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Dr. T.K. Srinivasagopal inaugurating the ShellCon-2014

see page 4

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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
P.B. No. 1603, Ernakulam North P.O., Cochin - 682 018

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Contents

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Director Speaks

Dear Colleagues,

Warm greetings to all of you.

This issue of Cadalmin highlights the major research output during the final quarter of the last financial year. Even during a global financial crunch for research funding, our efforts and campaign in streamlining marine fisheries research helped us to earn more grants. CMFRI coordinated, organized and implemented several research events during the last three months.The provisional estimate of marine fish landings during 2013 is 3.81 million metric tonnes. The trend is slightly lower than our estimates during the last two years. Our capture research team is addressing various issues on newly reported species/ records, extended fishing areas, change in fishing pattern and effect of climate change on marine fisheries. Low valued, under-utilized resources with high nutritional quality are being promoted. The Molluscan Fisheries Division organized 'ShellCon 2014' in February, which attracted enthusiastic participation from public and scientific fraternity. As part of capacity building, the 'ChloRIFFS' team met for the second round of workshops at Mangalore to discuss the strategies for *in situ* sampling, with a day at sea.

At Visakhapatnam Regional Centre of CMFRI, successful broodstock development, and induced spawning of Indian pompano (*Trachinotus mookalee*) was achieved for the first time in March 2014. The larval rearing was successfully completed and seed production was achieved. High growth rate coupled with versatile feeding behaviour enhances the culture potential of this species. The Indian Ocean Tuna Commission, Institute Management Committee, Research Advisory Committee, Review Committee on fisheries for the National Initiative on Climate Resilient project of ICAR and various other national delegations also participated actively during the last quarter in guiding the research governance at the Institute.

I wish that our staff will consider the financial year ending period as an opportunity to rethink and evaluate their performance and plan for achieving even better results in coming days.

Wishing all of you a prosperous time ahead.

Dr. A. Gopalakrishnan
Director

About CMFRI

The Central Marine Fisheries Research Institute, Cochin, 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.

Successful broodstock development, induced breeding and seed production of Indian pompano *Trachinotus mookalee*

T. mookalee Brooder

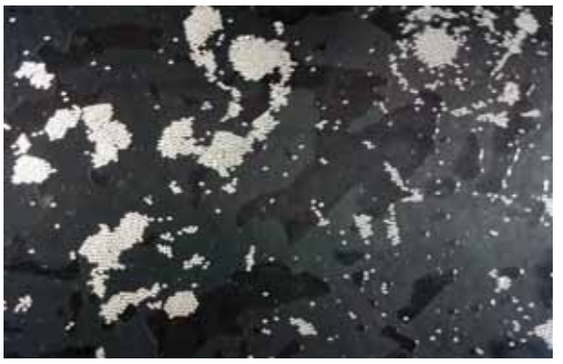
Achieved for the first time at Visakhapatnam RC

Among the many high value marine tropical finfish that could be farmed in India, the Indian pompano *Trachinotus mookalee* is one of the ideal candidate species, mainly due to its good meat quality and high market demand. It is one of the fast growing carangid and is encountered rarely in the capture fisheries. The species is able to acclimatize and grow well even at a lower salinity of about 15 ppt and hence it is suitable for farming in the vast low saline pond waters of our country besides its huge potential for sea cage farming.

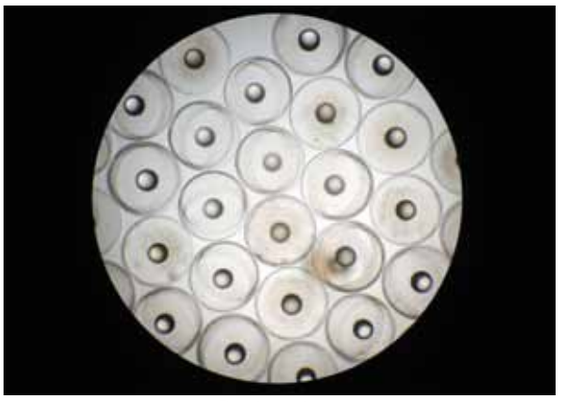
At Visakhapatnam Regional Centre of CMFRI, successful broodstock development, induced spawning and larval rearing of Indian pompano was achieved for the first time in the world. Wild collected pompano of size ranging from 2 to 4 kg were stocked in sea cages. The fishes were fed twice a day with squids and sardines @ 5% of body weight supplemented with vitamin and mineral mixture. After one year of rearing in sea cages, the brooders attained a size range of 4 to 5.5 kg. The sexes were determined by intra-ovarian biopsy and males and females were segregated and stocked in separate cages. Intra-ovarian biopsy of females was done at regular interval to assess the size of the intra ovarian ova. On 26.02.2014, two females with mature ova and two oozing males were selected for induced breeding. The females weighed 4.5 kg and 4.0 kg where as males were 5.0 kg and 4.5 kg in weight. Selected males and females were stocked in hapa of 3 m depth and 2 m dia, which was fixed inside a 6 m dia sea cage and induced for spawning with a single dose of hCG in the early morning of 26th February 2014.

Spawning was observed after 36 hrs after injection. The floating eggs were collected with a scoop net of 500 µ mesh and finally the hapa was lifted for collecting the remaining eggs. The total eggs spawned were estimated to be around 80,000. The fertilized eggs were treated with 15 ppm iodophore solution for 10 min. to avoid contamination. The treated eggs were washed and stocked in glass aquarium for incubation. The size of the fertilized eggs was 950-1000µ. The eggs hatched out after 22-24 hrs of incubation at a temperature range of 28-30° C. The hatching rate was estimated to be 80%. The newly hatched larvae measured from 2.1-2.2 mm in total length. The mouth opening was formed after 42-46 hrs post hatch. Green water was used for larval rearing. Artemia nauplii were also used in larval rearing tank from 9th day onwards. Weaning of larvae with inert diet was started from 15th day onwards. Metamorphosis of the larvae started from 17th day onwards and was completed by 22nd day. The size of the metamorphosed fry ranged from 16 to 17 mm. This is the first successful larval rearing of Indian pompano in the world. This success will go a long way in promoting mariculture in cages as well as in grow-out ponds in the country.

(Reported by Ritesh Ranjan, Sekar Megarajan, Biswajit Dash, Loveson L. Edward, Pralaya Ranjan Behera, Muktha Menon, S. Padmaja Rani, R. D. Suresh and Shubhadeep Ghosh, Visakhapatnam RC)



Collected eggs



Blastula stage

Hatching in progress

Newly hatched larvae

DPH 6 larvae

Metamorphosed larvae of *mookalee*

ShellCon 2014

March 22 & 23, 2014 CMFRI Campus
Kochi | Kerala | India

CMFRI conducts country's first shellfish food festival at Kochi

Participants keeping dishes for evaluation

A view of a stall

Dr. K.S. Mohamed, Head, MFD presenting the progress of bivalve value chain

The Shellfish food festival - ShellCon 2014 was organized by Central Marine Fisheries Research Institute (CMFRI), Kochi during 22nd to 23rd March, 2014 under the NAIP Value chain on high value shellfish. The aim of ShellCon was to:

- Build awareness among the general public on shellfish (oysters, mussels and clams) as a highly nutritious food with several health benefits, such as better immunity, mental and reproductive alertness.
- Bring together research and development professionals in the government and in the private sector to debate on the progress made in shellfish farming in the country and evolve policy on future development.

In connection with the ShellCon, the following programmes were arranged

- Cookery Competition
- ShellCon Exhibition open to public
- Music and songs for the public
- Roundtable conference on shellfish farming and business development
- Cookery show on how to make Arikadukka by iconic chef from Calicut
- Prize distribution to cookery competition winners

The food festival was inaugurated by Dr. T.K. Srinivasa Gopal, Director, Central Institute of Fisheries Technology (CIFT) in the presence of Dr. S. Girija, Director, National Institute of Post Harvest Technology and Training (NIFPHATT), Dr. A. Gopalakrishnan, Director, CMFRI, Dr. K.K. Appukuttan, former Head, Molluscan Fisheries Division (MFD), CMFRI, Dr. K. Sunil Mohamed, Head, MFD, CMFRI and other dignitaries. Besides a good number of officials from various central and state organisations, NGOs, fishermen societies, entrepreneurs and public took part. Dr. K. Sunil Mohamed, Head, MFD delivered the welcome address and explained the objectives of the festival. Dr. T.K. Srinivasa Gopal, Director, CIFT delivered an insightful inaugural address. In the brief presidential address, Dr. A. Gopalakrishnan, Director, CMFRI suggested the participants to utilize the opportunity of the facilities provided in connection with the food festival and suggested to conduct this food festival every year. Dr. S. Girija, Director, NIFPHATT delivered the felicitation addresses. Dr. V. Venkatesan, Scientist, MFD and PI of the project proposed vote of thanks.

Before the function, all guests and invitees visited the exhibition of products displayed at the various

Dr. K. S. Mohamed, Dr. Girija, Dr. Srinivasa Gopal, Dr. Gopalakrishnan along with staff, students and public at the inaugural function

exhibition stalls namely CIFT, Marine Product Export Development Authority (MPEDA), Goa Xacuti, Malabar Arikadukka, Casino Hotel, Taj Hotel, Beevi's Achar, Relish oyster Alapuzha, Society for Assistance to Fisherwomen (SAF) Self Help Group, Sea Gift and Chippi's Kudumbashree. The stalls were open to public from 02.30 pm to 09.30 pm on both days. More than 3000 people visited the stalls and tasted the best bivalve seafood and acquired knowledge about its health benefits and nutrition.

