	58278
	Total										117162	224362

1.	2.	3	4	5		6	7	8	9	10	11	12
65.	Laurencia paniculata	0.5	3150	145.00	72.25	223	691	--	--	--	223	691
		1.0	7250	200.80	133.00	491	2420	--	--	--	491	2420
		1.5	21800	557.50	351.00	4502	19805	--	--	--	4502	19805
		2.0	401075	163.00	63.13	40055	90695	--	--	--	40055	90695
		4.0	98775	90.00	43.15	4628	13152	--	--	--	4628	13152
	Total										49899	126763
66.	Dictyurus purpurescens	0.5	--	--	--	--	--	1850	20.00	37	37	37
		1.0	5250	60.00	35.35	105	405	--	--	--	105	405
		1.5	--	--	--	--	--	27950	10.00	279	279	279
		2.0	89550	122.50	45.88	6861	15078	--	--	--	6861	15078
		4.0	967700	37.00	10.17	25963	45646	--	--	--	25963	45646
	Total										33245	61445
	Grand Total										1179231	3366922
	Total of all seaweeds : (Total productive area 566.88 ha)										1576416	5299783

PK

Table - 22

Marine Algal Survey in IV Sector 1974-75

Mainland between Punnakkayal(Tuticorin) and Cape Comorin (Kanyakumari)

Specieswise Estimated Standing Crop (tons fresh wt.)

Group		Species	Standing crop	
			Lower limit	Upper limit
1		2	3	4
Agarophytes	1.	Gelidium micropterum	0.028	0.417
	2.	Gelidiopsis repens	0.816	0.816
	3.	Geligiopsis variabilis	1.787	3.710
	4.	Gracilaria compressa	1.454	1.454
	5.	Gracilaria corticata	23.525	55.261
	6.	Gracilaria crassa	0.005	0.005
	7.	Gracilaria fergusonii	56.594	99.675
	8.	Gracilaria foliifera	4.651	9.347
	9.	Hypnea musciformis	8.716	15.052
	10.	Hypnea spicifera	0.109	0.109
	11.	Hypnea spinella	0.853	0.853
	12.	Hypnea valentiae	1.074	2.769
	13.	Gigartina acicularis	0.063	0.063
		Total	99.675	189.531
Alginophytes	1.	Sargassum plagiophyllum	138.881	982.405
	2.	Sargassum vulgare	11.409	50.546
	3.	Sargassum wightii	134.967	683.739
	4.	Sargassum sp.	12.253	26.640
		Total	297.510	1743.330
Other seaweeds	1.	Enteromorpha intestinalis	0.088	0.172
	2.	Ulva fasciata	17.405	44.558
	3.	Ulva lactuca	0.409	0.809
	4.	Chaetomorpha littorea	0.376	0.381
	5.	Chaetomorpha torta	0.960	3.041
	6.	Cladophora fascicularis	0.574	0.965
	7.	Cladophora uriculosa	0.100	0.100
	8.	Spongomorpha indica	1.259	20.063
	9.	Caulerpa cupressoides	0.880	1.963
	10.	Caulerpa fergusonii	35.071	91.998
	11.	Caulerpa scalpelliformis	12.104	34.635
	12.	Caulerpa sedoides	0.454	0.475
	13.	Caulerpa sertularioides	0.050	0.050
	14.	Codium coronatum	0.021	0.021
	15.	Halimeda macroloba	4.633	10.946
	16.	Halimeda opuntia	0.377	0.535
	17.	Halimeda tuna	64.496	213.861
	18.	Udotea flabellum	0.352	0.352

1	2	3	4
19.	Valoniopsis pachynema	0.007	0.007
20.	Dictyopteris delicatula	4.473	15.389
21.	Dictyota maxima	1.464	2.734
22.	Dictyota dichotoma	0.013	0.013
23.	Padina pavonica	0.030	0.030
24.	Padina tetrastromatics	2.058	2.932
25.	Pocockiella variegata	0.371	0.371
26.	Spatoglossum asperum	218.539	582.995
27.	Stoechospermum marginatum	13.718	52.419
28.	Levringia borgensenii	4.298	8.861
29.	Iyengaria stellata	0.030	0.030
30.	Hormophysa triquetra	1.387	1.387
31.	Liagora pulverulenta	0.136	0.136
32.	Scinaia bengalica	0.486	0.486
33.	Asparagopsis taxiformis	0.196	0.196
34.	Chondrococcus hornemanii	0.311	0.311
35.	Amphiroa anastromosans	32.943	154.380
36.	Amphiroa ancepa	113.977	502.422
37.	Amphiroa foliacea	1.217	1.217
38.	Amphiroa fragilissima	2.145	26.847
39.	Cheilosporium spectabile	19.073	37.530
40.	Jania adhaerens	0.644	1.109
41.	Jania iyengarii	0.840	0.840
42.	Cryptonemia coriacea	0.391	2.217
43.	Grateloupia filicina	0.018	0.018
44.	Grateloupia lithophils	5.511	14.784
45.	Corynomorpha prismatica	83.430	152.551
46.	Sarcodia ceylanica	5.203	21.864
47.	Agardhiella robusta	13.752	111.833
48.	Sarconema filiforme	0.989	1.379
49.	Solieria indica	2.060	5.767
50.	Cymnogongrus pygmaeus	0.057	0.057
51.	Botryocladia leptopoda	32.939	206.140
52.	Coelarthrum opuntia	69.780	168.665
53.	Champia compressa	0.107	0.116
54.	Champia parvula	0.166	0.347
55.	Centroceras clavulatum	0.233	0.233

1	2	3	4
56.	Griffithsia tenuis	1.120	1.120
57.	Haloplegma duperrevi	0.511	0.511
58.	Wrangelia argus	0.334	1.087
59.	Acanthophora spicifera	0.076	0.076
60.	Chondria armata	0.650	1.000
61.	Enanthiocladia prolifera	198.879	436.690
62.	Laurencia ceylanica	0.153	0.153
63.	Laurencia flagelliformis	4.601	10.187
64.	Laurencia indica	117.162	224.362
65.	Laurencia paniculata	49.899	126.763
66.	Dictyurus purpurescens	33.245	61.445
	Total	1179.231	3366.922
	Grand Total	1576.416	5299.783

Table - 23

Marine Algal Survey in the IV Sector 1974-75

Mainland between Punnakkayal (Tuticorin) and Cape Comorin (Kanyakumari)

Groupwise estimates standing crop (tons fresh weight) and their percentage

Productive area hectares	Agarophytes standing crop		%	Alginophytes standing crop		%	Other seaweeds standing crop		%	Total of all seaweeds standing crop	
	Lower limit	Upper limit		Lower limit	Upper limit		Lower limit	Upper limit		Lower limit	Upper limit
566.88	99.675	189.531	4.20	297.510	1743.330	29.70	1179.231	3366.922	66.10	1576.416	5299.783

Table - 24

Marine Algal Survey in the V Sector 1975-76

Mainland between Cape Comorin (Kanyakumari) & Melmidalam (Colachel)

Depthwise Estimated Standing Crop (Kg. fresh weight)

