CMFRI newsletter

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Seaweed Resources

Seaweed Resources of Kerala, Tamil Nadu and Lakshadweep

Seaweeds are living and renewable marine resources which have tremenedous commercial importance. Seaweeds are microscopic algae that grow in the littoral and sublittoral areas of marine environment when there is a suitable rocky or coral substratum. Based on the type of pigmentation they are mainly divided into green, brown and red algae. Seaweeds are known since time immemorial as food, fodder and manure in many of the countries of Europe, Scandinavia and India-Pacific region. Seaweeds contain more than 60 trace elements, protein in different concentrations, vitamins and several bioactive substances. Marine algae form an important raw material for the extraction of phytochemicals such as agar agar, algin, manittol etc.

The seaweed resources along the coast line of India are distributed in Tamil Nadu, Gujarat and Lakshadweep and Andaman and Nicobar islands. Fairly rich seaweed beds are also present in Bombay, Ratnagiri, Goa, Karwar, Varkala, Kovalam, Vizhinjam, Visakhapatnam and a few other places in Chilka and Pulicat lakes.

In recent years a number of industries manufacturing phycocolloids such as agar-agar and algin have come up in India. Since the information on the availability of seaweed resources along the coast line will be useful to the Industry, CMFRI has been carrying out investigations on the occurrence and abundance of the resources in India. CMFRI has also developed technologies for culture of commercially important species of seaweeds.

Information on seaweed resources of certain maritime states such as Tamil Nadu, Gujarat, Maharashtra, Goa and Lakshadweep is available but not much data has been collected on the seaweeds occurring along the Kerala coast. Recently a detailed survey was carried out by a team of scientists and technicians of CMFRI led by Dr V S K Chennubhotla from Kollamkode to Manjeshwar to understand the substrata and resources available. The entire coastline of 600 km were covered and 35 species were recorded. Mainly 4 types of substrata are found in this coast. In the southern part of Kerala, from Poovar to Thirumullavaram, the coast is mostly sandy. However in this area different kinds of rocks and granite stones are found in patches in the intertidal and subtidal regions. Many species of red, green and brown algae are found growing here.

In the area north of Thirimullavaram up to Parapanagadi the coast is sandy and the seawall laid with granite stones have helped some seaweeds to settle down on them. North of Parapanagadi up to Cannanore rocks and granite stones occur in the littoral and sublittoral regions in some places where seaweeds are found to be growing abundantly. Beyond Cannanore the coast is sandy up to Manjeshwar.

Out of the total density of 1000 tonnes of seaweeds 15% was economically important, agrophytes formed 27 tonnes followed by alginophytes and agaroidophytes. The abundance of seaweeds in this coast appears to be low compared to other seaweed areas of the

The Seaweed growth on rocks along Cannanore coast

The green seaweed Ulva lactuca

country. However attempts can be made to augment the resources by enhancing these substrata by artificial methods in some potential areas. Out of the 35 species of seaweeds occurring in Kerala *Gracilaria corticata* and *G. foliifera* are put into some use as a manure for coconut plantations in Thikkkodi region. There is a possibility of introducing useful varieties from other regions of the country in suitable substrata.

Along the southern parts of east coast of India, standing crop of seaweeds is found to be abundant. A resource survey conducted from Mandapam to Colachel and the adjoining islands in Gulf of Mannar up to a depth of 4m revealed a standing crop of 22044 tonnes in the coastal area of 17125 ha comprising agrophytes, alginophytes and other seaweeds. The region between Tuticorin and Tiruchendur had a standing crop of around 9100 tonnes consisting of 58 species of seaweeds and three species of seagrasses of industrial importance in an area of 660 km in the depth range of 5.5 to 21.5m.

A survey carried out in the Lakshadweep islands in January-March 1987 gave information about 80 species of algae such as *Hypnea, Gelidiella & Gelidiopsis.*

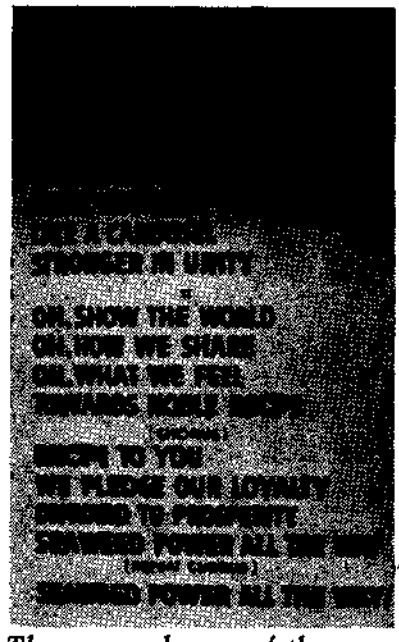
The coastal survey up to 4 m was done in collaboration with CSMCRI, Bhavanagar and Tamil Nadu State Dept. of Fisheries and the deep water survey in collaboration with CSMCRI, Bhavanagar.

