



ECOSYSTEM BASED FISHERIES MANAGEMENT – A NEW PARADIGM

The conference on Responsible Fisheries in the Marine Ecosystem held in 2001 unanimously adopted a resolution – the Reykjavik Declaration – concerning marine ecosystem utilization. The Declaration stated that Fisheries, when considered on a global scale, are neither sustainable nor are they operated in a responsible manner and therefore, should take into account the ecosystem. The problems of overcapacity, overfishing and detrimental impacts of contaminants on the fisheries ecosystem were debated at Reykjavik. The solution proposed was a fundamental change in fisheries governance through a new approach called Ecosystem Based Fisheries Management (EBFM).

The Principles of EBFM are: 1. Maintaining the natural structure and function of ecosystems, including the biodiversity and productivity of natural systems; 2. Establishing objectives for use and management of natural resources; 3. Sharing a vision and a set of objectives amongst stakeholders and 4. Adapting a management strategy based on scientific knowledge, continual learning and monitoring processes. Many countries have incorporated EBFM as a part of their fisheries management policies.

CMFRI has taken initiatives to re-orient its fisheries research based on EBFM. A beginning has already been made by the construction of a trophic model of the Arabian Sea ecosystem off Karnataka.

Models facilitate prediction of ecosystem behavior over time as a function of specified human impact such as fishing or changes in the environment (pollution, climate changes etc.). Fisheries scientists and managers are tasked with predicting ‘sustainable’ catch rates; that is how many fish of species X, Y, Z can be caught each year from a given area and still have a ‘healthy’ ecosystem where the fish and their food sources remain plentiful and in balance. Demand for accurate predictions encourages biologists to quantify and compact the complex interactions of organisms in an ecosystem into predictive computer models to guide ecological management and analysis of choices and tradeoffs. One of the softwares widely used for this application is the Ecopath with Ecosim (EwE) developed initially at ICLARM and subsequently at the Fisheries Centre, University of British Columbia, Canada. The ECOPATH is a trophic accounting model that is a practical way of studying the interactions of all species

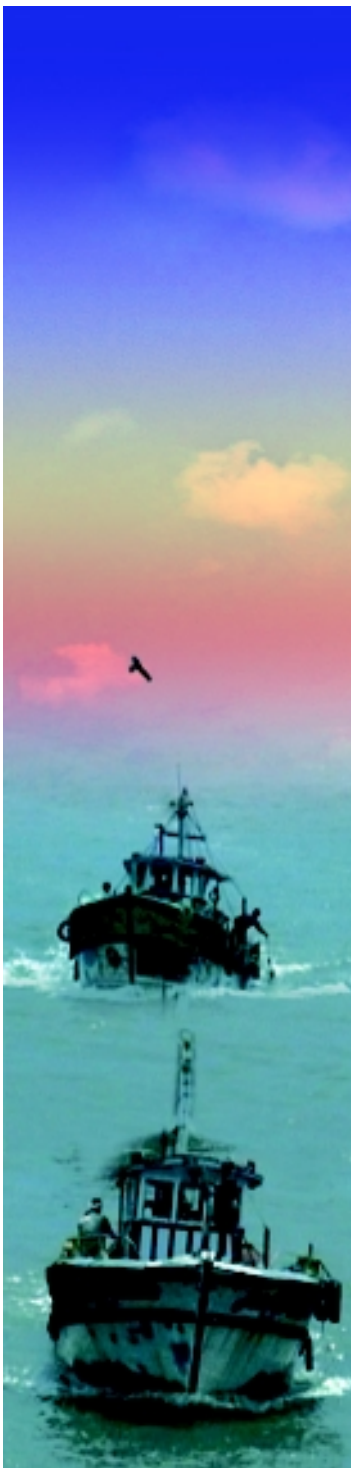
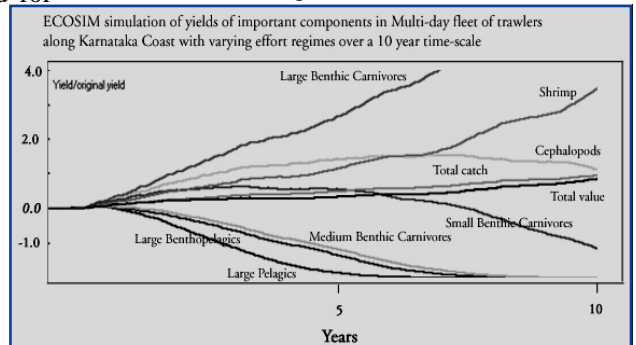
in an ecosystem. The ECOSIM calculates corresponding changes in biomass of each component when the fishing mortality of any particular group is altered. Using equilibrium simulations, where equilibrium biomass is plotted over a range of F values, ECOSIM provides the facility to predict the potential equilibrium yield for the fished group.

Trophic model of the Arabian Sea off Karnataka developed

Under a project funded by the ICAR AP Cess Fund, a trophic model of the Arabian Sea ecosystem off Karnataka was constructed using the EwE software. The Karnataka model encompassed an area of 27,000 km² and had 24 functional ecological groups from the apex predators like marine mammals and sharks to micro zooplankton and detritus. Estimates were made of the biomass, production/ biomass ratios, consumption/biomass rates and diet compositions for each functional group. Based on the gross efficiency value of the ecosystem, it can be classified as an ecosystem which has not yet achieved full maturity.

Fully mature ecosystems have web like connections and are less susceptible to perturbations. A simulation exercise with a 17% increase in effort every year for 10 years, indicated the changes in the biomass and yield of different components of the ecosystem. The result of such an exercise for the multiday fleet of trawlers in Karnataka is shown in the figure.

Although some of the components, especially shrimp, do show an increase in yield with increase in effort, the overall catch and value of the fishery does not show any increase. Therefore increase in effort cannot be recommended for the fleet. Similar exercises have been carried out for all fleets like Single-Day Trawl, Purse Seine, Gillnet, Hook & Line and Artisanal gears.



