CMFRI newsletter

NUMBER 20 APRIL-JUNE 1983

FORMULA FEED FOR PRAWN LARVAE

CMFRI has made yet another advance in the technology of rearing marine prawn larvae in hatchery. Until recently livefood organisms had to be cultured on mass scale for feeding the larvae and post larvae of penaeid prawns in the hatchery. A diatom *(Chaetoceros)* was used as food during larval stage, a rotifer (*Brachionus*) for feeding the early post larval stages, up to PL-5 and cladoceran (*Moina*) for the rest of post larval stages. The new development envisages replacement of livefood organisms by a dry powder formula feed compounded from locally available and inexpensive raw materials like prawn head waste, mantis shrimp and tapioca powder. These ingredients are micropulverized and vitamins and minerals are added. The feed is administered in finely powdered form. This powder feed has long shelf-life. This newly developed technology has simplified hatchery production of prawn seed considerably and will have far-reaching implications in the prawn hatcheries being established in different parts of the country. Shri K. H. Mohamed, Shri M. S. Muthu, Shri N. N. Pillai, Shri S. A. Ali and Shri S. K. Pandian are the scientists involved in the work.

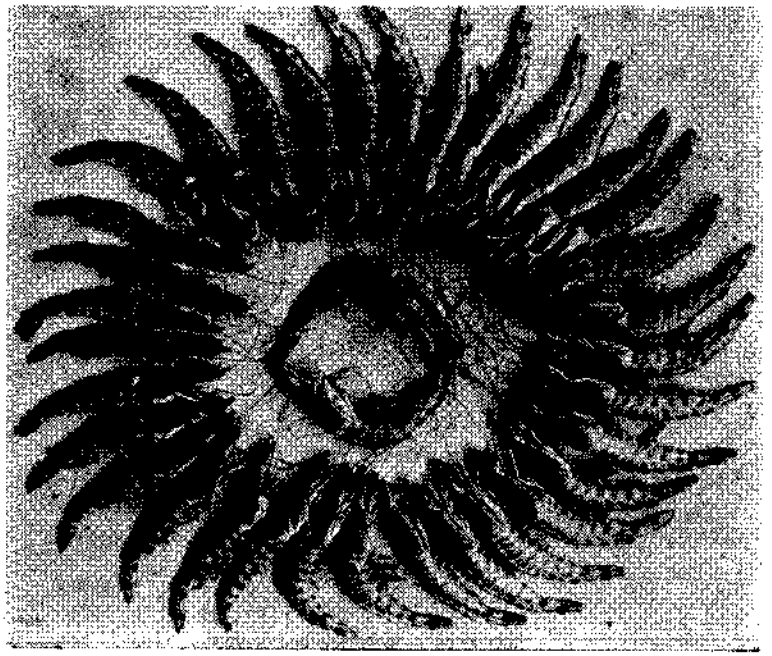
BREAKTHROUGH IN REARING GREEN CRAB

The larvae of the crab *Scylla serratta* have been reared from eggs of ovigerous female to crab stage. In the experiments conducted in April at the Tuticorin Research Centre, 1.5 million zoes emerged from eggs after the incubation period of 8-10 days. Five zoes stages and one megalopa lasting 28-30 days constitute the complete larval development of the crab. The larvae preferred to feed on rotifer and nauplii of brine shrimp. The rearing media were treated with mild antibiotics to control ciliates. Suitable ecological parameters

(*Continued on Page 6*)

KURUMA PRAWN CULTURED AT MUTTUKADU

For the first time in India, an attempt was made to culture the Kuruma prawn (*Penaeus japonicus*) at the Mariculture facility of CMFRI at Muttukadu. This species which is extensively cultivated in Japan, Korea and Taiwan attains a total length of 225 mm. Kuruma shrimp is marketed alive in Japan, where it is a luxury seafood commanding very high prices. In India it forms a small percentage of the marine prawn catch in Bombay. In the Kovalam backwaters near Madras juveniles of this species are caught in small numbers by the fishermen.



Harvested kuruma prawns

SUMMER INSTITUTE ON HATCHERY PRODUCTION OF PRAWN SEED

ICAR's first Summer Institute on 'Hatchery Production of Prawn Seed and Culture of Marine Prawn' was held at CMFRI from 18 April - 17 May. Presiding over the inaugural meeting Dr Silas, Director CMFRI said that one of the constraints in the large-scale application of prawn culture was non-availability of seed and the technology developed by CMFRI was a milestone in the fisheries development programmes of the nation. Shri K. H. Mohamed, Director of the Summer Institute welcomed the gathering and said that the objective of the Summer Institute was to update the knowledge of the teachers, researchers and extension workers who would pass on the same to the younger generation. Inaugurating the Summer Institute Dr R. . Natarajan, Director of Centre of Advanced Studies in Marine Biology at Annamalai University said, "Prawn culture has assumed great importance in the development departments, universities and colleges. This is an area where we have got to spend time in co-ordinating the efforts. There should be free exchange of ideas and provision to train people as and when the methodologies are developed". Shri K. H. Alikunhi, the well-known FAO Expert and Shrimp Culture Consultant and Dr R. Raghu Prasad, Emeritus Scientist also spoke.

