



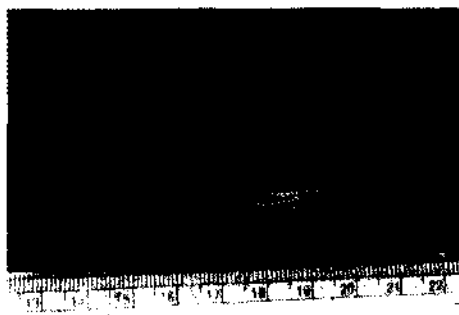
MIDWATER FISHES NEW CHALLENGES AND PROMISES

Since time immemorial, people world over have been depending on the resources from the coastal waters. Now it is time to venture into the least exploited oceanic zones. Mesopelagic, the vast and stable habitat of the midwater oceanic realm (200-1000m), harbours large quantities of exploitable but unutilized/underutilized resources like pelagic shrimps, cephalopods, myctophids etc. that form dominant components of the widely occurring association of diverse organisms—the Deep Scattering Layers (DSL), detectable acoustically.

Earlier surveys by U.S. GLOBEC/FAO revealed the presence of vast quantities of mesopelagic resources, to the tune of an estimated 100 million tonnes of myctophids worth exploiting, in the Arabian Sea. Only minimal efforts are directed even at experimental level towards exploring/capturing/rightly exploiting these rich and valuable biota.

CMFRI was infact one among the first Institutes which

initiated preliminary surveys in the Indian EEZ using Fishery Oceanographic Research Vessel (FORV) *Sagar Sampada* during 1985 - 1986. By virtue of the



Diaphus fragilis (Myctophidae)

importance and priorities, the DSL investigation was further taken up as one of the key areas of national priority research under the MLR Programme of Department of Ocean Development (CMFRI as the nodal agency) by FORV-*Sagar Sampada* during 1998 - 2002, with the specific objective to explore their potential and to identify the target groups / areas for future survey. This multi-institutional investigation has revealed that the resources, especially pelagic shrimps (*Sergestes* sp. and

Oplophorus sp.) comes even up to 23,500 tonnes in 1° square, some of which can be used for direct human consumption and myctophids (*Benthosema* sp. and *Diaphus* sp.; comes even up to 24,000 tonnes in 1° square) are widely distributed in the Indian EEZ particularly in the West Coast and the bulk of the production is found to be from the North. These resources are found to aggregate and are abundant near shelf break areas and beyond slope waters. They are found to be more prevalent during pre-monsoon and monsoon seasons. These organisms appear to perform diurnal vertical migrations and occur at depths between 300 and 500m during daytime and come to surface down to about 100m at night. Though these organisms form broad / diffuse layers during daytime which ranges from 150-250m thickness, they are found to be more compactly packed/dense at night and are seen to occur in large numbers in night catches. Their daily excursions to the surface enable us to

capture them with minimum effort during night hours by developing appropriate harvest technology. They are found to be more aggressive and possess better net avoidance capabilities, especially during day-time. Estimations using a non-quantitative gear like Isaacs-Kidd Midwater Trawl have indicated the presence of few thousands of tonnes of potential resources, which is infact promising and can assume that the presence of resources to the tune of millions of tonnes is a possibility. Whether these untapped protein rich food resource can be utilized directly or indirectly through value addition for human use, is a different question altogether, which needs lot of research inputs.

The DSL also consists of young/adults of economically important forms like decapod crustaceans, cephalopods, epipelagic fishes and mesopelagic fishes. They form a real trophic network that carries numerous food chains and play an important role in transporting energy from upper waters into mid waters. These dense aggregations of prey/predator items attract many commercially important carnivorous fin fishes/shell fishes and act as indicator organisms. There may perhaps be quite a few potential forms/avenues still resting in the darkness of the deep and let us strive for more researches and major surveys in these areas to unfold several such hidden living wealth.

Breakthroughs/Salient Research Results of Direct Importance to Users/Stake Holders

Pearl Production

A total of 1.58 lakh spats of marine pearl oyster were produced and transplanted for further growth in the Tuticorin laboratory. About 7000 oysters were nucleated with 3mm size beads for pearl production. A total of 9015 nucleated oysters yielded 910 commercial grade pearls.