Sr. No.	Species	Depth	Under continuous distribution				Under discrete distribution			Total Standing Crop	
			Area sq.m.	Mean density (g/m^2) and standard error $\bar{x} \pm se$	Standing Crop Lower Limit	Standing Crop Upper Limit	Area sq.m.	Mean density (g/m^2)	Standing Crop	Lower Limit	Upper Limit
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Agarophytes											
1.	Gelidiopsis repens	0.0	1700	10.00	0.0	17	17	-	-	17	17
2.	Gracilaria corticata	0.0	1700	290.00	148.40	241	745	-	-	241	745
		1.0	5200	115.00	60.10	285	910	-	-	285	910
		1.5	35600	630.00	106.00	18654	26202	-	-	18654	26202
	Total									19180	27857
3.	Gracilaria fergusonii	0.0	-	-	-	-	1700	40.00	68	68	68
		0.5	-	-	-	-	3400	180.00	612	612	612
		1.0	-	-	-	-	2200	20.00	44	44	44
	Total									724	724
4.	Hypnea spinella	0.0	-	-	-	-	1700	140.00	238	238	238
	Grand Total									20159	28836
Alginophytes											
1.	Sargassum ilicifolium	1.0	5200	[illegible]00	14.14	342	490	-	-	342	490
		1.5	-	-	-	-	-	35600	1340.00	47704	47704
	Total									48046	48194

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
2.	Sargassum vulgare	0.5	-	-	-	-	-	3400	2290.00	7786	7786
		1.5	35600	290.00	21.21	9569	11079	-	-	-	9569
	Total										17355
3.	Sargassum wightii	0.0	1700	380.00	28.28	598	694	-	-	-	598
		0.5	-	-	-	-	-	3400	540.00	1836	1836
	Total										2434
	Grand Total										67835
Other Seaweeds											
1.	Ulva fasciata	1.0	-	-	-	-	-	5200	160.00	832	832
		1.5	-	-	-	-	-	35600	40.00	1424	1424
	Total										2256
2.	Ulva lactuca	0.0	35250	125.00	85.68	1386	7426	-	-	-	1386
		0.5	-	-	-	-	-	3400	30.00	102	102
3.	Chaetomorpha antennina	0.0	3000	115.00	3.53	334	356	-	-	-	334
4.	Caulerpa scalepelliformis	0.5	3400	22.50	1.76	71	82	-	-	-	71
5.	Valeniopsis pachynema	1.5	-	-	-	-	-	35600	680.00	24208	24208
		2.0	-	-	-	-	-	62850	140.00	8799	8799
	Total										33007
6.	Dictyopteris delicatula	0.5	-	-	-	-	-	3400	5.00	17	17
7.	Levringia borgensenii	0.0	1700	85.00	43.74	70	219	-	-	-	70
		0.5	-	-	-	-	-	3400	10.00	34	34
											104

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
8.	Padina pavonica	1.0	-	-	-	-	-	5200	50.00	260	260	260
9.	Pocockiella variegata	2.0	-	-	-	-	-	62850	20.00	1527	1257	1257
10.	Amphiroa anceps	0.0	-	-	-	-	-	1700	80.00	136	136	136
		0.5	-	-	-	-	-	3400	430.00	1462	1462	1462
		1.0	-	-	-	-	-	2200	220.00	484	484	484
											2082	2082
11.	Amphiroa fragilissima	1.5	-	-	-	-	-	35600	45.00	1602	1602	1602
12.	Cryptonemia coriacea	4.0	13000	62.50	40.65	284	1341	-	-	-	284	1341
13.	Sarcodia ceylanica	0.5	-	-	-	-	-	3400	60.00	204	204	204
14.	Botryocladia leptopoda	0.5	-	-	-	-	-	3400	10.00	34	34	34
		1.0	-	-	-	-	-	2200	10.00	22	22	22
		4.0	13000	122.50	40.65	1064	2121	-	-	-	1064	2121
	Total										1120	2177
15.	Entiocladia prolifera	4.0	13000	30.00	17.67	160	620	-	-	-	160	620
16.	Centroceras clavulatum	1.0	-	-	-	-	-	5200	40.00	208	208	208
17.	Laurencia indica	0.0	1700	440.00	28.28	670	796	-	-	-	670	796
		0.5	3400	560.00	127.20	1471	2336	-	-	-	1471	2336
		1.0	-	-	-	-	-	2200	680.00	1496	1496	1496
	Total										3637	4628
18.	Laurencia paniculata	1.0	-	-	-	-	-	5200	490.00	2548	2548	2548
	Grand Total										50699	60426
			Total of all seaweeds ...(Total productive area ... 16.22 ha)								138633	158851

Table - 25

Marine Algal Survey in the V Sector 1975-76
Mainland between Cape Comorin (Kanyakumari) & Melmidalam (Colachel)
Species-wise Estimated standing crop (tons fresh weight)

Group	Species	Standing crop	
		Lower limit	Upper limit
Agarophytes	1. Gelidiopsis repens	0.017	0.017
	2. Gracilaria corticata	19.180	27.857
	3. Gracilaria fergusonii	0.724	0.724
	4. Hypnea spinells	0.238	0.238
	Total	20.159	28.836
Alginophytes	1. Sargassum iliciforlium	48.046	48.194
	2. Sargassum vulgare	17.355	18.865
	3. Sargassum wightii	2.434	2.530
	Total	67.835	69.589
Other seaweeds	1. Ulva fasciata	2.256	2.256
	2. Ulva lactuca	1.488	7.528
	3. Chaetomorpha antennina	0.334	0.356
	4. Caulerpa scalpelliformis	0.071	0.082
	5. Valoniopsis pachynema	33.007	33.007
	6. Dictyopteris delicatula	0.017	0.017
	7. Levringia borgesenii	0.104	0.253
	8. Padina pavonica	0.260	0.260
	9. Pocockiella variegata	1.257	1.257
	10. Amphiroa anceps	2.082	2.082
	11. Amphiroa fragelisima	1.602	1.602
	12. Cryptonemia coriacea	0.284	1.341
	13. Sarcodia ceylanica	0.204	0.204
	14. Botryocladia leptopoda	1.120	2.177
	15. Centroceras clavulatum	0.208	0.208
	16. Enantiocladia prolifera	0.160	0.620
	17. Laurencia indica	3.637	4.628
	18. Laurencia paniculata	2.548	2.548
	Total	50.639	60.426
	Grand Total	138.633	158.851

Table - 26

Marine Algal Survey in the V Sector 1975-76

Mainland between Cape Comorin (Kanyakumari) & Melmidalam (Colachel)

Groupwise Estimated Standing Crop (tons fresh weight) & their percentage

Productive area hectares	Agarophytes standing crop		%	Alginophytes standing crop		%	Other seaweeds standing crop		%	Total of all seaweeds standing crop	
	Lower limit	Upper limit		Lower limit	Upper limit		Lower limit	Upper limit		Lower limit	Upper limit
16.2200	20.159	28.836	16.47	67.835	69.589	46.19	50.639	60.426	37.33	138.633	158.851

Table - 27

Marine Algal Survey in the Five Sectors 1971 -76

Mainland between Thonithurai (Mandapam) and Melmidalam (Colachel) and the Off-shore Islands in the Gulf of Mannar and the Ma inland between Rameswaram and Athankarai in the Palk Bay

