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Beyond Tsunami

The tsunami of December 26th, 2004 triggered by an earthquake with a Richter magnitude of 9 in Indonesia, created havoc in the Andaman & Nicobar Island system and along the south east & south west coasts of India, shattering the livelihood of tens of thousands of coastal people. The killer waves inflicted immense damage to everything that came on its invasion path by way of flooding, wave impact on structures and coastal erosion. Calamity struck every fisher household in one way or other. Apart from fishers and fish farmers, hundreds of people depending directly or indirectly on the activities at the fishing harbours have been hard hit.

The Central Marine Fisheries Research Institute has made an assessment of the impact of the devastation due to tsunami on the marine fisheries of India. Primary data was gathered from the affected areas on the damages inflicted by the tidal waves to life and property including fishing crafts, gears, landing centres, fishing harbours, vessel maintenance yards, fish drying and processing yards, prawn/lobster hatchery facilities, transportation, communication and water supply systems. The studies revealed that the tsunami severely affected the coastal people in Andaman & Nicobar islands, Tamil Nadu, Pondicherry, south Andhra Pradesh and parts of Kerala. Tamil Nadu was the most affected state wherein 7,910 people lost their lives and 75,000 fishermen huts were destroyed. The total loss in the fisheries sector is estimated to be around Rs. 3,000 crores with 38,000 boats including 7,000 mechanized boats destroyed and 32,000 nets either fully or partially damaged. Fishing boats and nets have been totally wiped out in certain areas in Tamil Nadu such as Cuddalore, Nagapattinam and parts of Tuticorin, Thirunelveli and Kanyakumari districts. Owing to the decline in fishing effort, a 30 % fall in the production of marine fish is anticipated in the state. Live material and infrastructure facilities of Kovalam Field Lab of the Institute at Chennai have also been lost. In Kerala, where the death toll was 167 and as many as 6,280 dwelling units were destroyed, the total loss to the fisheries sector was assessed as Rs. 100 crores; the loss to the mechanized craft and gears amounting to about Rs. 64 crores, motorized sector 16 crores and traditional craft and gears 20 crores. Arattupuzha in Alapuzha District and Alappad in Kollam District are two sites where the tsunami resulted in unprecedented damage to fishing communities.

Fallouts of the tsunami onslaught were manifold. Fishing activities were badly hit and fish production recorded a steep fall. False rumours on seafood safety crippled fish trade. The Director and senior scientific personnel from the Institute attended press conferences and took part in seafood festivals organized by Fisheries Industry Protection Council to alleviate the public fear of consuming fish. These programmes, which had wide media coverage, helped to dispel concern on safety of seafood.

The impact of the killer waves was more evident in coastal areas within 0.5 km from shoreline and to a lesser extent between 0.5 and 2 km. A change in shore topography resulting in submersion of islands and beaches is reported from Tamil Nadu. Abnormal rise in tidal level and severe wave action has resulted in accumulation of sand mass near seashore in Mandapam. The mouth of Vellar estuary has also widened. Fishermen in Kerala have reported that the bottom topography of the trawling grounds has been altered and dislodged boulders and rocks hinder trawling. A change in the bottom topography may affect feeding and breeding grounds of the benthic community. In many parts, fish have been involuntarily transported alongwith tidal waves as has been reported from Arattupuzha where huge quantities of small oil sardine (100-150 mm) were landed by ring seine units subsequent to tsunami. Significant hydrological variations can affect the reproductive cycle and breeding of fish varieties.

The multi-dimensional impact of tsunami on fisheries and fish habitats demands a detailed study. The CMFR Institute has initiated studies on changes in the coastal biodiversity and environment of tsunami affected regions of the mainland and Andaman & Nicobar Island system as well as its impact on fish stocks. Network projects are also in place to examine the post-tsunami microbial and chemical hazards in seafood. Further, socio-economic impact assessment of tsunami alongwith case studies of restoration models is being undertaken along the Indian coasts. Studies on developing sustainable models of fish aggregating devices to reduce the impact of tidal waves are also on the anvil. It is anticipated that the first results of the above studies are available within six months, which would give a clear insight into the impacts of the catastrophe on coastal fisheries and livelihoods. The Institute plans to give support for alternate livelihood activities to fishers and guidance in their rehabilitation programmes along the tsunami-affected coastline of India.



From the Director's Desk

Perhaps, fishing *per se* is the most damaging anthropogenic activity in marine capture fisheries. In the early history of fishing, resource and environment friendly craft, gear and tackle were in use and little damage was done to the stock and habitats. As mechanisation and industrialisation modernised fishing operations, more and more 'efficient gears' have been designed and operated. Today, fishing has become the major destructive element in the development of world marine fisheries. The destructive impact of fishing on the marine ecosystem is perhaps a telling example of man's greed to plunder the bounty of the seas.

There have been many studies in the past as well as conferences and publications to highlight the magnitude of potential effects of fishing practices on the aquatic ecosystems. Worldwide extensive works are also been undertaken on methods to manage these effects including proposals for establishment of network of Marine Protected Areas (MPAs) and develop mitigation methods for non-target species. Present attempts to manage effects of fishing on the aquatic environment are focused on three main areas: managing the effects of fishing on non-target species; managing the effects of fishing on aquatic habitats; managing indirect effects on aquatic ecosystems. Evidently there is some degree of overlap in this approach.