Fragment Culture of a Carageenophyte

A drifted fragment of an alga resembling *Eucheuma* was collected from Gulf of Mannar. This was experimentally grown as fragment culture along with the *Gracilaria edulis* in the coastal waters of Njarakkal during December 2001-January 2002. This species exhibited excellent growth rate (12g/day). Different growth rates were observed in different climatic conditions. The plants collected from the Gulf of Mannar had elongated



Eucheuma collected from Gulf of Mannar near Mandapam

branches and pale green colour, whereas the same species showed dark green colour and profuse and compact branching at Njarakkal.



Eucheuma like alga experimentally grown at Njarakkal

Important events

National Workshop

CMFRI, Kochi, in association with the Indira Gandhi Institute for Development Research (IGIDR) Mumbai, organised a National Review Workshop of the World Bank aided project — 'Environmental Management Capacity Building in India' on 14 & 15 December at CMFRI Headquarters Cochin. Dr. R. Sathiadhas, Head, SEETD and the project leader



Mr. P.V. Jayakrishnan I.A.S. inaugurates the Project Review Workshop of EERC at CMFRI

welcomed the gathering. The workshop was inaugurated by Mr. P.V. Jayakrishnan IAS, Secretary to Ministry of Environment and Forests, Govt. of India. Dr. Jyothi Parikh, the eminent environmental economist was the Chairperson on the occasion. The progress of different ongoing projects in the area of economic analysis of coastal fishery resources of Kerala was reviewed in the workshop.

Institutional Meetings

Fish Farmers' Day was celebrated at Cochin in association with CIFT, on 10 July. The function was inaugurated by Prof. K.V. Thomas, Hon'ble Minister for Fisheries and Tourism, Government of Kerala and it was followed by a workshop on 'Problems and Prospects of Aquaculture'. Fish farmers and personnel from fisheries institutions attended the workshop.

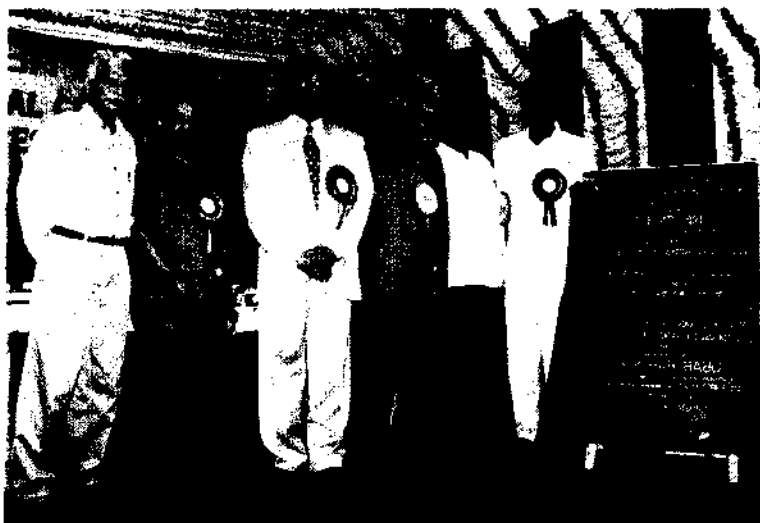
Fish Farmers' Day was celebrated at Tuticorin, Mandapam, Vishakapatnam, Kakkinada and Vizhinjam centres also on the same day.



Dr. G. Gopakumar takes a class for farmers on Fish Farmers Day

Vishakapatnam Research Centre Upgraded to Regional Centre

Dr. Haribabu, Member of Legislative Assembly, Government of Andhra Pradesh inaugurated the Vishakapatnam Regional Centre of CMFRI on 17 October. Dr. K. Gopakumar DDG (Fy.) ICAR presided over the function and the welcome address was delivered by Prof. (Dr.) Mohan Joseph Modayil. A publication entitled 'Prospects in Mariculture' was also released on the occasion.