Groupwise Estimated Standing Crop (tons fresh weight) together with the area (ha) seperately for Mainland and Islands

Sector Number	Place From	Place To	Productive area ha.	Agarophytes Lower limit	Agarophytes Upper limit	Agarophytes Mean	Alginophytes Lower limit	Alginophytes Upper limit	Alginophytes Mean	Other seaweeds Lower limit	Other seaweeds Upper limit	Other seaweeds Mean	Total Biomass Lower limit	Total Biomass Upper limit	Total Biomass Mean
1	2		3	4	5	6	7	8	9	10	11	12	13	14	15
I.	Thonithurai (Mandapam)	Kilakkarai													
	Mainland		1713.3500			273.949			1015.493			1079.404			2368.846
	Island		4356.2737			804.504			6879.000			4066.985			11750.489
	Rameswaram	Athankarai	2346.1900			102.030			1103.864			1996.711			3202.605
	Total		8415.8137			1180.483			8998.357			7143.100			17321.940
II.	Kilakkarai	Mukkaiyur													
	Mainland		167.4500	5.029	7.654	6.341	26.180	68.134	47.157	24.973	66.521	45.747	56.188	148.809	99.245
	Island		555.1000	131.611	223.242	177.427	105.389	136.726	121.057	106.985	122.403	114.695	343.985	482.371	413.178
	Total		722.5500	136.640	230.896	183.768	131.569	204.860	168.214	131.958	188.924	160.442	400.167	624.680	512.424

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
III.	Mukkaiyur to Punnakkayal													
	Main-land	62.6425	0.878	5.086	2.982	0.096	0.096	0.096	238.132	299.876	268.704	239.106	904.458	1804.782
	Islands	107.2620	95.668	249.675	172.671	9.901	9.901	9.901	107.177	229.454	168.315	212.746	489.080	950.888
	Total	169.9045	96.546	254.761	175.653	9.997	9.997	9.997	345.309	528.730	437.019	451.852	793.488	622.609
IV.	Punnakkayal to Cape Comorin	566.8800	99.675	189.531	144.603	297.510	1743.330	1020.420	1179.231	3366.922	2273.076	1576.416	5299.783	3458.099
V.	Cape Comorin to Melmidalam (Colachel)	16.2200	20.159	28.836	24.497	67.835	69.589	68.712	50.639	60.426	55.532	138.633	158.851	148.742
	Grand Total	9891.3682			1709.004			10265.700			10069.169			22043.873
		9892 hectares			11709 tons			10266 tons			10069 tons			22044 tons

Table - 28

Marine Algal Survey in the Five Sectors 1971-76

Mainland between Thonithurai (Mandapam) and Melmidalam (Colachel) and the off-shore Islands in the Gulf of Mannar, and the Mainland between Rameswaram and Athankarai in the Palk Bay.

Groupwise Estimated Standing Crop (tons fresh weight) and their percentage combined for Mainland & Islands

Group	I Sector		II Sector		III Sector		IV Sector		V Sector		Total	Group-wise percentage of the total
	Standing Crop	%	Standing Crop	%	Standing Crop	%	Standing Crop	%	Standing Crop	%	Standing Crop	
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
Agarophytes	1180.483	69.074	183.768	10.753	175.653	10.278	144.603	8.461	24.497	1.433	1709.004	7.75
Alginophytes	8998.357	87.654	168.214	1.63	9.997	0.097	1020.420	9.940	68.712	0.669	10265.700	46.57
Other Seaweeds	7143.100	70.940	160.442	1.593	437.019	4.340	2273.076	22.575	55.532	0.551	10069.169	45.67
Total	17321.940	78.579	512.424	2.325	622.699	2.825	3438.099	15.596	148.742	0.675	22043.873	

Percentage of water loss in some Marine Algae

Seaweed	Fresh Weight	Dry wt.		Percentage of water loss	
		Sun dried	Oven dried	Sun dried	Water dried
Agarophytes					
1. *Gelidiella acerosa*	300	80.5	74.0	73.1	75.3
2. *Gracilaria edulis*	200	34.0	33.0	83.0	83.5
3. *Gracilaria crassa*	200	17.5	16.0	91.2	92.0
4. *Gracilaria corticata*	250	39.0	36.5	84.4	85.4
5. *Gracilaria foliifera*	200	35.1	32.7	82.5	83.5
6. *Hypnea*	200	26.5	25.1	86.7	87.4
Alginophytes					
1. *Sargassum* spp.	200	30.6	28.5	84.7	85.7
2. *Sargassum mefiocytum*	100	19.0	17.2	81.0	82.8
3. *Turbinaria conoides*	200	28.0	24.5	86.0	87.7
4. *Turbinaria ornata*	200	34.0	33.15	83.0	83.4
5. *Turbinaria decuneus*	200	33.5	30.0	83.4	85.0
6. *Cystoseira* sp.	200	35.0	33.5	82.5	83.4
Other Seaweeds					
1. *Ulva reticulate*	200	36.0	34.10	82.0	83.0
2. *Caulerpa racemosa*	200	10.0	8.50	95.0	95.7
3. *Caulerpa peltata*	200	17.0	14.90	91.5	92.5
4. *Caulerpa* spp.	300	20.5	19.50	93.2	93.5
5. *Codium* sp.	200	21.0	20.50	89.5	89.7
6. *Padina* sp.	200	32.8	30.6	83.6	83.7

Seaweed	Fresh	Dry wt.		Percentage of water loss	
		Sun dried	Oven dried	Sun dried	Water dried
Other seaweeds					
7. Laurencia spp.	100	18.5	17.5	81.5	82.5
8. Halimeda macroloba	300	47.5	39.00	84.2	87.0
9. Halimeda gracilis	200	64.0	59.90	68.0	70.1
10. Pocockiella variegata	100	21.5	19.50	78.5	80.5
11. Amphiroa foliacea	200	-	62.00	-	69.0
12. Chondris armata	70	8.5	7.5	87.9	89.3
13. Chondrococcus hornemanii	100	18.0	16.3	82.0	83.7

Analysis done by the Central Marine Fisheries Research Institute.

Table - 30

Marine Algal Survey in the Five Sectors 1971-76

Sectorwise Estimated Standing crop (tons fresh weight) together with the area (ha), and their percentage.