New ~~Species~~ record Reported from Kerala

During the recent surveys along Kerala coast a very important seaweed *Porphyra kanyakumariensis* was found to be growing in Varkala, Mullur and Elathur. This seaweed forms an important food item in Japan. In India this alga is reported from Visakhapatnam, Goa, Gujarat, Colachel and Kanyakumari. If it is acceptable for human consumption, attempts can be made to augment this resource through culture practices.

Adhoc Scheme on Seaweed Resources

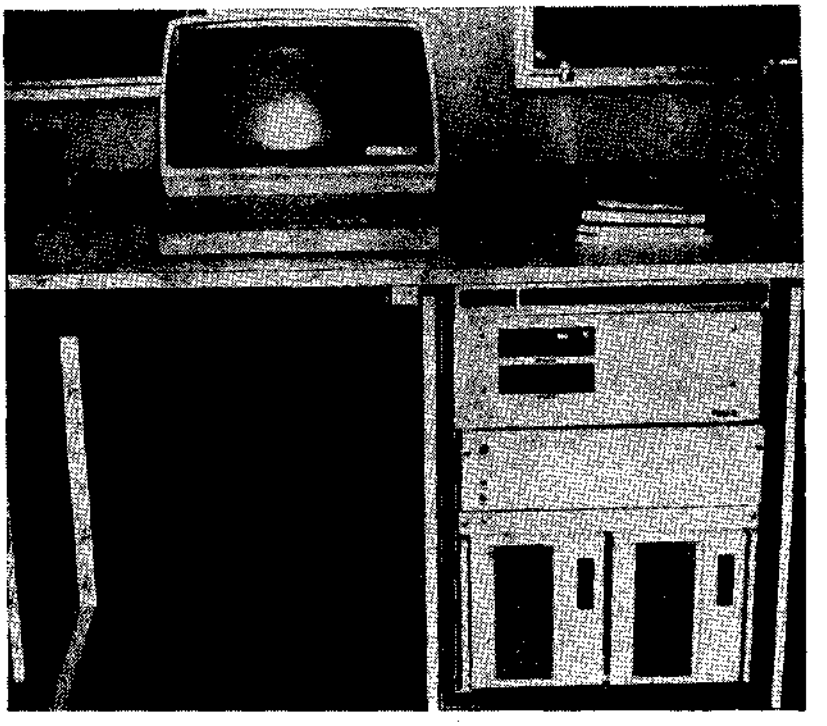
The Indian Council of Agricultural Research has initiated a survey of seaweed resources off Lakshadweep, Andaman-Nicobar islands, Vishakapatnam and Chilka Lake areas. This adhoc scheme which is located at CMFRI, Cochin will make detailed studies on the seaweed resources and their biochemical aspects. Investigations have been carried out on the marine algae of Tamil Nadu and Lakshadweep. Such studies will help in understanding the chemical composition of the algal species based on which food and feed formulations can be worked out. Considering the ever-growing demand for proteinrich food for human consumption it is necessary to properly utilise the seaweed resources for the benefit of mankind.



The seaweed song of the workers of the Marine Colloids Philippines Incorporated; a multinational seaweed industry in Cebu.

Computer Centre Established at CMFRI

Long-felt need of the Institute to go computerway has been materialized with the installation of a MICRO-32 computer system. This system has been manufactured by the Electronics Corporation of India Ltd. and belongs to the family of fourth generation computers. The system works on time sharing principle in a multi-programming and multi-user environment. System configuration currently consists of a console, two floppy disk drives, two hard disks each of 160 MB capacity, two magnetic tape drives and a high speed line printer with a capacity of 600 lpm. The system supports 4 terminals including two intelligent ones which can be used as 'stand alone' units. The system is also supported by 5 off-line data entry units. Besides the 'Micro-32' system, the Institute is equipped with a Wipro PC/XT computer.



Console of Micro 32 with 2 hard disc drives. This supports four terminals with two tape drives and a line printer

With the installation of this computer, the National Marine Living Resources Data Centre envisages speedy processing of the data and dissemination of information to end users. Two major tasks which would receive immediate attention of the computer centre are computerization of data processing and documentation. The Institute has regular inflow of voluminous data accruing from the nationwide sample survey on exploited marine fishery resources. The computer system now available would facilitate speedy processing of the data which has been hitherto carried out using desk calculators. Documentation is another sphere of the Institute's activities where computer has immense applications. Documentation of the research findings both within and outside the Institute which are scattered in research journals, project reports and other publications have to be consolidated and properly documented for quick reference.