The cookery competition was held during the morning of the first day. It was conducted at the CMFRI canteen under the leadership of Dr. V. Kripa, Head, Fisheries Environment and Management Division and Dr. P. Vijayagopal, Principal Scientist, Marine Biotechnology Division. Judges from the Casino Hotel, Taj Hotel, St. Teresa's College and NIFPHATT evaluated the entries. Twenty four participants from different parts of the country attended the competition based on the prior registration. Competitions were held under three bivalve categories- oyster, mussel and clams and each participant could take part in at least two categories. A total 36 dishes/ recipes were presented before the judges between 09.30 am to 01.00 pm. The result of the prizes of cookery competition was announced at 6.30 pm on 23rd March, 2014 in presence of TV artist Shri Anup Sivasenan.

S. No.	Category	Name of the winner	Prize	Submitted dishes and Recipes
1	Clam	Ms. Lisa joji	First prize	Steamed clam perfumed with lemon grass
2	Clam	Ms.Waheeda Shafi	Second prize	Kakka irichi adukku roti
3	Clam	Ms. Sini Salam	Consolation - 1	Kakka pathiri snack
4	Clam	Ms. Sairandhri	Consolation - 2	Kakka rasam
5	Clam	Mr. Rajesh, K.N.	Consolation - 3	Clam fry
7	Mussel	Ms. Waheeda Shafi	First prize	Kallummakaya pidi
8	Mussel	Ms. Jayasree	Second prize	Exotic shell roll
9	Mussel	Ms. Mercy Stephen	Consolation - 1	Mussel in coconut cream
10	Mussel	Ms. Vindya Ramesh	Consolation - 2	Arikkadukka
11	Mussel	Ms. Lisa joji	Consolation - 3	Mussel coastal style
12	Oyster	Ms. Razeena	First prize	Hot pot oyster kudumi
13	Oyster	Ms. Mercy Stephen	Second prize	Oyster miocheese bake

Dr. A. Gopalakrishnan, Director, CMFRI anxiously waiting to consume live oyster in front of audience

Chef Jose Varkey, Casino Hotels showing how to consume live oyster to the audience

Cookery competition winner Ms. Mercy Stephen receiving the prizes from Sh. Anup Sivasenan, TV artist

Dr. E.G. Silas, Former Vice Chancellor, Kerala Agricultural University addressing the participants

Roundtable on shellfish farming and business development

Roundtable was held in the morning of 23rd March. The Roundtable was chaired by Dr. E.G. Silas, Former Vice Chancellor, Kerala Agricultural University. Various issues of the value chain of the commercially important bivalves such as oysters, clams and mussels were discussed under the following four themes.

- Production/Farming
- Post - harvest and hygiene
- Marketing - domestic and export
- Consumption

The meeting was attended by 24 scientists/researchers/officials/ industry in the field of fisheries and mariculture including Dr. K.K. Appukkuttan, former Head, MFD, Dr. Shaji, Deputy Director, MPEDA, Kochi, Smt. C. R. Sathyavathy, Executive Director, State Fisheries Department, Shri Jose Varkey, Corporate chef, Casino Hotel, Willingdon Island, Kochi, Dr. M.K. Venu, Chief Technician NIFPHATT, Kochi, (Retired), Shri Varghese John, Technician, NIFPHATT, Kochi, Mr. Gomes, BFFDA, Goa, Shri Motpphilip, Relish Food, Alapuzha, Faraz Javeed of ABAD Fisheries, Dr. J. Bindu, Principal Scientist, CIFT, Kochi and scientists of CMFRI.

Dr. K.S. Mohamed welcomed the gathering. In his brief presentation, he addressed issues already solved in the areas of farming and production, farming technologies, post-harvest and hygiene, marketing and consumption regarding clam, oysters and mussel.

Dr. E.G. Silas, in Chairman's speech, told that there is scope for bivalve culture both in the domestic marketing and export. He congratulated Dr. K.S. Mohamed and his team for the commendable achievements in bivalve farming and also for the new development of value added product (VAP) unit by the Quilon Social Service Society at Kollam.

The following points emerged out of the roundtable conference.

- Production was not in match with marketing. Policies for first level buyers, regional market calendar and validation of transport protocols are to be formulated
- To scale up bivalve culture sustainable for domestic marketing and export, there should have a mission oriented programme for development and quality assurance. There is need for demarcation of areas for bivalve farming in the coastal groups. States should provide help to the coastal belt. Modalities and protocol for different bivalve farming can be drafted by CMFRI with the help of other organizations having similar activities.
- Durable materials should be tried for bivalve culture. Social involvement with motivation given by CMFRI is important. Participation of women in bivalve culture should be strengthened. Women entrepreneurs in bivalve processing and marketing should be encouraged.
- Improving technology and hygiene are very important to prevent break outs of shellfish poisoning in severe ways sometimes at Vizhinjam, Kovalam etc. There should be link with research on Harmful Algal Blooms and bivalve farming research. Relationship between the two should be monitored and studied. There should be a diagnostic pathology centre for bivalves in CMFRI. It can be a reference centre for other bivalve agencies also.
- There is need for study of Stock structure of bivalves. Transportation of different areas of different latitude and longitude affect the reproduction and behaviour of bivalves. There should be screening of bivalves before marketing to assure quality.
- Bacterial contamination in estuarine and near shore waters need monitoring of *E. coli*. Identification of clean water areas are to be done where safe culture operations can be taken up.
- Depuration units should be established in bivalve culture areas. Modalities for such operations should be worked out. Guidelines for this process also should be given. Only by depuration, market value can be increased. Certification can be done. This will promote marketing. MPEDA can help this. In the case of lower level stakeholders, co-management approach is necessary. CMFRI can forecast next years production. Hatchery is needed for production farming.
- The market team should be educated in handling the packed bivalves and their storage procedure and shelf life.
- Economic viability is the most important factor for adoption of technology by farmers and mussel farming was one of such technology. Marine farming of mussel by Shri Gul Mohamed, the enterprising farmer as directed by CMFRI, became the successful example which many others followed.

MPEDA a nodal authority can play a significant role in establishing model depuration unit in coastal areas where bivalve culture is prevalent.

Detail report on the recomm endation of ShellCon 2014 is available at the link- http://www.oysterandlobster.naip.org.in/news.php?contentid=NzM=

Dr. E. G. Silas receiving memento from Dr. V. Kripa

Adoption of CMFRI technology on cobia farming by fishermen groups of Palk Bay

Cage farming by SHG, Marakayarpattinam

CMFRI has developed breeding, seed production and farming technologies for two marine finfishes namely cobia and silver pompano. The message about farming the fishes in sea cages and ponds has reached the fishermen of the area through different training, awareness and frontline/participatory demonstration programmes organised at Mandapam Regional Centre of CMFRI.

Initially Vitality Aquaculture Pvt. Ltd., Thoothukudi, Tamil Nadu came forward for demonstration of cage farming of cobia through participatory mode. The seed and technology was given by Mandapam RC. The cost of the cages, feed, labour were incurred by the firm. A total of 4 tonnes of cobia was produced at a farming period of seven months from four cages and a farm gate price of ` 250/kg was realised with the net income of ` 4, 64,000/-. Subsequently the firm is continuing the adoption with full investment from seed to harvest. Partial harvest after 8 months of farming was done in February 2014.

By knowing about the farming of cobia and silver pompano, two fishermen groups approached the Mandapam RC during August 2013 to gain more knowledge about the farming techniques. Initially when they came to know about the technology for the first time, they were reluctant to take up the farming. By gaining more knowledge about the farming and being motivated by the scientists and technicians, they decided to take up the farming. The attributes which attracted the group to take up the farming were fast growth rate of cobia, good price, high market demand, farming near the seashore, seed availability and technical guidance from CMFRI and 6 to 7 months duration for farming.

One of the above groups from Rameswaram formed a Cobia Aquaculture Association with 21 members and invested about 21 lakhs for 10 cages. Other group from Marakayarpattinam formed a Self Help Group (SHG) with four members and invested more than 6 lakhs for 4 cages. 6,400 cobia fingerlings (with the average weight of 37 gms) and 2400 fingerlings (112 gms) were given to Cobia Aquaculture Association and SHG, Marakayarpattinam during November, 2013 and January 2014 respectively.

This is the first time the fishermen groups have invested on the cost of cages, netting material, anchors and feed. The Mandapam RC has supplied seeds and technology to these groups. Initially the Cobia Aquaculture Association members stocked the fingerlings in four circular GI metal cages of 6 m dia and 3.5 mts depth at Mandapam Sea during November 2013. After two months they graded and segregated the fingerlings in six more cages. After 85 days of farming the average weight

Dr.G.Gopakumar, SIC & Head, Mariculture Division handing over seeds to SHG, Marakayarpattinam

Feeding with low value fishes

Three months old cobia fishes inside the cages

Harvestable size of cobia inside the cage

of a cobia is 400 gms from the initial stocking weight of 37 gms.

The SHG, Marakayarpattinam stocked the fingerlings in two circular GI metal cages of 6 m dia and 3.5 mts depth at Mandapam Sea during January 2014. After two months they are planning to segregate the fingerlings in two more cages. After 45 days of farming the average weight of a cobia is 389 gms from the initial stocking weight of 112 gms. Both the farming is progressing well.

(Reported by G. Gopakumar, A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, Johnson, B. & Amir Kumar Samal, Mandapam RC)

eprints@cmfri scores first rank in India

Ranking for World Web Institutional Repositories (IR) 2014 announced by Consejo Superior de Investigaciones Cientificas (CSIC), the largest public research body in Spain.

The Institutes' Repository, eprints@cmfri got 352nd World Rank among 2000 repositories in the world. The Repository scores first place among the Indian Repositories, with the world rank of 275 in Google Scholar and third place among all good Indian Repositories and first place among all ICAR Institutes.

As per the usage statistics, 1,19, 015 users from 209 countries visited IR during 1st April 2013 to 31st March 2014.

Eprints@CMFRI is the Institutes' Digital Repository for CMFRI scientific publications. The scientific papers published since 1948 are uploaded in this repository.