Sectors	Productive area ha.	%	Standing crop	%
I	8416	49.14	17322	78.58
II	1826	10.66	512	2.32
III	4552	26.58	623	2.82
IV	1732	10.11	3438	15.60
V	599	3.50	149	0.68
Total	17125		22044	

Table - 31

Marine Algal Survey in the I Sector 1971-72
Profile gradients of the area

Area	Slope Range of the depth in m.				
	0.0 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 4.0
Mainland between Mandapam (Thonithurai) to Kilakkarai	1:28	1:44	1:54	1:216	1:111
Mainland between Rameswaram to Athankarai	1: 116	1:73	1:58	1:173	1:161
Islands					
Single Island	1:16	1:25	1:54	1:268	1:636
Krusadai Island	1:153	1:429	1:42	1:12	1:175
Pulli, Pullivasal Island	1:182	1:204	1:128	--	1:84
New Island	1:794	1:1442	1:28	1:260	1:620
Manoli Island	1:188	1:210	1:84	--	--
Hare Island	1:40	1:270	1:250	1:380	1:1314
Mulli Island	1:18	1:516	1:474	1:156	1:24
Vali Island	1:266	1:52	1:182	1:997	1:115
Appa Island	1:326	1:94	1:258	--	--

Table - 32

Marine Algal Survey in the II Sector 1972-73

Profile gradients of the area

Area	Range of the Slope depths in m.				
	0.0 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 4.0
Mainland	1:50	1:60	1:42	1:88	1:216
Upputhanni Island	1:10	1:16	1:96	1:16	1:14
Shuli Island	1:26	1:52	1:8	1:10	1:10
Nallathanni Island	1:18	1:10	1:224	1:44	1:27
Yanaiparai Island	1:118	1:78	1:56	1:4	1:25
Palaiayamunai Island	1:10	1:18	1:82	1:498	1:101
Nandamukhi Island	1:22	1:14	1:6	1:6	1:8

Table - 33

Marine Algal Survey in the III Sector 1973-74

Profile gradients of the area

Area	Slope Range of the depth in m.				
	0.0 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 4.0
Mainland	1:34	1:164	1:112	1:300	1:361
Karaya Island	1:26	1:26	1:64	1:68	1:92
Chally Island	1:20	1:26	1:60	1:36	1:13
Van Island	1:14	1:22	1:80	1:16	1:118

Table - 34

Marine Algal Survey in the IV Sector 1974-75
Profile gradients of the area

Slope Range of the depth in m.				
0.0 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 4.0
1:10	1:24	1:30	1:72	1:69

Table - 35

Marine Algal Survey in the V Sector 1975-76
Profile gradients of the area

Slope Range of the depth in m.				
0.0 to 0.5	0.5 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 4.0
1:40	1:32	1:46	1:234	1:57

Table-36

Marine Algal Survey in the II Sector 1972-73

List of Marine Algae collected together with their occurrence as continuous, discrete or rare

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
	CHLOROPHYTA						
	Ulvaceae						
1.	Enteromorpha compressa	+					
2.	Ulva lactuca						+
3.	Ulva reticulata					+	
	Cladophoraceae						
4.	Chaetomorpha littorea			+			
5.	Chaetomorpha antennina						+
	Caulerpaceae						
6.	Caulerpa cupressoides			+			
7.	Caulerpa sertularioides					+	
8.	Caulerpa racemosa				+	+	
9.	Caulerpa scalpelliformis		+			+	
10.	Caulerpa peltata		+				
11.	Caulerpa taxifolia		+				
	Codiaceae						
12.	Codium tomantosum					+	
13.	Codium dwarkense						+
14.	Halimeda gracilis				+	+	
15.	Halimeda macroloba						+
16.	Udotea flabellum		+			+	
	Valoniaceae						
17.	Anadyomene stellata						+
18.	Microdictyon tenuis	+					
19.	Valoniopsis pachynema		+				
	PHAEOPHYTA						
	Sphacilariaceae						
20.	Sphacilaria furcigera		+				
	Dictyotaceae						
21.	Dictyota dichotoma	+				+	

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
22.	Padina gymnospora		+		+	+	
23.	Padina pavonica					+	
24.	Padina tetrastromatica				+	+	
25.	Pocockiella variegata	+			+	+	
26.	Stoechospermum marginatum				+	+	
27.	Zonaria variegata					+	
28.	Zonaria crenata	+					
	Punctuariaceae						
29.	Colpomenia sinuosa				+	+	
30.	Hydroclathrus clathratus					+	
	Chnoosporaceae						
31.	Chnoospora implexa					+	
	Cystoseiraceae						
32.	Cystoseira trinodis					+	
	Sargassaceae						
33.	Sargassum wightii	+			+	+	
34.	Sargassum plagiophyllum	+	+			+	
35.	Sargassum sp.					+	
36.	Sargassum ilicifolium	+				+	
37.	Sargassum swartzii				+	+	
38.	Turbinaria ornata	+	+		+	+	
39.	Turbinaria conoides		+				
40.	Turbinaria sp.						+
	RHODOPHYTA						
	Gelidiaceae						
41.	Gelidium micropterum						+
	Gelidiellaceae						
42.	Gelidiella acerosa	+	+			+	
43.	Gelidiella sp.						+
	Rhizophyllidaceae						
44.	Chondrococcus hornemanii		+			+	
	Corallinaceae						
45.	Amphiroa fragillissima	+			+	+	
46.	Jania adhaerens	+					

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
	Gracilariaceae						
47.	Gelidiopsis repens	+					
48.	Gelidiopsis variabilis			+			
49.	Gracilaria corticata	+	+			+	
50.	Gracilaria debilis	+	+				
51.	Gracilaria crassa					+	
52.	Gracilaria dura			+			
53.	Gracilaria folifora					+	
54.	Gracilaria edulis					+	
55.	Gracilaria verrucoss			+			
56.	Gracilaria fergusonii			+			
57.	Gracilaria sp.					+	
	Hypneaceae						
58.	Hypnea musciformis		+		+	+	
59.	Hypnea valentiae				+	+	
60.	Hypnea pannosa				+	+	
61.	Hypnea nigrescens			+			
	Lomenatariaceae						
62.	Champia parvula		+				
63.	Champia compressa			+			
	Ceramiaceae						
64.	Centroceras clavulatum		+			+	
65.	Ceramium minatum		+				
66.	Ceramium sp.		+				
67.	Soyridia insignis						+
68.	Halophlegma duperrevi						+
	Rhodomalaceae						
69.	Acanthophora spicifera					+	
70.	Lenormandiopsis parthasarathii						+
71.	Laurencia papillosa					+	
72.	Laurencia indica			+			+
73.	Laurencia paniculata					+	
	CYANOPHYTA, Oscillatoriaceae						
74.	Lyngbya majuscula					+	

N.B. :- C = Continuous at any depth zone.
D = Discrete at any depth zone.
R = Rare, not entering into the estimates.

PK

Table - 37

Marine Algal Survey in the III Sector 1973-74

List of Marine Algae collected together with their occurrence as continuous, discrete or rare.