Managing non-target catch is a major concern of industrial fishing fleet and managers. Often referred to as 'by-catch', the non-target organisms could be categorized into i) Damaged and undersize fish of target species ii) Non-target fish species for which the operator doesn't hold fishing license or Annual Catch Entitlement (ACE) or permit iii) Associated or dependent species such as marine mammals, turtles, sea birds, benthic animals and plants, other species of fish iv) Protected species which includes protected sea birds, mammals, turtles and corals. Strategies and mechanisms are required to be developed for managing each of the above groups of non-target catch.

Managing indirect effects of fishing is yet another area of research concern. This must look into management of the effects of fishing occurring indirectly through changes in existing predator-prey relationship. Selectively removing a certain group of organism from a structured and interdependent ecosystem can adversely affect the health and functioning of that ecosystem. Often, there is little quantitative data on effect of reducing stock size of target species on other species.

A strategic knowledge-based approach is needed to achieve the above objective. The operating principles developed from research and analysis should be able to guide the stakeholders in developing a suitable approach for the management of impacts of fishing on the environment. The operating principles of such an approach should consider the following: i) Management action to provide for utilization of fisheries resources including ensuring sustainability ii) Conserving traditional livelihood fishing as well as recreational/sport fishing iii) A prioritized approach for managing the environmental effects of fishing iv) Quantification of the likely cost of inaction v) Defining roles, responsibilities and accountabilities of all stakeholders.

In addition to the above, there is also need for setting standards and to ensure that: i) Fishing induced extinctions do not happen ii) Effects of fishing on aquatic ecosystem are within accepted limits iii) Protected species are allowed to remain at present level or to recover from setbacks iv) Representative areas of each type of habitats are protected v) Those habitats which are of special significance to fishery management/conservation are protected.

Thus, in brief, there is great scope for research in the above areas so as to build up a system approach in managing the environmental effects of fishing on marine fish stocks. A multi-disciplinary and integrated research effort is the need of the hour.


Mohan Joseph Modayil

RESEARCH HIGHLIGHTS

The spiny lobster bred in captivity



The spiny lobster *Panulirus longipes* measuring 9.2 cm in carapace length, 29 cm in total length and weighing 502 gms maintained in a recirculating broodstock holding system matured and spawned yielding 3,99,960 phyllosoma larvae. Maturation and spawning of *P. longipes* in captivity has hitherto not been reported. The larvae measuring 1.5 mm in total length were

reared upto phyllosoma stage 4 on a diet of freshly hatched *Artemia* nauplii in a specially designed recirculating larval culture system at the Institute hatchery at Kochi.

Red seaweed successfully cultured

Carrageenan yielding red seaweed *Kappaphycus alvarezii* was successfully cultured in near seashore areas of Gulf of Mannar and Palk Bay by vegetative propagation method using bamboo rafts, nylon net bags and slotted polythene bags. 3.0-5.7 fold increases in yield was obtained after 22-34 days of culture period in the Gulf of Mannar.

Live feeds for successful sand lobster larval rearing

Larvae of *Thenus orientalis* were successfully reared in the hatchery at the Kovalam Field Lab using arrow worms and ctenophores collected live from the sea. The arrow worm *Sagitta enflata* has proved to be a good feed for phyllosomal stages I and II as the larvae showed a natural preference for this feed over other live feeds including *Artemia*. The advanced phyllosomal stages III and IV showed excellent response to the ctenophore *Pleurobrachia bachiae*.

Novel phytase producing *Bacillus* identified

The bacterial strain producing phytase enzyme, which was isolated from a mangrove swamp, was identified as *Bacillus licheniformis*. The identification has been confirmed by IMTECH, Chandigarh and the species designated as IJ-*Bacillus licheniformis* – MTCC 6824.

Antimicrobial compounds from green algae elucidated

The active principles and the structure of the bioactive molecules from *Ulva fasciata* were evaluated. Of the 74 fractions of purified extract from *U. fasciata*, 23 fractions exhibited moderate to high antibiotic activity against *Micococcus luteus*, *Psuedomonas aeruginasa*, *Serratia marcescens*, *Staphylococcus aureus*, *Vibrio alginolyticus*, *V. fischeri* and clown fish isolate, CLY 16104.

A new gut probiotic for shrimp disease management

A bacterial strain G23 (*Bacillus* sp.) isolated from healthy shrimp gut showed potential characteristics for use as gut probiotics for disease management in shrimp. This was tested for efficacy in post larvae and juveniles of *Penaeus monodon* and *Fenneropenaeus indicus*. Dietary administration of G23 resulted in significant improvement in growth, disease resistance and immunological responses in shrimp compared to the control shrimps under experimental conditions.

Heavy landings of ribbon fish at Kakinada

The ribbonfish, *Trichiurus lepturus* accounted for 89% of the total catch at the Bhairavapalam landing centre on 3rd & 9th November. 72 trawlers, which operated 20-32 km off the shore at a depth range of 48-70 m, landed 79 and 96 tonnes, respectively of the ribbonfish. However, the price range of fish measuring 460-814 mm and weighing 65-386 gms was between Rs. 3 and 6 per kg.