(Reported by V. Edwin Joseph, Administrator, eprints@cmfri)

Fisheries students complete their Industrial Work Experience programme at Veraval RC

Yet another initiative of CMFRI to support sea cage farming industry in India

The sea cage farming technology developed by the Institute is looked at as the most important soother in the wake of growing concern for alternatives to enhance fish production from the seas and providing livelihood for the ever increasing coastal population in India. There has been an active campaigning by the Institute for nurturing the sea cage farming sector all along the east and west coast of India. Besides perfecting the technology for open sea farming, the major gaps like seed and feed for seafarming are continued to be addressed by the Institute through coordinated research at various Centres of CMFRI. The training and capacity building of stakeholders is another major activity towards this goal and several of the stakeholders are trained in the seacage farming and associated areas like hatchery technology by the Institute at various Centres across the country.

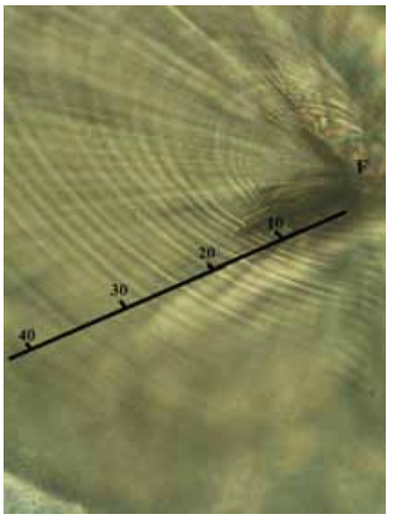
Cage net cleaning and net exchange by students

Specialized training on seacage farming for students of the newly started Diploma in Fisheries Engineering (DFE) course of College of Fisheries, Ratnagiri under Dr Balasaheb Sawant Konkan Krishi Vidyapeeth, Dapoli at CMFRI Regional Centre, Veraval is another step towards building qualified manpower for the sector. The University authorities desired that selected students of the DFE course be attached with CMFRI for an exposure on mariculture especially the seacage farming technology as part of their in Plant Work Experience programme under the course. Thus, four months training (1st December, 2013 to 26th March, 2014) was conducted for those final year Students opted for specialization in mariculture. The training was on a residential mode and the training module comprised of theory classes, practical sessions, case studies and field visits etc. During the training emphasis was given on various aspects of sea cage farming like potentiality of sea cage farming in India, site selection criteria, cage materials and fabrication, installation and mooring materials and mooring preparation, selection of potential species for sea cage farming, aspects of fish nutrition, health management techniques, cage farm management, harvesting techniques, protocols for farming of spiny lobsters etc. The students had opportunity to involve in all the management aspects of cage farm as well as the research activities of the Centre related seacage farming in the farm or wet laboratory including seed transportation experiments etc. The training of this kind will go a long way in building up technically qualified manpower for the seacage farming industry and cutting edge level technicians with the government to aid the seafarming initiatives.

(Reported by Mohammed Koya K., Vinay Kumar Vase, Gyanaranjan Dash, Sreenath K.R., Swatipriyanka Sen Dash and Suresh Kumar Mojjada, Veraval RC)

CMFRI makes a beginning in using Statoliths as a tool for squid age determination

Mounted Statolith



Ground statolith with growth rings

Efforts were initiated by Molluscan Fisheries Division of CMFRI for the application of statolith (hard-part) based methodologies for ageing oceanic and neretic squids from Arabian Sea. The squid statoliths are paired calcareous concentrations within the statocyst of the cephalopod cranium. Statoliths grow continuously throughout their life and are capable of recording life history events useful for stock assessment. The invention and development of innovative techniques of ageing squid using statoliths by other nations, and subsequent validation of daily growth increments in the statoliths microstructure by chemical marking have revealed that cephalopods have a much shorter life cycle and much higher growth rates than previously thought. Short life cycle and fast growth have been confirmed by the successful maintenance of the neretic squids and cuttlefish through one or even several generations. Unfortunately, statolith preparation, reading and interpretation of the daily growth increments were not applied for ageing cephalopods in India.

Cephalopod ageing laboratory

Under the NAIP project: '*Utilization strategy for ocean squids (Cephalopoda) in Arabian Sea: A value chain approach*' techniques for statolith extraction and preparation for increment reading and counting have been standardized. National cephalopod ageing laboratory was established at Kochi. Statoliths collected from adult squids were prepared by grinding to reveal the growth rings. Statoliths from juveniles were counted directly after cleaning without any preparation. Growth rings were counted using the binocular microscope by changing the focal plane under higher magnifications.

(Reported by Molluscan Fisheries Division, Kochi)

Pop-up satellite tuna tagging at Lakshadweep and Visakhapatnam

Five large sized (99-130 cm FL) yellowfin tunas were tagged with pop-up satellite tags off Kavaratti, UT of Lakshadweep during 19-29, January 2014 and two fishes off Visakhapatnam during March 2014 under the project *"Satellite Telemetry studies on Migration patterns of Tunas in Indian Seas" (SATTUNA).* The project is funded by INCOIS. Water quality parameters such as temperature, pH, salinity and dissolved oxygen were measured at the tagging site. Water samples were collected for the estimation of chlorophyll, phytoplankton and zooplankton.

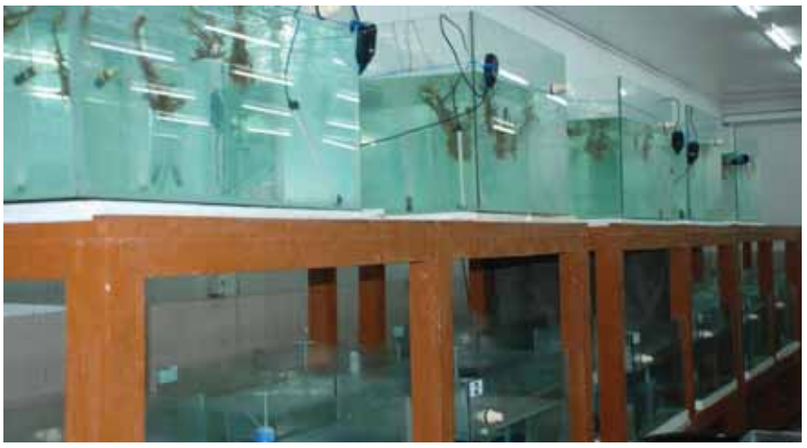
Tagged tuna being released back into the sea

Phytoplankton and zooplankton collection in process

Heavy loss of *Kappaphycus alvarezii* is reported due to high temperature in Ramanathapuram district of Tamil Nadu

Comparison of healthy and decayed *Kappaphycus* fragment

Farming of seaweed *Kappaphycus alvarezii* is expanding fast as one of the alternate livelihood options at Ramanathapuram coast of Tamil Nadu. Heavy loss of *Kappaphycus alvarezii* was reported during the month of August and September, 2013. More than 10,000 rafts which were ready to harvest were completely decayed due to high temperature and the economic loss was about ` 37.5 lakhs. Maximum loss was reported at Sambai and Mangadu village in Ramanathapuram district of Tamil Nadu. An experiment was conducted in an environmental chamber for testing the temperature effects on *Kappaphycus* at Mandapam RC during the month of October, 2013. Around 200 gms of *Kappaphycus* was placed in each of the five 250 litre glass tanks at temperature 31°, 32°, 33°, 34° and 35°C respectively and the control experiment was maintained at ambient temperature (28 -30°C). The water temperature was maintained with the thermostat. It was found from the study that the *Kappaphycus* which was placed in the tanks having water temperature 33°C and above started to lose pigments within 48 hours and resulted in paling and eventually whitening. The *Kappaphycus* which was placed in the tanks having water temperature 31°C and 32°C started to lose pigments on fourth day and resulted in paling and eventually whitening on fifth day. Based on the study it was recommended that the seaweed farmers should periodically measure the sea surface temperature. If they observe the temperature 33°C and above for two continuous days combined with less water current, they can go for immediate harvest. The experiment was conducted under the NICRA project.



Temperature controlled experiments at environmental chamber

(Reported by G. Gopakumar, A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel & Johnson, B., Mandapam RC)

Marine Biodiversity assessed at Lakshadweep Islands

Two islands of Lakshadweep, Amini and Kadamat were surveyed and the biodiversity was assessed by intensive Line Intercept Transect Method and diving. Major groups of hard corals (*Porites, Acropora, Psammacora, Favites, Favia, Leptoria, Pocillopora, Echinopora, Hydnophora* and *Leptastrea*) fishes, molluscs, seaweeds and other invertebrates were recorded. About 55 and 72 species of corals from Amini and Kadamat islands respectively, 26 species of molluscs (24 gastropods, 1 giant clam and 1 octopus), 20 species of sea weeds, 8 species of holothurians, 3 species of sea hares, 1 feather star, 5 species of brittle stars, 1 pin cushion star were recorded. Quantification of the fishing resources and hydrological analysis were also carried out.

(Reported by Marine Biodiversity Division, Kochi)

Coral reef at Lakshadweep

Artificial Reefs deployed along Tamil Nadu coast

Transporting and deploying reef modules

Deployment of artificial reefs were completed successfully in two villages in Kancheepuram district (Nemmelikuppam and Mudaliarkuppam) on 20.02.2014 and 24.02.2014 under the consultancy project on 'Installation of Artificial Reefs in the inshore waters in two villages in Kancheepuram district of Tamil Nadu for the Department of Fisheries, Tamil Nadu. The number of reef structures deployed was 180 at either site.