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
	CHLOROPHYTA						
	Ulvaceae						
1.	Enteromorpha prolifera		+				+
2.	Ulva lactuca			+			
3.	Ulva reticulata			+			
	Cladophoraceae						
4.	Chaetomorpha antennina			+			
5.	Chaetomorpha littorea	+	+				+
6.	Cladophora fascicularis		+				+
	Caulerpaceae						
7.	Caulerpa cupressoides					+	
8.	Caulerpa scalpelliformis	+	+		+		
9.	Caulerpa sertularioides		+				
10.	Caulerpa racemosa			+			
	Dasycladaceae						
11.	Neomeris annulata						+
	Codiaceae						
12.	Halimeda macroloba		+			+	
13.	Halimeda gracilis			+			
14.	Udotea flabellum		+				
	Valoniaceae						
15.	Microdictyon tenuis						
	PHAEOPHYTA						
	Dictyotaceae						
16.	Dictyota bartayresiana					+	
17.	Dictyota dichotoma			+			+
18.	Dictyota maxima					+	

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
19.	Padina gymnospora		+		+	+	
20.	Padina tetrastromatica		+				
21.	Pocockiella variegata	+	+				
22.	Spatoglossum asperum		+				
	Punctuariaceae						
23.	Colpomenia sinuosa						+
	Chnoosporaceae						
24.	Chnoospora implexa						+
	Cystoseiraceae						
25.	Cystoseira trinodis					+	
	Sargassaceae						
26.	Sargassum wightii		+			+	
	RHODPHYTA						
	Corallinaceae						
27.	Amphiroa fragilissima			+			
28.	Jania adhaerens	+	+				
	Gelidiaceae						
29.	Gelidium micropterum						+
	Grateloupiaceae						
30.	Grateloupia filicina	+					+
	Gracilariaceae						
31.	Gelidiopsis repens		+				
32.	Gelidiopsis variabilis		+				
33.	Gracilaria corticata	+	+				+
34.	Gracilaria crassa		+				
35.	Gracilaria edulis	+	+		+	+	
36.	Gracilaria foliifera		+			+	
37.	Gracilaria verrucosa						+
	Solieriaceae						
38.	Sarconema filiforme		+			+	
39.	Solieria robusta	+				+	
	Hypneaceae						
40.	Hypnea musciformis				+	+	
41.	Hypnea pannosa					+	
42.	Hypnea valentiae		+		+	+	

Sr. No.	Species	Mainland			Island		
		C	D	R	C	D	R
	Lomentariaceae						
43.	Champia compressa						+
44.	Champia parvula		+				+
	Ceramiaceae						
45.	Centroceras clavulatum		+				+
46.	Spyridia insignis	+	+			+	
	Rhodomelaceae						
47.	Acanthophora spicifera		+				
48.	Chondria armata	+					
49.	Herposiphonia stuposa		+				
50.	Laurencia nana		+				
51.	Laurencia papillosa		+				+
	CYANOPHYTA						
	Oscillatoriaceae						
52.	Lyngbya majuscula		+				

N.B. :-

C = Continuous at any depth zone

D = Discrete at any depth zone

R = Rare, not entering into the estimates

Table - 38

Marine Algal Survey in the IV Sector 1974-75

List of Marine Algae collected together with their occurrence as continuous, discrete or rare

Sr. No.	Species	Mainland		
		C	D	R
	Chlorphyta			
	Ulvaceae			
1.	Enteromorpha flexuosa			+
2.	Enteromorpha intestinalis	+		
3.	Enteromorpha prolifera			+
4.	Ulva fasciata	+	+	
5.	Ulva lactuca	+	+	
	Cladophoraceae			
6.	Chaetomorpha littorea	+	+	
7.	Chaetomorpha torta	+		
8.	Cladophora fascicularis	+	+	
9.	Cladophora utriculosa		+	
10.	Cladophora sp.			+
11.	Spongomorpha indica	+	+	
	Protosiphonaceae			
12.	Caulerpa cupressoides	+	+	
13.	Caulerpa fergusonii	+		
14.	Caulerpa scalpelliformis	+	+	
15.	Caulerpa sedoides	+	+	
16.	Caulerpa taxifolia			+
17.	Caulerpa sertulariodes		+	
	Codiaceae			
18.	Codium coronatum		+	
19.	Halimeda macroloba	+	+	
20.	Halimeda opuntia	+	+	
21.	Halimeda tuna	+	+	
22.	Udotea flabellum		+	
	Valoniaceae			
23.	Valoniopsis pachynema		+	
	PHAEOPHYTA			
	Dictyotaceae			
24.	Dictyopteris delicatula	+	+	
25.	Dictyota bartayresiana			+
26.	Dictyota dichotoma		+	
27.	Dictyota maxima	+	+	

Sr. No.	Species	Mainland		
		C	D	R
28.	Padina pavonica		+	
29.	Padina tetrastromatica	+	+	
30.	Pocockiella variegata		+	
31.	Spatoglossum asperum	+		
32.	Stoechospermum marginatum	+		
33.	Zonaria variegata			+
	Chordariaceae			
34.	Levringia borgensenii	+	+	
	Punctariaceae			
35.	Colpomenia sinuosa			+
36.	Iyengaria stellata		+	
	Chnoosporaceae			
37.	Chnoospora implexa			+
	Cystoseiraceae			
38.	Hormophysa triquetra		+	
	Sargassaceae			
39.	Sargassum conorium			+
40.	Sargassum ilicifolium			+
41.	Sargassum plagiophyllum	+	+	
42.	Sargassum vulgaro			
43.	Sargassum wightii	+	+	
44.	Sargassum sp.	+	+	
	RHODOPHYTA			
	Helminthocladiaceae			
45.	Helminthocladia sp.			+
46.	Liagora pulverulenta			
	Chaetangiaceae			
47.	Scinaia bengalica		+	
48.	Scinaia cornosa			+
	Bonnemaisoniaceae			
49.	Asparagopsis taxiformis		+	
	Gelidiaceae			
50.	Gelidium heteroplatos			+
51.	Gelidium micropterum	+		
52.	Gelidium pusillum			+

Sr. No.	Species	Mainland		
		C	D	R
	Gelidiellaceae			
53.	Gelidiella indica			+
	Rhizophyllidaceae			
54.	Chondrococcus hornemanii		+	
	Corallinaceae			
55.	Amphiroa anastomosans	+	+	
56.	Amphiroa anceps	+	+	
57.	Amphiroa foliacea	+	+	
58.	Amphiroa fragilissima	+	+	
59.	Cheilosporum spectabile	+	+	
60.	Jania adhaerens		+	
61.	Jania ivengarii			
	Grateloupiaceae			
62.	Cryptonemia coriacea	+	+	
63.	Cryptonemia spp.			+
64.	Grateloupia comorinii			+
65.	Grateloupia filicina		+	
66.	Grateloupia lithophila	+		
67.	Halymenia dubia			+
	Corynomorohaceae			
68.	Corynomorpha prismatica	+	+	
	Gracilariaceae			
69.	Gelidiopsis repens		+	
70.	Gelidiopsis variabilis	+	+	
71.	Gracilaria corticata	+		
72.	Gracilaria fergusonii	+	+	
73.	Gracilaria foliifera	+	+	
74.	Gracilaria verrucosa			+
75.	Gracilaria compressa		+	
76.	Gracilaria crassa		+	
	Sarcodiaceae			
77.	Sarcodia ceylanica	+	+	
	Solieriaceae			
78.	Agardhiella robusta	+	+	
79.	Sarconema filiforme	+	+	
80.	Sarconema indicum			+
81.	Sarconema furcellatum			+
82.	Solieria indica	+	+	