Inauguration of Vishakapatnam Regional Centre

Fishermen - Farmers - Industry - Institution - Meet

No.	Date	Theme	Venue
43	30.10.01	Crab farming	Azhikode
44	15.11.01	Finfish culture	Udayamperoor
45	04.12.01	Prawn farming	Panambukadu

Training Programmes Under Trainers Training Centre

Date	Subject	Venue	No. of Participants
2 - 7 July	Ornamental fish culture	Calicut	13
20 - 25 Aug	Ornamental fish culture	Calicut	10
15 - 20 Oct	Oyster mushroom	Calicut	16
18 Dec.	Edible oyster	Cochin	8

OTHER TRAINING PROGRAMMES

Organised by	Subject	Participants	Duration
CMFRI, Kochi & KVK, Njarakkal	Kitchen Gardening	43	One day

Hindi Activities

The second Sub Committee of the Parliamentary Committee on Official Language headed by the Member of Parliament Shri. Ram Reghunath Choudary visited CMFRI Headquarters and reviewed the progress of Hindi implementation on 5th November. The team also made a visit to the Minicoy Research Centre of CMFRI on 9 November and offered valuable suggestions for the progressive use of Hindi in the Institute.

A National Seminar on 'Use of Hindi in ICAR Institutes -Issues and Prospects' was organised at CMFRI Headquarters on 12 October. Dr. S.A.H. Abidi, Member, Agricultural Scientists Recruitment Board, ICAR, New Delhi inaugurated the seminar. The Directors of various Fishery Research Institutes under ICAR participated and presented papers on various issues and prospects of Hindi implementation in ICAR Institutes.



Dr. S.A.H. Abidi, Member, ASRB inaugurating the National Official Language Seminar

Hindi Week Celebrations

The Hindi week was celebrated at CMFRI Headquarters from 14 to 21

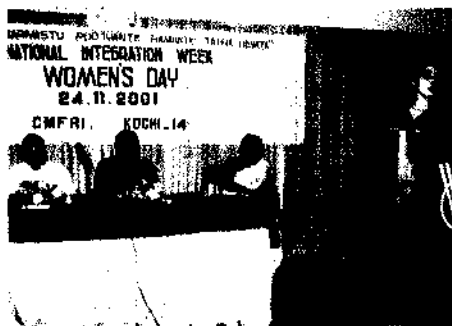


Visit of Committee of Parliament on OL to Visakhapatnam RC

September. Various competitions were organised on these days on depicted themes. Shri. Ravatha Chandrasekhar, IPS, City Police Commissioner, Kochi distributed prizes to the winners. Hindi week was celebrated also at Mandapam Regional Centre from 14 to 20 September.

Women's Day Celebrations

The Women Cell of CMFRI observed the Women's Day on 24 November as a part of Quami Ekta Week. Shri. Jacob Thomas, IAS, Chairman, Cochin Port Trust inaugurated the programme. Smt. Radha Madhav, Director, Expert Information Technology, Kochi gave a lecture on the 'Role of Women in Nation Building'.



Womens Day Celebration

Guests

Dr. Mohana Sundaram, Assistant Director, SITARC, Coimbatore.

Dr. Bhaskar Balakrishnan, Ambassador of India to Cuba.

S.K. Neeraj, IFS, Regional Deputy Director, Wild Life Protection, Mumbai.

Staff News

Director's Engagements

Dr. Mohan Joseph Modayil, Director, CMFRI, attended the following:

Symposium of National Fishermen Association at Bharat Tourist Home, Ernakulam and delivered a speech, 21 July.

Participated in the ICAR Directors' conference at NBPGR, PUSA, New Delhi, 23- 24 July.

Attended the 86th Academic Council meeting of the Kerala Agricultural University at Vellankkara, Thrissur, 7 August.

Participated in the inaugural session of the National Symposium on 'Marine Algal Research in India' and delivered the key note address at Bharathidasan University, Trichy, 16 August.

Visited the Mandapam Regional Centre of the CMFRI in connection with the review of the revolving fund project on agar agar and marine pearl culture, 17 August.

Participated as chief guest on the occasion of CSIR Foundation Day celebrations held at

the National Institute of Oceanography, Cochin, 26 September.

Visited Andamans for taking up joint work on Biodiversity Inventory on Andaman and Nicobar Islands along with the Directors of NBFGR and CARI, Portblair, 12- 15 September.