NEW HEIGHTS

CMFRI bags in Rajarshi Tandon Award

The CMFR Institute has won the ICAR instituted **Rajarshi Tandon Award (First position)** for excellence in Hindi implementation activities for the year 2003-2004. The award, which carried the citation and trophy, was presented in the Annual Award distribution function conducted at the ICAR, New Delhi on 24th December.



Dr. N.G.K. Pillai, Principal Scientist, receiving the Rajarshi Tandon Award from Smt. Sarala Maheswari, Dy. Chairperson, Parliamentary Committee on Official Language in the presence of Dr. Mangala Rai, Secretary (DARE) & Director General, ICAR and Shri Anil Kumar Dubey, Director (Hindi), ICAR

Prize won in Aquashow 2004

The collection of ornamental fishes presented by the Institute won the prize under the category of **Best Miscellaneous Fishes** in the 'International Exhibition of Ornamental Fishes and Accessories' organized by the Department of Fisheries, Government of Kerala and Ministry of Agriculture, Government of India at the Jawaharlal Nehru International Stadium, Kochi during 17- 22 November.

Sponsored Project on Marine Fisheries Census

The Fisheries Division of the Department of Animal Husbandry & Dairying under the centrally sponsored scheme on 'Strengthening of data base and information network for the fisheries sector' has entrusted CMFRI with the responsibility of conducting **Marine Fisheries Census** with a budgetary outlay of Rs. 80.5 lakhs. The census is to be conducted during April and May 2005 covering all fishing villages along the country's coastline. The Fishery Resource Assessment Division of the Institute has chalked out a detailed plan of action to collect information pertaining to the marine fishermen population of the maritime states at district/block level with all the ancillary information regarding the availability of fishing tackles, crafts and the infrastructure facilities. The division also intends to prepare an electronic database of the information collected.

TRANSFER OF TECHNOLOGY

Training for practicing farmers

Krishna Vigyan Kendra of the Institute at Narakkal conducted 46 training courses imparting training to 943 persons during October – December period. The number of training courses and beneficiaries in each discipline are as follows: Fisheries 12-237; Agriculture 23-475 and Home Science 11-231. Out of these, 13 collaborative training programmes were conducted in association with different agencies namely Brackishwater Fish Farmers Development Agency for shrimp & crab farming and crab fattening; Regional Agricultural Transfer of Technology Centre for three courses in milky mushroom cultivation, intercrop in coconut farm and value addition to mushroom; Krishna Bhavans of five panchayats for mushroom cultivation and Elamkunnappuzha Grama Panchayat for the preparation of mixed fruit jam.

KVK of the Institute also organized awareness campaigns for the benefit of shrimp farmers in collaboration with Agency for Development of Aquaculture, Kerala (ADAK) at North Paravur on 8th October, at Kandakadavu on 6th November and at Moolampally on 30th November. Knowledge was imparted on various aspects of **shrimp farming** such as site selection and pre-stocking management in shrimp farms, feed and feed management, water quality management, disease management and harvesting.

Aspects on **mushroom cultivation** and **wormi-composting** were discussed during the farmers meet organized by KVK of the Institute at Nayarambalam Krishna Bhavan on 8th December.

Basic exposure in seed production of sea cucumber *Holothuria scabra* was given to a farmer from Minicoy Island for 20 days at the shellfish hatchery of the Tuticorin Research Centre of the Institute.

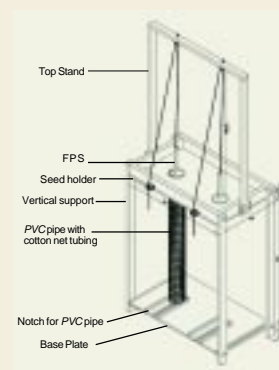
Training on **Fish Aggregating Devices** was organized at the Minicoy Research Centre of the Institute under the National Agricultural Technology Project 'Augmentation of Marine Fish production in Lakshadweep'. During the technical sessions, the designing, rigging, deploying, monitoring and maintenance of the FADs were discussed.



Apart from 72 fishermen, a cross section of the society including panchayat members, fishery technology teachers and personnel from other departments attended the training programme held during 25th – 26th November.

Mussel seeder popularised

The mussel seeder developed by the Molluscan Fisheries Division of the Institute has been launched among the mussel farmers of Kerala by conducting field demonstrations in Malappuram, Kozhikode and Kasaragod Districts. Three units of mussel seeder were fabricated and handed over to Self Help Groups of Vallikunnu, Padane and Korapuzha villages for the use of nearly 650 mussel farmers of the area. The farmers have widely acclaimed the increased efficiency in mussel seeding due to the use of the semi-automated seeder developed by the Institute.



Three interventions made in the conventional method of mussel farming namely the use of pre-stitched tubes, flexible plastic strips instead of nylon ropes and semi-automated seeding machine introduced in 125 mussel farms of Kerala have increased the efficiency of seeding and reduced physical strain and labour while seeding. Six demonstrations were conducted in main mussel farming areas of Malappuram, Kozhikode and Kasaragod districts and more than 500 villagers have been trained in modified methods of mussel farming.

Training for entrepreneurs

Knowledge on empowerment of women through formation of Self Help Groups was imparted to 70 participants of the mahila meet organized by KVK, Narakkal at Satara Island, Moothakunnam. Information on **value added products** from fish and vegetables was provided during the programme held on 7th December.