Sr. No.	Species	Mainland		
		C	D	R
	Hypneaceae			
83.	Hypnea flagelliformis			+
84.	Hypnea musciformis	+	+	
85.	Hypnea pannosa			+
86.	Hypnea servicornis			+
87.	Hypnea spinella		+	
88.	Hypnea valentiae	+		
89.	Hypnea spicifera		+	
	Phyllophoraceae			
90.	Gymnogongrus pygmaeus		+	
91.	Gigartina acicularis		+	
	Rhodymeniaceae			
92.	Botryocladia letopoda	+		
93.	Coelarthrum opuntia	+	+	
94.	Coelarthrum sp.			+
	Lomentariaceae			
95.	Champia compressa	+	+	
96.	Champia parvula	+	+	
	Ceramiales			
97.	Centroceras clavulatum		+	
98.	Ceramium moryae			+
99.	Haloplegma duperreyi		+	
100.	Wrangelia argus	+	+	
101.	Griffithsia tenuis		+	
	Rhodomelaceae			
102.	Acanthophora spicifera		+	
103.	Chondria armata	+	+	
104.	Enantiocladia prolifera	+		
105.	Laurencia ceylanica		+	
106.	Laurencia flagelliformis	+	+	
107.	Laurencia indica	+		
108.	Laurencia paniculata			
	Dasyaceae			
109.	Dictyurus purpurescens	+	+	
	CYANOPHYTA			
	Oscillatoriaceae			
110.	Lyngbya majuscula			+

Table - 39

Marine Algal Survey in the V Sector 1975-76

List of Marine Algae collected together with their occurrence as continuous, discrete or rare

Sr. No.	Species	Mainland		
		C	D	R
	CHLOROPHYTA			
	Ulvaceae			
1.	Ulva fasciata		+	
2.	Ulva lactuca	+	+	
	Cladophoraceae			
3.	Chaetomorpha antennina	+		
	Caulerpaceae			
4.	Caulerpa scalpelliformis	+		
5.	Caulerpa sedoides			+
	Codiaceae			
6.	Halimeda gracilis			+
	Valoniaceae			
7.	Valoniopsis pachynema		+	
	PHAEOPHYTA			
	Dictyotaceae			
8.	Dictyopteris delicatula		+	
9.	Padina pavonica		+	
10.	Pocockiella variegata		+	
	Chordariaceae			
11.	Levringia borgensenii	+	+	
	Chnoosporaceae			
12.	Chnoospora implexa			+
	Fucaceae			+
13.	Sargassum ilicifolium	+	+	
14.	Sargassum vulgare	+	+	
15.	Sargassum wightii	+	+	
	Gelidiaceae			
16.	Gelidium heteroplatos			+
17.	Gelidium micropterum			+
	Corllinaceae			
18.	Amphiroa anceps		+	
19.	Amphiroa fragilissima		+	
20.	Cheilosporum spectabile			+

Table - 40

Marine Algal Survey in the II Sector 1972-73

Relative abundance of substrate, cover, standing crop and density

Coast	Depth in meters	Substrate %				Cover %	Productive area in sq.m.	Standing crop			Density kg/m^2
		Sand	Mud	Coral	Rock			Lower limit	Higher limit	Mean	
1	2	3	4	5	6	7	8	9	10	11	12
Mainland	Intertidal	--	--	--	100.00	25.00	1400	289	289	289	0.205
	0.0	83.35	--	--	16.65	20.60	16600	2117	4950	3533	0.212
	0.5	81.25	--	12.50	6.25	10.00	21250	22448	59678	41063	1.932
	1.0	80.00	13.33	--	6.66	1.66	16600	2377	3433	2905	0.175
	1.5	71.66	6.66	6.66	15.00	10.00	1218750	5787	11211	8499	0.007
	2.0	80.35	7.14	3.57	8.92	9.00	326050	19172	58756	38964	0.119
	4.0	88.46	11.54	--	--	1.92	75300	3992	3992	3992	0.053
Total		77.17	4.24	6.52	11.96	9.00	1675950	56182	142309	99245	0.060
Upputhani Island	0.0	100.00	--	--	--	--	--	--	--	--	--
	0.5	75.00	--	--	25.00	8.33	15562	986	986	986	0.063
	1.0	83.33	--	--	16.66	16.66	70342	15367	16634	16000	0.227
	1.5	41.66	--	33.33	25.00	16.66	70342	12892	12892	12892	0.183
	2.0	66.66	33.33	--	--	Tr.	44197	74	74	74	0.0017
	4.0	--	100.00	--	--	--	--	--	--	--	--
Total		61.11	22.22	5.55	11.11	7.8	200443	29319	30586	29952	0.149
Salli Island	0.0	100.00	--	--	--	Tr.	8437	14	14	14	0.0017
	0.5	25.00	--	--	75.00	33.33	26662	14363	17082	15722	0.590
	1.0	--	--	--	100.00	58.33	20587	10733	11981	11357	0.548
	1.5	--	--	--	100.00	62.50	5737	1079	2128	1603	0.280
	2.0	33.33	--	--	66.66	37.50	15525	2730	9250	5990	0.386
	4.0	33.33	--	--	66.66	--	--	--	--	--	--
Total		38.33	--	--	61.66	31.7	76948	28919	40455	34687	0.450

Continued.....

1	2	3	4	5	6	7	8	9	10	11	12
Nallathanni Island	0.0	100.00	--	--	--	16.66	22612	1507	1507	1507	0.067
	0.5	100.00	--	--	--	33.33	35175	12415	28033	20224	0.575
	1.0	66.66	--	--	33.33	8.33	575362	61367	61367	61367	0.106
	1.5	50.00	--	--	50.00	--	--	--	--	--	--
	2.0	100.00	--	--	--	8.33	3979800	113424	204959	159191	0.040
	4.0	--	--	--	--	--	--	--	--	--	--
Total		83.33	--	--	16.66	14.3	4612949	188713	295866	242289	0.052
Yanaiparai Island	Intertidal	41.06	--	--	58.33	41.66	1800	1209	1247	1228	0.682
	0.0	66.66	--	--	33.33	33.33	43365	13935	16563	15249	0.352
	0.5	33.33	--	33.33	33.33	25.00	72030	16805	16805	16805	0.233
	1.0	25.00	--	--	75.00	25.00	49245	14521	20053	17287	0.351
	1.5	100.00	--	--	--	--	--	--	--	--	--
	2.0	100.00	--	--	--	Tr.	38587	643	643	643	0.017
	4.0	--	100.00	--	--	--	--	--	--	--	--
Total		52.38	14.30	4.47	28.75	28.3	204027	47113	55311	51212	0.251
Palliyamunai Island	0.0	100.00	--	--	--	--	--	--	--	--	--
	0.5	83.33	8.33	--	8.33	16.66	7700	1771	1771	1771	0.230
	1.0	25.00	66.66	--	8.33	8.33	27775	8055	8055	8055	0.290
	1.5	66.66	33.33	--	--	6.25	159500	25573	34505	30039	0.189
	2.0	16.66	66.66	--	16.66	8.33	247500	11549	11549	11549	0.046
Total		65.22	29.05	--	5.54	6.66	442475	46948	55880	51414	0.116
Nandamukhi Island	Intertidal	100.00	--	--	--	12.50	9225	1940	2840	2390	0.259
	0.0	--	--	66.66	33.33	25.00	825	135	167	151	0.183
	0.5	--	--	--	100.00	33.00	1350	470	724	597	0.442
	1.0	--	--	66.66	33.33	41.66	750	268	382	325	0.433
	1.5	--	--	50.00	50.00	16.66	450	96	96	96	0.213
	2.0	--	--	66.66	33.33	8.33	1500	64	64	64	0.042
	4.0	66.66	--	33.33	--	--	--	--	--	--	--
Total		23.81	--	40.47	35.71	20.00	14100	2973	4273	3623	0.257