Artificial reef structures were also successfully deployed off Goonankuppam village in Thiruvallur district on 27.02.2014 and 28.02.2014, Kovalam village in Kancheepuram district on 05.03.2014, Anichakuppam village in Villupuram district on 10.03.2014 and Sothikuppam village in Cuddalore district on 17.03.2014 under the consultancy projects 'Installation of Artificial Reefs in the inshore waters of two districts of Tamil Nadu' and 'Installation of Artificial Reefs in the inshore waters of four districts of Tamil Nadu' for IFAD assisted Post-Tsunami Sustainable Livelihood Program of the Tamil Nadu Corporation for Development of Women. Two hundred reef structures were deployed in each village.

(Reported by Shoba Joe Kizhakudan, Joe K. Kizhakudan, K. Vinod, R. Geetha, S. Mohan and A.A.K. Basha, Madras RC).

Dolphins stranded at Kovalam coast, Tamil Nadu

A live dolphin stranded near Fisherman's cove near Kovalam beach of Tamil Nadu coast on 22.12.2013. Successive attempt to release dolphin back into sea failed and hence it was rescued by forest officials and transported to Kovalam Field Centre for releasing into other area. Dolphin was identified as a female spinner dolphin, *Stenella longirostris* and 147cm in length. Animal was retained overnight in makeshift captivity facility of 1 ton FRP tank. However, dolphin died on early morning of 23.12.2013. There was no external visible mark of net or injury, which ruled out the possible cause of fishery interaction or boat collision. Death of dolphin is likely due to internal injury or disease. Deceased animal was taken by forest official for further anatomical investigation for finding death cause.

Spinner dolphin

Pantropical spotted dolphin washed ashore on Kovalam coast

On 10.03.2014 a dead dolphin washed ashore on Kovalam coast near Fisherman's cove. Dolphin, based on morphological characters, was identified as *Stenella attenuata*, commonly known as Pantropical spotted dolphin. Animal measured 2m in length and weighed approximately 35kg. Cause of the death could be net entanglement.

(Reported by Joe K. Kizhakudan, Shoba Joe Kizhakudan and KSSM Yousuf, Madras RC)

Stranding of Olive Ridley turtle at Kerala coast

Stranded Olive Ridley turtle

An Olive Ridley sea turtle *Lepidochelys olivacea* (Eschscholtz, 1829) stranded at Thottappally beach of Alappuzha was observed on 7th February 2014. The total length of the sea turtle was 52.0 cm. The reason for the death was unknown and no injury was observed in the body. The occurrences of sea turtles along the 9 district of Kerala coasts are evident from the year 1923. Other morphological measurements were taken during the study.

(Reported by R. Jeyabaskaran, Jishnu and V. Kripa, Fishery Environment & Management Division, Kochi)

Whale shark landed along Tuticorin coast

On 9th January, 2014 in the course of our landing observations on the drift gillnet fishery at Tuticorin coast, we observed a single female whale shark *Rhincodon typus*, locally called as "Ammani uluvai". On enquiry, it was found that the shark was not caught intentional or hunted but it was caught accidentally by the multiday drift gill net operating for scombroid fishes. The specimen landed was measuring 254 cm in total length and weighing 110 to 120 Kgs. The specimen was caught approximately 60 to 70 km north-east off Tuticorin, Gulf of Mannar at a depth of 200 to 300 m. The species was previously reported from Tuticorin coast during 2002 and 2003.

Whale Shark *Rhincodon typus* from Tuticorin coast

Whale shark is protected on an international basis for the conservation of the species on a global scale. This species is listed by the International Union for the Conservation of Nature and Natural Resources (IUCN) as Vulnerable; Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) included in Appendix II (Fauna - Animals); Bonn Convention for the Conservation of Migratory Species (CMS) listed this for species on Appendix II; Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks of the United Nations Convention on the Law of the Sea (UNCLOS) listed this species to assess the shared migratory populations. India also protected this species in Schedule I (Part IIA - Fishes) under Wild Life (Protection), 1972 Act.

(Reported by L. Ranjith, K. P. Kanthan K. Radhakrishnan and K. Murugan, Tuticorin RC)

Growing fingerlings of redsnapper collected from the wild to broodstock size

Collection of *L. argentimaculatus* grown in cage in Uppunda

Seeds of cultivable fishes were collected from the wild and grown for 9-10 months in small indigenous customized cages till they attained marketable size. Initial demonstrations made by Mangalore Research Centre was successful and several farmers have taken up mariculture of the redsnapper, *Lutjanus argentimaculatus* fingerlings collected from the wild. As a further step forward, experiments were initiated to extend the culture period of these of seeds collected from the wild to two years. The aim was to study the i) adaptability of the cultured fish to survive and continue to record good growth during the monsoon months when salinities go down to as low as 5ppt and ii) growth rate and size the fish would attain after two seasons with a possibility to use these cultured fishes as brood stock to carryout breeding studies. The trial run has been very successful and the Centre was able to grow the fingerling of around 10 g to an average weight of 900 g in a period of 10 months and further to an average weight of 1.8 kg at the end of 29 months.

Fifty snappers (*L.argentimaculatus*), each weighing about 1kg was retained in one cage and reared further for 19 months. Fresh oil sardine cut into pieces were used as feed for the fish. At the end of the second rearing phase, the fishes attained weight ranging from 1.6 to 2.3 kg with an average weight of 1.8 kg. The survival rate was 100%. The experiment has clearly proved that the *L.argentimaculatus* can easily adapt and survive in low salinity which prevails in estuaries and creeks during monsoon months. Further, the seedlings collected from the wild can be grown in captive condition to get healthy stock for further broodstock development.

(Reported by Mangalore RC)

Cage culture of GIFT Tilapia

A climate resilient farming option in traditional shrimp ponds in Kerala

Tilapia is emerging as an important species for aquaculture in India. Tilapias are farmed in more than 85 countries and they have many desirable qualities like high stocking density, resistance to diseases, omnivorous feeding habit *etc*. Most tilapia stocks in the world were of poor genetic quality and the innovation of World Fish Centre with the Genetically Improved Farmed Tilapia (GIFT) has been a boon to the aquaculturists. GIFT has been disseminated to 11 countries in the Asia and Pacific regions and to Brazil and Costa Rica in Latin America. GIFT has captured 69, 36, and 24% of the market in Philippines, Thailand and Vietnam, respectively. The Rajiv Gandhi Centre for Aquaculture (RGCA), Sirkazhi has been successful in developing the GIFT strain for aquaculture development in the country and is involved in the commercial production of tilapia fish fingerlings in Vijayawada (Andhra Pradesh) hatcheries.The Central Marine Fisheries Research Institute (CMFRI) has developed the technology of cost effective cage aquaculture in the country. The demonstrations in public-

Harvesting of Tilapia

Harvested Tilapia

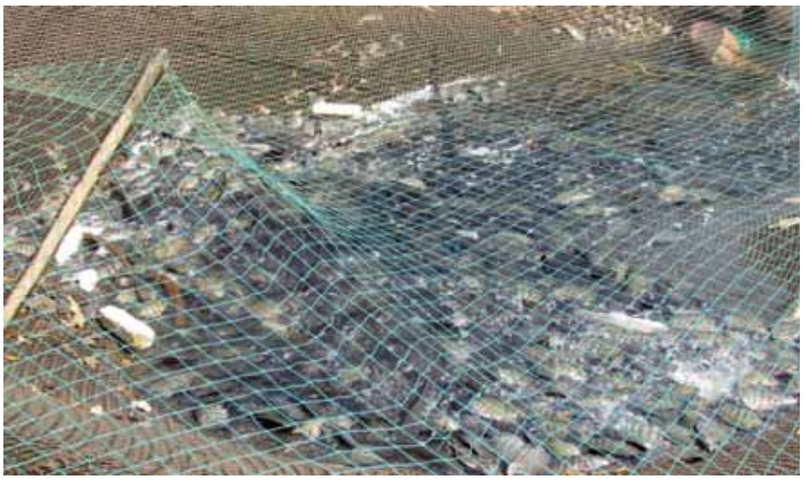
Handing over of harvested Tilapia by Dr.P.U. Zacharia, Head, DFD

private partnership (PPP) mode have enhanced the visibility of the technology in almost all the maritime states in the country. Under the technology demonstration programme of National Initiative on Climate Resilient Agriculture (NICRA) Project, the cage culture of GIFT tilapia was conducted at Cochin. As a farming option during south-west monsoon season in Kerala when the traditional shrimp farms remain flooded due to the heavy freshwater influx, cage culture of GIFT was found as a viable farming option. The fish was able to tolerate 0 to 17 ppt salinity without affecting growth performance. As an initial attempt, a farm registered for GIFT farming at Panampukad, Cochin was chosen. All biosecurity measures for tilapia farming were strictly followed during the entire operation. During June 2013 GIFT seed measuring <5 cm, procured from Rajiv Gandhi Centre for Aquaculture (RGCA) were reared for two months in a closed nursery pond of about 5 cents area. After attaining 25-35 g, about 1500 nos were transferred to a square galvanized iron (GI) cage measuring 4 m x 4 m inner frame and 4.5 m x 4.5 m outer frame. The cage was installed in the sluice pit of about 30 cents area at a depth of 3.75 m by fixing bamboo poles at four corners. The net depth was 3.5 m, which was tied at the top to the hand rail, 90 cm above the base frame. The nets were also tied at the corners to the bamboo poles. The mesh size of the net was 16 mm and regular cleaning and maintenance of the cage as well as nets were carried out by the farmer. A high density polyethylene pipe (HDPE) filled with weight was inserted inside the inner net and was tied to the poles for keeping the net shape intact. The fish were fed with 2 mm commercial floating pellets of 32% crude protein @ 5% body weight during the first month in the cage and later with 4mm pellets of 24% protein at the same rate. As a supplement, duck weed and azolla were also provided on alternate days (5-8 kg/ day). After three months of grow-out period in the cage, the fish had attained an average weight of 450 g. The weight ranged between 300-600 g. On harvest about 600 kg of fish were caught. The price realised at farm gate was Rs.200/kg. The flesh quality based on report of a taste panel (public of different categories) was found to be superior with appealing flavour and fat content. This has more emphasis because tilapias are not a favoured fish in Kerala due to its regular low flesh quality. About 600 kg (` 34/kg) feed was used and the FCR was1:1. The cage frame as well as net can be re-used for many cultures and it was observed that GIFT tilapia is a good option for farming during monsoon season under fresh to low saline (0-15 ppt) conditions. GIFT culture has to be popularized in the state with more lenient approaches towards its culture.

