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Inaugural function of the 5th International Symposium on Cage Aquaculture in Asia held at Kochi

see page 3



हर कदम, हर उमर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

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Indian Council of Agricultural Research
CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
P.B. No. 1603, Ernakulam North P.O., Kochi - 682 018, Kerala, India

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Published by

Dr. A. Gopalakrishnan

Director

ICAR-Central Marine Fisheries Research Institute
Post Box No. 1603, Ernakulam North P.O.
Kochi - 682 018, Kerala, India
Telephone: 0484-2394867
Fax: 91-484-2394909
E-mail: director@cmfri.org.in
Website: www.cmfri.org.in

Editor

Dr. U. Ganga

Editorial Board

Dr. Rekha J. Nair

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Dr. Kajal Chakraborty

Shri. D. Linga Prabu

Smt. P. Geetha

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DIRECTOR SPEAKS



Warm greetings to all.

The potential to increase marine fish production in India through sea farming is considerable although cage aquaculture in the country is still only in its early development stage. ICAR-CMFRI pioneered research in the open sea cage culture in India as well as

achieved the first breakthrough in breeding and seed production of several commercially important marine food fishes such as Cobia and Silver Pompano. R & D efforts are underway to achieve similar success in other groups such as groupers and Red snapper in the coming years. In this context, the 5th International Symposium on Cage Aquaculture in Asia hosted by the Institute witnessed many scientific deliberations which will be helpful in developing the necessary technologies. It has also come out with several recommendations that will surely aid the process of a Blue Revolution in India. The efforts of all those who strived to make the event a striking success deserve compliments. During the period, the planning for National Marine Fisheries Census 2016 with support from the Department of Animal Husbandry, Dairying and Fisheries (DAHD & F) was completed and the database compiled in specially designed forms on the socio-economic, infrastructure and other associated data from the coastal fishing villages and fishermen will be digitized. This will be invaluable during planning fisheries development schemes or policies for the country. We could also successfully collate stakeholders' opinion from various regions to aid the formulation of the new National Marine Fisheries Policy by the Union Government. As we enter the new year 2016, it is gladdening to note that the Puri Field Centre of ICAR-CMFRI has been opened, which will certainly make all efforts to fulfill the needs of marine fishermen of the region through their research out-reach and training programs. As the new year unfolds, it is time to approach our work with renewed vigour and dedication and I wish everyone a very successful New Year 2016.

A. Gopalakrishnan
Director

About CMFRI

The Central Marine Fisheries Research Institute, Kochi, is a premier research Institute under the Indian Council of Agricultural Research, devoted to research and training in marine fisheries and mariculture.

CMFRI has three Regional Centres viz., Mandapam Camp, Visakhapatnam and Veraval and seven Research Centres located along the Indian coastline, catering to the marine fishery policy needs of all maritime states of the country.



ICAR-CMFRI hosts the 5th International Symposium on Cage Aquaculture in Asia (CAA5)



Release of CAA5 Souvenir (from L-R) Dr. A. Gopalakrishnan, Dr. Alice Joan Ferrer, Dr. J. K. Jena, Dr. S. Ayyappan, Dr. Derek Staples, Prof. (Dr.) Mohan Joseph Modayil and Dr. Mridula Rajesh

ICAR-Central Marine Fisheries Research Institute and the Indian Branch of the Asian Fisheries Society (AFS) hosted the 5th International Symposium on Cage Aquaculture in Asia (CAA5) in Kochi, India during 25-28th November 2015. The inaugural function held on 25th November 2015 began with a welcome address by Dr. A. Gopalakrishnan, Convener, CAA5 and Director, ICAR-CMFRI. Invitees and delegates from India,

Norway, Indonesia, United Kingdom, Korea and Philippines were present on the occasion. He acknowledged the Asian Fisheries Society for providing the opportunity to host this prestigious event at Kochi which included a symposium theme talk, keynote address for each session and lead talks by eminent researchers and experts cage aquaculture. 252 participants from 10 countries (Norway, UK, Australia, South

Korea, Indonesia, Vietnam, Philippines, Thailand, Iran, China) were present besides Indian delegates. One symposium theme lecture, 6 keynote address, 17 lead talks, 141 abstracts, 42 oral and 75 poster presentations were made. An exhibition of cage culture technology, products and services with 21 exhibitors, had stalls displaying their products / services. Presentations in 6 different sessions pertaining to recent advances and research activities in the field of cage aquaculture were made. From over 200 submissions received, the best were summarized in the Book of Abstracts which was also released during the function. Convener CAA5 expressed his hope that the Symposium would meet the objectives and initiatives of ICAR, MPEDA, SAUs and NGOs in contributing to aquaculture growth in India and that it would provide a platform for the country to take up cage culture in a sustainable manner.

Felicitatory messages received from the Hon'ble President of India, Shri. Pranab Mukherjee, Vice President, Shri Mohammed Hameed Ansari, Union



Welcome Address by the Dr. A. Gopalakrishnan, Convener CAA5, Director, ICAR-CMFRI



*Address by the Chief Guest
Dr. S. Ayyappan, Secretary, DARE & DG, ICAR*



*Address by Guest of Honour
Prof. (Dr.) Mohan Joseph Modayil,
CAG, AFS, Malaysia*



*Presidential address by Dr. J. K. Jena,
Chairman, AFSIB and DDG (Fisheries), ICAR*

Agriculture Minister, Shri. Radha Mohan Singh, Hon. Chief Minister of Kerala, Shri. Oommen Chandy and the President, Asian Fisheries Society, Prof. Shuolin Huang who flagged the importance of the symposium were also read out.

After the Welcome address, Dr. Alice Joan Ferrer, Vice President, Asian Fisheries Society, Malaysia spoke briefly on the activities of AFS past. A two minutes silence was observed as a mark of respect to the departed souls of Dr. S. Z. Qasim, Honorary Life Member AFS, Prof. H. P. C. Shetty, Founder Chairman, AFSIB and past AFS Councillor and Mr. J. V. H. Dixitulu, former Managing Editor of Fishing Chimes.

In his Presidential address, Dr. J. K. Jena, Chairman, AFSIB emphasized the need for governmental policies to support cage farming in open waters. He said that the slogan at present was not only fish for all for today and tomorrow but also forever. He said that India could

take cues from countries such as Norway, Chile and China.

Prof. (Dr.) Mohan Joseph Modayil, Former Member, ASRB and Member Council Advisory Group (CAG), AFS, was the Guest of Honour for the function. He expressed happiness at the response shown by the participants to CAA5 and congratulated efforts to make this conference successful when cage aquaculture is still in its infancy in India. Highlighting the prospects of cage culture to a developing country like India where fish is not only an item of food but also of employment opportunities he pointed out that Asia is now emerging as a superpower in aquaculture. He flagged the issues of environmental safety, entrepreneurship, consumer health and also highlighted prospects of Asian countries to gain from cage aquaculture. He emphasized that there is no need for any competition between countries and what is rather needed is sharing of skills, knowledge and expertise with concerted

efforts of Asian countries to take ecofriendly cage culture forward.

Dr. Derek Staples, Immediate Past President, AFS, in his address stressed that the fisheries society in Asia needs to undergo a major reform with respect to connectivity among Asian countries.

The Book of Abstracts and Souvenir of the Symposium were released by the Chief Guest Dr. S. Ayyappan. In his Inaugural address he opined that it was apt that CAA5 was held in Kochi which may be rightly called the fisheries capital of India. He recounted his first experiments in freshwater cage culture along with Dr. Kumaraiah, way back in 1982. He mentioned that the food basket is getting diversified from cereals to meat to fish and the biggest challenge now is Climate Change which ICAR- CMFRI is also addressing. Highlighting the achievements made by ICAR-CMFRI in cage culture at Veraval, Karwar, Mandapam and Kochi he mentioned that present day emphasis is on environment



Address by Dr. Alice Joan Ferrer



Address by Dr. Derek Staples, Immediate Past President, AFS

friendly and sustainable practices in capture fisheries as well as aquaculture. He expressed hope that the symposium would provide an opportunity for exchange of ideas between India and Norway who are the leaders in cage culture. Today, the Indian youth is looking forward to challenging ideas and opportunities and cage culture will be such an opportunity he added. He further emphasized that multiple use of water should be resorted to and complimented the efforts of the youngsters from Jharkhand on their success in cage farming in the reservoirs. He also said that a strong combination of seed availability, feed, skill and will were the need of the hour for further development of cage aquaculture in India. Stressing that cage culture can provide opportunity for a paradigm shift for production of food from land to water bodies, Dr. Ayyappan concluded his address by wishing the delegates fruitful deliberations.

The AFSIB R & D Innovation Awards were presented to experts who had significantly contributed for the development of cage culture in India. This included Mr. Sanjay V. Raut, President (Technical & New Businesses), Garware-Wall Ropes Limited, Pune, Dr. Thampi Samraj, Director, Rajiv Gandhi Centre for Aquaculture, MPEDA, Kochi, Prof. (Dr.) Mohan Joseph Modayil, Former Member, ASRB and Former Director, ICAR-CMFRI, Dr. G. Syda Rao, Former Director, ICAR-CMFRI, Dr. G. Gopakumar, Emeritus Scientist, ICAR-CMFRI and Dr. P. Kumaraiah, former Principal Scientist, ICAR-CIFA. Dr. Mridula Rajesh, Treasurer, AFSIB proposed the vote of thanks.