From the Director's Desk

It has been well recognized that as production of fish from natural environments is stagnating and bound to continue so in the coming years, growth in the fisheries sector must depend on production achieved through aquaculture. Doubling production in ten years from this sector will perhaps remain a well-cherished dream; but it would be possible to double the incomes realized from the aquaculture sector in a shorter period. Reducing the cost of production is one of the significant measures that must go into the process for realization of this target. As both high value and low value aquaculture will expand during the next two decades, the pressure on the environment is bound to increase many folds. Aquaculture operations have impacted the capture fisheries operations through loss of habitats important during breeding and nursery phases, high organic pollution of water bodies, coastal habitat conversion and loss of biodiversity. Threat to genetic integrity of wild stock through the breeding of escaped farmed fish as well as disturbing changes in the habitat and trophic relationships are other fall outs. Increasing demand for wild seed and brood stock will exert further pressure on the capture fisheries. The ever increasing demand for fish meal and fish oils for the aquaculture feed industry will also put additional pressures on the wild species, especially low value species. Thus, growth of aquaculture has an indirect threat and negative impact on capture fisheries, contrary to the general belief that aquaculture will reduce the pressure on capture fisheries.

Reducing aquaculture's reliance on capture fisheries for feed inputs is a challenge to the feed industry and nutrition researchers. It is reported that nearly one-third of the world's wild caught fish is not directly consumed but diverted to the animal feed industry as an ingredient in various animal feeds. Although it is argued that bulk of the fish used in the feed industry is low value fish unfit for human consumption, the rationale and ethics of using fish to feed fish is resource unfriendly and disputable. It is estimated that aquaculture consumes about 35 percent of the world's fish meal compared with 24 percent for poultry and 29 percent for pigs. The share of fish oil for aquaculture is around 54 percent. The outlook on the use of fish meal predicts that aquaculture will become the sole consumer for the world's fish meal in twenty years. It is projected that the price for fish meal will increase by 50 percent by 2020. Such a change will also result in not only pressures on the stocks but on the food security of the coastal poor who mainly depend on low value fish. Some predictions do not support this argument. However, for countries like India, this is a threat and the pressures are already visible in the coastal livelihoods and food security. Thus, there is need for anticipatory research to find out alternatives to fish meal and fish oil to reduce the pressures on the fish stocks, cost of production, coastal food security and livelihoods.

Perhaps reducing the dependence on fish feed and fish oil by replacement with nutritionally comparable feed substitutes is the only answer to the problem. Oil seed, grains, other vegetable based substitutes like soybean, corn and wheat gluten, rapeseed, pea, lupin, meat and bone meals, are all possible with varying degrees of benefits and risks. Certification process for fish meal has ensured the elimination of the use of meat and bone meal which is a banned item because of threat from animal borne diseases. Removing the anti nutritional factors and improving the content of desirable proteins of vegetable based ingredients is an area of research opportunity. Many believe that total replacement of fish oils is perhaps impossible as for many carnivores, fish oil serves as the only source of essential fatty acids in the diet and substitution will eventually affect the organoleptic quality of the fish meat. A new and exciting field of research is the commercial production of fatty acids through controlled fermentation of micro-organisms such as the microalga *Phaeodactylum tricoratum*. Coastal micro-organisms thus offer a valuable source for research and commercial utilization in the aquafeed industry. There is great potential for focused research in this field, especially in a tropical region with high microbial biodiversity.


Mohan Joseph Modayil

NEWS FROM THE RESEARCH FRONT

Technology upgradation in molluscan mariculture

For the first time in Kerala, small scale farming of mussels adopting 'Bouchot' (stake culture) method was carried out in the shallow waters of Ashtamudi Lake at Dalavapuram, Kollam. The work was carried out by the Molluscan Fisheries Division of the Institute with farmer participation. Mussel seeds (20-25 mm)



Casuarina poles with mussel seed

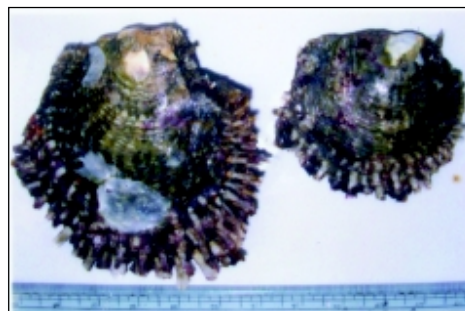


Fully grown mussel

were collected from the estuary itself and seeded on casuarina poles and bamboo splits of one meter length @ 1.5 kg/pole. Productions of 12 kg/pole, were obtained within a period of 3 months. This method has received good response from the local farmers who are planning to follow this method in the next season.

Pinctada margaritifera reported

Two specimens of *P. margaritifera* were collected from Mulloor from a depth of 3 m. The oysters weighing 206 and

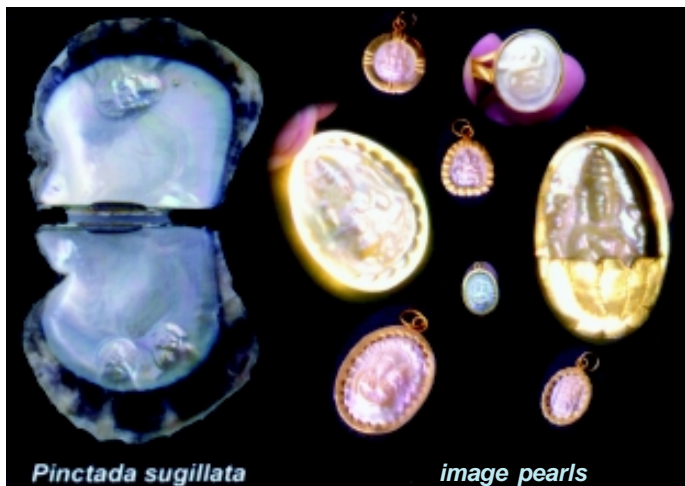


Pinctada margaritifera specimens collected from Mulloor

118g measured dorso-ventrally 119 and 91 mm respectively.