Inuagural Session. Seated are (from l to r) Dr R. Raghu Prasad, Dr E. G. Silas, Dr R. Natarajan and Shri K. H. Alikunhi. Dr Vedavyasa Rao proposes vote of thanks

Twenty-two participants from the agriculture and other universities and fisheries departments of maritime states from different parts of the country attended the Summer Institute. The curriculum included lectures and field work extending 130 hours. In addition, Shri Alikunhi and Dr C. V. Kurien, Emeritus Scientist delivered guest lectures with the review of prawn breeding efforts in different parts of world.

The valedictory function of the Summer Institute was held on 17 May. Shri K. Gopalan, Vice-Chancellor of the University of Cochin in his valedictory address congratulated the participants for having got an opportunity to participate in the same. He said that ICAR could not have selected a better place than CMFRI, for conducting this course in view of the pioneering work done in the Institute in the field. Professor P. C. George, FAO Expert from Bangladesh also spoke on the occasion complimenting the creditable achievements of CMFRI.

A total of 1100 juveniles (average length 64 mm and average weight 2 g) were stocked in a 0.15 ha pond at the Muttukadu Farm in December 1982. The prawns grew rapidly and attained a size of 130 mm and 17 g in 63 days. In Japan the Kuruma prawn grows at a slower rate and attains marketable size of 20 g in six months of culture. The extremely fast rate of growth observed at Muttukadu opens up the possiblity of culturing this highly priced species in India for the export market.

Hatchery-Produced Tiger Prawn Cultured at Muttukadu

Tiger prawn seed numbering about 1,800 produced at Kovalam prawn-hatchery were stocked in one of the 0.5 ha grow-out ponds at Muttukkadu on 31 October, 1982. The initial salinity of the pond water was 28 ppt and it gradually increased to 42 ppt by April 1983. The average size and weight of the seed at the time of stocking was 28 mm and 0.29 g respectively. No supplementary feed was given during the first 93 days. During the later period locally available backwater clam (*Meretrix casta*) was fed at 5% of the total body weight.

SCUBA Diving Training Concluded

The two-month training course in SCUBA diving organised by CMFRI concluded on 20 April at Tuticorin. The course which commenced on 21 February was inaugurated by Shri K. Nagappan Nayar, Officer-in-Charge of the Tuticorin Research Centre. Five participants, three from Tamil Nadu Fisheries Department and two from CMFRI attended the training. This unique training course was meant for training young scientists in the exciting field of under water exploration. The sea bed has very valuable resources such as pearl oysters, sacred chank, holothurians, sponges, gorgonids, alcyonarians, corals and several species of ornamental fish, besides fishes of edible value. Some of these have export value too. These resources should be properly explored and estimated to provide the data base for proper exploitation and management.

Aqua-lung diving with Self-Contained Underwater Breathing Apparatus (SCUBA) facilitates direct observation on the resources and also behaviour of fish and fishing gear. The expertise in aqualung diving was originally acquired through FAO in 1958-59 with the training of CMFRI scientists by an Italian expert. Since then survey of pearl oyster and chank beds of the Gulf of Mannar were conducted and expertise developed. To widen the base of the expertise in the country CMFRI provides training to personnel of other organisations under the leadership of two experts, Shri K. Nagappan Nayar and Shri S. Mahadevan, Senior Scientists.

Activities of the Research Centre are being explained to Shri Nirmal Singh Hira

The curriculum included training in surface swimming, underwater swimming with mask and snorkel, skin diving in shallow waters, SCUBA-diving in deeper areas, safety precautions and underwater observation. Underwater photography of marine life and sea bed is an essential part of the programme.

The valedictory programme was attended by Shri Nirmal-Singh Hira, District Collector, Tirunelveli who also distributed certificates to the participants. Dr E G. Silas, Director CMFRI presided over the meeting.

The final harvest was done on 6 April and the prawns, on an average, measured 191 mm and weighed 60 g. The head-on count was 17 per kg and the headless 24 per kg. This is for the second time that CMFRI has succeeded in harvesting hatchery-produced F-1 generation of prawn.

A part of the harvest is being maintained as brood stock for further work. The present culture experiment is being carried out by Shri M. Kathirvel, Scientist S-1 at the Madras Research Centre.