Participated in the XXIX meeting of the Academic Council of CIFE, Mumbai, 8 October.

Participated in the inaugural session of the winter school on 'Advances in Microbiological and Biotechnological Methods' at CIFT, Cochin and gave felicitations, 5 November.

Discussed with the Parliamentary Committee on Official language at Taj Residency, Cochin, 5 November.

Participated in the meeting convened and chaired by Prof. K. V. Thomas, Hon'ble Minister for Fisheries and Tourism, Kerala in connection with the ornamental fish exhibition at Government guest house, Ernakulam, 9 December.

Attended the ICAR Directors' conference at NBPGR, New Delhi, 27-28 December.

Participated in the launching ceremony of *Sagar Kripa* of CIFT, Veraval, 30 December.

Attended the inaugural function of the CIFT's office-cum-laboratory building, Mumbai.

Foreign Visit

Dr. Mohan Joseph Modayil, Director, CMFRI visited Sharjah for setting up Marine pearl demonstration cum sale module at Sharjah Airport, Government of Sharjah along with Dr. K. K. Appukuttan, Head, MFD, under the consultancy project, 25-30 July.

Others

Dr. V.D. Deshmuk, Mumbai Regional Centre of CMFRI attended the meeting on 'Scientific Manpower Planning in ICAR Fisheries Research Institute' at CIFE, Mumbai, 21& 22 September.

Dr. V.V. Singh participated in the inauguration of Western Chapter of National Academy, CIFE, Mumbai, 3 July and also attended the Summer School on 'Environmental Impact Assessment' at CIFE, Mumbai, 8 August.

Dr. V. V. Singh and Shri. S.G. Raje attended the National Workshop on 'Basic Sciences of Fisheries' organised by Academy of Biosciences, CIFE, Mumbai, 11 September.

Dr. N. G. K. Pillai attended the following meeting (i) International Workshop on 'Aquaculture and Environment' organised by the Center for Integrated Management of Coastal Zones, Cochin, 13-14 July, (ii) the IUCN-SUSG workshop on 'Sustainable Fisheries' organised by IUCN-

SUSG South Asia Regional office, Goa, 27-29 September, (iii) Task force meeting organised by Department of Fisheries, Government of Kerala, Thiruvananthapuram, 15 November and (iv) X plan working group meeting on Technology and Human Resources organised by the State Planning Board, and Kerala Agricultural University, Trichur, 17 November.

Dr. N. Kaliaperumal participated in the National Symposium on 'Marine Algal Research in India-Prospects and Retrospects' at the National Facility for Cyanobacteria, Bharathidasan University and presented two papers, Thiruchirapalli, 16-18 August. He also participated in the workshop on 'Coastal Ecosystem, Coral and Mangrove Problems and Management Strategies' organised by the Suganthi Devadasan Marine Research Institute at Tuticorin, 26-27 September.

Dr. R. Paul Raj attended the International Symposium on 'Fish for Nutritional Security in the 21st Century' organised by CIFE, Mumbai, 4-6 December. He also attended the Expert committee meeting for fixing standards for aquaculture inputs held at MPEDA, Cochin, 17 September and the Postgraduate Programme Co-ordinators meet, Mumbai, 26-28 November.

Shri. P. Vijayagopal participated in the Summer School on 'Exploring and Evaluation of Newer Feed Resources to Optimise the Cost of Production of Feed for Livestock and Poultry', Tamil Nadu Veterinary College and Research Institute, Namakkal, 21 June - 11 July.

Dr. (Mrs.) Imelda Joseph participated in the Training Course on 'Fermentation Technology for Production of Biomolecules' IVRI, Izatnagar, 1st August to 5 September.

Dr.(Mrs) K.S. Sobhana and Ms. Sujitha Thomas participated in the Winter School on 'Advances in Microbiological and Pathogenic Micro organisms and their Toxins in Fish and Fishery Environments', CIFT, Cochín, 5-25, November.

Dr.V.P.Vipinkumar participated in the Winter School on 'Recent Advances in Extension Management' IARI, NewDelhi.

Shri. K.K. Balasubramanian at Calicut attended a one day Hindi Seminar, conducted by TOLIC at Calicut, 12 December.