Marine Algal Survey in the III Sector 1973-74

Relative abundance of Substrate, Cover, Standing Crop & Density

Coast	Depth in meters	Substratum %				Cover %	Productive Area in Sq.m.	Standing crop			Kg/m^2
		Sand	Mud	Coral	Rock			Lower limit	Upper limit	Mean	
1	2	3	4	5	6	7	8	9	10	11	12
Mainland	Intertidal	80.00	--	--	20.00	20.00	9775	488	1096	792	0.081
	0.0	57.50	2.50	5.00	35.00	22.50	40900	9483	14403	11943	0.292
	0.5	62.50	20.00	10.00	7.50	7.50	51100	3526	6298	4912	0.096
	1.0	53.60	35.70	10.70	--	18.00	40050	2088	3532	2810	0.070
	1.5	53.60	39.30	7.10	--	23.20	78400	49699	104283	76991	0.982
	2.0	42.30	57.70	--	--	7.70	357450	171572	171572	171572	0.479
	4.0	78.60	21.40	--	--	Tr.	48750	2250	3274	2762	0.056
Total		58.00	25.60	6.00	10.40	14.80	626425	239106	304458	271782	0.433
Karaya Island	0.0	83.33	--	16.66	--	--	--	--	--	--	--
	0.5	66.66	--	33.33	--	--	--	--	--	--	--
	1.0	50.00	--	50.00	--	33.33	51637	5009	9532	7270	0.140
	1.5	50.00	--	50.00	--	25.00	75735	6957	9956	8457	0.111
	2.0	58.33	--	33.33	8.33	35.00	251876	42581	155119	98850	0.392
	4.0	50.00	--	--	50.00	--	--	--	--	--	--
Total		61.00	--	34.30	4.60	17.50	379248	54547	174607	114577	0.302

Cont'd.....

1	2	3	4	5	6	7	8	9	10	11	12
Chally Island	0.0	100.00	--	--	--	--	--	--	--	--	--
	0.5	100.00	--	--	--	8.33	31970	3942	3942	3942	0.123
	1.0	100.00	--	--	--	20.00	59770	8690	16315	12503	0.209
	1.5	66.66	--	--	33.33	3.33	66720	999	999	999	0.015
	2.0	66.66	--	--	33.33	41.66	61160	13102	27315	20208	0.330
	4.0	--	100.00	--	--	--	--	--	--	--	--
Total		76.60	11.70	--	11.70	13.00	219620	26733	48571	37652	0.171
Van Island	0.0	66.66	--	33.33	--	--	--	--	--	--	--
	0.5	100.00	--	--	--	--	--	--	--	--	--
	1.0	100.00	--	--	--	8.33	71272	237	237	237	0.003
	1.5	100.00	--	--	--	25.00	64285	11626	15469	13548	0.210
	2.0	66.66	33.33	--	--	45.00	338195	119603	250146	184874	0.546
	4.0	--	100.00	--	--	--	--	--	--	--	--
Total		81.20	12.50	6.30	--	14.70	473752	131466	265852	198659	0.419

Table - 42

Marine Algal Survey in the IV Sector 1974-75

Relative abundance of Substrate, cover, standing crop & density

Depth in meters	Substratum %				Cover %	Productive area in Sq. m.	Standing Crop			Kg/m^2
	Sand	Mud	Coral	Rock			Lower limit	Upper limit	Mean	
0.0	83.00	--	--	17.00	15.66	26450	22495	70400	46448	1.756
0.5	79.00	--	--	21.00	14.86	66412	79247	335209	207228	3.120
1.0	67.10	--	--	32.90	21.20	248275	141172	701835	421503	1.697
1.5	61.30	--	--	38.70	21.00	979137	184085	634414	409249	0.480
2.0	48.00	--	--	52.00	33.80	2413979	645287	2281800	1463543	0.606
4.0	35.50	--	--	64.50	33.69	1934550	504130	1276125	890128	0.460
Total	64.80	--	--	35.20	22.43	5668803	1576416	5299783	3438099	0.606

Marine Algal Survey in the V Sector 1975-76

Relative abundance of substrate, Cover, Standing Crop & Density

Depth in meters	Substrate %				Cover %	Productive area in sq. m.	Standing crop			kg/m^2
	Sand	Mud	Coral	Rock			Lower limit	Upper limit	Mean	
0.0	37.5	--	--	62.5	28.12	39950	9958	10695	7227	0.180
0.5	75.0	--	--	25.0	18.75	3400	13629	14505	14067	4.137
1.0	68.75	--	--	31.25	31.25	7400	6521	7294	6907	0.933
1.5	66.66	--	--	33.33	16.66	35600	103161	112219	107690	3.025
2.0	77.80	--	--	22.20	2.80	62850	10056	10056	10056	0.160
4.0	77.80	--	--	22.20	7.22	13000	1508	4082	2795	0.215
Total	67.65	--	--	32.35	16.96	162200	138633	158851	148742	0.917

PK

Table - 44

Marine Algal Survey in the I Sector 1971-72

List of marine algae together with their occurrence in the Gulf of Mannar Mainland, Gulf of Mannar Island & Palk Bay

Sr. No.	Species	Gulf of Mannar Mainland	Gulf of Mannar Islands	Palk Bay
1	2	3	4	5
	CHLOROPHYTA			
	Ulvaceae			
1.	Enteromorpha clathrata	-	+	-
2.	Enteromorpha flexuosa	-	+	=
3.	Enteromorpha prolifera	-	+	-
4.	Enteromorpha sp.	-	+	-
5.	Ulva lactuca	-	+	+
6.	Ulva reticulata	+	+	+
	Cladophoraceae			
7.	Chaetomorpha antennina	+	-	-
8.	Chaetomorpha littorea	+	-	+
9.	Chaetomorpha torta	-	+	-
10.	Cladophora fascicularis	+	+	-
11.	Cladophora sp.	-	+	-
12.	Rhizoclonium kerneri	+	+	-
	Protosiphonaceae			
13.	Bryopsis indica	-	+	-
	Caulerpaceae			
14.	Caulerpa crassifolia	-	+	-
15.	Caulerpa cupressoides	+	+	+
16.	Caulerpa cupressoides var. lycopodium f. elegance	-	+	-
17.	Caulerpa fastigiata	-	+	-
18.	Caulerpa fergusonii	-	+	-
19.	Caulerpa freycinetii	-	+	+
20.	Caulerpa lentellifera	-	+	-
21.	Caulerpa peltata	+	-	+
22.	Caulerpa racemosa	-	-	+
23.	Caulerpa racemosa var. cleavifera	+	-	+
24.	Caulerpa racemosa var. lateverense	-	+	-
25.	Caulerpa racemosa var. uvifera	+	-	-
26.	Caulerpa racemosa var. Chemnitzia f. turbinata	-	-	+
27.	Caulerpa chemnitzia	-	+	-
28.	Caulerpa sertularioides	+	+	+
29.	Caulerpa taxifolia	+	+	+
30.	Caulerpa verticillata	+	-	-