Training for students

Physiology, Nutrition and Pathology Division of the Institute organized a training programme in **Instrumentation Techniques in Biotechnology** for the faculty and students of Rai University, Kochi campus from 13 to 18 December. Theory and practical classes in PCR Techniques, Chromatography, Electrophoresis, Spectrophotometry, AAS and Electron Microscopy were held during the six day programme.

Students of the Government Vocational Higher Secondary were introduced to the fundamentals of ornamental fish culture, crab fattening and scientific shrimp farming through a **Science Camp** organized by Krishi Vigyan Kendra at Narakkal. 25 students alongwith two teachers participated in the Aquaculture camp held from 1st to 5th November.

Training for scientists and teachers

The Central Marine Fisheries Research Institute, Kochi conducted a 21-day Winter School on **Ecosystem Based Management of Marine Fisheries – Building Mass Balance Trophic and Simulation Models** to 25 researchers and scientists of fisheries institutions and colleges from all over the country. The renowned



fisheries scientist and the former Vice-Chancellor of Kerala Agricultural University, Dr. E.G. Silas inaugurated the Winter School on 30th September. The valedictory function of the Winter School was held on 20th October wherein the chief guest was Dr. N.R. Menon, Director, C-IMCOZ, Cochin University of Science and Technology.

Fish stocks in many parts of the world are facing an unparalleled crisis due to excessive fishing. Many valuable fish species are under threat of extinction. Fisheries scientists throughout the world agree that fishing has the most significant impact on marine ecosystems and it is well known that the biological process in our oceans and seas are complex, interlinked and dynamic. Under these circumstances, the fisheries scientists have adopted a new approach to study the marine ecosystem holistically. This approach using the software ECOPATH with ECOSIM incorporates all living things and non-living materials in an ecosystem and simulation models are constructed.

Scientists of the CMFRI, who have recently constructed an ecosystem model of the Arabian Sea off Karnataka, are now able to look to the future and simulate the likely changes to fish stocks when the number of fishing boats increases or decreases. They can also simulate the changes taking place to non-fishery components in the ecosystem due to fishing. The training programme has facilitated the use of this tool, which is universally acknowledged as the most appropriate for managing fish stocks.

Revenue generated through ATIC

An amount of Rs. 40,805/- was generated by way of sales and services rendered through the ATIC functioning at the Institute Headquarters during October - December 2004.

INTERACTION & EVALUATION

Management Committee Meeting

The 60th meeting of the Institute Management Committee was held under the chairmanship of Prof. (Dr.) Mohan Joseph Modayil, at the Institute Headquarters on 9th November. Members of the Committee, Shri C.K. Soman, Shri. S. George, Dr. N.G.K. Pillai, Dr. K.K. Appukuttan, Dr. R. Paul Raj, Dr. R. Sathiadhas and Member Secretary Shri K.L. Meena, attended the meeting.

Quinquennial Review Team evaluation

The QRT reviewed the research activities and development programmes for the period 1999-2004 carried out at three of the Institute Centres.

Members of the team, Dr. E.G. Silas, Former Vice Chancellor, Kerala Agricultural University, Dr. Vinaysheel Gautam, Professor, School of Business Management, IIT, New Delhi and Dr. S.L. Shanbhogue, Ex-Director, College of Fisheries, Mangalore visited the Institute Regional Centre at Veraval and Research Centre at Mumbai during 17-20 November and the Tuticorin Research Centre on 16th December.

Impact of closed season on fisheries appraised

The first meeting of the committee convened by the Department of Animal Husbandry & Dairying, Ministry of Agriculture, Govt. of India to study the impact of closed season on fisheries was held under the chairmanship of Prof. (Dr.) Mohan Joseph Modayil at CMFRI, Kochi on 1st December.

Dr. C.K. Murthy, Jt. Director of Fisheries (Marine), Govt. of Karnataka; Dr. M.P. Dileep, Jt. Director of Fisheries, Govt. of Kerala; Shri Haridas, Adviser, Planning Commission; Shri A. Anrose, Sr. Fishery Scientist, FSI; Shri J.P.S. Mehrotra, Deputy Commissioner, DAHD; Dr. N.G.K. Pillai, Head of Pelagic Fisheries Division and Dr. M. Srinath, Head of Fishery Resources Assessment Division of CMFRI participated in the deliberations held. The status of monsoon ban along the east and west coasts of India was analyzed. The need for a uniformity in the implementation of the monsoon ban and its effective surveillance was discussed. The importance of studying the socio-economic implications was also pointed out.

Brain Storming Session

Two-day session on Mariculture was conducted on 3rd & 4th November at the Mandapam Regional Centre to finalise the research projects under the Mariculture Division for the period 2005-2007.

Seminars held

- Apoptosis – An emerging field of study in pathology – Dr. K.C. George
- Self Help Group dynamics in marine fisheries sector – Dr. Vipin Kumar

ACADEMIC NEWS

Ph.D. Awards

Scholar	Guide	Title of Theses
P. Kannan	Dr. M. Rajagopalan, Head, FEMD	Studies on the biology and incidental catch of sea turtles in selected centres along the Indian coast.
P.S. Swathi Lekshmi	Dr. K. Chandrakandan Emeritus Professor, Tamil Nadu Agricultural University	Computer simulation modeling for forecasting of diffusion and decision support for shrimp farming.
P.U. Zacharia	Dr. Jayabalan, College of Fisheries, Mangalore University	Studies on the fishery, biology and population dynamics of the whitefish, <i>Lactarius lactarius</i> (Bloch and Schneider, 1801) along the Karnataka coast.