Mabe pearls from *Pinctada sugillata*

Good quality image pearls have been produced from the flat oyster *Pinctada sugillata*, an oyster species hitherto considered as a pest in pearl oyster farms. Good coating of nacre was achieved on the image nuclei within 50 to 60 days after implantation with no post-operative mortality and rejection. The shape of



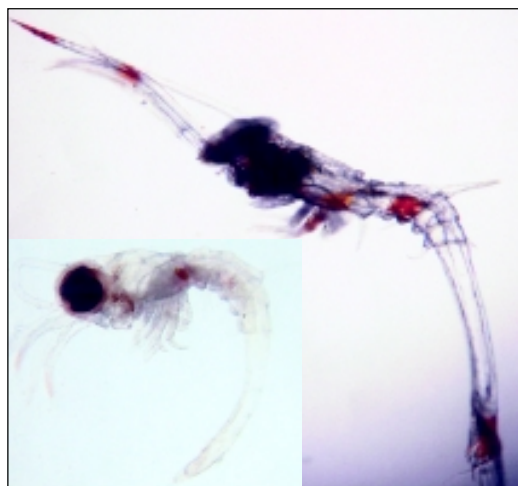
P. sugillata provided a larger flat surface area for the implantation of larger as well as multiple images.

A potential area for integrated bivalve farming identified

The total biomass (standing stock) of bivalves in the Moorad Estuary has been estimated as 3368 tonnes in a bed area of 155 ha with a percentage contribution of 61.58% by *Meretrix casta*, 16.39% by *M. meretrix*, 19.83% by *Crassostrea madrasensis* and 2.20% by *Saccostrea cucullata*.

Doctor shrimp successfully bred

One of the most sought after ornamental crustacean *Stenopus hispidous* priced at about 7 US \$ per shrimp, was bred successfully at the Calicut Research Centre of the Institute. Berried females brought from the Androth Island of Lakshadweep were



Two days old larva

Thirteen days old larva

used for the study. The newly hatched mysis were reared to post larvae using a mixture of live feed organisms. Further trials are on to standardize breeding and larval rearing.

Environmental impact of dredging/reclamation monitored

The Fishery Environment Management Division of the Institute has initiated the two year long phase III of the consultancy project undertaken for the Cochin Port Trust to assess the environmental changes prior to, during and after dredging. The programme involves monitoring the hydrography of the southern end of Wellington Island and assessing the distribution and productivity of phytoplankton, zooplankton and benthos.

Onshore marine pearl culture technology standardized

Standardization of large pearl production under land based technology was carried out at the Visakhapatnam Regional Centre of the Institute. In the first phase, about 25% bead retention over implantation was achieved in *Pinctada fucata* with a pearl production of about 20% of which 16% were best quality pearls of 6-9 mm fulfilling the five good qualities (lustre, size, shape,



Cultured pearls (8-9 mm size) produced under land based technology surface and colour) for pearls. Good quality larger pearls can be produced even from five year old *P. fucata* in about 12-15 months period.

NEW HEIGHTS

ICAR Best Annual Report Award Won

The Central Marine Fisheries Research Institute has bagged the **Best Annual Report Award** for the year 2001-2002 in the category of large ICAR research institutes. The Annual Report for 2001-2002 was edited by Dr. V.Sriramachandra Murty and Dr. N.G.K. Pillai.

The citation has commended the coverage of critically analyzed and appropriately summarized achievements in priority areas under different disciplines. Completion of eight consultancy projects worth Rs. 35.21 lakhs by the Institute and its linkages with other Departments and Institutions was considered especially praiseworthy.



Dr. Mohan Joseph Modayil receiving the Best Annual Report Award from Dr. Mangala Rai, Secretary DARE & Director General, ICAR



Achievers

- ❖ Dr. R. Paul Raj, Principal Scientist of the Institute & Principal Investigator of the NATP Sub Project: 'Nutrition and Pathology in Mariculture' alongwith his team comprising of CCPI's, Drs. P.G. Viswanathan Nair (CIFT, Cochin), Rema Madhu (CARI, Port Blair), G. Indira Jasmine (FC&RI, Thoothukkudi) and
- ❖ Dr. T.S. Velayudhan, Principal Scientist of the Institute & Principal Investigator of the Project entitled 'Mussel Mariculture' alongwith his team comprising of CCPI's Dr. Anil Renade (CoF, KKV, Ratnagiri) and Shri. R. Soundararajan (CARI, Port Blair) were awarded **Commendation Certificates** in the Poster Presentation held in connection with the National Symposium on 'Enhancing Productivity and Sustainability in Coastal Agro Ecosystem' organized by Agro Ecosystem Directorate (Coastal) at CTCRI, Thiruvananthapuram during 9-11 June.

ICAR Inter-Zonal Sports Winners

- ★ A.K. Shaji – First Prize in Javelin Throw
- ★ Purandara Shetty – First Prize in Shot put

Winners of Competitions conducted by Central Government Employees Welfare Co-ordination Committee

- ★ Dr. P. Jayasankar – First Prize in classical and light music

- ★ Dr. Imelda Joseph – First Prize in English extempore and English poetry writing
- ★ S/Shri. Tomy Prince & K.N. Pushkaran – First Prize in Table Tennis
- ★ Shri. C.S. Sashidaran – Second Prize in light music
- ★ Smt. E.K. Uma–Third Prize in Malayalam short story writing

Proficiency Prize Winners

- ★ Master Adil. K. Kalam (S/o Dr. (Smt.) Fameena Hassan) - CBSE X
- ★ Kum. Geetha Krishnan (D/o Shri M. Krishnan) - PLUS TWO
- ★ Kum. Aswathy P.S. (D/o Shri M.G. Sivadasan) - SSLC

TRANSFER OF TECHNOLOGY

Mussel culture taken up by Women SHG's

The women Self Help Groups of Mundalli village in Karwar District in association with the NGO 'Sneha Kunja' have successfully carried out Green Mussel culture with the technical guidance from the Karwar Research Centre of the Institute. The entire work was carried out by women themselves.