Zonal Workshops of the FRAD Field Staff

The zonal workshops of the field staff of Fishery Resources Assessment Division of CMFRI posted in the various maritime states of India were held in June. The field staff posted in Maharashtra and Gujarat met at the Bombay Research Centre between 15-18 June and those in Kerala, Karnataka and Goa met at the Calicut Research Centre between 22 - 25 June. The field staff posted in Tamil Nadu, Pondichery and Andhra Pradesh (zones An_7 - An_9) attended the workshop held at the Madras Research Centre between 27-30 June. Similar workshop will be held at Waltair Research Centre between 2-6 July for the staff

Meeting of the Maritime States and Union Territories

A ministerial level meeting of the maritime states and union territories was convened by the Department of Agriculture Government of India, on 25-26 June at Hyderabad to discuss specific problems of marine fisheries development in the country. An official level meeting was held on 25 June at Hyderabad to discuss the trends in marine fish production, collection and compilation of fish production statistics, welfare measures for coastal fishermen and brackishwater fish farming. The recommendations made in the official level meeting were presented at the ministerial level meeting held on 26 which was presided over by the Hon'ble Union Minister for Agriculture, Shri Rao Birendra Singh. Chief Ministers of Andhra Pradesh, Maharastra and Goa and fisheries ministers of some other maritime states were also present. Dr E. G. Silas Director, Dr S. V. Bapat, Joint Director, Shri T. Jacob and Dr K. Alagarswami, Senior Scientists of CMFRI attended the meeting.

The multistage stratified random sampling system which was evolved and adopted by CMFRI was commended and recommended for adoption by all the maritime states and union territories. CMFRI was requested to organise training programme for the personnel of state governments and union territories for adopting and implementing the system. The following are some of the recommendations made at the meeting.

The states will have their production estimates reconciled with the CMFRI before the figures are communicated to the Union Ministry of Agriculture.

CMFRI will be the nodal agency in the country for monitoring marine fish landing and will be responsible for the final estimates of the country's marine fish production.

The copies of the fishing log sheets of all deepsea fishing vessels operating in the Indian EEZ shall be made available to the NMLRDC at CMFRI for consolidation, along with national marine fish production estimates.

CMFRI will also be responsible for designing techno-socio-economic survey of marine fisheries in the country, based on the experience gained in conducting such studies.

Some of the states had expressed their concern in sharing the stock of pelagic fishes such as oil sardine and mackerel which form common resource along the coast line of more than one state. Inter-state commissions to settle problems of shared stock was suggested to be constituted. CMFRI will intensify the stock assessment programme with a view to helping the maritime states to understand the resources position better.

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posted in the states of West Bengal, Orissa and Andhra Pradesh (zones An_1 - An_6).

Director of CMFRI, the Head of FRA division, senior scientists and concerned technical staff from the Headquarters and officers-in-charge of all the research centres attended the workshop and took part in the deliberations. The method of filling up of the schedules for collection of catch statistics, efforts and other biological data as per the recommendations of the Workshop on Acquisition and Dissemination of Data on Marine Living Resources of Indian Seas held at CMFRI, in October 1982 was dealt with. Emphasis was made in using code numbers in the relevant columns of the schedule for facilitating computerisation of the data. The list of landing centres and various types of fishing crafts and gears were updated. Zonal survey maps showing the approaches to the landing centres were also finalised. The field staff refreshed their knowledge in the identification of fish and shellfish and methods of data collection. The difficulties faced by the field staff in collecting data as well as personal problems were discussed.

Rain Storm in Junagadh

A heavy rain storm with a wind velocity of 60-80 km per hour lashed Junagadh district in Saurashtra coast during 19-24 June. Vanthali, Shapur and Porbandar areas were most affected due to flood water from Kalwa, Uben and Ozat rivers. Communication was completely cut off. The Bombay duck fishery in Rajpara, Jaffrabad, Nawabunder and Porbandar suffered heavy loss.

Refresher Training in Pearl Culture

Shri M. C. Muthu Koya, Fisheries Officer, Department of Fisheries, Union Territory of Lakshadweep is undergoing a two-week refresher training course in pearl culture at the Tuticorin Research Centre of CMFRI from 25 June. The programme is organised specially at the request of Shri George Varghese, Director of Fisheries, Kavaratti.

Shri Muthu Koya doing pearl oyster surgery for nucleus implantation during training

Shri Muthu Koya was one of the candidates at the six-week short-term Training Course in Pearl Culture conducted from 9 July to 18 August 1979. Subsequently, the Department of Fisheries of Lakshadweep has located the presence of pearl oysters in the islands and developed a programme of pearl oyster farming in Bangaram. The much-valued species in pearl culture, *pinctada fucata* occurs in the islands, along with other species of pearl oysters. To strengthen this project, the Department requested CMFRI for a refresher training to Shri Muthu Koya.