OFFICIAL LANGUAGE IMPLEMENTATION

Inspections

Shri Anil Kumar Dubey, Director (Hindi), ICAR inspected the Hindi implementation activities of the Mumbai Research Centre on 4th October.

Prof. (Dr.) Mohan Joseph Modayil carried out inspections on the official language activities of the Mandapam Regional Centre on 4th November and that of the Tuticorin Research Centre on 3rd December.

The Drafting and Evidence Sub-committee of the Parliament Committee on Official Language under the leadership of Shri Lakshminarayan Pandey, conducted discussions regarding the official language implementation programmes of the Calicut Research Centre on 28th December.

Hindi Workshop

A Hindi Workshop was conducted to improve the employee's working knowledge in Hindi at the Mandapam Regional Centre of the Institute on 22nd & 23rd December. 13 staff members attended the classes, which dealt with correspondence and administrative terminologies related to fisheries.

OLIC Meeting

The Official Language Implementation Committee meeting of the Institute Headquarters was conducted under the chairmanship of Prof. (Dr.) Mohan Joseph Modayil on 16th November. The progress made in augmenting the usage of Hindi in administrative dealings at the Institute during the quarter, July – September was reviewed. Standard drafts and covering letters have henceforth been made bilingual.

Hindi Teaching Scheme

Ten staff members of Tuticorin Research Centre of the Institute have attended various courses under the Hindi Teaching Scheme during July-November period as follows: Pragya -2, Praveen -3 and Probohdh -5.

Prizes won

* Staff members of the Tuticorin Research Centre of CMFRI have bagged in six Ist, three IInd, two IIIrd and two consolation prizes in various competitions conducted by Tuticorin Town Official Language Implementation Committee during November.

* Dr. P. Jayasankar, Senior Scientist of the Institute won IInd prize for light music at the Joint Hindi Week celebration of Cochin TOLIC held during 13-17 December.

IN-HOUSE EVENTS

The **Vigilance Awareness Week** was observed at the Institute from 1st to 6th November 2004. The observance of the week commenced on the 1st November with a pledge administered by Prof. (Dr.) Mohan Joseph Modayil to staff members at the Headquarters followed by reading out message from Central Vigilance Commissioner, Govt. of India. The **Quami Ekta Week** was observed at the Institute from 19th to 25th November. The staff members took the National Integration Pledge on 19th November.

IPR Cell formed

An Intellectual Property Rights Cell has been formed at CMFRI, Kochi for examining proposals relating to property rights/patents. Dr. Sunil Kumar Mohamed, Senior Scientist, has been nominated as the Nodal Officer of the IPR Cell.

Journals online

The fast expanding Library Section of the Institute has introduced facility for online access to journals. 33 foreign and one Indian journal is available from computers on CMFRI Network. Accession to these journals is limited for the staff members of the Institute.

Staff benevolence for tsunami victims

CMFRI staff members have contributed Rs. 3,50,853/- by way of donating one day salary, to the Prime Minister's Relief Fund.

The charity club of the Institute functioning under the patronage of Prof. (Dr.) Mohan Joseph Modayil, contributed Rs. 25,810/- to the Malayala Manorama Relief Fund for tsunami victims.

The Staff Recreation Club put off the new year day celebration and the money earmarked was donated by supplying 100 kg. rice to the inmates of a poor home.

Recreation club activities

Recreation club arranged a picnic to the waterfall site at Thumburmuzhi. 55 members enjoyed the trip arranged on 2nd October.

The animation movie 'Finding Nemo' was screened on 16th November.

The recreation club has made arrangements for staff members to do Yoga practice half an hour before and after office hours.

PERSONALIA

Guests

Headquarters, Kochi

- Mr. Lutz Asbeck, Chairman & Mr. Volker Kuntzsh, Director (Supply Management), Frozen Fish International, Bremerhaven, Germany.
- Shri Shivram Warrior, Vice President & Shri Salim David, Business Manager, Marine Exports Hindustan Lever Limited, Bangalore.
- Shri M.K.R. Nair, Development Commissioner (Fisheries), AH&D, Ministry of Agriculture, New Delhi.
- Shri P.M.A. Hakeem, Secretary, AH&D, Ministry of Agriculture, New Delhi.
- Shri Direndra Kashyap, IPS, Commissioner of Police, Kochi City.
- Dr. N. Balaraman, Vice Chancellor, TANUVAS, Chennai.

Mandapam Regional Centre

- 1113 visitors including 985 students from 30 colleges.

Veraval Regional Centre

- Dr. H.V. Joshi and Shri Shaik Basha, Scientists, CSMCRI, Bhavnagar.
- Mrs. Nalini Nayak and A.J. Vijayan, Protsahan, Trivandrum.
- Shri Naresh Dali, Boat Owners Association President, Veraval.

Visakhapatnam Regional Centre

- Dr. S. Ayyappan, Deputy Director General (Fy.), ICAR, New Delhi.
- 432 students from various schools and colleges.