Training programmes

For practising farmers

- *Krishvi Vigyan Kendra* of the Institute at Narakkal conducted 13 multi-disciplinary training courses for 243 villagers. The number of training courses and beneficiaries in each discipline are as follows: Fisheries 4-69; Agriculture 5-99; Home Science 4-75. Out of these, five training programmes viz. two on cultivation of mushroom, two on Jasmine and one on fish pickle preparation were conducted in collaboration with *Krishvi Bhavan*, Narakkal and grama panchayats of Elamkunnappuzha, Ainapuram and Centre for Management Development, Kalamassery.

For nominated officials

- A three week training programme on **Multivariate Statistical Methods for Fisheries Research** was organized for 12 participants from various research organizations and State Agricultural Universities by the Fisheries Resources Assessment Division of the Institute from 18th March to 7th April



Inset : Dr. Mohan Joseph Modayil distributing certificate to a participant

2004. The training covered theoretical aspects of important multivariate techniques such as principal component analysis, cluster analysis, factor analysis and discriminant analysis. Practical applications of these methods were demonstrated with the help of real time data.

- The Fishery Resource Assessment Division of the Institute imparted another training programme on **Marine Fisheries Data Collection and Estimation** for the staff of Fisheries Dept., Kerala State from June 7 to 11. The training covered topics on the stratified multistage random sampling followed at CMFRI for the estimation of marine fish landings, different sampling methods, schedules used for data collection and data entry, application programmes for estimation of landings and guidelines for field identification of common marine fish groups/species.
- The Fishery Environment Management Division of the Institute conducted a training programme on **Phytoplankton**



Dr. Mohan Joseph Modayil at the inaugural session

Identification/Taxonomy during 14th - 19th June at Cochin. The course content related to quantitative/qualitative analytical studies of Diatoms, Dinoflagellates, Blue green algae, Silicoflagellates, Coccolithophores and Nanoplankton. Six scientific staff from the Central Institute of Fisheries Technology, Kochi; Central Institute of Brackishwater Aquaculture, Chennai; Central Institute of Freshwater Aquaculture, Bhubaneswar; Central Inland Fisheries Research Institute, Barrackpore and Sri. Manonmaniam Sundaranar University, Thirunelveli participated in the one week training.

Duplex PCR Kit for WSS Virus commercialised

Rights for production and marketing of the Duplex PCR Kit for detection of the deadly White Spot Syndrome Virus of shrimps, developed at CMFRI has been awarded to M/s Microl Remedies, Hyderabad. The MOU was signed by Dr. Mohan Joseph Modayil, Director, CMFRI and Shri Harikrishnan, General Manager, Microl Remedies, for the production and marketing of the kit on commercial basis.

Duplex assay based PCR Kit developed at CMFRI for detection of WSSV is cost effective and rapid compared to the conventional nested PCR. Simultaneous PCR screening of different segments of the viral genome is carried out in a single step using the Duplex Kit. This save time and cost of chemicals compared to the two-step nested PCR kits. The kit was developed by

Dr. P. C. Thomas, Principal Scientist along with Shri. M. P. Paulton, Senior Training Assistant.



Dr. Mohan Joseph Modayil handing over the Duplex PCR Kit to Shri Harikrishnan, General Manager, Microl Remedies, Hyderabad

The aqua-clinics can provide PCR screening service to shrimp farmers and hatcheries to select virus free shrimp larvae for stocking at competitive rates using the kit. The kit can be sold about 30-50% cheaper than the PCR kits currently used in India.

News from ATIC

- The Agricultural Technology Information Centre functioning at the Institute Headquarters has generated an amount of Rs. 16,408 through sales of algal inoculum, publications and value added products (produced by the women SHG *Janani*) and diagnostic services including detection of WSS Virus, pollutants and analyses of water/mud samples.
- Three farmer interactive discussions were organized at the ATIC.
- Movies on technologies developed by the Institute were shown 169 times for the visitors during the period reported.

INTERACTION AND EVALUATION

Seminars

Divisional Seminars were held at the Institute Headquarters on the following topics:

- ❖ Recirculatory systems in aquaculture
- Dr. E.V. Radhakrishnan
- ❖ Selective breeding of pearl oyster in India
- Dr. T.S. Velayudhan
- ❖ Application of resampling techniques in fisheries modeling- Dr. J. Jayasankar
- ❖ Apoptosis – An emerging field of study in pathology
- Dr. K.C. George

World Environment Day commemorated

A Seminar was organized on World Environment Day with the theme 'Do you want the seas and oceans dead or alive' by the Krishi Vigyan Kendra of the Institute in collaboration with Kerala Sasthra Sahithia Parishad, Grama Panchayat, Narakkal and Krishi Bhavan, Narakkal on 5th June. Smt. Sulochana, President, Grama Panchayat inaugurated the programme. The importance of

mangroves in preserving the biodiversity of the coastal region was discussed during the programme. Saplings of mangrove plants were planted in the KVK Campus. 55 persons including Agricultural Assistants, ward members of the gramma panchayat, members of the self-help groups, rural youth and students participated in the programme.