The progrmme of the refresher course mainly concentrates in practical exercise for updating the officer's technical skill in graft tissue preparation and pearl oyseter surgery, pre-operative conditioning and post-operative care of the oysters. Besides, the training include lessons on identification of important species of pearl oysters, spat collection and raft culture. The Officer will also make field visit to the pearl culture farm of CMFRI. Shri Muthu Koya will have discussion with Dr E. G. Silas, Director of CMFRI and Dr K. Alagarswami, Head of the Molluscan Fisheries Division at Cochin after the refresher training. The programme is being organised under the Institute's Research Project 'Training in pearl culture', by Dr K. Alagarswami (Project Leader) and Shri A. Chellam, S. Dharmaraj and T. S. Velayudhan (Project Associates). Shri K. Nagappan Nayar, Officer-in-charge, Tuticorin Research Centre has extended the Research Centre's facilities for the training.

Tuna Update '83

The Association of Indian Fishery Industries in association with the Ministry of Agriculture and the Marine Products Development Authority organised a Seminar on Tuna Fishing titled 'Tuna Update 1983' during 14-15 April at Bombay. The Seminar was attended by well known experts from India and abroad. Dr E. G. Silas, Director CMFRI was an invited speaker in one of the sessions, who also presented a paper. Shri K. V. Narayana Rao, Dr S. Ramamurthy and Dr P. P. Pillai, Senior Scientists of CMFRI also attended the seminar.

Culture Experiments in Finfish

In monoculture of milkfish, two experiments were conducted at Mandapam Research Centre. The stocking was done for a period of 10 months in two 0.24 ha ponds. The stocking size and weight were 74.61 mm and 2.70 g. The size at harvest was 278 35 mm (136.58 g) in experiment I, and 295.21 mm (185.00 g) in experiment II. The yield realised in the experiment I, where the stocking density had been kept at 3500/ha, was 85 kg (354 kg/ha); in experiment II, with a stocking density of 3000/ha, the yield was 106 kg (443 kg/ha). The survival rate was 73.21% and 79.86% in experiment I and II respectively. A phenomenon of tail fin rot disease was observed in one of the ponds. Shri G. Mohanraj, S-1 and Shri V. Gandhi are the scientists involved in the project.

In the experiment on polyculture of milkfish with mullets, two 450 sq. m ponds were stocked with *Chanos chanos* and *Valamugil seheli* in the ratio of 1:2 in one pond (Experiment I) and 2:1 in the other pond (Experiment II) with an overall stocking density of 10000/ha in each pond. The stocking size was 67.9mm (2.5g) for *chanos* and 50.5 mm (1.5 g) for *V. seheli.*

The size of *chanos* at harvest was 325.7 mm (227.7 g) in experiment I and 302.9 mm (187.4 g) in experiment II and of *V. seheli* was 241 .9 mm (103.2 g) and 249.1 mm (96.0 g) respectively for the above experiments. The harvest yielded 19 kg (422 kg/ha) and 39.250 kg (872kg/ha) of *chanos* in experiment I and II respectively. In the case of *V. seheli,* the yield was 4 kg (89 kg/ha) in experiment I and 3 kg (67 kg/ha) in experiment II. The rate of survival was 56.7% for *chanos* and 13.3% for *V. seheli* in experiment I and 70% and 20.7% in respect of *chanos* and *V. Seheli* in experiment II. The experiment is being carried out by Shri A. Raju, S-1 and V. S. Rengaswamy at Mandapam.

Publication on Fish Landing Trends

The NMLRDC of CMFRI brings out a monthly publication on the trend of marine fish landings at important landing centres, with a view to catering to the State Government Departments and the industry. The publication titled 'Fish Trend' exhibits the trend in ten important centres, namely, Cochin Fisheries Harbour (Cochin) Sakthikulangara (Quilon) Mangalore, Malpe, Mandapam, Rameswaram, Pudumanaikuppam (Madras) Kakinada, Visakhapatnam, and Sassoon Dock (Bombay) where there is heavy concentration of mechanized boats. The trend is depicted in the form of graphs. The graphs have been prepared by Shri T. Jacob, Senior Scientist and Shri K. Balan and Shri M. Srinath, Scientists of the Fishery Resources Assessment Division and published by Shri K. N. K. Kartha, Senior Scientist from the Library and Documentation Division.