Madras Research Centre

- Dr. Mangala Rai, Director General & Dr. S. Ayyappan, Deputy Director General (Fy.), ICAR, New Delhi.

Tuticorin Research Centre

- S/Shri Kishore Dehi and Nevielle Tata Reji Koppara, Trident Aqua, Mumbai.
- Shri S.L. Prasad, Senior Commandant, CISF, Chennai.
- 443 students alongwith 31 faculty members.

Minicoy Research Centre

- Dr. V.S. Somvanshi, Director General, FSI, Mumbai.

Programme Participation

Prof. (Dr.) Mohan Joseph Modayil, Director

- Meeting on SDR for Lakshadweep sponsored by the Planning Commission organized by the Institute of Applied Manpower Research in collaboration with the Administrator, Union Territory of Lakshadweep held at Kavaratti (12-13 October)
- Discussions and deliberations on Vision 2020 perspective plan document for fisheries sector alongwith the DDG (Fy.), ICAR, SMD and other experts held at NASC Complex, New Delhi (26-28 October)
- Silver Jubilee Function of Fisheries College and Research Institute (Tamil Nadu Veterinary and Animal Sciences University), Tuticorin and chaired the Fisheries Education Session (4 December)
- International Workshop on 'Policy Research for Sustainable Shrimp Farming in Asia' organized by University of Agricultural Sciences and held at Bangalore (9-10 December)
- Presented 'Vision 2020 Perspective Plan' for fisheries sector at NASC Complex, New Delhi (19 December)

Dr. M. Rajagopalan, Principal Scientist & Head, Fishery Environment & Management Division

- Two day Colloquium on 'The Sea' organized by India International Centre, New Delhi (8-9 October)
- National Workshop on 'Fish for all through quality fisheries education' organized by the Kerala Agricultural University at Fisheries College, Panangad (25 November)

Dr. M. Rajagopalan, Principal Scientist & Dr. P.K. Krishnakumar, Senior Scientist

- Workshop on ICAR National Network on Climate Change at CRIDA (20-21 December)

Dr. E.V. Radhakrishnan, Principal Scientist & Head, Crustacean Fisheries Division

- Programme on 'Crab culture and lobster fattening' conducted by State Bank Institute of Rural Development, Kochi (3 November)
- Lobster harvesting programme organized by Rajiv Gandhi Centre for Aquaculture (12-14 December)
- Project Meeting on the 'Participatory management and conservation of lobster resources along the southwest coast of India' at MPEDA, Kochi (22 December)

Dr. N.G.K. Pillai, Principal Scientist & Head, Pelagic Fisheries Division

- International Conference on 'Agricultural Heritage of Asia' at NAARM, Hyderabad and presented a lead paper on 'Heritage of Fisheries in India' (6-8 December)

Dr. R. Paul Raj, Principal Scientist & Head, Physiology, Nutrition and Pathology Division

- Special lecture on 'Recent Advances in Aquatic Nutrition' in the Vth Biennial Conference of Animal Nutrition Association at National Institute of Animal Nutrition and Physiology, Bangalore (24-26 November)

Dr. R. Sathiadhas, Principal Scientist & Head, Socio-Economic Evaluation and Technology Transfer Division

- National Advisory Committee Meeting of SUSTAIN FISH 2005 at Kochi (22 December)

Dr. R. Sathiadhas, Principal Scientist, **Dr. S. Sivakami**, Principal Scientist & Head, Demersal Fisheries Division and **Dr. L. Krishnan**, Principal Scientist

- Seminar on Ornamental Fisheries and Accessories jointly organized by Government of India and Government of Kerala at Kochi (20 November)

Dr. K.C. George, Principal Scientist and **Dr. K.S. Sobhana**, Scientist (SS)

- Resource persons for the training programme on 'Shrimp Health Management' organized by ADAK, Kerala Govt. at Moolampally (30 November)

Dr. P.C. Thomas, Principal Scientist and **Dr. Imelda Joseph**, Senior Scientist

- Presented papers in the International Conference on 'Biotechnology and Neuroscience' held at Cochin University of Science and Technology (29-31 December)

Dr. C. Ramachandran, Senior Scientist

- Winter School on 'Market-led Extension-Dimensions and Tools' at the College of Horticulture, Kerala Agricultural University, Vellanikkara, Thirssur (1-21 December)

Dr. K. S. Sobhana, Scientist (SS)

- Resource person for the topic 'Shrimp Health Management' for the training programme on 'Sustainable Shrimp Farming' organized by ADAK at North Parur (8 October) and at Chellanam (6 November)

- Resource person on 'Health Management and Disease Prevention in Aquaculture' for the training programme organized by College of Fisheries, Panangad (28 October)

Dr. K.V. Somasekharan Nair, Principal Scientist & Scientist-in-charge, Veraval Regional Centre and **Dr. P.K. Asokan**, Scientist (SG)

- Workshop on Fisheries Management organized by Protsahan at Veraval (8-9 December)

Dr. G. Syda Rao, Principal Scientist and Scientist-in-charge, Visakhapatnam Regional Centre

- 'Tsunami' conducted by the Indian Meteorological Department, Visakhapatnam (31 December)

Dr. G. Maheswarudu, Senior Scientist, **Shri. K. Vijayakumaran**, Scientist (SG) and **Smt. Sheela Immanuel**, Scientist (SS)

- Workshop on 'Correct use and upkeep of fish finders, GPS, Echo sounder and radio telephone' at CIFNET, Visakhapatnam (23 November)

Smt. Sheela Immanuel and **Smt. Utkal Laxmi Mohanty**, Technical Assistant

- Official language Seminar on 'Modern technology and official language Hindi' at CIFNET, Visakhapatnam (24 November).