Ms. Sheela Immanuel attended the Review Workshop on ATIC, Dharward, 18-19 October.

Dr. (Mrs) S. Ashaletha attended the International Conference on 'Women in Fisheries' and presented a paper on 'Changing Roles of Fisherwomen in, India-Issues and Perspectives organised by Indian Society of Fisheries Professionals at Mumbai, 11-12, December.

Dr. C. Ramachandran attended the Annual Review Workshop of IVLP/ATIC, Ambalavayal, Wayanad, 11-12 October. He also presented a paper in the Seminar on 'Crisis in Higher Education' organised by the Zoological Society of Kerala, SH College, Thevara, 21 October.

Shri. K. Vijayakumaran attended the TTC Workshop on 'Ecology, Restoration and Participatory Management of Mangroves' organised by M. S. Swaminathan Foundation, 25-27 July. He also attended the Faculty Upgradation Programme in 'Environmental Economics' supported by World bank aided Environmental Management Capacity Building Technical Assistance Project of Govt. of India at Institute for Social and Economic Change, Bangalore, 9-10 October.

Dr. Chandrakanth Tayade attended the Workshop cum Training Programme on 'Recombined DNA Technology In Vaccine Production' IVRI, Izatnagar, 20-29 November.

Dr. G. Syda Rao and a team of scientists attended a meeting, on 'Impact of WTO Agreement on Fisheries Sector' organised by the Commissioner of Fisheries, Government of Andhra Pradesh, 12 September.

Dr. G. Maheswaradu and a team of scientists attended a Seminar on 'Larval Nutrition and Health Management'

organised by Tropical Biomarine Systems Pvt. Ltd, 10 September.

Foreign Deputation

Dr.N.G.K.Pillai, Head, Pelagic Fisheries Division was deputed to attend the Inception Workshop on 'Fish Supply and Demand in ASIA (ADB-RETA-5945)-Strategies and Options for Increasing and Sustaining Fisheries and Aquaculture Production to Benefit Poor Households in ASIA', ICLARM, Penang, Malaysia, 21-24 August.

Sri. Bobby Ignatius, Mandapam Regional Centre of CMFRI was deputed to Philippines to attend the third Country Training Programme on 'Responsible Aquaculture Development' SEAFDEC, Tignawan, Philippines, 4-29 September.

Consultancy Programme

The Madras Research Centre of CMFRI executed a rapid environmental impact assessment of aquaculture farms at Vanjoor, Karaikal Fisheries Harbour. The project was executed on Consultancy basis in July - August. The estimation of different water-cum-soil parameters, quantitative and qualitative estimation of plankton and fauna and flora at the sites were also conducted, which would be useful to the Government of Pondichery. The consultancy fee for the project was Rs. 2,34,480.

Sports

A sports contingent from the CMFRI participated in the ICAR Inter-Institutional Sports Meet 2001 at CIFT, Cochin. The under-mentioned are the winners in various items.

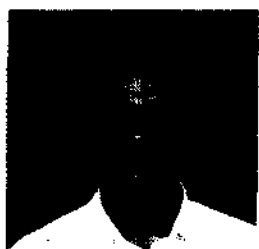
Dr.M.Srinath & K.N. Pushkaran	Winners in Table Tennis
A.K.Shaji	First in Javelin throw
K.Smitha	First in High Jump, Third in Long Jump, runner up in Badminton [Single]
K.Smitha & K.G Mini	Runners up in Badminton [Doubles]
K.Jerald Raja	Third in 100 metre Race
U.P.Shetty	First in Discus Throw and Shotput



CMFRI Team with the Director, CMFRI

U. Purandara Shetty

Shri. U. Purandara Shetty has been the winner of Shotput and Discus Throw events in both the ICAR South Zone as well as in the Interzonal tournaments consecutively for 4 years since 1998.



New Projects Sanctioned

The projects entitled, (i) 'Coral Reef Ecosystem', (ii) 'Evaluation of genetic heterogeneity of marine ornamental fishes using molecular genetic markers', (iii) 'Impact of dams on river run off into the sea and changes in the nutrient and productivity profile of coastal waters' and (iv) 'Aquaculture, breeding and hatchery production of ornamental fishes with special reference to clown fishes and damsel fishes' were sanctioned.