(Reported by Imelda Joseph, Mariculture Division, Kochi)

Harvest of cage farmed pearl spot at Ernakulam & Thrissur

6 m diameter dismantling and reassembling type GI cage as well as a 6 m diameter HDPE cage was installed in the open waters at Pooyappilly, Ernakulam. A fishermen group of three families and a youth group of 6 members were the beneficiaries of each cage. Each cage was stocked with 1500 numbers of pearl spot *Etroplus suratensis*. After a period of one year grow-out period, the fishes were harvested on 22-12-13. The harvest function was inaugurated by the President, Chittattukara Panchayat. The members of the Panchayat as well as local people had participated in the



Harvested pearl spot

President, Chittattukara Panchayat handing over the harvested fish

programme. The fishes were sold at a price of ` 500/kg. The 10 g fish had attained 150-250 g weight in the cage during the one year grow-out period. Since last years demonstration of cage farming, more farmers are coming forward for the technology to be adopted in their area.

During December 2012 and January- February 2013, a 6 m diameter HDPE cage was installed in Kanoli canal in Kaipamangalam Panchayat of Thrissur district. This was the initial attempt of cage farming in Thrissur district. About 1500 numbers of 10 g size grey mullet *Mugil cephalus* and 2000 numbers of 10-15 g size pearl spot *Etroplus suratensis* seeds were stocked in the cage. Due to prolonged summer with no showers the initial growth was considerably slow. So after 12 months of grow-out, the fish were harvested on 23-12-13. The fish were sold at ` 400/kg at farm gate. The harvest was inaugurated by Shri. K.V. Dasan former District Panchayat President, Thrissur in the presence of the Member District Panchayat, Thrissur, Panchayat President, Kaipamangalam, and Members of the Panchayat and local people and farmers. The cage was operated on participatory mode. The farmers were interacted with the scientist on various aspects cage culture adoption in PPP mode. The farmers will continue cage farming in the current year also with the awareness and knowledge they have gained.

(Reported by Imelda Joseph, Mariculture Division, Kochi)

Harvested fishes

Dr. Imelda Joseph welcoming the farmers

First successful experiment on co- culture of silver pompano with *Litopenaeus vannamei*

Experimental farming of silver pompano *Trachinotus blochii* along with *Litopenaeus vannamei* was carried out in a 1.0 hectare farm at Pedda Kammavari Palem, Nagayalanka Mandal, Krishna District, Andhra Pradesh. This farming trial was carried out to assess the survival, growth and co-existence of *L. vannamei* along with sliver pompano. A total of 20,000 numbers of post larvae of *L. vannamei* procured from a hatchery located in Guntur District, Andhra Pradesh were stocked during last week of July 2013 in the farm and were fed with commercial pellet feeds as per the feeding chart specifications of the feed manufacturer.

After 45 days of stocking of *L. vannamei*, 3,500 numbers of silver pompano seeds of 2.5 cm average size were stocked in the same pond. The silver pompano were fed with extruded floating pellet feed manufactured by M/s. Rudra Techno Feeds, Bhimavaram. Feeding zones made of 2 meter x 2 meter PVC frames were installed in the pond for exclusive feeding of silver pompano. The water quality parameters like dissolved oxygen, pH, salinity were regularly monitored. The farming operations were carried out in accordance with the requirements of *L. vannamei*. As the stocking density of *L. vannamei* was low, no aeration was provided and regular water exchange was done to maintain the optimal dissolved oxygen levels.

During August to October 2013, the salinity of the farm dropped to zero ppt due to heavy inflow of freshwater. Majority of the shrimp ponds surrounding the experimental pond had outbreak of diseases and total crop loss was noticed. However, this experimental pond was not affected with any diseases. After 6 months of culture period, *L. vannamei* attained an average weight of 60 grams and about 25 kgs were harvested through drag netting. Silver pompano had slow growth and average weight of 50 grams was noticed while harvesting the vannamei and culture of pompano is being continued in the same pond.

This farming experiment has indicated that *L. vannamei* can be cultured along with silver pompano without any disease problem. It is assumed that the poor survival rate of *L. vannamei* and low growth rate of pompano are due to low salinity prevailed for a longer period in the pond.

Co-cultured silver pompano and *L. vannamei*

Close up view of harvested *L. vannamei*

Close up view of silver pompano

(Reported by G. Gopakumar, A. K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, Johnson, B. & Amir Kumar Samal, Mandapam RC)

Supply of cobia and pompano fingerlings to different parts of the country from Mandapam RC

A total of 11,325 fingerlings of silver pompano and 8,100 fingerlings of cobia were supplied to aquafarmers/ entrepreneur and Research Institutes from Tamil Nadu, Kerala, Karnataka and Goa state during the period 15th December 2013 to 15th March 2014.

Cage culture of pearl spot in less saline waters of Malabar region

The low cost cage designed was used for culture of pearl spot in the less saline waters of Thiruvangoor in Calicut district. The cage culture of pearl spot was started in February at Thiruavangoor. This site was ideal due to good tidal flow of water and good salinity. The pearl spots stocked in the cages has an initial weight of 2 gm and 25 mm length. Each cages in Thiruvangoor was stocked with 250 young ones of pearl spot. Feeding was done twice in a day during morning and evening at the rate of 10% biomass with formulated feed made of coconut oil cake, rice bran, tapioca powder, maida and common salt. The ingredients were mixed with boiled water and made into small balls and mixed with growth enhancers and placed in the feeding tray. The salinity during this period ranged 8-25 ppt. The dissolved oxygen ranged between 5.2-6.8ml/L in these sites. Presence of ammonia and nitrates in the cage farming areas was almost negligible. Flow of water in the site was good, which provided healthy environmental conditions for the growth of food fishes stocked in the cages which also helped to reduce the risk of occurrence of disease in the farming area.

Pearl spot *Etroplus suratensis*, the State Fish of Kerala cultured in low cost cages at Thiruvangoor, Chemancherry Panchayat at Calicut District, Kerala was harvested on 30.01.2014. The District Panchayat President Mrs. Kanathil Jameela inaugurated the Harvest Mela.

The culture was carried out at Madhav Fish farm of Mr. P.K. Venugopal, an innovative fish farmer. The fish was harvested after 8 months. Total ten numbers of cages each costing ` 2,500/- was introduced with 150 numbers of Pearl Spot. Total 250 Kg was harvested and realized ` 90,000/-. Total cost of the operation including ten cages and cost of feed comes around ` 50,000/-. A profit of ` 40,000/- was received. The size of the fish at the time of harvest was 150 to 180mm in length and 110 to 180 gm in weight.

(Reported by Calicut RC)

Harvested pearl spot

Pre Marine Fisheries Census 2015 Workshops at Chennai, Mumbai and Mangalore

Participants of pre census workshop at Chennai

As an overture to marine fisheries census to be held in 2015 a pre census workshop for the Marine Fisheries Census 2015 was held at **Madras RC** from 7th to 9th January 2014. Dr T.V. Sathianandan, Head i/c, FRA Division, CMFRI headed meeting and briefed about Marine Fisheries Census in 2015. Workshop was attended by Scientists, Assistant Directors of Tamil Nadu state fisheries and FRAD survey staff of Tamil Nadu and Ongole regions. All participants involved in discussion on methodology to be adopted for Marine Fisheries Census 2015.

Mumbai RC organized pre-census workshop during 2nd & 3rd January 2014 for north-west coast (Maharashtra and Gujarat), at Mumbai Research Centre of CMFRI, under the budget grant allocated by DAHDF, Ministry of Agriculture, New Delhi under the central sector scheme on "Strengthening of database and Geographical Information System for fisheries sector -Marine Fisheries Censes-2015".

Mangalore RC conducted Pre-census workshop of the Marine fisheries Census 2015 for Kerala, Karnataka and Goa region at the Mangalore RC during 16th-17th January 2014.

Training on biology and identification of demersal finfishes at Headquarters

A training programme on 'Biology and identification of demersal finfishes' during 18-21, February 2014 was conducted at Cochin. The course convener was Dr.Rekha J. Nair. 17 participants from various universities in Kerala and Tamilnadu, Central Government Institutes and Colleges were attended. Training was conducted for fish taxonomy, biology and MS, Excel and other fisheries related programmes.

Dr. A. Gopalakrishnan, Director inaugurating the training programme

Participants with the Director and staff

Workshop on coastal biodiversity and conservation at Karwar RC

Karwar RC hosted a Workshop organized by Karnataka Biodiversity Board, Govt. of Karnataka on 24.2.2014.The workshop was attended by Scientists and researchers from Mangalore University, Mangalore Fisheries college, Indian Institute of Science, Karnatak university, Karnataka Forest department, Heads of Botany and Zoology departments of local PG colleges and scientists from CMFRI.

Dr. K.K.Philipose, Scientist in Charge of Karwar Research Centre made a presentation on Marine Biodiversity and the need for development of livelihood alternatives for conserving the marine ecosystem. Around 50 researchers and policy makers from different organizations actively participated in the workshop.

Participants with the Director ▶

Field Experience Training at Mandapam RC

Dr. G. Gopakumar, Scientist-in-Charge interacting with the FET trainees

Field Experience Training at Olaikuda

FET trainees along with scientists of Mandapam RC

As a part of 99th Foundation Course of Agricultural Research Service (FOCARS) from National Academy of Agricultural Research Management (NAARM), Hyderabad, six ARS trainees had undergone Field Experience Training (FET) at Mandapam RC from 23rd February to 15th March 2014. They conducted Participatory Rural Appraisal (PRA) technique at Olaikuda village, Ramanathapuram district.