- ❖ Dr. P. Jayasankar gave a seminar on his deputation to Southern Ocean (Port Mauritius) for the period from 20th January to 12th March 2004 to participate in the Pilot Expedition to Southern Indian Ocean on board ORV *Sagar Kanya*.
- ❖ Dr. E.V. Radhakrishnan presented a seminar on his deputation to Australia during 8–13 February to attend the International Conference on Lobster Biology & Management.
- ❖ Dr. E. Vivekanandan delivered an expert lecture at the Madras Research Centre of the Institute on his assignment as the Fisheries Team Leader in the UN sponsored Project ‘Oceanographic survey in support of damage assessment’ held at the King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia.

OFFICIAL LANGUAGE IMPLEMENTATION

TOLIC Meeting held

CMFRI hosted a meeting of the Kochi Town Official Language Implementation Committee on 23rd June. Prof. (Dr.) Mohan Joseph Modayil, Director, CMFRI welcomed the gathering of senior officers from around 100 central government offices and autonomous bodies in the town. *Matsyagandha*, a special publication of the Institute, was released on the occasion by Shri. B.M. Jindel, Chief Commissioner of Income Tax, Cochin and Chairman, Kochi TOLIC by handing over a copy to Commodore M.K. Murthy, C&MD of Cochin Shipyard Ltd.

Workshop organized

A Hindi workshop was conducted for 32 personnel in the technical cadre at the Institute Headquarters on 25th and 26th

June. The classes intended to improve the usage of the official language, dealt with the commonly used terminologies and structural aspects of Hindi. The classes were handled by Smt. D. Radhika Devi and Smt. P.S. Jayashree of Pradhyapak Hindi Teaching Scheme, Kochi.

Progressive use of official language

The following research papers prepared in Hindi by the staff members of Tuticorin Research Centre and presented at the Scientific Seminar held at Heavy Water Plant, Tuticorin have been published in their Souvenir:

- ❖ Biodiversity and conservation in fisheries - Dr. E.M. Abdussamad
- ❖ Technologies developed in pearl culture - Dr. C.P. Suja
- ❖ Commercial exploitation and need of conservation of sea cucumber - Shri. K. Diwakar
- ❖ Lobster fisheries resources in India - Shri. M. Manickeraja

IN-HOUSE EVENTS

Two new Scientific Divisions: **Mariculture Division** and **Marine Bio-diversity Division** have been created in the Institute with effect from 19th April. With this, the number of scientific divisions has increased to ten. Dr. G. Gopakumar and Dr. (Smt.) Rani Mary George, Principal Scientists hold the positions of Head of Mariculture and Marine Bio-diversity Divisions respectively.

NATIONAL TECHNOLOGY DAY CELEBRATED

The National Technology Day was celebrated at the CMFR Institute on 11th May. The Institute labs were open to the public on the day. Prof. (Dr.) Mohan Joseph Modayil, Director presided over the meeting held at the Headquarters. Dr. N.G.K. Pillai, Principal Scientist & Head, Pelagic Fisheries Division welcomed the gathering and narrated the genesis and motive of the day reminding the audience the significance of the slogan ‘Jai Vigyan’. Dr. R. Sathiadhas, Principal Scientist & Head of Socio-Economic Evaluation and Technology Transfer Division, in his

ACADEMIC NEWS

Ph. D Awards

Scholar	Guide	Title of Thesis
T. S. Velayudhan	Dr. N. Ravindranatha Menon Professor (Retd.) & Dr. V. Kunjukrishna Pillai Principal Scientist (Retd.)	Ecology of the Indian pearl oyster, <i>Pinctada fucata</i> (Gould).
Anitha, P.S.	Dr. Rani Mary George, Principal Scientist	Studies on certain selected livefeed organisms used in aquaculture with special reference to rotifers (Family: Brachionidae).
Sabu A.S.	Dr. P. Nammalwar, Principal Scientist (Retd.)	Some aspects on ecotoxicology and ecophysiology of shrimp <i>Penaeus semisulcatus</i> (de Haan, 1844) to copper, cadmium and zinc.
Leena Joseph	Dr. V.V. Singh, Senior Scientist	Studies of the nearshore coastal waters off Mumbai with reference to pollution and fisheries.
K.R. Salin	Shri T.M. Yohannan, Principal Scientist (Retd.)	Reproductive biology and larval rearing of <i>Hippocampus kuda</i> and the taxonomy of sea horses (<i>Hippocampus</i> spp.).
Satish Sahayak	Dr. V.S.R. Murthy Principal Scientist (Retd.)	Studies on the taxonomy and some aspects of biology of the fishes of the family Balistidae from the Indian seas.

talk on 'Technology and People' highlighted the need for transferring viable technologies for the welfare of the people.

Dr. Joseph Varghese, a successful entrepreneur, the chief guest of the day in his address called for stronger tie-ups between researchers, farmers and industrialists. The need of the hour is to develop sustainable fisheries, increase productivity and ensure better resource management. Students, scholars and staff members actively participated in the quiz programme that followed. It was heartening that the questions which covered an array of



topics were well answered by the teams and audience with no points scored by the quiz master.

Dr. K.K. Appukuttan, Principal Scientist & Head of Molluscan Fisheries Division, while proposing the vote of thanks reminded the audience the fruitful work the Institute has been undertaking in developing, transferring and popularising technologies.

Recreation Club Activities

Adding vigour and energy to office life, are the programmes organized by the Staff Recreation Club. At Cochin, **yoga classes** were held from 14th June to 12th August for staff and their family members twice a week after office hours. Smt. Sreedevi, a yoga teacher trained from Vivekananda Kendra, Kanyakumari, conducted the classes for 17 participants.

Hand in hand with our scientific pursuits goes our **humanitarian activities**. S/Shri. C. Anand, Chandrasekhara Rao, Sujoy Biswas, Abhay Ranjan Gupta, K.M. Venugopalan and K.M. Sreekumar have donated blood for a needy person.



The staff recreation club of the Madras Research Centre celebrated the **club day** on 12th May by arranging a music programme and organizing outdoor and indoor games.