Awards

Dr. Gulshad Mohammed, Scientist, was awarded the Best Young Scientist Award 2001 of Dr. Hiralal Choudhari Fisheries Foundation based at CIFE, Mumbai for evolving cost effective and ecofriendly culture technology of economically important seaweeds during 1996-2000 at Minicoy Island, Lakshadweep, at CIFE, Mumbai, 11 September.

Shri. John Joseph Raj, M.F.Sc. Mariculture student of 17th batch, was awarded gold medal by the Central Institute of Fisheries Education (Deemed University) for academic achievements in M.F.Sc. Mariculture for 1998-2000.

Ms. V. Thushara, former M.F.Sc. student, was awarded the University Gold Medal and Merit Certificate and Dr. C.V. Kulkarni Merit Medal and Merit Certificate by the CIFE (Deemed University) Mumbai for academic achievements in M.F.Sc. Mariculture for 1996-98.

Degree Awarded

Ph.D.

1. Shri. C. N. Haneefa Koya for his thesis entitled 'Studies on ecology, chemical constituents and culture of marine macroalgae of Minicoy Islands, Lakshadweep' under the guidance of Dr. C.P. Gopinathan, Principal Scientist, FEMD.

2. Shri. Ashuthosh D. Deo for his thesis entitled 'Ichthyocriotoxicity of marine catfishes of Mumbai coast' under the guidance of Dr. M. Devaraj, former Director, CMFRI.

3. Shri. S. Renjith for his thesis entitled 'Impact of feed and feed ingredients on the environment and microflora of farmed shrimp' under the guidance of Dr. K. Gopakumar, Deputy Director General, (Fy.), ICAR, New Delhi.

4. Kum. Soniya Sukumaran for her thesis entitled 'Studies on sporulation in some commercially important marine algae of Mandapam coast' under the guidance of Dr. N. Kalia-perumal, Principle Scientist and Officer-in-charge, Mandapam Regional Center of CMFRI.

5. Shri. R. Manoj Nair for his thesis entitled 'Studies on induced maturation, spawning and larval settlement in Green Mussel *Perna viridis* (Linnaeus 1758)' under the guidance of Dr. K.K. Appukkuttan, Principal Scientist, CMFRI, Cochin.

6. Shri. T.M. Najmudeen for his thesis entitled 'Reproductive Biology and seed production of the tropical abalone *Haliotis varia* Linnaeus (Gastropoda)' under the guidance of Dr. A.C.C. Victor, Principal Scientist, Tuticorin.

Smt. Sherly Thomas was awarded Ph.D. Degree in Marine Sciences by the Cochin University of Science and

Technology for her thesis entitled 'Evaluation of non-conventional and alternate feed resources for *Penaeus indicus* H. Milne Edwards' under the guidance of Dr. (Mrs.) S. Sivakami, Principle Scientist, CMFRI, Cochin.

M.F.Sc.

Ten students have successfully completed their M.F.Sc. Mariculture Programme under the Central Institute of Fisheries Education, Mumbai.

Appointments

Dr. E.V.Radhakrishnan, Principal Scientist as Head, CFD at Kochi, 2 November, 2001.

Dr. H. Mohamed Kasim, as Principal Scientist (Fish and Fishery Science) at Madras, 18 December, 2001.

Miss. Bindu Sulochanan, as Scientist at Kochi, 10 September, 2001.

Shri. B. Balasubramanian Alias James, as SSG-I (Fieldman) at Mandapam Camp, 14 August, 2001.

Promotions

As Technical Officer (T-6)

Shri Jacob Jerold Joel, Vizhinjam, 1 January 2000
From 3 February 2000 onwards

Smt. S. Lakshmi, Calicut.

Shri K. K. Balasubramanian, Calicut.

Smt. K. Koumudi Menon, Calicut.

Shri S. K. Balakumar, Chennai.

Smt. Geetha Antony, Kochi.

Smt. P. Sreelatha, Vizhinjam.

Shri T.S. Balasubramanian, Tuticorin.

Shri C. Kasinathan, as Curator (T-6), Mandapam.

As Technical Officer (T-5)

Shri N.Viswanathan, Senior Draughtsman, Kochi. 13th February 1996.