Distinguished guests at the symposium included Dr. V. V. Sugunan and Dr. Madan Mohan (Former ADGs (Fisheries), ICAR), Dr. P. S. B. R. James, Dr. V. N. Pillai (Former Directors, CMFRI), Dr. S. D. Tripathi (Former

Director, ICAR-CIFE), Dr. S. W. A. Naqvi, Director, CSIR-NIO, Goa; Dr. P. Ravishankar, Director, ICAR-CIFT, Dr. K. K. Vijayan, Director, ICAR-CIBA, Chennai and Dr. P. Jayasankar, Director, ICAR-CIFA, Bhubaneswar besides many other eminent personalities in the field of fisheries and aquaculture.

The Symposium Theme lecture "Greening the Asian Cage Aquaculture Construct" was delivered by Prof. (Dr.) Mohan Joseph Modayil. The keynote speakers were Mr. Trond Severinsen (Norway) (Marine Production Systems), Dr. V. V. Sugunan (Inland Production Systems), Dr. G. Gopakumar (Breeding and Seed Production), Dr. P. E. Vijay Anand, USSC (Nutrition and Feed), Dr. Brit Hjeltnes, (Norway) (Health and Environment Management), and Dr. Marius Dalen, (Norway) (Economics, Livelihood and Policies). All sessions had lead talks by eminent speakers and scientists from different organisations in India and abroad. They were Dr. Niels Svennevig (Vietnam), Dr. Clive Jones (Australia), Dr. K. G. Padmakumar (India), Dr. A. K. Das (India), Mr. Uttam Kumar Subuddhi, IFS (India), Dr. Asmund Bjordal, Director, IMR (Norway), Dr. Ketut Sugama (Indonesia), Dr. Kristoffer Lunde, EWOS (Norway), Prof. Trevor Platt (Plymouth, presently Jawaharlal Nehru Science Fellow, India), Dr. K. K. Vijayan, Director, ICAR-CIBA (India), Dr. Indrani Karunasagar (India), Dr. Murwantoko (Department of Fisheries, Faculty of Agriculture (Indonesia), Dr. P. Ravichandran, Member Secretary, Coastal Aquaculture Authority, (India), Mr. Suresh Kumar, DGM, NABARD, (India) and Mr. Jacob Joseph, Asst. Professor, NUALS, (India). There were oral and poster presentation in each session by scientists and students from different organisations in India and abroad. The Exhibition and Trade show inaugurated by Dr. Derek Staples, AFS (Malaysia) had 22 stalls which included



Keynote address by Prof. Trevor Platt in Session I on Marine Production Systems



Keynote address by Mr. Trond Severinsen (Norway) in Session I on Marine Production Systems



Lead lecture by Dr. Asmund Bjordal (Director, Institute of Marine Research, Norway) in Session III



Lead lecture by Dr. Ketut Sugama (Indonesia) in Session III on Breeding and Seed Production

State and Central Government Agencies, ICAR institutes, Fisheries Universities, Entrepreneurs, Banks and NGOs.

The Plenary and valedictory session of CAA5 was held on 27th November, 2015. After the welcome address by Dr. B. Shamasunder, Secretary AFSIB, Dr. S. D. Tripathi, Dr. K. K. Philipose, Coordinator, All India Network Project



Delegates at the Symposium



Lead lecture by Dr. Kristoffer Lunde (Norway) in Session IV on Nutrition and Feed



Keynote address by Dr. Brit Hjeltnes (Norway) in Session V on Health and Environment Management



Keynote address by Dr. Marius Dalen (Norway) in session VI on Economics, Livelihood and Policies

(Mariculture), Dr. Imelda Joseph, Head in Charge, Mariculture Division, ICAR-CMFRI and Dr. Derek Staples, expressed their views about the Symposium and appreciated the success of the symposium. Dr. J. K. Jena, President, AFSIB presented the concluding remarks and the recommendations of the symposium. Prof. (Dr.) Mohan Joseph Modayil announced the awards for the best three papers and posters. MATSYAFED Kerala was presented with an award in recognition of their support to the cage culture programmes in the country by supplying the nets at nominal rates to the fishers. Mr. V. Dinakaran, Chairman, MATSYAFED and Ex-MLA, on receiving the award, stated that the organization will continue supporting ICAR-CMFRI in their cage culture endeavours. The program concluded with the vote of thanks by Dr. A. Gopalakrishnan, Director, ICAR-CMFRI and Convener, CAA5.



Presentation of AFSIB R&D Innovation Award to Prof. Dr. Mohan Joseph Modayil



Presentation of AFSIB R&D Innovation Award to M/s. Garware Wall Ropes Ltd.



Presentation of AFSIB R&D Innovation Award to Dr. G. Gopakumar



Presentation of AFSIB R&D Innovation Award to Dr. P. Kumaraiah



Presentation of Award to Mr. V. Dinakaran, Chairman, MATSYAFED



Inauguration of Trade Show by Dr. Derek Staples



Visit to CMFRI stall by Dr. S. Ayyappan, DG, ICAR



Award for best paper presentation to Dr. G. Grinson and Team

Recommendations of CAA5

Considering the emerging importance of cage aquaculture on the economy and life of the Asian region, the CAA5 recommends

1. A precautionary development agenda for environment and resource friendly, sustainable and inclusive way forward for Asian countries by sharing information and experiences for the benefit of all.
2. Collective efforts between Asian countries to foster a green approach by following best management practices for providing safe fish.
3. Development of breeding and grow-out technologies of indigenous candidate species, specific to each country, with emphasis on diversification in both inland and marine cage aquaculture.
4. Greater focused research attention on feed development, with emphasis on reduced use of fish meal and fish oil, and feed management approach for prospective candidate species for cage aquaculture in the Asian region.
5. Development and implementation of country specific disease surveillance and management plans for addressing existing diseases and preventing future outbreaks.
6. A greater thrust on R & D on multispecies farming; involving fish, molluscs, seaweeds and scavengers for utilization of multi-trophic food niches for preventing environmental deterioration.
7. Development and adoption of National policies for each country, taking into consideration harmonized approaches delineating maximum biomass production for sites in inland and marine water bodies, so as to prevent adverse impacts on the aquatic environment of neighbouring countries.
8. Mapping of sites for cage aquaculture, taking into consideration local area development plans, environmental safeguards and user rights; further, notifying and demarcating culture sites must receive attention in each country so as to promote harmonious development.
9. Facilitation of private-public participation in commercial cage farming to attract increased investment and entrepreneurial development.
10. Sharing of knowledge and skill for development of cage aquaculture through collaborative programmes in research, training and human resource development.



Award for best paper presentation to Dr. M. K. Anil and Team



Award for best poster presentation to Dr. K. Madhu and Team



Award for best poster presentation to Dr. P. A. Vikas and Team



CAA5 Core Committee from ICAR-CMFRI with Dr. A. Gopalakrishnan, Convener, CAA5.



Delegates at the National Marine Biodiversity Museum, ICAR-CMFRI



Delegates at the Dinner hosted at CMFRI as part of CAA5



Dr. A. Gopalakrishnan, Director with the invited speakers and the AFS and AFSIB team at ICAR-CMFRI



Dr. B. Shamasundar, Secretary AFSIB speaks at Valedictory function



Session in progress



Dr. Asmund Bjordal presents memento to Dr. A. Gopalakrishnan during the Valedictory Function



View of the Audience



'Cage Aquaculture Aiming Sky High' - Symposium Theme Painting by Shri. K. M. David



Logo and Website Team : Shri. P. R. Abhilash, Shri. K. M. David and Shri. Manu V. K.



Glimpses of the Cultural Evening



Host Institute of ICAR-CMFRI

Puri Field Centre of ICAR-CMFRI inaugurated

The Office cum Research Laboratory of Puri Field Centre of ICAR-CMFRI, was formally inaugurated on 7th December, 2015 by Dr. A. Gopalakrishnan, Director in the presence of distinguished officials from Odisha State Fisheries Department including Mr. P. Krishna Mohan, IFS, Director of Fisheries, Mr. Basant Dash, Deputy Director, (Marine Fisheries), Mrs. Urbashi Behera, Additional Director of Fisheries and Mr. Shashi Kanta Mishra, Asst. Engineer, CPWD, Odisha. In her welcome address, Dr. (Mrs.) Reeta Jayasankar, Scientist-in-charge, Puri Field Centre thanked Mr. Satyabrata Sahoo, IAS, former Commissioner cum Secretary, Animal Resource Development Department (Fisheries), and Mr. Bishnupada Sethi, IAS for providing all support during setting up of the centre. Dr. A. Gopalakrishnan appreciated the cooperation between the State and Central Fisheries Departments to address the issues of stake holders and



Director with dignitaries and staff of Puri Field Centre

highlighted the opportunities to take up marine fisheries activities in Odisha to new heights through collaboration in cage farming, coastal aquaculture and seaweed farming with the active technical backing from this centre. Some of the fish farmers present expressed their difficulties in

getting seed from Chennai and Mandapam for crab and finfish farming and requested for setting up such hatcheries in Odisha also. After the formal inauguration, the dignitaries visited the laboratory and hatchery facilities developed at the Centre.

Marine Fisheries Census 2016

The National Marine Fisheries Census-2016 in all the maritime states and two Union Territories of the country is to be held under the leadership of ICAR-CMFRI. The Island regions of Andaman & Nicobar and Lakshadweep will be enumerated under the supervision of Fishery Survey of India. The exercise includes collecting information about marine fishermen families, fishing crafts and gears, social and educational profile and demographic features of marine fishing villages. The previous census was conducted in 2010. The Department of Animal Husbandry, Dairying and Fisheries (DAHDF) of Ministry of Agriculture and Farmers Welfare, Government of India is funding the exercise which is coordinated

by the Institute. Training programmes for supervisors and prospective enumerators were conducted.