Announcement

Winter School on

Towards Ecosystem based Management of Marine Fisheries – Building Mass Balance Trophic and Simulation Models

CMFRI will conduct a 21-day winter school at its Headquarters for scientists, researchers and teachers in the field of Fishery Biology, Statistics and Economics from 30th September to 20th October 2004.

The course with an intake capacity of 25 participants is funded by ICAR. The faculty for this multi-disciplinary course includes biologists and oceanographers who have expertise in constructing the trophic models of the Arabian Sea ecosystem off Karnataka, South west coast and the Arabian Gulf ecosystem of Saudi Arabia.

Training programme on Post Harvest and Value Addition Techniques in Seaweeds

The Institute is organizing a training for 10 candidates (scientists/teachers/research scholars and entrepreneurs dealing with seaweeds) at the Mandapam Regional Centre from 20 to 25th September. The training will include theory and practical classes on methods for improvement of yield and quality of agar production, extraction and production of phycocolloides such as agar, algin and carrageenan, liquid fertilizer, manure, fuel and preparation of edible products from seaweeds.

Details regarding the programmes are available at www.cmfri.com under 'what's new'.

PERSONALIA

Guests

Headquarters

Dr. John Warford and Dr. Konda P. Reddy from Tropical Marine Science Institute, Singapore.

Dr. P. Natarajan, Professor, Kerala University.

Dr. K. Ramalingam, Professor, Govt. Arts College, Chennai.

Dr. M.J. Chandragowda, Sr. Scientist, ICAR TOT Projects, Z.C. Unit, Bangalore.

Dr. M.V. Kulsy, FAO Consultant

Dr. J.P. Mittal, National Co-ordinator (ITD), ICAR, New Delhi.

Madras Research Centre

Dr. R.J. Asari, Conservator of Forests, Marine National Park, Jamnagar.

Shri. Viswanath A. Shegaonkar, Secretary to Department of Animal Husbandry & Fisheries, Govt. of Tamil Nadu and Dr. M. Sakthivel, Chairman, AFI.

Karwar Research Centre

Professor Ravichandra Reddy, Prof. Jayaprakash and Dr. Bela Zutshi alongwith 56 post graduate students, Department of Zoology, Bangalore University.

Vizhinjam Research Centre

Shri Kanti Desai, Hon'ble Minister for Education, West Bengal

Dr. I.V. Subba Rao, Member, ICAR High Power Committee and Former Vice Chancellor, Acharya NG Renga Agricultural University, Hyderabad.

● 29,933 people including 10,116 children visited the Marine Aquarium. A sum of Rs. 1, 58,370/- was collected as the entry fee to the Marine Aquarium.

Visakhapatnam Regional Centre

Shri. G.V.S. Prasad, CEO, Golden Aquafarms, Thimmapuram.

Shri. P. Narayana Rao and Shri. K. Prasad, Aquafarm, Katrameri.

Programme Participation

Prof. (Dr.) Mohan Joseph Modayil, Director

National Coastal Zone Management Authority Meeting at Ministry of Environment and Forests, New Delhi (6 May)

Meeting with Social Scientists of ICAR for Development of Strategic Research projects at New Delhi (7 May)

Round Table Conference on 'Impact of Inter River Basin Linkages on Fisheries' at NAAS, New Delhi (21 May)

Meeting alongwith FSI, DBT and Department of Fisheries, Govt. of Maharashtra to chalk out the detailed programme on Aquaculture of Shellfishes on the coast of Ratnagiri in collaboration with Dr. Babasaheb Ambedkar Marathwada University at their Marine Research Laboratory, Ratnagiri (22 & 23 May)

NATP National Symposium on 'Enhancing Productivity and Sustainability in Coastal Agro Ecosystem' organized by AED (Coastal) at CTCRI, Thiruvananthapuram (9-10 June)

Inaugural function of 'Professional Upgradation Programme in Fisheries' organized by the Kerala Agricultural University College of Fisheries, Panangad and Professional Fisheries Graduates Forum, Kerala chapter at College of Fisheries, Panangad, Kochi (11 June)

National Workshop on Coastal Zone Management at Chennai (18-19 June)

Dr. R. Paul Raj, Principal Scientist & Head of Physiology, Nutrition and Pathology Division **Shri. P. Vijayagopal**, Scientist (SG) and **Dr. (Smt.) Imelda Joseph**, Scientist (SS)

Network Meeting convened by DDG, Fisheries, ICAR for formulation of project proposals in Network mode on the subject 'Fish Feeds and Feed Technology' at New Delhi (27-28 April)

Dr. R. Paul Raj Principal Scientist and **Dr. Sathiadhas**, Principal Scientist and Head of Socio-Economic Evaluation and Technology Transfer Division

National Symposium cum Exhibition on 'Enhancing Productivity and Sustainability in Coastal Agro-Ecosystem' organized by NATP at CTCRI, Thiruvananthapuram (8-11 June)

Dr. M. Rajagopalan, Principal Scientist & Head of Fishery Environment Management Division, **Dr. N.G.K. Pillai**, Principal Scientist & Head of Pelagic Fisheries Division, **Dr. L. Krishnan**, Principal Scientist, **Dr. E.V. Radhakrishnan**, Principal Scientist

& Head of Crustacean Fisheries Division, **Dr. G. Gopakumar**, Principal Scientist & Head of Mariculture Division, **Smt. Grace Mathew**, Principal Scientist, **Dr. G. Maheswarudu**, Senior Scientist

Indo-Singapore Workshop on 'Frontiers in Aquaculture and Marine Biotechnology' organized by Department of Biotechnology, Government of India and convened by Centre for Fish Disease Diagnostic and Management, Cochin University of Science and Technology at Cochin (22-25 April)