Shri. Hameed Batcha, Chennai, 12 January, 1999.

Shri T.N. Sukumaran, Bosun Vizhinjam, 16 April, 2000.

As Senior Technical Assistant (T-4)

From 1 January 2001 onwards

Shri. K. Pandi (Retd.), Madras.

Shri R. Dias Johny, Mumbai.

Shri V. Sivaswamy, Mandapam.

Shri H. Kather Batcha, Chennai.

Shri S. Sankaralingam, Chennai.

Shri O. M. M. J. Habeeb Mohamed, Tuticorin.

Shri Sapankumar Ghosh, Tuticorin.

Smt. K. V. Rema, Kochi.

Smt. V. K. Janaki,
Calicut.

Shri M. Selvaraj,
Chennai.

1 January 2000 onwards

Shri S. Rajapackiam,
Chennai.

Shri M. Manivasagam,
Chennai.

Shri P. Poovannan,
Chennai.

Shri G. Arumugham,
Tuticorin.

Shri L.R. Khambadkar,
Kochi.

As Technical Assistant (T-3)

Smt. T.N. Ananthalakshmy,
Kochi, 24 February, 2000.

As Junior Technical Assistant (T-2)

Shri B. Raju, Vizhinjam,
14 September, 2000.

Shri C. Chandran, Calicut,
1 February, 2000.

Shri K.C. Hezhakiel, Kochi,
9 August, 2001.

Shri N. Boominathan,
Mandapam, 16 December, 2000.

Shri P. Jaiganesh, Chennai
26 April, 2001

Shri P.S. Alloyicious,
Kochi, 25 October, 2000.

Shri Y.V.S. Suryanarayana,
Kakinada, 3 July, 2000.

Shri Chudasama Ramji Raja,
Veraval, 4 January, 2000.

Shri P.Villan, Mandapam
11 January, 2001

Shri D. Prakasan, Kochi,
23 March, 2000.

Shri V.Mohana Rao,
Visakhapatnam, 12 July, 2000.

Shri M.P. Harikantra, Serang,
Karwar, 12 September, 2000.

Shri A. Rajan, Motor Driver,
Kochi, 29 June, 2001.

Shri A. Srinivasan,
Mandapam Camp, 29 June, 2001.

Shri S.K. Gurusamy,
Tuticorin, 29 June, 2001.

Shri S.Duraipandian,
Mandapam Camp, 29 June, 2001.

Shri V.A. Surendran,
Kochi, 29 June, 2001.

Shri P. Harshakumar,
Chennai, 29 June, 2001.

Shri P.Narayana Naik,
Mangalore, 29 June, 2001.

Shri K.G. Radhakrishnan Nair,
Kochi, 29 June, 2001.

Shri K. Muthuvel,
Tuticorin, 29 June, 2001.

Shri Shashikant R. Yadav,
Mumbai, 29 June, 2001.

Shri K.U. Raman,
Mandapam Camp, 29 June, 2001.

Administration

Shri V.P. Unnikrishnan,
as AFACO, Visakhapatnam
28 June, 2001.

Shri Balakrishna Naik, as
Assistant Administrative Officer
Mangalore, 29 September, 2001.

Smt. M.M. Teresakutty,
as Assistant, Kochi, 2 July, 2001.

Smt. K.Santha, as Assistant
Kochi, 5 September, 2001.

Smt. V.K. Sobha,
as Assistant Kochi,
29 September, 2001.

Shri Rishikesh Aandi,
as UDC Kochi, 2 July, 2001.

Shri S.Radhakrishnan Nair,
as UDC Vizhinjam,
11 September, 2001.

Shri K.S. Ajith, Fieldman
as LDC Kochi, 23 July, 2001.

Shri M. P. Mohandas,
as SSG-III (Messenger),
Kochi, 3 October, 2001.

Shri R. Dalayya, as SSG-III
(Watchman) Visakhapatnam,
8 October, 2001.

Shri V. C. Gopi, as SSG-III
(Safaiwala) Kochi,
3 October, 2001.

Shri T.M. Abdul Aziz,
as SSG-III (Messenger)
Kochi, 4 October, 2001.