Fishery Resources Assessment Division (FRAD) conducted Pre-Census Workshops at the various Regional/Research centres of the Institute. At the Visakhapatnam Regional centre it was held on 19th-20th November, 2015. Dr. Mini KG, Senior Scientist, Dr. Reeta Jayasankar, Scientist-in-charge, Puri FC of ICAR-CMFRI and Mr. Vivekanand Bharti, Scientist conducted the training. Dr. Grinson George, Senior Scientist, Shri Wilson T Mathew, Scientist and Shri. D. Pugazhendi, Technical Officer conducted workshop at Chennai Research Centre

for training of field, district and state level supervisors of Tamil Nadu, south Andhra Pradesh and Puducherry U.T. on 17th and 18th November 2015. Workshop for Kerala and Mahe was held on 12th and 13th November 2015. Dr. Somy Kuriakose, Principal Scientist and Mr. Manu V. K., Senior Technical Assistant, conducted the workshop at Mangalore Research Centre for Karnataka and Goa on 1st and 2nd December 2015. Dr. T. V. Sathianadan, Principal Scientist and Mrs. K. Ramani, Assistant Chief Technical Officer, trained supervisors for North Gujarat and U.T. of Diu on 18th and 19th November 2015 and Maharashtra, South Gujarat and U.T. of Daman on 20th and 21st November 2015 at Mumbai RC.



Participants of the Workshop on "Marine Fisheries Census-2016" at Mumbai RC of CMFRI

About 3000 enumerators trained by the institute will visit 11 lakh fishermen families spread across 4250 marine fishing villages located in 73 districts. Around 220 officials are posted at the 26 centres for effective supervision and co-ordination. The schedules are designed to collect details pertaining to social, educational and fishing aspects of marine fishermen families besides information related to fish processing, handling, marketing and value addition. The information on

infrastructure facilities in fishing villages and other fish harvesting and processing facilities available in various coastal districts is also being collected. The schedules to be used for household survey have been translated into eight regional languages for ease of use. Apart from the schedules the personnel involved have been provided an instruction booklet to clarify various heads under which details are being collected. The data would later be analyzed by ICAR-CMFRI to develop a comprehensive census database to facilitate formulation of fisheries related plans and policies in the marine sector.



Workshop held at Vishakapatnam Regional Centre

Online survey for developing stakeholders' opinion on National Marine Fisheries Policy

The high level committee entrusted with the formulation of National Marine Fisheries Policy recorded various opinions of stakeholders through a set of 84 main questions available in print (offline) and online on the websites of DAHDF and ICAR-CMFRI. The printed

questionnaire forms were posted to over 1000 fisheries organizations in the country. Wide publicity to the exercise was given in regional and national print media. Initially, 45 days' time (October 26 to December 10, 2015) was given for submission of forms, but based on popular

demand was extended by another 6 days. Postal submissions continued even after this date and all responses received until December 31st were used in the analysis. The online form had adequate cyber security to ensure protection against spam generation and hackers.

Harvest of farmed lobsters from model sea-cage farm

Tuticorin Research Centre initiated sea-net cage farming of lobsters and cobia through participatory mode with fisherfolks at Sippikulam, Thoothukudi during the month of September 2015. The farming of lobsters was done in floating Galvanised Iron (GI) net-cage (7 m diameter & 3 m height). 550 baby lobsters with an average size of 60 g procured from nearby fish landing centres were stocked in the cage maintained by the fisher folk with technical guidance from ICAR-CMFRI. After three months, the lobsters attained about 225 g and the value of harvested lobster was about ₹ 1.8 lakhs. The harvest programme was conducted on 22nd December 2015 in Sippikulam village, Thoothukudi. Dr. P. P. Manojkumar, Scientist-in-Charge, Tuticorin Research Centre of ICAR-CMFRI welcomed the gathering. Mr. Amal Xavier, Joint Director of Fisheries (Regional), Tuticorin flagged off the harvest program and appraised the fisher folk about the various state and central government schemes available for sea-



Joint Director, Tamil Nadu Fisheries Department handing over the lobster harvest to the fishermen

cage farming. Mr. C. Kalidas, Scientist briefed about the technical details of sea cage farming. Mr. M. Kumeresan, Lobster farming Entrepreneur, Mr. Gnanaraj, Lobster Sea-cage farmer and Mr. Rexon, Cobia Sea-cage farmer shared their sea-cage farming experiences at Sippikulam. In the felicitation address Dr. C. S. Shine Kumar, Deputy Director, MPEDA told about subsidies available for construction of facilities for live and chilled export of

marine fishes from the village. Rev. Raja Rodrigo, Sippikulam and Mr. Issac Jayakumar, Assistant Director of Fisheries (Marine) also spoke on the occasion where leaders from Sippikulam Fishermen Co-operative Society, fish farmers and other fishermen were present. The first of its kind in this coastal village, the event will enthuse other fisher families to take up sea cage farming to improve their livelihoods.

(Reported by : Tuticorin RC)

Expansion of the open sea cage farming under TSP in Gujarat

For the fourth consecutive year, ICAR-CMFRI launched the seacage farm off Veraval under the Tribal Sup-Plan for the benefit of the Sidi tribals of Gujarat. The successful farming trials in the past three years have motivated them to launch the farm during the current year. Priorities for

the year will be to diversify the farming from lobsters only to integration with the seaweed and oysters. These farming trials in addition to providing livelihood to the tribals have also served as venues for the demonstration and capacity building of the interested cage farming entrepreneurs in

the region. The programme which is being run through a registered society of the tribals, Bharat Adimjuth Matsyodyog Mandali, Talala and benefits nearly 110 tribals members from 22 families.

(Reported by Veraval Regional Centre)

Progressive fishermen trained by ICAR-CMFRI initiate fish farming

With the able support of the youth from the Association of Kovalam Progressive Fishermen (AKPF) trained under the mariculture team from CMFRI, the fisher youth of Kadalur Chinnakuppam villages in Kancheepuram District of Tamil Nadu carried out cage culture of Asian sea bass fingerlings and juveniles of *Parastromateus niger*, *Lutjanus* spp. and *Rachycentron canadum* caught from marine nearshore waters. Small indigenously designed fixed cage nets were installed in the creeks and

backwaters adjoining the village. One cage harvested on November 13th 2015 yielded 54 kg of sea bass (980 g average weight) along with other fishes like Pearlsport and carangids stocked. The sea bass and the mangrove jacks were sold live to a gaming resort for ₹ 500/- per kilogram from where they were shifted to fresh water conditions in less than two hours with no mortality. A total revenue of ₹ 33,000 was realised from the operation enthusing the fisher youth.

(Reported by Madras Research Centre)



National Workshop on "Effective Management of E- Resources in Research Libraries"

Library & Documentation Centre of CMFRI organized a 6 days National workshop on "Effective Management of E- Resources in Research Libraries" from



12th - 17th October 2015. Dr. J. Letha, Vice-Chancellor, Cochin University of Science and Technology (CUSAT), Kochi inaugurated the Workshop. Dr. A. Gopalakrishnan, Director presided over the function. Mrs. P. Geetha, Officer-in-charge, Library & Documentation Centre co-ordinated the workshop. A capacity building programme for library professionals, it provided necessary training to develop Institutional Repositories and created awareness in executing modern technologies for efficient management of E-Resources. The valedictory function was held on 17th October 2015.

Dr. J. Letha, Vice-Chancellor, CUSAT
inaugurating the Workshop

IMTA benefits Fishermen self-help groups

The second demonstration of Integrated Multi Trophic Aquaculture (IMTA) under NICRA by integrating the seaweed *Kappaphycus alvarezii* with cage farming of cobia initiated at Munaikadu (Palk bay) from May 2015 has successfully

concluded. After two successive seaweed harvests on 17th September and 5th November 2015 the harvest of cage farmed cobia was carried out on 27th November and 6th December 2015. A total of 1,792 kg of cobia measuring 52

to 72 cm and each weighing 1.4 to 3.5 kg was harvested, getting a farm gate price of ₹ 270 per kg.

(Reported by Mandapam Regional Centre)

Cage culture adoption by traditional shrimp farmers in Ernakulam District

Cage culture in brackishwater bodies appears to be a rapidly expanding farming practice in Kerala, especially in Ernakulam district. The traditional shrimp farmers in the district are enthusiastic to utilize existing water resources which in most cases have only limited fish production, with the uncertainty in shrimp production due to disease outbreaks. Fish production in cages is considered as an alternative where open pond culture is not lucrative due to various reasons. Nayarambalam in Vypeen Island with agriculture and fishing as the main sources of income for the people has vast areas of traditional Pokkalipaddy fields and fish ponds especially in the eastern and western areas of the village. Pizhala an island in the Kadamakkudy Grama Panchyath, Kochi



Square GI cages being moored at Nayarambalam

also has several Pokkali farms. The 4 m x 4m GI cages at both the places were fabricated by farmers at their respective places. At Pizhala, four cages and at one at

Nayarambalam stocked with sea bass, pearl spot and Tilapia are now operational. ICAR-CMFRI is assisting with scientific inputs to the farmers.