Dr. N. Kaliaperumal, Principal Scientist & Scientist-in-charge, Mandapam Regional Centre

- Presented a paper on 'Effect of different fertilizers in the growth of *Gracilaria edulis* in onshore cultivation' in the National Symposium on 'Algal Biology and Industrial Application' organized by Krishnamurthy Institute of Algology at Chennai (25-26 September)
- Gulf of Mannar Biosphere Trust Coordination Committee Meeting at the Ramanathapuram Collectorate (7 October).

Dr. G. Gopakumar, Principal Scientist & Head of Mariculture Division

- Presented a paper on 'Marine Ornamental Fishes' at the ornamental fisheries seminar Aquashow 2004 at Kochi (20-21 November).

Shri P. Vijayagopal, Scientist (SG)

- Training on 'Networking and ERNET Connectivity' at NAARM, Hyderabad (20-24 September)

Smt. Bindu Sulochanan, Scientist

- Presented a paper on 'Sedimentation effect of dredging on the marine environment' in the National Seminar on 'Ecological balance and Sethusamudram canal' organized by the Department of Oceanography and Coastal Area Studies, Alagappa University, Thondi Campus (1-3 October)
- Presented a paper on 'Sustainable development of coastal zone' in the Workshop 'Integrated management strategies for Tamil Nadu coastal zone and its resources' organized by the Institute of Remote Sensing and Institute for Ocean Management, Anna University, Chennai (26 November)

Dr. V.V. Singh, Senior Scientist

- Training course on 'Remote sensing: An overview for decision makers' at Indian Institute of Remote Sensing (Dept. of Space), Govt. of India, Dehradun (21-24 September)
- Working Group Meeting for development of competency based modular curriculum in the area of marine fisheries at PSS Central Institute of Vocational Education, NCERT, Bhopal (2-6 November)

Dr. R. Narayanakumar, Senior Scientist and Scientist-in-charge, Kakinada Research Centre

- UGC sponsored National Seminar on Environmental Issues and Natural Resource Management and presented a paper 'Economic evaluation of biodiversity conservation with economic loss of juvenile catch in marine fisheries in Kerala' organized by the Gobi Arts and Science College (9-10 October)

Dr. P.N. Radhakrishnan Nair, Principal Scientist & Scientist-in-charge, Calicut Research Centre

- Consultative Committee Meeting for the 'Farm and Home Programme' of All India Radio, Kozhikode held at Milma, Kunnamangalam (7 October).

Dr. P.N. Radhakrishnan Nair, Principal Scientist and **Shri. K.K. Philipose**, Scientist (SG)

- Seminar on 'Problems and prospects of ornamental fish culture' organized by National Agriculture Society held at Regional Science Centre, Kozhikode (3 October).

Dr. A.C.C. Victor, **Shri D.C.V. Easterson**, **Dr. P. Muthiah** and **Dr. S. Dharmaraj**, Principal Scientists

- Silver Jubilee celebrations of the Fisheries College and Research Institute, Tuticorin (3 December)

Dr. S. Dharmaraj, Principal Scientist

- Interface Meeting of DAC-DAH & D-DARE on Aquaculture held at CIFA, Bhubaneswar (27-28 September)

Smt. Asha P.S., Scientist (SS)

- National Symposium on 'Recent Trends in Fisheries Education and Research' at Fisheries College and Research Institute, Tuticorin and presented a paper on 'Effect of sea weed, sea grass and powdered algae in rearing the hatchery produced juveniles of *Holothuria (Metriatytila) scabra* Jaegar (4 December)

Shri T.S. Balasubramanian, Technical Officer (T-6)

- 'Fisheries development mission programme – deployment of artificial reef in the inshore waters of Kombuthurai' organized by Tamil Nadu State Apex Fisheries Co-operative Federation Ltd., Tuticorin (10 December)

Shri K. Diwakar, Technical Officer (T-5)

- Meeting on 'Gulf of Mannar Biosphere Reserve Trust Coordination Committee' held at District Collectorate, Tuticorin (22 September & 20 October)

Dr. H. Mohamad Kasim, Principal Scientist & Scientist-in-charge, Madras Research Centre

- International Seminar on 'Ecotechnology for Sustainable Development Ecotech – 2004' at New College, Chennai (4 & 5 December)
- Symposium on 'Managing Marine Reserves – Challenges and the Way Forward' at Greenpeace, Chennai (7 November)
- NATP workshop on 'Shrimp and Fish Health Management' at Central Institute of Brackishwater Aquaculture (16 November)

Dr. T.V. Sathianandan, Senior Scientist

- Training programme on 'Data Warehousing' organized at Indian Agricultural Statistics Research Institute, New Delhi under the NATP Mission Mode Project 'Integrated National Agricultural Resources Information System' (8-10 November)

Shri Joe K. Kizhakudan, Scientist (SS)

- Resource person in the workshop 'Management Issues in Marine Fisheries of Gujarat' organized by Protsahan for the fishermen community in Gujarat at Veraval (8-9 December)