Dr. G. Gopakumar, Scientist-in-Charge interacting with the farmers from Kannur

Training on 'Cage culture' was given to 50 farmers from Kannur, Kerala at Mandapam RC on 15th March 2014.

Training programme on cage culture of Finfishes at Visakhapatnam RC

A training programme on "Cage culture of Finfishes" was conducted from 27th January to 2nd February 2014 at Visakhapatnam Regional Centre of CMFRI. About 20 numbers of fishermen have attended the training. During the course of the programme, different aspects of cage culture including cage fabrication, installation, maintenance, culture of candidate fish species and financial support for cage culture were given to fishermen. A comprehensive training manual was given to all the trainees describing the details of the cage culture practices. Field visits to cage culture site of the Centre at Rajulanka, West Godavari, Andhra Pradesh and cage farm of an entrepreneur were under taken.

Trainees interacting with scientists

Trainees involved in net changing

Training to fishermen self help groups of Maharashtra & Karnataka by Karwar RC

Training programme on "Open Sea Cage farming" was organized by Karwar RC during 5.1.2014 to 18.1.2014. The training programme was conducted for the fishermen of Raigad district of Maharashtra. Another training programme on "Open Sea Cage farming of marine finfish and shellfish" was organized by Karwar RC during 25.2.14 to 1.3.14 for the fishermen self help group members of Karwar and Kumta. The training programme was sponsored by the Department of fisheries, Government of Karnataka. The trainees were given hands on training on cage designing, mooring, net exchange and nursery rearing. They were also trained in management practices in cage culture by feed strategies and environmental management strategies.

Participants with the staff of Karwar RC

Training programme for the fishermen

Karwar RC and ICAR Research Centre for Goa jointly organize training programme on Coastal Mariculture

Karwar Research Centre of CMFRI and ICAR Research Centre for Goa jointly organized a training programme on Coastal Mariculture at ICAR Research Complex, Goa during 11th and 12th of February 2014. In the inaugural session Dr.N.P.Singh, Director ICAR Research Complex Goa has said that the collaborative training programme is precursor for many joint action programmes to be initiated by Karwar Research Centre of CMFRI and ICAR research Complex Goa.

Dr. K. K. Philipose lighting the ceremonial lamp ▶

National level training programme in designer pearl production at Vizhinjam RC

Inaugural function of the training programme

A 3-day training programme "Image pearl production" was organized by Vizhinjam Research Centre of CMFRI from 19/02/2014 to 21/02/2014. Twenty four participants from different parts of the country attended the training programme. The training programme started with an inaugural function in which, Shri R. Kamalahar, IFS. Managing Director, KMSC, Government of Kerala inaugurated the training by lighting the traditional lamp. He also released the training manual on image pearl production by giving a copy to Dr. A.C.C. Victor.

Inauguration of the training programme

View of participants

The function was presided over by Dr. Rani Mary George, Scientist-in-Charge, Vizhinjam Research Centre of CMFRI.

Training programmes for tribal community in Thiruvallur and Kancheepuram districts of Tamil Nadu

A series of two days capacity building training programmes for 60 Schedule Tribe (Irulas) members from coastal villages of Thiruvallur and Kancheepuram district was organized at the Kovalam Field Laboratory of Madras RC during 18-25 March 2014, under the Tribal Sub Plan.

First batch of trainees from Oyyalikuppam village (Kancheepuram district) and staff

Training session on open sea cage activities

The first programme (18-19 March) was held for a group of 20 Irula members from Oyyalikuppam village in Kancheepuram district. The second programme (21-22 March) was for 20 members of the Senjiamman Nagar Irula community of Pazhavercadu, Thiruvallur District and the third (24-25 March) for 20 Irula members from Kullathumedu, Kallukadamedu and Rajarathinam Nagar in Pazhavercadu, Thiruvallur District. The training schedule includes a preliminary interactive session and demonstration sessions on live feed culture, marine ornamental culture and bivalve mariculture & processing. The second day includes demonstration sessions on finfish nursery practices, grading, feeding, packing, transport, cage fabrication, mooring, cage deployment, stocking, monitoring, cleaning and net exchange, followed by a feedback session.

The trainees were awarded certificates on completion of the sessions at the end of the second day. The preliminary interaction and feedback will help in identifying the skill, interest and resource availability in each identified village for evolving future programmes and effective technology transfer.

(Reported by Joe K. Kizhakudan, Kovalam Field laboratory, Madras RC)

Surgical nucleation and pearl production in Indian pearl oyster at Tuticorin RC

A ten days training programme on 'Surgical nucleation and pearl production in Indian pearl oyster, *Pinctada fucata*' was conducted from 18.12.2013 to 28.12.2013 for the benefit of Fisher folk of Keelavaipar Village, Tuticorin. The training programme was inaugurated by Shri Isaac Jeyakumar, Asst. Dir. Fisheries, Tuticorin on 18th Dec. 2013. The training programme consisted of series of lectures on the biology, surgical procedures, farming practices and hands on practical on surgical procedures and fabrication of farming infrastructures. Valedictory function was attended by Shri. Amal Xavier, Joint Director of Fisheries, TN Fisheries Department, Tuticorin.

Issue of Certificates by Joint Director, Fisheries, Govt. of Tamil Nadu

Training in basic skin and SCUBA diving at Tuticorin RC

The training programme was conducted from 23rd January to 19th February, 2014. The training programme was inaugurated by Shri. Pradeep Kumar, Asst. Dir. Fisheries, Tuticorin.

The training consisted of basic swimming, stamina enhancement, snorkelling and skin diving up to 3 fathoms (=18ft) and training in use of SCUBA equipment and diving up to 8 fathoms (=48ft) depth. The Valedictory function of the training programme was held on 19th February, 2014 and was presided by Shri. Amal Xavier, Joint Director of Fisheries, TN Fisheries Department, Tuticorin and certificates were distributed.

Issue of Certificates by Asst. Director of Fisheries, Tamilnadu

ChloRIFFS training programme at Mangalore RC

A training programme on ChloRIFFS was organized at Mangalore RC of CMFRI during 15th-17th February 2014. Twenty participants from different collaborating centres of CMFRI attended the programme. The programme started with a formal inauguration and theoretical sessions on 15th February. On 16th February a field cruise was done for sample collection and fishing was carried out at 40m depth off Mangalore. Samples were transferred to the laboratory and analysis was done subsequently. Few more practical on geo-cording the landing data and discussions on the data base and field sample format took place on 17th February.

Workshop on taxonomy of commercially important crustaceans at Headquarters

CMFRI conducted three days training workshop on "Taxonomy of commercially important crustaceans" from 22 to 24 January 2014 at CMFRI, Kochi. 20 participants attended the training from various institutions. Dr. S. Lakshmi Pillai, Senior Scientist, CFD co-ordinated the programme.

Capacity building of Sidi tribals on best farm management practices at Veraval RC

Veraval RC organized a 21 days training programme on Capacity building of Sidi tribals on best farm management practices in sea cage farming of lobsters and finfishes for the benefit of Sidi tribal's of Gujarat under TSP for the current year from 05.02.2014 to 01.03.2014. The training programme was conducted for 25 sidi tribal beneficiaries under TSP HRD fund of CMFRI. The training programme was inaugurated by Shri. N.K. Muchhar, Additional District Magistrate of Gir Somnath District, Gujarat in an august function marked by the presence of officials from the Department of Fisheries, Gujarat, President of the Sidi tribal society, SIC, CIFT etc. The training was aimed at imparting the best farm management practices in sea cage farming of lobsters and finfishes to members of the sidi tribals. The training module consisted of lectures by scientists and technical staff of the Institute and external experts from other institutes, practical sessions on cage fabrication, installation, seed stocking, feed preparations and feeding, cage net cleaning and net exchange. The valedictory function on 1st March 2014 was organised with the presence of Dr. B.S. Rajawat, Programme Coordinator, KVK, Kodinar who emphasized the need for more such training and strengthening of the linkage with the KVK in training on a promising technology like seacage farming and frontline demonstrations of the technology in Gujarat. Thus, a new batch of sidi tribals had opportunity to get hands on training on the sea cage farming in the open sea.

(Reported by Gyanaranjan Dash, Mohammed Koya, K, Sreenath K.R., Vinay Kumar Vase, Suresh Kumar Mojjada and H.M. Bhint, Veraval RC)

Cage launching

Hon. Union Minister of Agriculture, Shri. Sharad Pawar inaugurates open sea cage farming at Ratnagiri, Maharashtra

Hon. Union Agriculture Minister Shri. Sharad Pawar inaugurating the open sea cage culture programme at Ratnagiri

Hon. Union Minister of Agriculture Shri. Sharad Pawar,, inaugurated open sea cage farming at Ratnagiri, Maharashtra on January 25th 2014. More than 5000 fishermen, officials and dignitaries participated in the function. The Minister addressed the scientists, fishermen, farmers and other officials and said that south Maharashtra has excellent condition for open sea cage farming and requested the state department to bring a new schemes from NFDB, NPM and RKVY with the help of Karwar Research Centre of CMFRI in the region. Hon. Minister urged the fishermen to visit Karwar and learn open sea cage farming. Later Shri. Sharad Pawar released the Sea bass seeds into the cages.

DG visits Mangalore RC

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR, visited Mangalore Research Centre on 9-03-2014. He was accompanied by Dr. A. Gopalakrishnan, Director, CMFRI and convened a meeting with scientific and technical staff of the Centre.