Dr. R. Sathiadhas, Principal Scientist

World Bank Review Workshop and discussion of future financial plan for IVLP at CRIDA, Hyderabad (26 March)

Dr. R. Sathiadhas, Principal Scientist **Dr. R. Narayanakumar**, Sr. Scientist and **Smt. Sheela Immanuel**, Scientist (SS)

'Social Scientists Network Meeting' convened by DDG (Fy.) at Krishi Anusandhan Bhavan, New Delhi (6-7 May)

Dr. R. Sathiadhas, Principal Scientist, **Dr. S. Sivakami**, Principal Scientist & Head, Demersal Fisheries Division, **Dr. L. Krishnan**, Principal Scientist, **Smt. Sheela Immanuel**, Scientist (SS) and **Dr. P.K. Martin Thompson**, Scientist-in-charge, KVK, Narakkal

Site Committee meeting for the implementation of III phase of 'Institution Village Linkage programme (IVLP) for Technology Assessment and Refinement in the Coastal Agro-ecosystem of Ernakulam District' at CMFRI, Kochi (14 May)

Dr. L. Krishnan, Principal Scientist

Governing Body Meeting of Fisheries Resources Management Society of Kerala (FIRMA) under the Chairmanship of Prof. K.V. Thomas, Minister of Fisheries, Govt. of Kerala (9 June)

Dr. K.C. George, **Dr. A.P. Lipton**, Principal Scientists and **Dr. K.S. Sobhana**, Scientist (SS)

Network Meeting convened by DDG (Fy.) for formulation of project proposal in Network mode on 'Fish Health and Disease Management' at ICAR, New Delhi (28-30 April)

Dr. P.C. Thomas, Principal Scientist and **Dr. P. Jayasankar**, Sr. Scientist

Network Meeting convened by DDG (Fy.) for formulation of project proposal in Network mode on 'Auto transgenics' at ICAR, New Delhi (14-15 April)

Dr. H. Mohamad Kasim, Principal Scientist

Lecture on Fisheries Resources in Tamil Nadu to the trainees at Fisheries Staff Training Institute, Chennai (20 April)

Organizing Committee Meeting of Ocean Life Expo 2004 at Aquaculture Foundation of India at Chennai (29 April)

Dr. E. Vivekanandan, Principal Scientist

Meeting of the 'Planning Commission' for formulating Aquarium Policy for Govt. of Tamil Nadu at Chennai (24 May)

Dr. V.D. Deshmukh, Principal Scientist & Scientist - in - charge Mumbai Research Centre

4th Consultative Committee Meeting at Fishery Survey of India, Mumbai (16 April)

Dr. V.D. Deshmukh, Principal Scientist, **Dr. V.V. Singh**, Sr. Scientist, **Dr. Miriam Paul & Smt. Paramita Banerjee**, Scientists Inaugural function and invited keynote lectures at the UGC sponsored National Seminar on 'Aquaculture prospects and problems' organized by the Institute of Science, Mumbai and Maharashtra Aquaculture Farmers Association at the Institute of Science, Mumbai (27 March)

Dr. R. Narayanakumar, Senior Scientist & Scientist-in-charge, Kakinada Research Centre
Meeting on 'Formulation of Network Schemes for Utilization of A.P. Cess Funds under the Head Social Sciences' organized by ICAR, New Delhi (6-7 May)

Workshop on 'Policy Advocacy for Joint Mangrove Management for Media' organized by M.S. Swaminathan Research Foundation, Kakinada (14 June)

Dr. R. Narayanakumar, Senior Scientist, **Shri. K. R. Somayajulu** Technical Officer (T-6), **Shri. K. Dhanaraju**, Technical Officer (T-5)

Seminar on 'Sir Arthur Cotton's Vision on River Water Management for Food Security' organized by Sastriya Vigyana Samithi and Society for Promotion of Integrated Coastal and Arid Areas Management (SPICAAM), Kakinada (15 May)

Shri K. Vijayakumaran, Scientist (SG)

Planning Workshop on DFID Funded Project 'Better Management of Fisheries Conflicts' organized by KVK, Mitraniketan and WorldFish Centre at Visakhapatnam (1-2 June)

Dr. P.K. Martin Thompson, Scientist-in-charge, KVK, Narakkal Seminar on 'Empowering migrant women labourers' organized by Department of Labour, Government of Kerala at Co-operative Bank Auditorium, Puthuvype. Presented a paper on 'Role of KVK on empowering rural women in the formation of self-help groups through training programmes' (29 March)

Meeting of the task force to prevent the spread of communicable diseases during the monsoon period convened by the Block Panchayat President, Vypeen at Community Health Centre, Malipuram (28 April)

Shri P.M. Aboobacker, Technical Officer, KVK, Narakkal Training programme on 'New Dimensions in Agricultural Extension Management' at *MANAGE*, Hyderabad (22-26 March)

Action plan Meeting for the year 2004-2005 convened by the Zonal Co-ordinating Unit, TOT projects of ICAR, Zone VIII at Tamil Nadu Agricultural University, Coimbatore (14-15 April)

Meeting of the district nodal agency for the implementation of the X Plan for National Watershed Development Programme for Rain Fed Areas convened by the Principal Agricultural Officer at Civil Station, Kakkanad, Ernakulam (4 June)

Smt. P. Sreeletha, Technical Officer, KVK, Narakkal

Training programme on 'Swadesi soap making and value added products from jack fruit' at the Centre for Gandhian Studies, University of Kerala, Thiruvananthapuram (29 March-3 April).



Obituary

Director and Staff of CMFRI deeply mourn the untimely demise of Dr. S. Kalimuthu, Technical Officer (T-6) of Mandapam Regional Centre on 6th June.