Code List of Marine Living Resources

As a prerequisite for codification and acquisition of species-wise data for commercially important varieties of marine living resources, the National Marine Living Resources Data Centre (NMLRDC) of CMFRI has brought out a code list of common marine living resources of the Indian seas (CMFRI Special Publication number 12). The list covers finfish, shellfish, mesopelagics, sponges, corals and seaweeds and endangered species such as marine mammals and turtles which are protected under Wild Life Act. Code numbers have been given for genera and species with adequate provision for future addition for potentially important species from the Indian seas. Common names are given against species/ genera. The code list has been compiled by Shri G. Venkataraman, Senior Scientist, Shri P. K. Mahadevan Pillai and Shri Joseph Andrews, Technical Assistants of the Fishery Resources Assessment Division.

[Continued from page 1]

were also determined. One hundred and fortyfive crabs reared in the experiment were stocked in ponds for culture. This breakthrough indicates the possibilities of setting up of crab hatchery.

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Under the Prime Minister's 20 Point Programme a course on improved strains of ducks and their farming techniques was held at KVK on 16 May by Dr Gopalakrishnan Nair Veterinary Surgeon - in - charge of the Government Duck Farm, Niranom. Thirty five farm women attended the course.

World Environment Day Seminar

Cochin Science Association, Working Group on Environmental Protection, World Wild Life Fund-India (Kerala Branch), Kerala Sashtra Sahithya Parishad (Cochin Unit), and Friends of Trees (Cochin Chapter) jointly organized a world Environment Day Seminar on Conservation of Elephants at Maharaja's College, Ernakulam on 5 June. Worshipful Mayor of Cochin, Prof. Mathew Pylee inaugurated the seminar and Dr E. G. Silas, Director, CMFRI presided. Scientific and technical staff of CMFRI also attended the seminar.

From the Mobile Lab

The second phase of the survey of important estuaries in Tamil Nadu was completed in April. The FEM division with the help of the mobile laboratory collected samples from Thirumalairayanpattinam estuary, Karaikkal estuary, Thirumullaivasal backwater, Coleroon estuary, Killai estuary, Cuddalore estuary, Veerampattinam estuary, Kadapakkam backwater and Kadalore estuary. The physico-chemical characteristics of the samples indicated high productivity. The estuaries also supported good fishery of finfish (*Etroplus, Sillago, Gerres* and mullets), clams and prawns (*P. indicus, P. Monodon* and *M. dobsoni*). No indication pollution was observed. The Kadappakkam and Kadalore estuaries showed high salinity value as the bar was closed in summer.

Collection of benthos from Thirumalairayanpattinam estuary

Consultancy

Dr Hubert J. Ceccaldi, Director, Ecole Pratique Des Hautes Etudes, Station Marine de' Endoume, Marseillie, France has arrived at CMFRI on 10 June to give expert consultancy in crustacean physiology and nutrition at the Centre of Advanced Studies in Mariculture. Dr Ceccaldi will be dealing with crustacean physiology with special reference to cultivable species of prawns, lobsters and crabs and will be giving advice on basic and applied research programmes of the CAS. Dr Ceccaldi will be at CMFRI for three weeks.

Dr Ceccaldi with the research fellows

Visitors

Cochin

Dr S. Z. Qasim, Secretary to the Department of Ocean Development and leader of the First Indian Expedition to Antarctica visited CMFRI on 28 April. Dr Qasim while addressing the scientists of CMFRI appraised them of the present policies and projects undertaken and those to be taken up in future for ocean development. A few excerpts from his speech.

Dr Qasim and Dr Silas discussing the programmes

India In 2000 AD

In the year 2000 Indian population is likely to exceed a billion. Resources will be tremendously in short supply and recycling and reuse will be necessary. The requirement for fish will be 11.4 million tonnes. But the maximum that can be exploited from diversified resources and effort will be about 4.55 million tonnes. Aquaculture will play a big role in bridging the gap as a result of innovative technologies and large-scale investments. The progress achieved in genetic manipulation will supply fish to our requirement, similar to what we have achieved in poultry. We will have nutrient supply systems as big as an oil refinery, large rearing areas and harvesting and processing mechanisms. No intervention of human being will be required except for determination of sex. People who live in flats will be able to culture fish in collapsible plastic bags. We will be consuming all the varieties of seaweeds. The vast krill resources of the Antarctica will fill up a portion of our requirement.

Using the membrane technology developed in Japan for extraction of uranium from the seawater and electrolysis, we will be able to extract whatever minerals we want from the seawater.

Programmes of DOD

There are number of agencies engaged in ocean research in our country such as the ICAR Institutes and CSIR laboratories. But there is no co-ordination of functioning among these Institutes. The Department of Ocean Development, (DOD) which is of recent origin, will serve as a funding agency to these Institutions in taking up programmes of national importance. The two major programmes with the Department, at present, are the Antarctica expedition and deepsea mining. Sophisticated research vessels are being acquired for this purpose. *Gaveshini* has surveyed 3 million sq. m in the Central Indian Ocean and more than 100 scientists are involved in the programme. Four buoys have been left in the Central Indian Ocean which transmit information to the National Institute of Oceanography. The Department of Science and Technology has plans to acquire large vessels and the first of such vessel, *Sagarakanya,* equipped with highly sophisticated laboratories will be arriving shortly and serve as a national facility.