Participatory Open sea cage culture in Kerala

A 6 m diameter GI cage has been installed in the open sea near Fort Kochi Beach road by ICAR-CMFRI for

farming of seabass and cobia, on 23.11.2015. Done in a participatory mode with the KLCA Unit of Immanuel

Church, Beach Road, the cage has been anchored two kilometers away from the shore at a depth of 6 m using two anchors of 75 kg each. About 1400 numbers of Asian seabass seeds are stocked in the cage and the group has agreed to do the daily maintenance of the cage and feeding of fishes. This is the second trial of open sea cage culture in Kochi area after an earlier demonstration in 2009 at Munambam.. Prior to cage installation, an awareness programme was organized for the fishermen in the area on 11.11.2015, with a participation of about 100 persons. Dr. Imelda Joseph, Dr. Shoji Joseph and Dr. Bobby Ignatius Principal Scientists and Mr. K. M. Venugopalan, Technical Officer of Mariculture Division took classes on cage culture to the group and screened videos of cage culture activities operated with support of ICAR-CMFRI at different locations in the country.



Open sea cage launch off Fort Kochi

Island Biodiversity Surveys

Underwater surveys were done at Devgad Island, off Karwar, during September to December 2015 and coral diversity mapped. Patch reefs were found to occur on the rocky bottom surrounding the island. Soft corals dominated near shore areas at a depth of 5-12 meters. The island has dense vegetation including an endangered species of wild banana (Cliff Banana, *Ensete superbum*). Heavy sedimentation was evident in all sites surveyed which can be attributed to the relative position of the island towards the mouth of Kali estuary. Nevertheless, hard corals are observed to be coping with this stressful environment. Whip coral or Monkey tail (*Juncella juncea*) were found to be abundant on the northern side of the island at a depth of 6-9 meters. Hard corals were represented by seven genera including *Porites*, *Favia*, *Coscinaraea*,



Soft corals and Gorgonids at Devgad Island

Turbinaria, *Paracyathus*, *Cyphastrea* and *Tubastrea*. Rock oyster *Saccostrea cucullata* and seaweeds such as *Sargassum* sp. and *Padina* sp. were found to dominate in the intertidal and shallow regions upto 3 metres deep. Evidence of bacterial disease was noticed on soft

corals and gorgonids while bioerosion was observed in hard corals especially in *Porites* colonies. However, the ecosystem appears to be generally robust.

(Reported by Dr. P. Laxmilatha, Principal Investigator, MB/NAI/33, Marine Biodiversity Division)

Installation of power block in purse seiners causing social conflicts in Maharashtra

During the last decade, purse seine fishery has gained momentum in the state along with trawling targeting Mackerel and Oil sardine. In recent years, catch of purse seine fishery has been diversified with the landing of commercially important demersal fish resources like catfish, Black pomfrets and sciaenids like *Ghol*, *Koth* etc. Increased purse seine fishery with associated issues like bulk quantity of by-catch (60 - 65%) and fishing of juveniles caused social conflicts between traditional fishermen operating *dol* net, gill net and shore seine in near-shore waters. Considering the sustainability of the natural resources and growing social tensions between purse-seiners and traditional fishers, Government of Maharashtra had constituted a Purse seine Committee in the year 2011 to look into the matter. Presently the purse-seine fleet in Maharashtra has 435 units. Traditionally, these nets were hauled onboard manually but recently a power block (or Boom) for hauling of the nets onboard have been instal. It is driven by hydraulic power generated by a separate engine (4 cylinder, 36 HP) and speed of power block and direction of pulling can be

regulated according to the requirements. About 50 numbers of purse seiners operating from Sassoon Dock have installed power block which has facilitated reduction in duration required for hauling net onboard which in turn doubles number of hauls and fish catch. It has also facilitated reduction of man power employed onboard and 20 to 25 crew members involved in a purse seine fishing

operation earlier has now reduced to about 5 to 8 crew. These developments are causing conflicts between traditional fishers and purse seine operators as well as between crew members and boat owners.

(Reported by Albert Idu, I. S. Hotagi, Veerendra Veer Singh, Vaibhav D. Mhatre, Nilesh A. Pawar and Punam A. Khandagale, Mumbai Research Centre)



Hydraulic power block fitted purse seiner at Sassoon Dock, Mumbai

Unusual floods affect fishing villages in Tamil Nadu

Chennai witnessed incessant heavy rains and floods in November-December 2015 which caused widespread loss and damage. In the seven coastal districts of Tamil Nadu 68 fishing villages were "severely affected" and 169 villages "moderately affected" by

the floods. Kanchipuram District had the highest number (23) of severely affected fishing villages followed by Cuddalore (12). The incessant heavy rains caused damages at the Kovalam Field Laboratory also. The roof of the sedimentation and reservoir tanks were

lost and salinity of the incoming seawater in the bore pipe dipped to very low levels affecting the broodstock, algal cultures and other live animals being held at the facility

(Reported by Madras Research Centre)

Heavy landings of Pink whip ray

Huge landings of pink whip ray *Himantura fai* caught in inboard hooks and line operated off Beypore was observed at Cochin Fisheries Harbour on

22nd December 2015. Around 18 tonnes of the ray landings were auctioned at ₹ 74 per kg.



Pink whip ray landings

Heavy landings of juvenile Threadfin breams

Juveniles of threadfin breams (*Nemipterus randalli*) in the length range of 50 - 100 mm were observed in landings of multiday trawlers at Munambam Fishing Harbour from November 2015 onwards. They constituted 75-80 % of the total threadfin breams landed. The estimated landing of juveniles was 113 tonnes in November, which continued in December also. The catch was auctioned at rate of ₹ 20 per kg at the landing centre and transported to Mangaluru for processing into minced fish paste known as *Surimi*, an important item for export.

(Reported by: Demersal Fisheries Division)

Unusual bumper catch of the Black spotted croaker

Heavy landings of Black spotted croaker (*Protonibea diacanthus*) locally known as 'Ghol/Koora' were landed at Pamban-Therkuvadi landing centre by fish trawl (*Meenmadi*) with an OAL of 16 m fitted with 193 HP engine on 9th December, 2015. The catch weighing around two tonnes comprised 47 females and 53 males with an average length and weight of 120 cm and 19 kg respectively. The catch was auctioned at the rate of ₹ 1460 per kg and transported

to Kerala, owing to the huge demand for its swim bladder used for making isinglass important in domestic as well as export market. The occurrence of large size croakers on the south east coast is extremely rare and has never been reported in such a huge quantity.

(Reported by Remya L., Surya S., M. Rajkumar, Dr. N. S. Jeena, Ramya Abhijith, A. Gandhi, K. Shanmuganathan, R. Selvakumar, K. Thangavel, and Dr. A. K. Abdul Nazar, Mandapam Regional Centre)



Captive hatching of spiny lobster species

In the Gulf of Mannar Marine Biosphere Reserve three major species of spiny lobsters viz., *Panulirus homarus homarus*, *P. versicolor* and *P. ornatus* occur and their live trade is an important economic activity of the region. To understand its larval dispersal and recruitment an attempt to induce captive spawning of wild berried females of *Panulirus versicolor* and *P. homarus* to assign molecular identity of the larva was made. The brooders collected from live lobster holding centres during October and November 2015 were maintained in a 2 tonne FRP tank. They spawned after 1-2 weeks of egg incubation with an estimated 1.9 lakh and 3 lakh phyllosoma hatched out from a single brooder of *P. homarus* and *P. versicolor* respectively. The species wise identification of wild caught phyllosoma is very difficult and this work will be useful in generating a reference data for comparison.

(Reported by Jeena, N. S., Tinto Thomas, Abdul Nazar A. K & Ramamoorthy, N., Mandapam Regional Centre)

Unusual presence of two operculums in *Lambis lambis*

During the regular monitoring programme for gastropod resources on 24th August 2015, a specimen of *Lambis lambis* (Linnaeus, 1758) measuring 195 mm and 325 g collected by divers from 5 m depth at a distance of 2 nautical miles off Kalavasal was found to have double operculum. Aberrations have been reported in several instances however, observation of double operculum is a unique one and first of its kind reported in gastropods.

The animal was collected and deposited in marine museum of Tuticorin Research Centre.

(Reported by M. Kavitha, Dr. I. Jagadis, J. Padmanathan & H. Sivanesh Tuticorin Research Centre)

Lambis lambis with double operculum



Indigenous technique for bivalve storage practised

Bivalves locally known as *Tisare*, *Shivale*, *Tigari* or *Shimpale* are commercially exploited from various creeks in Maharashtra. Kalbadevi creek in Ratnagiri district is a major bivalve collection centre. Clams are handpicked from the beds during low tide by local fishermen and usually the maximum collections are made on new moon and full moon days when they are fully exposed. Fishers collect about 80-100 kg per day depending upon availability. Local fishermen are of the opinion that such peak catches occurs every five to ten years and similar magnitude was last observed during 2010 - 11 season. The collected

clams are stored in live condition by the local fishermen employing a unique



Clams collected and stored by local fishers in Kalbadevi creek

practice. Meshed polythene net bags each with 50-60 kg of collected clams are completely immersed in the creek itself. These bags are mostly placed head to head in and tied with a centre rope and an indicator flag is fixed for easy location. When the demand for bivalves increases in the local market they are removed and sold. About 100-200 collectors are involved in clam collection was a source of livelihood along Kalbadevi creek. Hence, judicious exploitation and conservation of this clam resource is required to ensure sustainable fishery.

(Reported by: Mumbai RC of CMFRI)

Gonochorism confirmed for *Lutjanus argentimaculatus* along north-east coast of India

Gonochorism or the presence of separate male and female sexes in fishes, was confirmed for *Lutjanus argentimaculatus* collected from the wild, off Visakhapatnam. Specimens of

both male and female fish were found in the 55-60 cm category (just starting to mature) and in the larger sizes of 70-75 cm (ready to spawn) category as well. This was also confirmed by

examining the histological preparations of testicular and ovarian samples collected from these specimens.