Dr. S. Ayyappan, Secretary, DARE and DG (ICAR) interacting with the staff of Mangalore RC

Norwegian delegation visits open sea cage farm at Karwar

Norwegian delegates in the marine cage farm of Karwar RC

A 15 member Norwegian delegation visited Karwar RC on 8th January 2014 and witnessed the open sea cage culture initiatives taken by CMFRI. The Karwar Research team and other State Government Fisheries officials at Karwar interacted with Norwegian delegates and the team also visited Marine Farm and Marine Hatchery Complex of Karwar Research Centre. The delegation shared its technical expertise with the Indian team and opined a joint collaborative programme can bring revolutionary changes in the Indian cage culture scenario.

Karwar RC establishes new cold store

Karwar Research Centre established a new cold store of 10 tonne capacity at the centre to support the cage farming activities at the centre. The cold store can store feed at -20°C. This will help the centre to store feed for the monsoon months during which period feed is not available due to fishing ban.

A tribute to scientific fraternity - CMFRI celebrates National Science Day

Director inaugurating the programme

Director congratulating a winner in the instant quiz

The works and bio sketches of more than 65 eminent scientists were displayed in the Marine Drive Walk way by CMFRI, Kochi to foster science among general public and the youngsters as a part of National Science Day celebration. Every year, the National Science Day is celebrated on 28th February, the day when Prof. C.V. Raman announced the famous theory of scattering of light which made him win the Nobel Prize in 1930. The exhibition was inaugurated by Dr. A. Gopalakrishnan, Director, CMFRI.

The elegant and informative posters with photograph of the scientist and their contributions were viewed by the public including students, youth, elders including tourists to Kochi . The posters attracted the attention of even international tourists who were impressed by the contributions of great Indian science contributes like Sushruta (Father of Surgery), Varahamihira (Indian astronomer) and Aryabhatta (Indian astronomer and mathematician).

Students who viewed the bio sketches were motivated by the simple and inspirational lives of scientist like Janaki Ammal who was born in a village in Tellicherry and after making several award winning contributions in Botany, rose to become the Director of Botanical Survey of India. Similarly, the inquisitive nature of Prof C.V. Raman, the first Indian scientist to win a noble prize, which made him probe deeper into the theories of Physics to find an answer to the question "Why the sea is blue in colour?" and finally come up with the Nobel prize winning discovery motivated several students who viewed the bio sketch of Prof Raman. The simple Malayalam translations were read by numerous who were mostly unaware about research and laboratories and they were enthralled by the lives of scientists and how discoveries help mankind.

(Reported by FEM Division, Kochi)

Awareness programme on Artificial Reefs at Visakhapatnam RC

An awareness programme on "Artificial reefs for enhancing marine fish production" was conducted at Mutyalammapalem, an adopted village of Visakhapatnam RC under consultancy project on 24th February 2014. The Fishermen of the village participated in this programme. The concept of artificial reefs, its fabrication, deployment and its uses and uniqueness in enhancing

the marine fish production was taught during the programme. They were briefed about the structure, shape and uniqueness of these models of artificial reefs and its uses in aggregating the fishes to near shore areas. They were explained mainly how productivity can be increased multifold by setting up these artificial reef structures by increasing surface area. They were appraised that these artificial reefs is one of the approach of management of the fishery resources, used for sustainable fish production and to promote community based management of resources. The programme was also attended by Village panchayat president, fishermen society president and other prominent village heads and fishermen.

(Reported by Loveson, L. Edward, Rajendra Naik, P. Pattnaik and Shubhadeep Ghosh. Visakhapatnam RC)

Consensus building on fishing ban at Mandapam RC

State Fisheries Department organized a meeting with the representatives of 75 Mechanized fishermen to ascertain their views on 45 days fishing ban in Tamilnadu at Mandapam RC on 8th January 2014. After the meeting they visited the centre and awareness on cage farming of cobia, pompano and ornamental fish culture was given to them.

Dr.G. Gopakumar, Scientist-in-Charge along with State Fisheries Dept. officials in the interaction meeting

Fishermen articulating stakeholders views

Official Language Implementation

Spoken Hindi Class

A Spoken Hindi Class was organized for the Technical and Ministerial Staff of CMFRI Headquarters on 18th and 19th February 2014. Dr. Radhikadevi, Assistant Director (Training), Department of Official Language conducted class. Total 12 Officers and staff attended the class.

TOLIC Joint Hindi celebration

In the Joint Hindi celebration 2014 conducted under the auspices of Kochi Town Official Language Implementation Committee. Smt. Latha Khambadkar, Technical Officer won Ist prize in Hindi poetry recitation. Dr. J. Jayasankar, Principal Scientist won IInd prize in Hindi Cross word puzzle and in the TOLIC meeting organized on 09.01.2014 Shri D.K.Das Sharma, IRS, Chief Commissioner of Income Tax, Kochi distributed prizes.

At Mandapam RC

- Staff (9 staff for Prabodh, 9 staff for Praveen and 2 staff for Pragya) from Mandapam Regional centre of CMFRI participated in two days personal contact programme for Hindi course at DRMS Office, Madurai during the month of January 2014.
- Hindi workshop in connection with Hindi Exam 2014 was conducted at Mandapam Regional centre of CMFRI on 17th March 2014.

At Mumbai RC

- Participated "Special translation training course", conducted by Central Translation Bureau, (Department of Official Language, Ministry of Home Affairs) at Bandra from 13-18th January 2014.

Exhibitions organized by Headquarters

- CMFRI participated at Kochi in connection with 'India International Aquashow-2014' organized by 'State Fisheries Management Society (FIRMA)' during '24th to 28th January. CMFRI secured the 'Marine Angel Award' in this exhibiton.
- Exhibition 'PRAYUKTHI-2014' organised in Perumbavoor by Jai Bharath College of Management & Engineering Technology during the period from 6th to 8th February, 2014.
- Exhibition in connection with Shell Con 2014 organised by CMFRI in CMFRI campus during the period from 22nd to 23rd March, 2014.

On behalf of CMFRI Dr. Vipinkumar receiving Marine Angel Award in Aquashow 2007 from Sri.Tony Chammany, Hon. Mayor, Kochi in presence of Prof.K.V.Thomas, Hon. Union Minister.

Mumbai RC participated in India's largest Agricultural Fair-cum-Expo - Krishi Vasant 2014 at Nagpur

A five-day Agricultural Fair-cum-Expo, 9th-13th February 2014 was organised by Department of Agriculture and Cooperation, Govt. of India in collaboration with ICAR at CICR, Nagpur. The event was inaugurated by Hon. President of India, His Excellency Shri. Pranab Mukherjee in the presence of Hon. Union Agriculture Minister, Shri. Sharad Pawar, Hon. Minister of the Heavy Industries Shri. Praful Patel, Hon. Chief Minister of the Maharashtra state, Shri. Prithviraj Chavan, Deputy Chief Minister, Shri. Ajit Pawar, Hon. Secretary, DARE and Director General, ICAR Dr. S. Ayyappan, delegates of the central and state government and farmers across the country.

Among the ICAR institutions, Mumbai RC of the CMFRI represented the institute and demonstrated centre's activities.

Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR visiting CMFRI stall

Karwar R C participated in Aqua Goa Mega Fish Festival at Navelim, Goa

Dr. K. K. Philipose, Scientist in charge, Karwar RC explaining to Lt. Governor of Goa His Excellency Shri. Bharat Vir Wanchoo about the activities of the centre in the presence of Shri.Alvartano Fotardo, Hon. Minister for Fisheries, Goa and Dr.Shamila Monteiro, Director of Fisheries, Govt. of Goa

The Karwar Research Centre participated in "Aqua Goa Mega Fish Festival" Exhibition organized by Directorate of Fisheries Govt. of Goa during 31st January 2014 to 2nd February 2014 at Navelim, Salcette, Goa. In the first ever such exhibition in Goa, Karwar RC showcased its thrust area activities like open sea cage farming, Mussel farming, models of different types of cages and cage cultured fishes. Lt. Governor of Goa His Excellency Shri. Bharat Vir Wanchoo inaugurated Aqua Goa. Later His Excellency Shri. Bharat Vir Wanchoo visited the CMFRI stall.

Calicut RC

- Kavil Fest – People's Festival, at Kavumthara, Naduvannur, Calicut from 04.01.2014 to 07.01.2014.
- 26th Kerala Science Congress – National Science Expo, Kalpetta, Wayanad from 28.01.2014 to 31.01.2014.
- Perumkaliyattam 2014 (Grand Festival) of Sree Nellikka Thuruthi Kazhakam, Cheruvathur, Kasaragod from 01.02.2014 to 11.02.2014.
- Science and technology Exhibition organised by Ministry of Information and Broadcasting, Government of India at Kannur in connection with public campaign from 22.2.14 to 24.2.14

Visakhapatnam RC in Kishan Mela

Visakhapatnam Regional Centre participated in the exhibition "Kishan Mela" organized by Regional Agricultural Research Station of Acharya N G Ranga Vyavasaya Viswa Vidyalayam at Anakapalli from 14-15 March, 2014.

India International Seafood Show (IISS) at Chennai

MPEDA Kochi organised "India International Seafood Show (IISS)" from 10th to 12th of January, 2014 at Chennai trade centre. Madras RC participated and exhibited various activities of CMFRI in stall.

Mangalore RC

Mangalore RC organised an exhibition in connection with Kadal Utsavam Samudra Sambhrama convened by the traditional fishermen at Uppunda, Kundapura taluk, Udupi district from 10-01-2014 to 12-01-2014

KVK shifted back to Narakkal campus

The KVK administrative office, sales counter and soil testing laboratory which were temporarily functioning at the residential campus of Central Marine Fisheries Research Institute, Kasthurba Nagar got shifted back to its campus at Arattuvazhy beach near Narakkal in Vypeen with effect from 07th February 2014.