Dr. P.K. Martin Thompson, Scientist-in-charge, KVK, Narakkal

- Annual Review meeting of TOT projects of ICAR, Zone VIII, at K.H. Patel Krishi Vigyan Kendra, Gadag, Bangalore (24-27 September)

Shri P.M. Aboobaker, Technical Officer (T-6), KVK, Narakkal

- Meeting of the District nodal agency for the implementation of the Xth Plan 'National watershed development programme for rain fed areas' convened by the Principal Agricultural Officer, Govt. of Kerala at Civil Station, Kakkand (18 September)

Shri B. Suresh Kumar, Technical Officer (T-5), KVK, Narakkal

- National Seminar on 'Scaling up of good extension practices in rice production system' organized by Krishi Vigyan Kendra, Pattambi (30 September & 1 October).



Obituary

Director and staff of Central Marine Fisheries Research Institute deeply mourn the loss of two of our family members:

Shri C. Manimaran, Technical Assistant (T-3) of Madras Research Centre who expired on 11th December.

Shri M. Vijayakumar, M.F.Sc. (Mariculture) 2001-2004 batch student at CMFRI, Kochi who lost his life in the Tsunami catastrophe at Chennai on 26th December.

Appointments					
Name	Designation	Centre	w.e.f.		
Shri T.K. Sumesh	Lower Division Clerk	Vizhinjam R.C.	18-10-2004		
Smt. R. Sarojini	SSG-I (Messenger)	Madras R.C.	25-10-2004		
Shri Sunil Raj K.S.	Lower Division Clerk	HQ, Kochi	01-11-2004		
Retirements					
Shri Menino Souza	SSG-IV (Lascar)	Karwar R.C.	31-10-2004		
Shri P. Thankappan	Technical Officer (T-5)	Vizhinjam R.C.	30-11-2004		
Shri R. Ravindranathan Nair	SSG-II (Messenger)	HQ, Kochi	30-11-2004		
Voluntary Retirement					
Shri K. Velayudhan	SSG-III (Watchman)	HQ, Kochi	2-11-2004		
Smt. A.B. Lalitha	UDC	Madras R.C.	3-11-2004		
Transfers					
Name	Designation	From	To		
Dr. K.K. Joshi	Senior Scientist	HQ, Kochi	Tuticorin R.C.		
Smt. Molly Varghese	Scientist (SG)	HQ, Kochi	Mandapam Regl. C.		
Shri S. Jayachandran	Asst. Administrative Officer	Visakhapatnam Regl. C.	Tuticorin R.C.		
Inter-Institutional Transfer					
Shri P.P. Anilkumar	UDC as Junior Accounts Officer	HQ, Kochi	CIFT, Kochi		
Promotions					
Name	Centre	w.e.f.	Name	Centre	w.e.f.
Sr. Library Assistant (T-4) to Technical Officer (T-5)			Supporting Staff in Grade II to SS Grade III		
Smt. P. Geetha	HQ, Kochi	01-12-2003	Shri P. Selvaraj	Madras R.C.	30-08-2004
Library Assistant (T-3) to Sr. Library Assistant (T-4)			Shri B. Babu	Vizhinjam R.C.	09-11-2004
Shri V. Sathiyanesan	Mandapam Regl. C.	24-12-2003	Shri P. Dasan	Calicut R.C.	10-11-2004
Assistant to Assistant Administrative Officer			Shri R. Vasu	Madras R.C.	30-12-2004
Smt. Christina Joseph	HQ, Kochi	08-10-2004	Shri Haridasan Thannimukkoth	Calicut R.C.	31-12-2004
M.K. Abdulla	Visakhapatnam Regl. C.	20-10-2004	Shri R. Sunder	Madras R.C.	31-12-2004
Upper Division Clerk to Assistant			Supporting Staff in Grade I to SS Grade II		
Smt. P.S. Sumathy	HQ, Kochi	04-10-2004	Smt. S. Usha	HQ, Kochi	06-11-2004
Smt. V. Parukutty	HQ, Kochi	05-10-2004	Smt. K.K. Sujatha	HQ, Kochi	06-11-2004
Shri V.C. Subhash	HQ, Kochi	15-10-2004	Smt. P.P. Sheela	HQ, Kochi	06-11-2004
Smt. V. Gouri	Visakhapatnam Regl. C.	27-12-2004	Shri K.M. Sreekumar	HQ, Kochi	30-12-2004
Lower Division Clerk to Upper Division Clerk			Smt. Shyamala M.P.	HQ, Kochi	30-12-2004
Shri A. Dickson Jebaraj	Tuticorin R.C.	08-10-2004	Shri A.K. Shaji	HQ, Kochi	30-12-2004
Shri F. Arun Prasanth	Mandapam Regl. C.	25-10-2004	Shri K. Anandan	Mandapam Regl. C.	31-12-2004
Shri S. Yuvarajan	Mandapam Regl. C.	09-11-2004			
Shri A.K. Kunjipalu	HQ, Kochi	27-12-2004			
Supporting Staff in Grade III to SS Grade IV					
Shri U.B. Sadashiva	Mangalore R.C.	08-11-2004			
Shri R. Madhusudhanan Nair	Vizhinjam R.C.	09-11-2004			

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