The development of man power will be another aspect of DOD's programmes. The Department has instituted 100 fellowships and 25 research associateships. Entirely new generation of scientists and funding agencies will be coming to marine sciences. With the new fleet of fishing vessels and the new generation of manpower India will emerge as one of the leading nations in the field of ocean development.

Public Accounts Committee

The Committee discussing with the directors and senior officials of CMFRI and CIFT

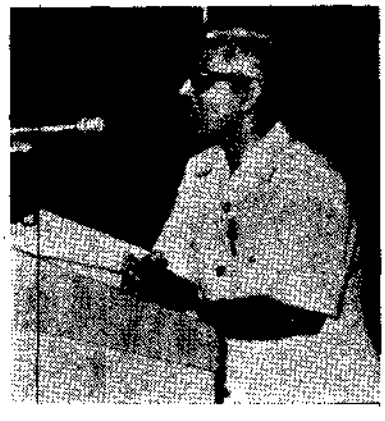
Study Group I of the Public Accounts Committee of the Lok Sabha visited Cochin from 21-23 June. The Committee was at CMFRI on 22 June to study the activities of CMFRI in relation to the development of marine resources in India. The Committee consisted of the following members.

Shri Sunil Maitra - Chairman
Shri Bhiku Ram Jain - Convener
Shri Nirmal Chatterji - Alternate Convener
Shri Chitta Basu
Shri N. G. Narasimha Reddy
Smt Vidyavati Chadurvedi
Dr Hara Krishur Mullick
Shri Harish Rawat
Shri Ram Singh Yadav

Secretariat

Shri H. S. Kohli - Chief Financial Committee Officer
Shri S. K. Sharma - Reporting Officer
Shri S. C. Arora - Stenographer

Professor P. C. George, FAO Expert and Adviser to the Government of Bangladesh in the Ministry of Fisheries and Joint Commissioner and Chairman to the Indian Ocean Programme gave a talk on problem and prospects of mariculture, 18 May.



Mr P. Haugaard, Country Project Officer, Regional Operations Service, Asia and Pacific, FAO Rome and Mr A. L. Mendiratta, Programme Officer, FAO New Delhi visited the Centre of Advanced Studies in Mariculture, 6 June.

Dr O. P Makheja, Scientist (CAS), ICAR and Shri V. Kumar Administrative Officer, UNDP Cell, ICAR, New Delhi, 17-18 June.

Dr P. V. Dehadrai, Fisheries Development Commissioner, Department of Agriculture and Co-operation was also present during the visit of the Committee to help them in the discussions.

Tuticorin

Shri R. Ganesan, Commissioner of Income Tax, Madras.

Mr Gavin Young, The Observer, London, U.K.

Dr M. G. Garg, President, Indian Medical Association, New Delhi.

Dr (Mrs) Lalita Rao, Ministry of Health, Maharashtra.

Mangalore

Shri D. M. Amiruddin, Tillary Road, Bolar West, Mangalore.

Shri Ratnahar Padubiri, Mahamaye, Indrali, Udupi.

Veraval

Shri B. Verma, Scientist S-4 and S. N. Prasad, Scientist S-1, Central Sheep and Wool Research Institute, Kota, Rajasthan.

Staff News

Engagements

Dr E. G. Silas, Director, attended the following meetings.

Seminar on Tuna Fishery at Bombay, 14 - 15, April.

Seminar on Natural Resources Management System at Hyderabad, 11 and 12 May.

Sea Turtle Specialist Group Meeting at Delhi, 13 May.

The meeting on whales in connection with the forthcoming meeting of the International Whaling Commission at U. K

Meeting of the Central Coordination Committee on National Fisheries Survey at Panaji, 15 June.

The Official Level Meeting in connection with the Meeting of Chief Ministers at Hyderabad, 25 June.

Meeting of the Chief Ministers Convened by the Ministry of Agriculture, Government of India at Hyderabad, 26 June.

Zonal Workshop of Fishery Resources Assessment Division at Madras, 27 June.

Dr S. V Bapat, Joint Director attended the Fisheries Panel Meetings of the ICAR at New Delhi, 16 - 17 May.

Dr S. V. Bapat, Joint Director, Shri T. Jacob and Dr K. Alagarswami, Scientists S-3 attended the officers level meeting and the Meeting of the Chief Ministers of Maritime States convened by the Ministry of Agriculture, Government of India at Hyderabad, 25-26 June.