The Institute being a premier research organization, has to resort to sophisticated analysis of data through modern statistical tools and through developing mathematical models. The stock assessment studies involve estimation of various vital parameters and development of complex mathematical models. Similarly, studies on the influence of various environmental parameters on the resources as well as the interaction of the parameters call for sophisticated multivariate techniques. Those studies will be the areas where computer application will be immediately available.

Many organizations of national and regional importance are currently engaged in investigations on multifarious aspects of the marine fisheries. The studies relating to this multi-disciplinary area involves synthesis of

physical, mathematical and biological sciences. Besides the fundamental research in the area, the conservation of resources and management of fishing industry require timely information on various parameters. Besides the data gathered by the research organizations, industry and Governmental agencies involved in commercial and exploratory fishing also collect valuable informations which are necessary to be communicated to research establishments so that the planners and the industry would receive the timely feedback. In this context, the relevance of a centralized agency for collecting, processing and disseminating such valuable information need not be emphasized. The National Marine Living Resources Data Centre established at this Institute on the advice of Planning Commission is, therefore, in the process of developing a computerized information system for the benefit of all concerned. The computer facility available with the institute would be geared to this purpose shortly.

Collaborative Programme on Squid Jigging

A programme for squid jigging jointly sponsored by the Central Institute of Fisheries Nautical and Engineering Training, Fishery Survey of India and CMFRI is in operation from June 1988. The programme aims at studying the resource potential, conducting feasibility studies and training personnel at various levels in the art of squid jigging and post-harvest handling & processing on board. Captain E. Haruta of Japan is serving as expert consultant to this programme.

Squid jigging is carried out during night hours when squids attracted by powerful lights on board congregate in the illuminated zone around the vessel and are caught in the jigs attached to lines from the jigging units. Jigs are simple lures with a coloured body of synthetic material such as bakelite set with two or three rows of sharply pointed hooks in crown-like clusters. Matsya Sugandhi, a combination vessel rigged for both squid jigging and long lining is used for carrying out the survey. The vessel undertakes two cruises of 10-12 days each in a month. Scientists of CMFRI associated with the research project on survey and assessment of cephalopod resources in the EEZ are active participants in the programme. Shri M. M. Meiyappan, Scientist in the Molluscan Division serves as coordinator of the programme at the Institute level.

Surveys carried out under this programme in Quilon and Vizhinjam coasts have indicated the dominance of the Indian squid *Loligo duvauceli* followed by *Doryteuthis sobogae*. It is hoped that squid jigging, being a species-aimed fishery, will provide necessary data for the assessment of the resources in our waters.

Whales Stranded

Stranding of five whales were reported from different centres of CMFRI. One *Sei* whale *Balaenoptera borealis* Lesson was brought ashore at Tuticorin in May. The total length of the whale was 750cm. Three baleen whales measuring 900, 1800 and 2300 cm in length were stranded at Bombay and Gujarat. The species identification could not be established due to highly putrified condition of the specimens. One fin whale *Balaenoptera physalis* (Linnaeus) was entangled in a trawl net at a depth of 40m at Pudumanikuppam near Madras in June. It was a young baby female whale measuring 470 cm estimated to be one-year old.

Stray catches of whale shark *Rhincodon typus* were reported from Veraval during April.

Catch of *Octopus* sp and a male hump dolphin *Sousa chinensis* were reported from Veraval. Landing of a dolphin measuring 172 cm and weighing 95 kg was reported from Ghokala landing centre near Veraval.

Workshop on Marine Fisheries Research and Development

A two-day workshop on R & D in marine fisheries was held at Bombay from 25 May to discuss the current issues in fisheries research and development at Maharashtra. This workshop was organised as suggested by CMFRI based on its appraisal of

marine fishery resources of different maritime states of India consolidating the data collected during the ten-year period from 1975 to 1984. A series of reports pertaining to the states and union territories have been published by CMFRI recently. Such workshops will be conducted in maritime states from time to time so that the research programmes of CMFRI could be oriented to focus attention on priority areas. About 42 officials from central and state organisations and universities and retired officials associated with fisheries development participated in the workshop.

KVK/TTC

The following training programmes were conducted.

Five courses of five days and three courses of 2 days duration were organised in which 67 farm men and 57 farm women participated.

One day on-campus training on fish handling was organised in which 18 farm women participated.