1	2	3	4	5
	Dasycladaceae			
31.	Neomeris annulata	-	-	+
	Codiaceae			
32.	Avrainvillea erecta	-	+	-
33.	Avrainyillea sp.	-	+	-
34.	Codium coronatum	-	+	-
35.	Codium dwarkense	-	+	-
36.	Codium iyengarii	-	+	-
37.	Codium sp.	-	+	+
38.	Halimeda gracilis	+	+	-
39.	Halimeda macroloba	+	+	+
40.	Udotea flabellum	+	+	-
41.	Udotea indica	+	-	-
42.	Udotea iyengarii	-	-	+
43.	Udotea javensis	-	+	+
	Valoniaceae			
44.	Anadyomene stellata	-	+	-
45.	Dictyosphaeria favulosa	-	+	-
46.	Microdictyon tenuis	-	+	+
47.	Boergesenia forbesii	+	-	-
48.	Valoniopsis pachynema	-	+	-
49.	Valoniopsis sp.	-	+	-
	PHAEOPHYTA			
	Ectocarpaceae			
50.	Bachelotia antillarum	-	+	-
51.	Ectocarpus sp.	-	+	-
	Dictyotaceae			
52.	Dictyota bartayresiana	-	+	-
53.	Dictyota dichotoma	-	+	-
54.	Dictyota sp.	-	+	-
55.	Padina gymnospora	+	+	-
56.	Padina pavonica	+	+	+
57.	Pocockiella variegata	+	+	+
58.	Spatoglossum asperum	-	+	-
59.	Stoechospermum marginatum	+	-	-
60.	Zonaria crenata	+	+	+
	Punctariaceae			
61.	Colpomenia sinuosa	-	+	-
62.	Hydroclathrus clathratus	+	+	-
	Chnoosporaceae			
63.	Chnoospora fastigiata	-	+	-
	Cystoseireceae			
64.	Cystoseira trinodis	-	+	-
65.	Hormophysa triquetra	+	+	-

1	2	3	4	5
	Sargassaceae			
66.	Sargassum ilicifolium	+	+	+
67.	Sargassum linifolium	-	+	-
68.	Sargassum plagiophyllum	+	+	-
69.	Sargassum tenerrimum	+	+	-
70.	Sargassum wightii	-	+	-
71.	Sargassum sp.	-	+	-
72.	Turbinaria conoides	+	+	+
73.	Turbinaria conoides var. conoides f. laticuspidata	+	+	+
74.	Turbinaria conoides f. evesciulosa	-	-	+
75.	Turbinaria ornata f. erecta	-	-	+
76.	Turbinaria ornata f. ecortica	+	+	-
	RHODOPHYTA			
	Chantransiaceae			
77.	Acrochaetium sp.	+	-	-
	Chaetangiaceae			
78.	Galaxaura oblongata	-	+	-
	Gelidiaceae			
79.	Gelidium heteroplatos	-	+	-
80.	Gelidium micropterum	+	-	-
81.	Gelidium pusillum	+	-	-
	Gelidiellaceae			
82.	Gelidiella acerosa	+	+	+
	Rhizophyllidaceae			
83.	Chondrococcus hornemanii	+	+	+
	Squamariaceae			
84.	Peyssonelia obscura	-	-	+
	Corallinaceae			
85.	Amphiroa anceps	-	-	+
86.	Amphiroa fragilissima	-	+	+
87.	Amphiroa foliacea	-	+	-
88.	Cheilosporium spectabile	+	-	-
89.	Jania iyengarii	+	+	+
90.	Jania capillacea	-	+	-
91.	Lithothamnion prolifera	-	+	-
92.	Lithothamnion sp.	-	+	+
93.	Lithophyllum sp.	-	-	+
94.	Melobesia farinosa	+	+	-
	Grateloupiaceae			
95.	Halymenia floresia			

1 2	3	4	5
Gracilariaceae			
96. Gelidiopsis repens	+	+	+
97. Gelidiopsis variabilis	+	+	-
98. Gracilaria corticata	+	-	-
99. Gracilaria crassa	-	+	+
100. Gracilaria disticha	-	+	-
101. Gracilaria dura	-	+	-
102. Gracilaria edulis	-	+	+
103. Gracilaria foliifera	+	+	+
104. Gracilaria foliifera f. granatea	-	+	-
105. Gracilaria pygmaea	-	+	-
106. Gracilaria verrucosa	+	-	-
107. Gracilaria sp.	-	+	-
Solieriaceae			
108. Sarconema filiforme	-	+	-
Hypneaceae			
109. Hypnea esperi	-	+	+
110. Hypnea musciformis	-	+	-
111. Hypnea pannosa	+	+	+
112. Hypnea servicornis	+	+	-
113. Hypnea valentiae	-	+	-
114. Hypnea sp.	-	+	-
Phyllophoraceae			
115. Phyllophora sp.	+	-	-
Rhodymeniaceae			
116. Rhodymenia australis	-	+	-
117. Rhodymenia dissecta	-	+	-
118. Rhodymenia sp.	-	+	-
Lomentariaceae			
119. Champia parvula	-	+	-
Ceramiaceae			
120. Hormothamnion entromorphoides	-	+	-
121. Centroceras clavulatum	-	+	-
122. Ceramium gracillimum	-	+	-
123. Ceramium subdichotomum	-	+	-
124. Ceramium sp.	-	+	-
125. Spyridia filamentosa	-	+	-
Delesseriaceae			
126. Vanvoorsitia spectabilis	-	+	-

1 2	3	4	5
Rhodomelaceae			
127. Acanthophora delilei	+	-	+
128. Acanthophora muscoides	+	+	-
129. Acanthophora spicifera	-	+	-
130. Acanthophora thierii	-	+	-
131. Acanthophora sp.	-	+	-
132. Bostrychia tenella	-	-	+
133. Chondria armata	-	-	+
134. Chondria armata var. Plumaris	-	-	+
135. Chondria dasyphylla	-	+	-
136. Chondria tenuissima	+	-	-
137. Herposiphonia insidiosa	+	+	-
138. Herposiphonia tenella	+	-	-
139. Laurencia ceylanica	-	+	-
140. Laurencia cruciata	+	+	-
141. Laurencia bostrychiodes	-	+	-
142. Laurencia paniculata	+	-	-
143. Laurencia perforata	+	+	+
144. Laurencia papillosa	-	+	+
145. Laurencia sp.	-	+	-
146. Leveillea jungermannioides	-	+	-
147. Fostiella minutata	+	+	-
148. Tolypeocladia glomerulata	-	+	-
149. Neurymenia fraxinifolia	-	+	+
150. Polysiphonia sp.	+	-	-
CYANOPHYTA			
Oscillatoriaceae			
151. Lyngbya majuscula	-	+	-
152. Lyngbya sp	+	+	+
153. Phormidium tenuis	-	+	-
154. Microcoleus chthnoplastes	-	+	-
155. Oscillatoria sp.	-	+	-

/PK/