Dr P. V. Ramachandran Nair, Scientist S-3 and Shri K. Subbaraju, Scientist S-1 attended the Seminar on Natural Resources Management System at Hyderabad, 11-12 May.

Shri T. Jacob, Scientist S-3 and Dr K. Alagaraja, Scientist S-2 held discussions with the officials of the Department of Fisheries, Pondicherry at Pondicherry and the Statistical Department, Tamil Nadu at Madras to arrive at combined estimates of marine fish production for 1982-83.

Shri A. Noble, Scientist S-2 attended the National Agricultural Research Project Regional workshop on Brahmavari sub-project held at Fisheries College, Mangalore, 27-30 April.

Dr M. M. Thomas, Officer-in-charge, KVK attended Rural Radio Advisory Committee Meeting of All India Radio, Trichur, 25 May.

Shri S. Daniel Selvaraj, Scientist S-1 participated in the workshop on Mangroves organised by the Institutes for Coastal and Offshore Research, Visakapatanam at Kakinada, 8-9 June.

Dr Padmini, R., Scientist S-1 visited Space Application Centre, ISRO, Ahmedabad and had discussion with Prof. O. N. Kalla and his group of the Communication Area on the possible applications of microwave radiometers in the measurement of sea surface temperature from the Exclusive Economic Zone, 24 March-2 April.

Shri K. Kanakasabhapathi, Senior Library-cum-Documentation Assistant participated and presented a paper in All India Seminar on Agricultural Library and Information Services sponsored by the Association of Agricultural Librarians and Documentalists of India and Himachal Pradesh Krishi Vishva Vidyalaya with the assistance of ICAR at Palampur, 4-7 May.

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Dr E. G. Silas, Director to serve as one of the vice-presidents to the Interim Executive Council of the Federation of Indian Society of Agricultural Science and Technology, (FIS AST)

Dr E. G. Silas, Director and Shri S. Mahadevan, Scientist S-2 have been nominated by ICAR to serve as members in the task force of the Wild Life Section of the Department of Environment to study the problems and recommend measures to protect sea turtles.

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Shri T. M. Yohannan, Scientist S-1 gave a talk on whales over all India Radio Calicut.

Smt. V. Chandrika, Scientist S-1 participated in the discussions on Feasibility of bio-gas plants in Kerala in the 'Farm and Home' programme of All India Radio, Trichur, 5 May.

Training Abroad

Dr S. Kulasekarapandian, Scientist S-1 has been deputed for training in Culture of Live Food Organisms under FAO/UNDP Programme at the University of Ghent, Belgium for three and-a half months from 30 April.

Appointments

Sri Raj Kumar as Assistant at Cochin, 10 June.

Promotions

(with effect from 1 July, 1982)

T-4 to T-5

S/Shri P. Raghavan
Varughese Philipose
T. Prabhakaran Nair
W. Venugopalam
K. Kanakasabapathi

T-II-3 to T-4

S/Shri R. Reghu
R. Gurusamy
M. Babu Philip
M. Mohamed Sultan
Jacob Jerold Joel
S. G. Vincent
P. M. Aboobaker
E. K. Raveendran
G. C. Lakshmiah
P. Karunakaran Nair

T-I 3 to T-II-3

Shri K. Thulasidas

T-2 to T-I-3

S/Shri J. R. Ramalingam
M. Najmuddin
K. B. Waghmare
Y. D. Savaria
G. Subharamania Bhat
Joseph Xavier Rodrigo
Ramasomayajulu
C. Thankappan Pillai
Joseph Andrews
K. Chittibabu
P. Radhakrishnan
V Selvaraj
K. Dhanaraju
V. A. Narayanankutty
K. Muniyandi
L. Jayasankaran
N. Sundaram
K. Balachandran
Smt. A. Kanagam
S/Shri D. Sundararajan
D. Vincent
C. J. Prasad
M. Mustaffa
A. Pathrose
S. Kalgutkar
R. Marimuthu
K. Karuppiah
P. C. Appukuttan
A. Kondan Chettiar
K. P. Velu
K. Dharma Rao
Dr N. Jayabalan
Smt P. L Ammini
,, S. Girijakumari

Transfers

Sri K. V. George, Technical Officer (T-7) from Kovalam to P. C. L, Narakkal.

Shri S. Palanichamy, Junior Technical Assistant (T-2) from NPCL to Kovalam Field Centre, Madras.

Shri P. M. Aboobaker, Technical Assistant (T-II-3) from Goa to Cochin.

Shri P. Thillairaja, Field Assistant (T-1) from Tuticorin to Mandapam.

Shri A. Ahamed Kamal Basha, Field Assistant (T-1) from Mangalore to Karwar.

Shri T. Krishnankutty, Field Assistant from Karwar to Cannanore.

Shri T. Girijavallabhan, Technical Assistant (T-II-3) from Cannanore to Calicut.