(Reported by: Visakhapatnam Regional Centre)

Ingestion of plastic by marine fishes

A carangid fish *Coryphaena equiselis* landed at Tharuvaikulam by the *murrelvala* (a gill net targeting *belonids*) on 30th November 2015 was found to contain a piece of plastic having a length of 10.5 cm and breadth of 6 cm right inside the stomach. The stomach was otherwise empty. The fish is normally carnivorous in nature, with the adults feeding on smaller fishes and squid.

(Reported by M. Sivasdas, K. Suresh Kumar and K. Kannan, Tuticorin R. C.)



Part of the plastic piece seen through ruptured stomach wall

Unusual sightings of migratory seabirds

As very little information is available on seabirds of India, the institute initiated research to study seabird-fishery interactions with regular observations during cruises on-board *FRV Silver Pompano*. The migratory sea bird Pallas's Gull or Great Black headed gull *Larus ichthyaetus* is the largest sea gull species in India. It generally visits, during winter months arriving along the Kerala coast by end of November/early December and leaving by April/May. Unusually on 16th October 2015, six juvenile Pallas's gulls were sighted off Kochi (10°N 03'E ; 76° E). Masked Booby *Sula dactylatra* a sea



Masked Booby

bird rarely found in Kerala was first reported from Kannur by the world renowned ornithologist Dr. Salim Ali in 1983. Earlier reports of its occurrence were during June to August while recently it has been observed off Kochi on 9.11.14 and 8.9.15, perhaps



Pallas's gull

indicating a shift in migration periods. Atmospheric temperature during September 2015 ranged between 27-29° C while the Sea Surface Temperature (SST) was 28-29° C.

(Reported by R. Jeyabakaran, S. Lavanya, P. Vysakhan, Seban Joh, Jishnu Mohan, D. Prema and V. Kripa, FEMD)

Training/Extension

Demonstration and hands-on training in Oyster farming

The Self Help Groups of Taramumbari, Vengurla and Devbagh areas in the Sindhudurg district were trained under the UNDP/GEF funded project "Demonstration of bivalve farming at Sindhudurg District in the state of Maharashtra" as a means of popularising the oyster farming in the area. The successful farming and harvest of oysters in Wadatar, Sindhudurg District in June 2015 with the technical support of ICAR-CMFRI, has attracted many potential women Self Help Groups to this enterprise. A total of 200 members participated in the training in each area. Training was given through videos as well as hands-on training in ren making and rack construction for oyster farming involving all participants. The training was given by Dr. Vidya, Mr. P. S. Alloydious and Mr. K. M. Jestin Joy from Headquarters

(Reported by: Molluscan Fisheries Division)



Trainees making rens for oyster farming

Training on ornamental fish seed production

A training programme on 'Seed Production of Selected Marine Ornamental Fishes' was organized under Gulf of Mannar Biosphere Reserve Trust (GOMBRT) funded project at Mandapam Regional Centre during 28th to

30th October 2015. Thirty seven fishermen from Olaikuda, Vadakadu, Thangachimadam, Mandapam, Vedalai and Pillaimadam villages participated in the training. The programme was inaugurated by Dr. T. S. Dange, I.F.S.,

Director, GOMBRT. Hands on training in broodstock development, breeding, larval and juvenile rearing of clown fishes, grow-out techniques, livefeed culture, enrichment of live feeds, water quality and disease management was given.



Practical session at the hatchery



Practical session on fabrication of GI cages



Visit of trainees to freshwater ornamental fish unit at Kadasanenthal, Madurai

One day training programme for the delegates from Africa

Delegates from Kenya and Liberia under the US-INDIA-AFRICA Triangular International Training Programme conducted by National Academy for Agricultural Research Management (NAARM) visited the Institute on 10th August 2015. A one day training programme for the visitors was coordinated through by Agricultural Technology Information Centre (ATIC),



Director interacts with the visiting delegates from Africa

Project Monitoring and Evaluation (PME) Cell and Mariculture Division where they participated in interactive discussions with

Scientists, visited laboratories and brackish water cage farm activities at Panambukadu, Kochi.

Trainings on Open sea cage culture

- A training programme on Open sea cage farming was conducted 1st to 7th December 2015 by the Karwar RC for the officials of the department of Fisheries, Govt of Kerala.
- Training Programme on "Cage Culture" was conducted for the officials of State Fisheries Department, Kerala at the Mandapam Regional Centre from 5th to 11th December, 2015. Field visits to sea cage farm, seaweed processing unit, Manamadurai, and marine and freshwater ornamental fish culture units were arranged for the benefit of trainees.

Industrial Work Experience Programme in cage farming

Veraval Regional Centre is conducting the Industrial Works Experience programme for the students of Diploma in Fisheries of the Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth, Ratnagiri, Maharashtra for the third consecutive year. For 4 months (from 17th December 2015 to 30th April 2016), the students



Cage net fabrication by diploma students

will be provided with a residential mode training on sea cage farming with emphasis on to the engineering related aspects of cage designing and fabrication, mooring, cage installation, seed collection and transportation besides cage farm management.

(Reported by: Veraval Regional Centre)

Interface Meeting at Veraval Regional Centre

An interface meeting of the development agencies and the research institutes of Gujarat state was organized by VRC of CMFRI, Veraval on 30th November 2015 jointly with the Commissionerate of Fisheries, Govt., of Gujarat at the Veraval Centre of CMFRI. The meeting was chaired by Mr. M.A. Narmavala, IAS, Commissioner of Fisheries, Govt. of Gujarat and the Scientists and Developmental Officers of the institutes like the ICAR-CMFRI, ICAR-

CIFT, College of Fisheries, Veraval, Dept. of Fisheries, Marine Products Development Agency (MPEDA), MPEDA-NETFISH and Export Inspection Agency (EIA). Representatives from the various institutions presented their activities and roles they play in the development of the marine fisheries sector in Gujarat. Later, the Fisheries Commissioner also visited the laboratories and sea cage farm sites of the centre.



Dignitaries in the Wet lab at Veraval Regional Centre

Exhibitions

Tuticorin Research Centre of ICAR-CMFRI also took part in the exhibition organized by the Gulf of Mannar Biosphere Reserve Trust (GOMBRT) on 13th to 15th October 2015 on the premises of Caldwell School, Thoothukudi. The primary objective of the exhibition was to create awareness among childrens about the marine ecosystem and fishery resources of Gulf of Mannar. The message of how to



preserve the marine ecosystem in a healthy and sustainable manner received good response from school children who visited the exhibition on all the days.



Ernakulam District collector Mr. M. G. Rajamanickam visiting ICAR-CMFRI stall during the Friends Fest-2015 exhibition held on 1st and 2nd December, 2015 at Kochi

- Tuticorin Research Centre of Central Marine Fisheries Research Institute participated in the district level exhibition conducted by the **Tamil Development and Information Department** for the 4th time in Thoothukudi during 26th - 27th September, 2015

- The Kerala Fish Farmer's Capacity Building Meet - 2015 jointly organized by CMFRI, Kochi, Alumni association, College of Fisheries, Panagad and Kerala Aqua Farmers federation was held at ICAR-CMFRI on 17th and 18th of October 2015, coordinated by Dr. Shyam S. Salim, Dr. Vipinkumar V. P. and Dr. Grinson George.

Karwar Research Centre initiates brackishwater cage farming of Asian seabass

Under the All India Network Project on Mariculture, cage farming of Asian seabass in identified brackishwater sites was initiated at Halga near Karwar. Each of the 6 GI cages with a dimension of 6 m x 4 m x 4 m. were stocked with 1500 juveniles of seabass and are being managed by fishermen SHG under the supervision of Karwar Research Centre.

Delegates/Visitors

World Bank Team at Mandapam Regional Centre

The World Bank Team held discussions with various Government organizations in Ramanathapuram at District Collectorate on 4th November 2015 in connection with the Tamil Nadu Pudhu Vaazhu Project being implemented at Ramanathapuram district since 2006. The project will be renamed as Tamil Nadu Rural Transformation Project (TNRTP) from September 2016. The meeting was chaired by the District Collector. Dr. R. Jayakumar, Senior Scientist, Mandapam Regional Centre participated in the meeting and based on

the discussions, it was decided to select Ramanathapuram district to promote cage farming activities as an alternate livelihood option and an entrepreneurial development programme. Later, along with officers from the district administration, the World Bank Team visited Mandapam Regional Centre where various activities of the centre were explained. The team also visited the sea cage farms at Marakayarpattinam.

(Reported by Mandapam Regional Centre)



World Bank Team along with officers from the district administration at the cage farming site.

- As part of an Indian delegation visiting Norway, Dr. A. Gopalakrishnan, Director, ICAR - CMFRI participated in the meeting with Ms. Elisabeth Aspaker, Fisheries Minister, Trondheim, Norway on 19th August, 2015.



- Dr. T. Prabhu Sankar, IAS, Asst. Secretary, DARE-ICAR visited ICAR-CMFRI, Kochi on 17th October, 2015.

Awards

IISF Science Film Award

The film on Oyster farming received IISF Science Film Award in the India International Science Film Festival 2015 held during 4-7 December, 2015 at Indian Institute of Technology, Delhi. The film was produced by CMFRI using NAIP funds and can be viewed on Youtube. (https://www.youtube.com/watch?v=amUE_R2kFx8)



- Dr. Sandhya Sukumaran received the Taylor and Francis Commonwealth Best Journal Article Prize from Dr. Richard Middleton, Chief of Commonwealth Scholarship Commission and T&F representative in a function held at New Delhi on 19th December, 2015.
- Mr. Suresh Kumar Mojjada, Senior Technical Officer, Veraval Regional Centre of CMFRI, was awarded Ph.D by the Mangalore University for his thesis entitled "Technological and Biological Innovations in Open Sea cage farming" under the research guidance of Dr. (Mrs.) Imelda Joseph, Principal Scientist ICAR-CMFRI, Kochi.