Nineteen farm men were given one-day training in poultry farming. Seventeen farmmen were trained in duck farming through a one-day course.

A one-day training course in livestock management was organised for the benefit of 20 farmmen.

A demonstration-cum-training programme was organised in which 14 women participated.

Twenty women were trained under a one-day course in nutrition.

Two on-campus training programmes of one day each was organised in which 22 farm women were trained.

Under the new 20 Point Programme of the Prime Minister a training course of one-day duration was arranged in which 25 farm men participated.

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Twenty selected farmers sponsored by the Brackishwater Fish Farmers Development Agency of the Department of Fisheries of Kerala State were given one-month training under the inter-institutional extension programme in prawn farming.

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Seed of *M. affinis* produced in the mini hatchery of KVK and stocked in the demonstration pond were harvested with the onset of monsoon. It was observed that this species, though capable of thriving in backwater does not attain more than 100 mm in this system.

* * *

KVK Patrika entitled An Introduction to Freshwater Fish Culture by Dr M. M. Thomas and Shri P. Radhakrishnan and another publication on harvesting systems in prawn culture by Shri N. Mohanan were brought out.

* * *

Fishery Economics and Extension Division with the help of KVK organised 3-day off-campus training at Chalakkadavu in Chellanam Panchayat as a part of the research project in extension. Under this programme 25 farm women were trained in the preparation of fish pickles, wafers and cutlets.

Visitors

Mandapam

Dr M. V. Rao, Special Director General, ICAR.

Shri K. Mohan Naidu, Director, Sugarcane Breeding Institute, Coimbatore.

Vizhinjam

Dr Chandrika Prasad, Deputy Director General, ICAR.

Shri K. Viswanathan, Director, Mitraniketan and member, CMFRI Management Committee.

Sister Vitaliae Mary, Principal, St. Mary's College, Tuticorin to receive technical help from Dr P. A. Thomas.

Dr C.V.N.K. Rao, Geologist, Geological Survey of India, Hyderabad.

Shri Arokyachami, Member, Union Public Service Commission.

Shri P. Kumardas, Member, Kerala Public Service Commission.

Calicut

Students from the following institutions visited the Centre. LVD College, Raichur; M.C.C.L.D. School, Calicut; Providence College, Calicut; Kabanigiri High School, Kabanagiri; Muchukanna UP School, Quilandi; Govt UP School, Quilandi; Govt UP School Westhill; HMS School, Torakkal Manjeri; Govt High School, Malappuram.

Kakinada

The Quienquennial Review Team consisting of Shri J.V.H. Dixitulu, Dr C.T. Samuel, Prof S. Datta and Dr D. Sudarshan.

Shri B. Biswas, Shri V. Surendran, Shri George Thomas, Shri K. Joshua, Shri Subbarao and Smt A. Sujatha of Taspaic Hatchery Project (MPEDA), Vishakhapatnam.

Engagements

Dr PSBR James, Director attended the following meetings.

Meeting of cruise planning & programme priorities Committee of FORV Sagar Sampada, Sagar Kanya and Gaveshini at New Delhi, 15 April.

Meeting of the Coordination Committee for survey of living resources of Ocean Science and Technology Board at New Delhi, 12 May.

Workshop on Marine Fisheries Research and Development organised by Maharashtra State Fisheries Department at Bombay, 25-26 May.

Meeting of the Central Board of Fisheries at Calcutta, 30 May.

Meeting called by ICAR to consider the location of headquarters of CIBA at New Delhi, 16 June.

Dr P. Bensam and Shri M. Kathirvel, Scientists and Shri B. S. Ramachandralu, Farm Engineer attended the National Workshop on Aquaculture Engineering held by Ocean Data Centre, Centre for Water Resources, College of Engineering, Anna University, Madras, 8 April.

Appointments

A Bastian Fernando, Curator (T-5) as Field Officer (T-6) at Madras, 12 May.

Miss K. Balamani, Junior Clerk (Hindi Typist) at Cochin, 25 May.

A. Latha, S.S. Grade I (Safaiwala) at Cochin, 9 June.

Smt Pennamma Joseph, S. S. Grade I (Messenger) at Cochin, 23 June.

Shri T. Lawrance, S.S. Grade I (Gardener) at Cochin, 27 June.

Shri K.G. Jayaprasad, S. S. Grade I (Gardener) at Cochin, 30 June.

Shri V.T. Ravi, S.S. Grade I (Watchman) at Cochin, 17 May.

Shri S.K. Guruswamy, S. S. Grade I (Watchman) as Driver for light vehicles at Tuticorin, 28 May.