Closure of Field Centres & Transfers (with effect from 1st June 2004)

Field Centres	Name (S/Shri)	Centre to which transferred
Rander	Nil	Veraval Regional Centre
Dahanu	A.Y. Mestry, (T-3)	Mumbai Research Centre
	Suresh Krishna Rao Kamble, (T-2)	"
	Jayadev S. Hotagi, J (T-2)	"
Malvan	Bharamu S. Melinmani (T-2)	Ratnagiri Field Centre
Cannannore	K.C. Purushothaman, (T-3)	Calicut Research Centre
	Shri. K.C. Pradeep Kumar, (T-3)	"
Chavakad (Edakazhiyur)	K.G. Baby, (T-1-3)	CMFRI, Kochi
Alleppey	A.Y. Jacob, (T-1-3)	CMFRI, Kochi
Machilipatnam	P. Achayya, (T-1-3)	Narsapur Field Centre
Pondicherry	L. Chidambaram (T-4)	Cuddalore Field Centre
	M. Rajkumar, (T-2)	"
Mahabalipuram	V. Thanapathy, (T-4)	Madras Research Centre
Kovalam	Nil	"
Nellore	V.S. Gopal, (T-3)	"
Palasa	Y.V.S. Suryanarayana (T-2)	Visakhapatnam Regional Centre
Gopalpur	S.V. Subba Rao, (T-2)	"

Appointments

Name S/Shri	Designation	Centre	w.e.f
Sreekumar S.	S.S. Gr. - I (Mistry)	CMFRI, Kochi	31.05.2004
Biju George	S.S. Gr - I (Electrical Attendant)	CMFRI, Kochi	07.06.2004

Promotions

Name S/Shri	Designation	Promoted Post	Centre	w.e.f
V.V. Lekshminarayanan	Assistant	Asst. Administrative Officer	CMFRI, Kochi	01.04.04
V. Mohanan	Assistant	Asst. Administrative Officer	CMFRI, Kochi	01.05.04
Ms. K.N. Meera	UDC	Assistant	CMFRI, Kochi	08.06.04
R. Sreenivasan	UDC	Assistant	Mangalore R.C	11.06.04
Ms. Ponnamma Radhakrishnan	UDC	Assistant	CMFRI, Kochi	08.06.04
K. Ramadasan	UDC	Assistant	CMFRI, Kochi	08.06.04
P. Krishna Rao	LDC	UDC	Visakhapatnam Regl. C.	08.06.04
Ms. C. Pushpa Rani	LDC	UDC	Tuticorin R.C.	08.06.04
Ms.. C.A. Leela	LDC	UDC	CMFRI, Kochi	09.06.04
Ms. K. Smitha	LDC	Stenographer	CMFRI, Kochi	08.06.04
K.P. John	S.S.Gr IV (Fieldman)	LDC	CMFRI, Kochi	14.05.04
G.K. Rajan	S.S.Gr.II (Pump Driver)	S.S.Gr. III (Pump Driver)	Mandapam Regl. C.	11.06.04
Gopi X. Chodenkar	S.S. Gr. II (Lascar)	S.S. Gr. III (Lascar)	Karwar R.C.	18.05.04
W. Satyawan Neelraj	S.S. Gr. II (Fieldman)	S.S. Gr. III (Fieldman)	Tuticorin R.C.	17.05.04
K. John James	S.S. Gr. II (Fieldman)	S.S. Gr. III (Field man)	Tuticorin R.C.	17.05.04
V.P. Halarnekar	S.S. Gr. II (Net Maker)	S.S. Gr. III (Net Maker)	Karwar R.C.	18.05.04
K. Sankaran	S.S. Gr.I (Gardner)	S.S.Gr.II (Gardner)	Calicut R.C.	25.03.04
K. Murugan	S.S Gr. I (Watchman)	S. S. Gr. II (Watchman)	Tuticorin R.C.	27.03.04
Ms. Subbalakshmi	S.S. Gr I (Safaiwala)	S.S. Gr. II(Safaiwala)	Mandapam Regl.C.	26.03.04
D. Jaganna	S.S. Gr. I (Safaiwala)	S.S. Gr. II(Safaiwala)	Visakhapatnam Regl. C.	01.04.04

Transfers

Name (S/Shri)	Designation	From	To
Dr. M. Rajamani	Principal Scientist	Tuticorin R.C.	Mandapam Regl. C.
Ms. S. Lakshmi Pillai	Scientist	Calicut R.C.	Madras R.C.
Dr. N. Ramachandran	Principal Scientist	Vizhinjam R.C.	Tuticorin R.C.
Ms. Sheela Immanuel	Scientist (Sr. Scale)	CMFRI, Kochi	Visakhapatnam Regl. C.
Dr. (Ms.) S. Ashalatha	Scientist (Sr. Scale)	CMFRI, Kochi	Mangalore R.C.
Ms. N. Aswathy	Scientist	CMFRI, Kochi	Tuticorin R.C.
Dr. (Ms.) Rani Mary George	Principal Scientist	Madras R.C.	CMFRI, Kochi
Ms. Sandhya Sukumaran	Scientist	CMFRI, Kochi	Mandapam Regl. C.
Dr. (Ms.) V. Kripa	Senior Scientist	CMFRI, Kochi	Calicut R.C.
Dr. T.V. Sathianandan	Scientist (S.G)	CMFRI, Kochi	Madras R.C.
I. Jagadis	Scientist (Sr. Scale)	Mandapam Regl.C.	Tuticorin R.C.
Dr. K. Muniyandi	Technical Officer (T-6)	Mandapam Regl.C.	Madras R.C.
A.T. Sunil	S.S. Gr. I (Fieldman)	Calicut R.C.	CMFRI, Kochi

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Telephone : 2394867. Fax : 91-484-2394909. E-mail : mdcmfri@md2.vsnl.net.in. Website : www.cmfri.com

Editor : **Dr. (Smt.) Geetha Antony**, Technical Officer

Secretarial Assistance : **Smt. Bindu Sanjeev**

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