The ICAR-CMFRI Journal Club, Kochi conducted a lecture on the subject "The Invisible, Illusive, Amazing, Mysterious and Incredible Nematodes". The lecture was given by the eminent Professor Mohamad Shamim Jairajpuri, former Director, Zoological Survey of India & Founding Director, Institute of Agriculture. More than 100 staff members participated in the program

Vigilance Awareness week was observed at Madras Research Centre, Chennai from 26th - 31st October, 2015.

World Food Day Celebrated

On the occasion of World Food Day on 16th October, 2015, Tuticorin Research Centre of Central Marine Fisheries Research Institute launched the sea cage farming unit for Cobia at Sippikulam Village, Thoothukudi. This is the first fisher group to start open sea-net cage grow-out culture of cobia in Thoothukudi district. Dr. A. Gopalakrishnan, Director, presided over the function. A team of scientists from Tuticorin RC comprising Mr. C. Kalidas Mr. L. Ranjith, Ms. M. Kavitha, Dr. I. Jagadis and Dr. P. P. Manojkumar had surveyed various sites from Manapad to Vembar in Thoothukudi Districts for cage culture and identified Sippikulam village. The success of cage farming of marine fishes at

Mandapam and Rameshwaram had also motivated, fisher groups from Sippikulam village to approach Tuticorin Research Centre for technical guidance and support in sea cage farming.

Two specially fabricated GI net-cages were deployed in the selected sites at Sippikulam with 1500 numbers of cobia fingerlings having an average weight of 15 g. Dr. A. Gopalakrishnan, Director promised necessary technical support to all interested fisher groups in the region and mentioned that about 342 cages have been already installed by ICAR-CMFRI against a target of about 1000 cages by 2017. Shri. Isaac Jayakumar, Assistant Director, Fisheries (Marine), Govt. of Tamil

Nadu also spoke about the various financial aid schemes available for the sea cage farming of fin fishes and shellfishes. On the occasion, hatchery reared juveniles of *Sepioteuthis lessoniana* and *Sepia pharaonis* packed in polythene bags containing aerated seawater were also handed over to fisher group of Sippikulam and Threspuram for sea ranching. The program was felicitated by Assistant Directors of Fisheries, Thoothukudi District, Tamil Nadu. The print media gave wide coverage for the programme. A booklet (English and Tamil) on Tuticorin Research Centre of ICAR-CMFRI detailing research facilities available, technologies developed and future thrust areas of research was also released on the occasion.



Formal launch by of the sea cage farming program at Thoothukudi by Dr. A. Gopalakrishnan, Director



Release of booklet on Tuticorin RC

Mumbai RC staff participated in National cleanliness campaign in office building and office premises at Versova on 4th October 2016, and at the Visakhapatnam Regional centre from 25th September to 11th October 2015. All the staff participated in cleaning activities as part of implementation of *Swachh Bharat Abhiyan*. Cleanliness Drive was implemented during 25th September to 11th October 2015 at Mangalore Research Centre Campus and nearby places were cleaned including the Mangalore Fisheries Harbour. During 16th October to 1st December, 2015 special cleanliness drive activities were also undertaken by Madras Research Centre and the Kovalam Field Centre, Chennai on the campus and nearby places.



Swachh Bharat implementation at Mumbai RC



Cleaning of Mangalore Fisheries Harbour



Weekly Campus Cleaning drive on Tuesdays at Mangalore RC

Official Language Implementation

Hindi Workshop

- A One day Hindi workshop on 'Spoken Hindi' was conducted for the Officers and staff members at Headquarters on 11th December, 2015. Shri. Ramesh Prabhu, Chief Official Language Translator, Hindustan Petroleum Corporation Ltd., Kochi conducted class.
- Hindi workshop on "Use of Administrative and Scientific words in Hindi" was held in 21st December, 2015 at Chennai Research Centre and attended by 30 staff members.

Hindi Stenography Training

Mrs. Dhanya M. B., and Mrs. Zulekha M., (Stenographers Gr. III) attended 5 days Hindi Stenography training programme conducted by Hindi Teaching Scheme, Department of Official Language, Ministry Home Affairs, Govt. of India, at Kochi during 05th-09th October, 2015.

Participation in All India Hindi Seminars

Mrs. E.K. Uma, Assistant Chief Technical Officer (Hindi Translator) attended All India Hindi Seminar on the Subject 'Rajbhasha ke prayog evam protsahan' conducted by Indian Council of Agricultural Research and Directorate

of Knowledge Management in Agriculture on 07th November, 2015 at NASC complex, New Delhi.

Mrs. Vandana V., Technical Assistant (Hindi Translator) attended All India Hindi Seminar at Naval Physical and Oceanographic Laboratory (NPOL), Kochi.

Official Language awareness for College students:

A group of students and teachers from St. Pauls College, Kalamassery were given a brief on the importance of Official Language in Central Government Offices, use of UNICODE, Hindi in research activities etc. on 19th December, 2015.

World Soil Day celebrated

World Soil Day was celebrated by KVK on 5th December, 2015 in a function held at Pallipuram Service Cooperative bank. Hon. MP Prof. K. V. Thomas distributed Soil Health Cards to farmers. Nutrslurry was launched by MLA Mr. S. Sharma who also inaugurated the Mobile Sales Counter. Folder on soil collection technique was released by Director of CMFRI Dr. A. Gopalakrishnan, Director, ICAR-CMFRI. Vice President Pallipuram Grama Panchayat, President Pallipuram Service Cooperative Bank, Assistant Director (Agriculture) Narakkal, Agriculture Officer, Pallipuram also attended the function. 250 farmers participated in the function.



Distribution of Soil Health Cards



Inauguration of Mobile Sales Counter

Technical Backstopping for Fish Farmers Development Agency (FFDA) Cage Aquaculture Programme

KVK provided technical backstopping for Cage Aquaculture Self Help Group partners of Ernakulam District. Dr. P.A Vikas provided hands on training programme on 19th December 2015 at FFDA Ernakulam.

ATMA Technology Meet

KVK participated in the ATMA technology meet held at Muvattupuzha on 10th and 11th December, 2015. Organic agriculture products of KVK were displayed and sold to public.



Training programme on cage aquaculture



Organic agriculture product on display

- **Dr. A. Gopalakrishnan**, Director attended the AINP Mariculture Review meeting at Vizhinjam RC of CMFRI on 14th October 2015.

Attended the World Food Day celebrations organized by Tuticorin Research Centre of ICAR-CMFRI on 16th October 2015.

Participated in the meeting with Dr. Sanjeev Kumar Balyan, Minister of State for Agriculture and Dr. S. Ayyappan, DG, ICAR on 21st October 2015 regarding developing fish culture activities in Muzaffarnagar.

Participated as Chief Guest in the AWF/OL Training programme on ornamental fish culture Kaloor, Ernakulam on 3rd December 2015.

Participated in the World Soil Health Day celebrations conducted by KVK - CMFRI in collaboration with the Pallippuram Krishi Bhavan on 5th December 2015.

Participated in the Symposium on "Marine & Freshwater Ecosystems: Role in National Development" organized during the 85th Annual Session of NASI at KIIT University, Bhubaneswar on 7th December 2015.

Attended the 29th Scientific Advisory Committee meeting of Rajeev Gandhi Centre for Aquaculture (RGCA) at MPEDA, Kochi on 11th December 2015.

Participated in the MSSRF - Fisher Friend Mobile Application High Level Stakeholders meeting in Kochi on 16th December 2015.

Attended Meeting with Chief Minister of Kerala Shri. Oommen Chandy at Thiruvananthapuram and explained about the steps involved in formulating National Marine Fisheries Policy on 18th December 2015.

Attended the meeting with Dr. S. Ayyappan, Director General, ICAR and Secretary (DARE), Joint Secretary (Fisheries) & Assistant Director General (M.Fy) to discuss the National Marine Fisheries Policy on 24th December, 2015.
- **Dr. P. U. Zacharia**, Head, DFD attended workshop of Vigilance Officers of ICAR Institutes on the theme 'Preventive Vigilance as a tool of Good Governance' at NASC, Delhi on 28th October 2015.

Attended the Mixed Species Fisheries Workshop organized by the Marine Stewardship Council on 8th December, 2015 at Taj Gateway Hotel, Kochi and made a presentation on Trawl fisheries of India.

Attended Review Meeting of Vigilance Officers of southern states on 16th November 2015 at Sugar Cane Breeding Institute, Coimbatore.

Attended meeting of European Mission on EC regulation on IUU fishing held on 20th November 2015 at Hotel Crowne Plaza, Kochi and made a presentation on ICAR-CMFRI's initiatives to curb IUU fishing.

Attended the follow-up meeting of the European Mission on IUU fishing held on 23rd November 2015 at Udyog Bhavan, New Delhi.

Delivered an invited talk in the UGC sponsored two day National Seminar on "Sustainable Fisheries In an Ecosystem Perspective" held on 10th December 2015 at St. Michaels College, Cherthala, Kerala.

Attended a meeting with Chief Minister of Kerala on 18th December 2015 at Trivandrum to appraise regarding Marine Fisheries Policy preparation on the direction of DG, ICAR.
- **Dr. K. S. Mohamed**, Head, MFD participated in the 25th Technical Advisory Board (TAB) meeting of the Marine Stewardship Council (MSC, London) at Kochi on 8th-10th October, 2015.