Shri A. A. Thankappan, Technical Assistant (T-II-3) from Calicut to Cochin.

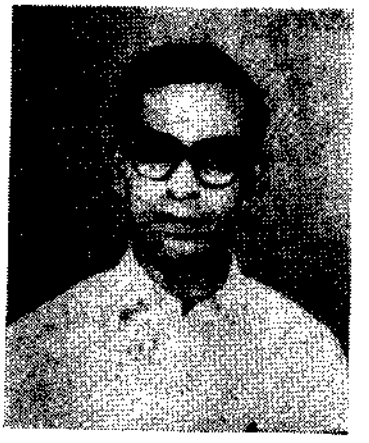
Shri C. Chakrapani, Watchman from Kovalam to Madras.

Shri C. M. Rajappan, Laboratory Attendant from Cochin to Mandapam Camp.

Shri A. Munisamy, Laboratory Attendant from Tuticorin to Mandapam Camp.

Retirements

Dr B. Krishnamoorthy, Scientist S-3, on Superannuation, 31 May.



Dr B. Krishnamoorthy

Shri K. P. Velu, Motor Driver, on Superannuation, 30 June.

Shri K. Muniyandi, Laboratory Attendant, on Superannuation, 31 May.

Shri K. P. Velu receiving memento from the Director

Reliefs

Dr C. Balasundaram, Technical Assistant, on resignation, 7 February.

Shri C. K. Prabhakaran, Junior Clerk, on resignation, 7 April.

Shri P. F. John, Messenger, on resignation, 5 May.

Weddings

Kumari Annamma, Junior Clerk at Cochin married Shri James, Kanjiramkavala, 7 April

Shri Jossy, Chief Engineer, R. V. Skipjack married Kumari Rosiline at Ernakulam, 23 May

Shri M. R. Wadadekar, Junior Clerk at Bombay married Kumari Vibhavavari D. Bhave at Bombay, 24 May.

Kumari Suseela, Junior Clerk, at Cochin married Shri Ramachandran at Arrakunnam, 26 May.

Shri Synudeen, Punchcard Operator at Cochin married Kumari Nazeema at Cochin, 5 June.

Kumari Gracy Mathew, Scientist S-1 at Calicut married Shri Jacob at Palai, 5 June.

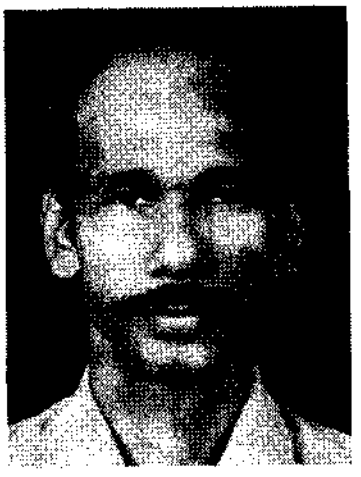
Obituary

Shri V. Prakasan (Safaiwala) expired on 23 June.

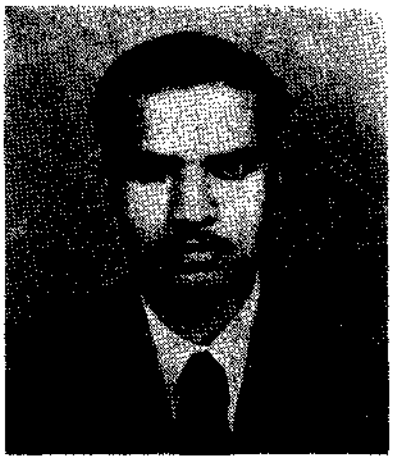
Shri M. Lakshmanan, SS Grade III (Fieldman) expired on 28 June.

Shri M. Lakshmanan

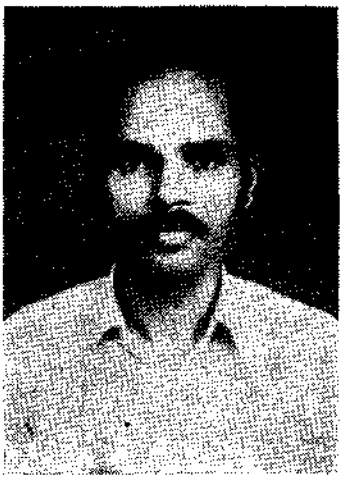
Award of Doctorate



Shri K. J. Mathew, Scientist S-I for his Studies on Euphausiids of the Indian Seas by the University of Kerala



Shri C. P. Gopinathan, Scientist S-1 for his Studies on Phytoplankton in the Estuarine and Marine Environment by the University of Cochin.



Shri C. Thankappan Pillai, Technical Assistant for his Studies on Finfish and Shellfish Diseases by the University of Cochin.

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