Miss. B. Savithri, as SSG-III
(Messenger) Kochi,
3 October, 2001.

Retirements

Shri K. G. Girijavallabhan,
Principal Scientist, Kochi,
31 July.

Shri V. S. Rengaswamy,
Principal Scientist, Chennai,
31 August .

Dr. K. K. Sukumaran,
Principal Scientist, Chennai,
30 September.

Dr. P. A. Thomas, Principal
Scientist, Vizhinjam,
31 October.

Shri P. Aithappa Naik,
Assistant Administrative Officer
Mangalore Res. Centre,
31 August.

Smt. T.K. Ponnamma,
Assistant Administrative Officer
Kochi,
31 December.

Shri S. Abdulla, Assistant,
Mandapam, 30 June.

Shri K.L.K. Padmanabhan,
Assistant, Kochi, 31 August.

Shri B. Ramesh, T.O. (T-6)
Kochi, on voluntary retirement,
18 September.

Shri M. Ayyappan Pillai, T.O.
(T-6) Kochi, 31 October.

Shri R. Gurusamy, T.O. (T-6)
Tuticorin, 31 July.

Shri M. Babu Philip, T.O. (T-6)
Quilon, 31 July.

Shri P. Ramadoss, T.O. (T-5)
Madras, 30 June.

Shri G.C. Lakshmiah, T.O.
(T-5) Madras, 30 June.

Shri R. Vasanthakumar, T.O.
(T-5) Kochi on Voluntary
retirement, 24 June.

Shri K. K. Soman, Motor Driver
(T-4) Kochi, 31 August.

Shri A. Hanumantha Rao,
STA (T-4) Chennai,
30 September.

Shri A. Dasman Fernando,
Skin Diver (T-3) Tuticorin,
30 June.

Shri M. Rengan, Cook (Boat)
T-3 Mandapam, 30 June.

Shri K.P. Joseph, SSG-IV
(Lab. Attendant) Kochi,
31 August.

Shri M.R. Kotharkar, SSG-III
(Watchman) Karwar Research
Centre, 30 June.

Transfer

Shri K. Nagarajan, Assistant
Administrative Officer,
Mandapam to Kochi.

Shri S. Balasubramanian,
Assistant, Chennai to
Mangalore.

Shri V. Chandrasekharan,
Assistant Kochi to Karwar.

Shri B. Bavanandam,
Assistant, Mangalore to Madras.

Shri K. Mohamed Abdulla,
Assistant, Karwar to Mangalore.

Smt. P. Sreelatha, T.O.
(T-5), Vizhinjam to KVK,
Narakkal.

Shri K. Soman, T.O. (T-5),
Kochi to Calicut.

Shri S. Yuvarajan, LDC,
Kochi to Mandapam.

Shri R.V.S. Subramanyam,
LDC, Visakhapatnam to Veraval.

Inter-institutional transfer

Shri K. Narayana Kurup
Principal Scientist,
Kochi to IISR, Calicut,
25 August.

Dr. (Mrs.) Manpal Sridhar
Scientist (Sr. Scale),
Kochi to NIANP,
Bangalore, 4 August.

Dr. (Mrs.) Femeena Hassan,
Technical Officer (T-6),
IISR, Calicut to Kochi,
22 November.

Shri J. Srinivasan, T.O. (T-5),
IASRI to Kochi, 9 July.

Miss. Jenny C.M. Assistant ICAR
to Kochi, 27 August.

Smt. Nandini Mayekar
SSG-I (Mazdoor), CPCRI
to Karwar, 2 July.

Smt. N. Suma, SSG-I
(Safaiwala) Kochi to CPCRI,
Kasaragod, 31 December.

CONSULTANCY SERVICES

Consultancy services are offered by the Institute in the following specialised areas :

- Coastal zone and marine environment monitoring, environment impact assessment and biodiversity
- Fishing impact assessment, underwater investigations, stock assessment, fisheries forecasting, conservation and management, and socio-economic evaluation
- Shellfish and fin fish farming systems, hatchery technology and sea ranching

TRAINING PROGRAMMES

Training programmes are also offered for a wide spectrum of clients in private, quasi government and government sectors at nominal rates on the topics of clients' interest.