Participated as an invited expert in the workshop on "Indian Ocean Tuna Issues - The Indian Perspective" organized by WWF Global Fisheries Programme, Hamburg, Germany on 18th November 2015.

Participated in 'World Fisheries Day Celebration' held on 20th November, 2015 at Kerala University of Fisheries & Ocean Studies (KUFOS), Panangad, Kochi.

Participated in the workshop on "To create awareness for fishermen in the fisheries sector" organized by Kerala Fishermen Welfare Board on 21st November, 2015 at Kochi.

Attended the Clam Council Meeting at District Collectorate Office, Kollam on 30th December 2015.
- **Dr. Veerendra Veer Singh**, SIC, Mumbai Research Centre attended 29th meeting of the National Coastal Zone Management Authority (NCZMA) on 15th October, 2015 at New Delhi.

Meeting with Central Public Department Officials (CPWD) at Central Govt. Staff Quarters, Malvani on 17th October, 2015.

Attended "Long term integration and collaboration dialogue: the preliminary meeting to finalize modalities" with Dr. Gopalakrishnan, Director i/c, ICAR-CIFE, Mumbai and Dr. Anil Choubey, In-charge CSIR-NIO, Mumbai held at ICAR- CIFE, Mumbai on 15th November, 2015.

Attended meeting of Board of Studies "Fisheries Economics, Extension and Statistics Division of Central Institute of Fisheries Education, Versova, Mumbai on 15th December, 2015.
- **Dr. P. Laxmilatha**, SIC, Madras Research Centre attended the stakeholders meeting held at the Office of the Director, Dept. of Environment, Anna University, Chennai on 23rd November 2015 for the preparation of DPR on implementation of ICZMP by National Centre for Sustainable Coastal Management (NCSCM).
- **Dr. V. Kripa**, Head, FEMD attended the Fishery Hydrography Board of Studies meeting at KUFOS on 31st December, 2015.

Attended the Clam Council Meeting at District Collectorate Office, Kollam on 30th December 2015.
- **Dr. V. Kripa, Dr. D. Prema and Dr. R. Jeyabaskaran** attended the Mud Bank Group Meeting held at ICAR-CMFRI on 22nd October, 2015.
- **Dr. R. Narayankumar**, Head, SEETTD attended the Kerala Fish Farmers Capacity Building Meet 2015 held on 17th - 18th October 2015, at Kochi.
- **Dr. R. Jeyabaskaran**, Senior Scientist attended International Symposium on "Dynamics of the Indian Ocean : Perspective and Reproductive" organised by INCOIS, Ministry of Earth Sciences on 30th November - 4th December 2015 at NIO, Goa.
- **Dr. K. Vijayakumaran**, Principal Scientist attended stakeholders meeting conducted by NCSCM at Chennai on 15th October 2015.

Attended meeting to discuss BOBLME-Phase-II and SAP document convened by Joint Secretary (Fisheries), ICAR at Krishi Bhavan, New Delhi on 29th October 2015.
- **Dr. Shoba Joe Kizhakudan**, Senior Scientist, attended Agro Ecosystem Workshop on east-west plains and hilly regions convened by Dr A.K.

Singh (DDG, ICAR) at CIBA, Chennai on 29th October 2015.

- **Dr. A. K. Abdul Nazar**, SIC, Mandapam Regional Centre participated the meeting on 'Mariculture Estate Policy' organized by Ministry of Earth Sciences at New Delhi on 17th November 2015.
- **Dr. P. Kaladharan**, Principal Scientist and **Dr. T. M. Najmudeen**, Senior Scientist attended the Seminar on "Ecosystem and Water Column Analysis Using Acoustics" organised by CMLRE and NORINCO on 10th December, 2015 at Kochi.
- **Dr. R. Jayakumar**, Senior Scientist participated the pre-bid conference for establishing the Chennai Oceanarium at The Commissioner of Fisheries Office, Chennai on 16th November 2015.
- **Dr. P. Rameshkumar, Dr. B. Johnson, Dr. R. Saravanan and Dr. K. K. Anikuttan**, (Scientists) participated the Pre-Census Workshop during 18th to 19th November 2015 at Chennai Research Centre of CMFRI.
- **Dr. R. Saravanan**, Scientist participated the district level FFMA

Stakeholders Meeting conducted by MSSRF at Thangatchimadam on 22nd December 2015.

- **Dr. Jeena, N. S.**, Scientist participated in the Genetic Solutions Tour, India Symposium conducted by Thermo Fisher Scientific at Bangalore on 15th October 2015.
- **Mr. K. Mohammed Koya**, SIC, Veraval Regional Centre attended the one day Workshop on "Strategies for development of Agriculture and its allied sectors of Island region" at Port Blair on 18th November, 2015, jointly organized by ICAR- Central Island Agricultural Research Institute Port Blair, A&N Islands and ICAR-Agricultural Technology Application Research Institute, Bengaluru, Karnataka.
- **Mr. Vinay Kumar Vase**, Scientist attended 'World Whale Shark Day - 2015' celebrations conducted by Wildlife Trust India (WTI), Tata Chemicals and Department of Forest, Govt. of Gujarat at Mangrol, Junagadh, Gujarat on 11th December, 2015.
- **Dr. Vipinkumar V. P.**, Principal Scientist participated in the District level

meeting of Kudumbasree CDS chairpersons of Ernakulam District held at the District Collectorate, Kakkannadu, Kochi on 09th December, 2015.

- **Dr. Shyam S. Salim**, Senior Scientist attended the first meeting of the Central Committee on Fisheries Scheme (CCFS) held on 15th December, 2015 in the office of National Fisheries Development Boards (NFDB) Hyderabad under the chairmanship of Joint Secretary (Fisheries).
- **Dr. P. Shinoj**, Scientist participated in the AERA Annual Conference 2015 held at ICAR - Central Institute of Fisheries Education, Mumbai during 02nd to 04th December, 2015.
- **Dr. Grinson George**, Senior Scientist participated in the meeting "Stakeholder Consultation: Scaling up of Fisher Friend Mobile Application "(FFMA)" held on 16th December 2015 at Kochi,
- **Mr. Loveson Edward**, Scientist attended National Research Meet on "Developing knowledge management system through cross sectoral approach" organized by the EGREE Foundation at Visakhapatnam on 5th November, 2015.

Human Resources Development

Workshop/Training/Conference etc.	Date and Venue	Participants
GULLS (Global learning for local solutions: Reducing vulnerability of marine-dependent coastal communities) System Models Working Group Meeting	3 rd - 9 th October 2015 Queensland Biosciences Precinct (QBP), Brisbane, Australia;	Dr. T. V. Sathianadan; Dr. Pratibha Rohit, Dr. P. U. Zachariah (Principal scientists); Dr. Shyam Salim (Senior scientist)
International Short course on "Fisheries Governance"	30 th November - 18 th December, 2015 Centre of Development Innovation, Wageningen UR, The Netherlands	Dr. Shubhadeep Ghosh (Senior Scientist)
CITES Capacity Building Workshop Appendix II listing of Sharks and Manta rays	15 th -16 th December 2015, Kochi	Dr. P. U. Zacharia (Principal scientist), Dr. T. M. Najmudeen, Dr. Rekha J. Nair (Senior scientists)
International Training Course on "Fishery Stock Assessment and Ecosystem Modeling"	6 th - 22 nd September, 2015 International Training Centre for Operational Oceanography, ESSO-INCOIS, Hyderabad	Dr. G. B. Purushottama (Scientist)
Workshop on "Towards Sustainable Fishing",	05 th October, 2015 organized by ICAR-CMFRI, CIFT and NETFISH, MPEDA at Arnala Fishermen Society, Arnala	Dr. G. B. Purushottama, Mr. R. Ratheeshkumar (Scientists)
All India Network Project on Mariculture Workshop on "Review of progress and cage culture site selection using GIS"	13 th -14 th October, 2015, Vizhinjam RC of ICAR-CMFRI	Dr. A. K. Abdul Nazar, Dr. R. Jayakumar, (Senior Scientists), Dr. Amir Kumar Samal, Dr. K. K. Anikuttan, Dr. Ritesh Ranjan, Dr. Biji Xavier and Dr. Sekar Mekarajan (Scientists)
Short course on "Metagenomics : Role of next generation sequencing and bioinformatics"	26 th October - 4 th November 2015, Anand Agricultural University, Gujarat	Dr. Pradeep, M. A. (Scientist) Dr. S. R. Krupesha Sharma (Principal Scientist)