Shri S. Duraipandian, S. S. Grade (II Watchman) as Driver for light vehicle at Visakhapatnam, 15 June.

Promotion

Shri D. Pakkiri, S.S. Grade I (Watchman) to S.S. Grade II (Watchman) on 16 May.

Transfers

Shri M. S. Muthu, Scientist S-3, from Cochin to Madras

Shri N. Neelakanta Pillai, Scientist S-2, from Cochin to Mandapam.

Shri D. Sivalingam, Scientist S-2, from Mandapam to Tuticorin.

Dr D.B. James, Scientist S-2, from Madras to Tuticorin.

Shri P. Natarajan, Scientist, S-1, from Mandapam to Madras.

Shri G. M. Kulkarni, Scientist S-1, from Goa to Mangalore.

Shri V.S. Rengaswamy, Scientist S-1, from Mandapam to Tuticorin.

Shri M. Sivadas, Scientist S-1 from Mandapam to Calicut.

Shri K.R. Manmadan Nair, Scientist S-1, from Puri to Cochin.

Dr S. Shanmugham, Scientist S-2 from Tuticorin to Veraval.

Dr E. Vivekanandan, Scientist S-2 from Madras to Veraval.

Shri A. A. Jayaprakash, Scientist S-2, from Cochin to Mandapam.

Shri A. P. Lipton, Scientist S-2 from Veraval to Mandapam.

Dr R. Paul Raj, Scientist S--2 from Cochin to Madras.

Shri C. K. Dandapani, Serang (T-I-3) from Cochin to Tuticorin.

Shri E. Sivanandam, Cook (Boat T-2) from Vizhinjam to Tuticorin.

Shri S. Kemparaju, Junior Technical Assistant (T-2) from Goa to Mangalore.

Shri K. Sasidharan Pillai, Field Assistant (T-1) from Cochin to Vizhinjam.

Shri V. Mohanan, Senior Clerk, from KVK to Cochin.

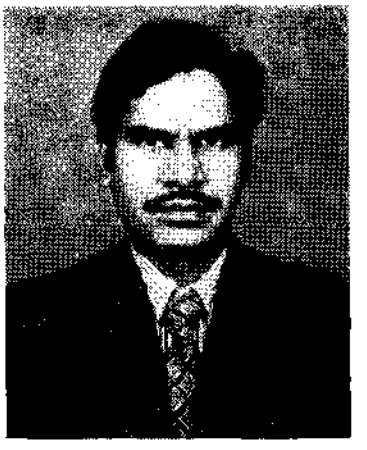
Mrs Kamalavenkataraman Junior clerk, from Mandapam to Tuticorin.

Shri N. K. Shanmugham, S.S. Grade I Safaiwala from KVK to Cochin.

Shri A.R. Mishra, Scientist S-2 from Cochin to Mandapam.

Degree Awarded

Dr P.V. Sreenivasan, Scientist S-2 was awarded the degree of Doctor of Philosophy by Annamalai University for his thesis entitled "Studies on the potamidid snail, *Cerithidea Cerithideopsilla*) *cingulata* (Gmelin, 1790) (Mollusca: Mesogastropoda)". He worked under the guidance of Professor Dr R. Na-



tarajan, at the Centre of Advanced Study in Marine Biology, Parangipettai. The study includes the investigations on the potamidids of Portonovo area, ecology and distribution pattern of C. (C) Cingulata, its age and growth, digestive organs, digestion, reproduction and life history.

Deputation Abroad

Dr V.S.K. Chennubhotla, Scientist S-3 was deputed to Philippines for a Demonstration/training in *Eucheuna* seaweed farming, 2-21 May.

Dr V. Sriramachandra Murthy was deputed to U.K. for training in Fish Stock Assessment under British Technical Corporation for a period of 6-months from 9 May.

Obituary

Shri P.C. Joseph, Junior Clerk, expired, 11 May.

Shri K. Rajappan, Fieldman expired, 22 May.

Weddings

Kum Subhadra, Technical Assistant (T-II-3) at Madras married Shri A.R. Ramasubramania Raja at Coimbatore, 18 May.

Shri P.P. Pavithran, Punchcard Operator at Cochin married Kum Ramani at Cannanore, 7 May.

Shri Shridhara, Technical Assitant at Mangalore, married Kum. Vijayalakshmi at Mangalore, 8 May.

Shri Mohan, Safaiwala at Cochin, married Kum. Soja at Cochin, 18 May.

Cover: New ~~species~~ record of Seaweed, *Porphyra kanyakumariensis* reported from Kerala coast

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