Public procurement	26 th - 31 st October, 2015, NIFM, Faridabad	Mr. N. Viswanathan, (Assistant Chief Technical Officer)
The Science of Living for Women Scientists	26 th -30 th October 2015, Vadodara, Gujarat	Dr. S. Lakshmi Pillai (Principal Scientist)
Mussel seed production and spat grow out	27 th - 28 th October 2015 ICAR-CMFRI, Kochi	Dr. K.S. Mohammed, Dr. I. Jagadis (Principal Scientists) Dr. V. Venkatesan (Senior Scientist) Dr. R. Vidya, Ms. M. Kavitha (Scientists)
Interactive Co-Learning Workshop on "Philosophy, Methods and Ethics in Science"	03 rd -05 th , November, 2015 Veraval Regional Centre of CMFRI 16 th -18 th , November, 2015 Chennai Reserch Centre of CMFRI	Mr. R. Ratheeshkumar, Dr. K. V. Akhilesh and Mr. Ajay D. Nakhawa (Scientists) Mrs. Hema Sankari, Dr. Srinivasa Raghavan Dr. R. Geetha, Ms. Indira Divipala and Ms. E. M. Chhandaprajnadarsini (Scientists)
Planning for sustainable coastal livelihoods	16 th - 20 th November 2015, ANSSIRD, Mysuru	Dr. P. S. SwathiLekshmi, (Principal Scientist); Dr. K. M. Rajesh (Senior Scientist)
National seminar on contextual relevance of ITKs in plant protection	28 th - 29 th November 2015, ICAR-IARI, Pusa, New Delhi	Dr. Shinoj Subramannian (Senior Scientist)
Marine Stewardship Council (MSC) Fisheries Training Workshop	7 th December, Gateway Hotel Kochi	Dr. Josileen Jose (Principal Scientist); Mrs. M. Muktha, K. Mohammed Koya (Scientists)
Marine Stewardship Council (MSC) Mixed Fisheries Workshop	8 th December, Gateway Hotel Kochi	Dr. G. Maheshwarudu, Dr. K. K. Joshi; Dr. S. Lakshmi Pillai, Dr. E. M. Abdussamad; Dr. Somy Kuriakose (Principal Scientists); Dr. U.Ganga (Senior scientist)
Nutrigenomics approaches in fish nutritional research	8 th - 18 th December 2015, ICAR-CIFE, Mumbai	Mr. S. Chandrasekar, Mr. D. Linga Prabu (Scientists)
In house trainings/workshops	Date and Venue	Participants
NICRA workshop on "Assessing the Vulnerability of Marine Fish Stocks to Climate Change"	16 th - 17 th November 2015, Chennai Research Centre	Dr. P. U. Zachariah, Dr. A. P. Dinesh Babu, Dr. Sujitha Thomas, Dr. M. Sivadas (Principal Scientists); Dr. Shubhadeep Ghosh, Dr. Shoba J. Kizhakoodan, (Senior Scientists) Mr. K. Mohamed Koya (Scientist)
Tuna Tagging Workshop	28 th - 29 th November 2015,	Dr. Pratibha Rohit, Dr. K. M. Rajesh, Dr. Shubhadeep Ghosh
Trainings / Seminars organised	Date and Venue	Organised by
Training programme on Advances in Fisheries and Aquaculture	12 th - 27 th October 2015 ICAR-CMFRI, Kochi	Dr. N. Aswathy Senior Scientist (ATIC), Dr. Vipin Kumar, Principal Scientist Mr. K. M. David, Technical Assistant
Seminar on Responsible Fisheries Management, Climate Change and Coastal Livelihoods	4 th October 2015 ICAR-CMFRI, Kochi	
Marine ornamental fish breeding and hatchery seed production	27 th - 31 st October 2015 ICAR-CMFRI, Kochi	Dr. K. Madhu, Principal Scientist
Mussel seed production and spat grow out	27 th - 28 th October 2015 ICAR-CMFRI, Vizhinjam Research Centre	Dr. M. K. Anil, Principal Scientist
Capacity building on seed production of selected marine ornamental fisher women in Gulf of Mannar region	28 th - 30 th October 2015 Mandapam Regional Centre	Dr. Johnson. B., Scientist
Conservation and management of fisheries resources and statistical survey	30 th November - 5 th December 2015 ICAR-CMFRI, Kochi	Dr. E. M. Abdussamad, Principal Scientist
Interactive Co-Learning Workshop on "Philosophy, Methods and Ethics in Science"	03 rd - 05 th , November, 2015 Veraval Regional Centre of CMFRI 16 th - 18 th , November, 2015 Chennai Research Centre of CMFRI	Dr. K. Vijayakumaran, Principal Scientist

APPOINTMENTS			
Name	Designation	Centre	w.e.f
Mr. Sankar M.	Scientist	ICAR-CMFRI, Kochi	07.10.2015
Ms. P. Gomathy	Scientist	ICAR-CMFRI, Kochi	12.10.2015
Ms. Arathy R Pillai	Skilled Support Staff	ICAR-CMFRI, Kochi	01.10.2015
Mr. Jijil K. M.	Skilled Support Staff	ICAR-CMFRI, Kochi	30.10.2015
Mr. Gadhiya Noormamad Alibhai	Skilled Support Staff	Veraval Regional Centre	07.10.2015
Shri. R. Yuvaraj	Skilled Support Staff	Madras Research Centre	16.10.2015
Ms. Niranjana A.	Skilled Support Staff	Madras Research Centre	23.12.2015
Mr. Yenni Prasad Babu	Skilled Support Staff	Visakhapatnam Regional Centre	16.12.2015
Ms. Nandana P. R.	Skilled Support Staff	ICAR-CMFRI, Kochi	18.12.2015
Mr. Santhakumar A.	Skilled Support Staff	ICAR-CMFRI, Kochi	23.12.2015
PROMOTION			
Name & Designation	Promoted as	Centre	w.e.f
Mr. K. Ramadasan, Assistant	Assistant Administrative Officer	ICAR-CMFRI, Kochi	09.10.2015
Mr. R. Sreenivasan, Assistant	Assistant Administrative Officer	Mandapam Regional Centre	15.10.2015 (F.N)
Mr. Vinod P. Bagayatkar, Upper Division Clerk	Assistant	Mumbai Research Centre	06.10.2015
Mr. J. Vinoth Prabhu Vaz, Upper Division Clerk	Assistant	Tuticorin Research Centre	09.10.2015 (A.N)
Ms. C. Pushpa Rani, Upper Division Clerk	Assistant	Tuticorin Research Centre	13.10.2015 (A.N)
TRANSFERS			
Name & Designation	From	To	w.e.f
Mr. Paulose Jacob Peter, Technician	ICAR-CMFRI, Kochi	Quilon Field Centre	05.10.2015
Mr. Shiju P., Technician	Calicut Research Centre	Data collection Point, Kannur	30.10.2015
Mr. Shrikrishna Pandurang Hotekar, Technician	Ratnagiri Field Centre	Alibaug Field Centre	12.10.2015
Mr. M. P. Jadhav, Technician	Mumbai Research Centre	Ratnagiri Field Centre	08.10.2015
Mr. M. Kala Mallik, Technician	Visakhapatnam Regional Centre	Puri Field Centre	12.10.2015
Mr. Indranil Mukharjee, Technician	Visakhapatnam Regional Centre	Contai Field Centre	13.10.2015
Mr. U. Jeyaram, Senior Technical Assistant	Kanyakumari Field Centre	Mangalore Field Centre	06.11.2015
Mr. Santhosi, Senior Technician	Madras Research Centre	Kovalam Field Lab	28.10.2015
Mr. P. Rajendran, Technician	Mandapam Regional Centre	Kanyakumari Field Centre	03.11.2015
Mr. M. Saravanakumar, Skilled Support Staff	ICAR-CMFRI, Kochi	Mumbai Regional Centre	26.12.2015
INTER-INSTITUTIONAL TRANSFERS			
Name & Designation	From	To	w.e.f
Dr. S. S. Raju, Principal Scientist	National Institute of Agriculture Economics and Policy Research, New Delhi	Visakhapatnam Rgional Centre ICAR-CMFRI	21.12.2015
Ms. Christina Joseph, Assistant Administrative Officer	ICAR-CMFRI, Kochi	Administrative Officer ICAR-CIFT, Kochi	08.10.2015 (AN)
Mr. K. S. Sreekumaran, Assistant Finance & Accounts Officer	ICAR-CMFRI, Kochi	Finance & Accounts Officer ICAR-CIFT, Kochi	31.12.2015 (FN)
MEETINGS			
1. The 78 th meeting of the Institute Management Committee of ICAR-CMFRI held on 28 th December 2015 at Kochi.			

RETIREMENTS ON SUPERANNUATION



Mr. K. C. Pradeep Kumar
Senior Technical Assistant
31.10.2015
Calicut Research Centre



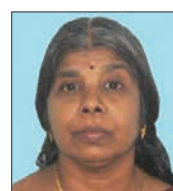
Mr. U. B. Sadasiva
Skilled Support Staff
31.10.2015
Mangalore Research Centre



Mrs. K. V. Rema
Technical Officer
30.11.2015
ICAR-CMFRI, Kochi



Mr. V. J. Thomas
Technical Officer
30.11.2015
ICAR-CMFRI, Kochi



Mrs. K. Parukutty
Skilled Support Staff
30.11.2015
ICAR-CMFRI, Kochi



Mr. N. P. Mohanan
Skilled Support Staff
30.11.2015
ICAR-CMFRI, Kochi



Mr. K. T. Mohanan
Skilled Support Staff
30.11.2015
Calicut Research Centre



Mr. V. Narasimha Bharathi
Skilled Support Staff
30.11.2015
Mandapam Regional Centre



Mr. K. P. John
Upper Division Clerk
31.12.2015
ICAR-CMFRI, Kochi



Mr. M. Samuel Sumithrudu
Technical Officer
31.12.2015
Visakhapatnam Regional Centre

New Year Celebrations



New Year celebration at HQ



Release of calendar for Year 2016 at HQ



New Year celebration at Madras Research Centre



New Year celebration at Mandapam Regional Centre

*ICAR-CMFRI Family wishes all readers a
Happy & Prosperous New Year 2016*



Dr. A. Gopalakrishnan, CAA5 Convener & the Organizing Team from ICAR-CMFRI
with Dr. J. K. Jena, Chairman, AFSIB and Prof. (Dr.) Mohan Joseph Modayil
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cadalmin

CMFRI Newsletter

Cadalmin, the CMFRI Newsletter is a quarterly publication of the Central Marine Fisheries Research Institute, Kochi. The publication gives an insight into the major events of the quarter, besides highlighting the salient findings in the research front and dissemination of technological know-how to the farming community.