KVK's Vegetable Top Up is getting popular in Kerala

The micronutrient mix developed by Indian Institute of Horticultural Research, produced and marketed by KVK in the trade name Vegetable Top up is getting popular in Kerala. KVK received bulk orders from Department of Agriculture, Govt. of Kerala for supplying the product to all 14 districts. KVK is taking lead role in the micronutrient campaign organized by the state department of Agriculture at various places as a part of Vegetable development programme 2013-14. The sprays of these nutrients at critical growing stages enhance the yield by 15-20%. The vegetable top up is being manufactured in KVK's satellite production centre (SPC) at Janani JLG (Kudumbashree), Edakkattuvayal, Ernakulam.

KVK participated Krishi Vasant, 2014 at Nagpur

KVK set up exhibition stall in the National agricultural exhibition at Nagpur during 9-13 February 2014- Krishi Vasant, 2014. The mega event was organised as a large congregation of farmers and other stake-holders from the country to celebrate farmers' great contribution to our economy. It was a joint effort of the Government of India and Government of Maharashtra in the city of Nagpur. The event was organized at Central Institute of Cotton Research of ICAR, Nagpur with the partnership of Confederation of Indian Industries. Farmers from all parts of India visited the KVK Stall.

KVK exhibition stall at Krishi Vasant 2014 at Nagpur

KVK's satellite fresh water fish seed production centre operational

Seeds of Koi carps are available for sale in KVK's Satellite production centre (SPC) located in a farmer's field at Kothamangalam. Seeds of IMC also would be available during June -November period. The seed production is being done in the Portable carp hatchery (PCH) developed by Central Institute for Freshwater Aquaculture (CIFA), Bhubaneswar and installed by KVK. Seed quality is being constantly monitored by KVK. For more information and purchasing seeds, please contact Mr. Joseph Thakadiyel @ 9446687191 or Mr. Luice @ 9846659398.

KVKs satellite fresh water fish seed production unit

Mr. Joseph selling seeds produced at KVKs satellite seed production unit

Traditional fisherman turned sea food entrepreneur

Mr. Sukumaran aged 50 was a traditional fisherman doing prawn fishing and selling the catch daily in nearby markets for his livelihood. Most of these prawn are purchased by middleman for making dried prawn which have more demand in the market. In order to avoid middle men and to earn more income, KVK facilitated Mr. Sukumaran to start a dry pawn unit using electric drier. In order to further increase the profit, he was given training on manufacturing ready to cook dried prawn, prawn chutney powder and roasted prawn. KVK also facilitated him to get license from Food Safety and Standards Authority of India (FSSAI) and registering his unit as Small scale industry (SSI). A brand name-KAYAL CHEMMEEN was given to his products. The primary and secondary packaging were designed by KVK team in an attractive way. Subsequently he started the production and marketing of these products. The products are being marketed through supermarkets and shops at Ernakulam.

Open house and Foundation Day celebrations at CMFRI

The Central Marine Fisheries Research Institute, Kochi celebrated its 67th Foundation Day on 3rd February, 2014. The institute organized an open house for the benefit of school and college students. As part of the open house at CMFRI, Kochi, nearly 2000 students from 5 colleges and 32 schools observed the scientific activities and interacted with the researchers while viewing state-of-art laboratories, marine aquarium, biodiversity museum and library. Scientific equipments used in marine fisheries research such as electron microscope, thermal cyclers, gel documentation apparatus, various sensors for collecting environmental data, fishing techniques, craft and gear models etc. were displayed and explained to the students. Various divisions displayed their ongoing research works and major findings through posters and exhibits. The visitors also watched the latest documentaries on significant research findings by the institute. There were displays of products developed by CMFRI through research and development.

Students viewing electron microscope and museum

At Mandapam RC

The Foundation day of CMFRI was celebrated on 3rd February, 2014 at Mandapam Regional centre schools and colleges of Ramanathapuram district more than 2000 students visited the aquarium and museum. Nearly 30 members of fisherwomen group visited the aquarium, museum, hatchery and cage site.

As a part of Foundation day programme, awareness on marine resource conservation, biodiversity issues, mariculture and aquarium keeping was given to the school students by Dr.G.Gopakumar, Scientist-in-Charge, Mandapam Regional Centre. Around 200 students from two schools in Ramanathapuram district were benefitted by the awareness programme.

Students visiting the aquarium

Students viewing the seacages from the shore

Dr.G.Gopakumar, Scientist-in-Charge interacting with the students

At Visakhapatnam RC

Foundation Day of CMFRI celebrated on 3.2.2014 by conducting an Open House for school children in and around Visakhapatnam. Children from different schools visited the Centre and were enlightened about the research activities of the Centre. CMFRI videos were shown and the children visited the marine museum and hatchery complex. Dr. Shubhadeep Ghosh, SIC addressed the students regarding the research activities of the Centre.

SIC intercating with school children during Foundation day celebration ▶

Foundation Day celebrations at Research Centres

Students visiting Kovalam Field Laboratory at Chennai

Students visiting marine museum at Tuticorin

Dr. Veerendra Veer Singh SIC, Mumbai RC addressing the invitees on the occasion of Foundation day celebration

Recreation Club activities

Club Day celebrations at CMFRI, Kochi

Club day was celebrated with lot of enthusiasm on 15th March 2014 at CMFRI, Kochi. The event started at 3.00 PM with a cultural meet at CMFRI auditorium. The chief guest of the programme Adv. J. Jayashankar in his inaugural address enlightened the audience about the public administration fallacies in a humorous way. Guests of honour Shri Baiju Jose and Shri Babu Jose entertained the crowd with their comedy show. Shri. Kalabhavan Baijukuttan also attended the function and offered felicitation.

Inaugurating the club day

Major prizes of the club annual sports and arts competitions were bestowed on the winners by the chief guest. The cultural meet was followed by orchestra and cultural programmes at the lawns of CMFRI and concluded after dinner

Shields for winners

View of Members of the club

Entertainment in the lawn

At Mandapam RC

Recreation club organised new year-2014 celebration on 1st January 2014 mid night at Mandapam Regional Centre staff premises.

Dr. G. Gopakumar, Head, Mariculture Division & SIC, MRC of CMFRI cutting the cake on new year-2014

Cultural programme by the staff children

Women's Day celebration at Madras RC

Madras RC celebrated women's day on 7th and 10th of March, 2014. Women staff of CMFRI, Chennai visited old homage at Santhome in Chennai on 7th February 2014 and spent a day with them. With charity concern, lunch and materials for day to day life use were offered to senior citizen in homage. A cake cutting event for observing women's day was arranged on 10th February 2014 at Madras RC of CMFRI.

Women staff of Chennai RC

Womens day celebrations at Tuticorin RC

Programme participations

- **Dr. A. Gopalakrishnan,** Director Participated in the Indo-Norwegian Working Group meeting under the chairmanship of Dr. Rajasekhar Vundru, Joint Secretary, Dept. of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture at NASC, New Delhi on 6th January, 2014.

  Attended the meeting of Standing Committee on Time and Cost Over Run for construction of Laboratory-cum-Office Building of Vizhinjam Research Centre under the chairmanship of DDG (Horticulture) at New Delhi on 13th January 2014.

  Attended the interaction meeting of Vice Chancellors and Directors of ICAR Institutes & inauguration of the Conference of VCs, ICAR Directors and Progressive Farmers at Baramati on 19th January, 2014 and Directors' Conference at Pune on 20th January 2014.

  Attended the meeting convened by DG, ICAR and Secretary (DARE) for preparing the presentation on cage culture for presenting before the Hon'ble Agriculture Minister at New Delhi on 28th January 2014.

  Attended the meeting on cage culture at Krishi Bhavan, New Delhi under the chairmanship of Hon. Union Agriculture Minister on 29th January 2014.

  Visited CPCRI, Kasaragod in connection with the inauguration of Bio-control Laboratory on 08.03.2014 and Directorate of Cashew Research (DCR), Puthur in connection with the inauguration of Plant Protection Laboratory.

  Reviewed the research and other activities of the Mangalore Research Centre and discussion was held with the Scientists on 10th March, 2014.

- **Dr. V. Kripa,** Head, FEMD participated in the GIZ project initiation workshop on ecosystem services for the Consultancy project on 'Assessment of eco-labeling as tool for conservation and sustainable use of biodiversity in Ashtamudi Lake (Southwest coast of India) (GIZ-TEEB) on 17th January at New Delhi

  Participated in the UN workshop on Global Marine Assessment: Northern Indian Ocean at Chennai from 26-28 January 2014 and presented a National Status paper on 'Food Security'

- **Dr. G. Gopakumar,** Head, Mariculture Division & Scientist-in-Charge, Mandapam RC

  Participated in the discussion on cage culture potential of India with Norwegian delegates at New Delhi on 5th and 6th January 2014.

  Participated in the IMC meeting at Kochi on 25th February 2014.

  Participated in the RFD meeting at Kochi on 26th February 2014.

- **Dr. T. V. Sathianandan,** Head (I/C) FRAD and Principal Scientist, **Dr. J Jayasankar,** Principal Scientist and **Dr. Somy Kuriakose,** Sr. Scientist attended the meeting with Joint Secretary (Fy), Department of Animal Husbandry, Dairying & Fisheries, Ministry of Agriculture at Krishi Bhawan, New Delhi to discuss data collection schedules and other issues related to Marine Fisheries Census 2015 on 6th March, 2014

- **Dr. G. Maheswarudu,** Head,CFD attended the 43rd meeting of the Institute Management Committee of Central Institute of Brackishwater Aquaculture (CIBA),Chennai on 31st January 2014.

- **Dr. G. Maheswarudu,** Head, CFD and **Dr. A. P. Dinesh Babu,** Principal Scientist, Mangalore RC attended the meeting with delegates from High Commission of the Republic of Mozambique on 7.3.2014 with reference to the nomination of the Director General, ICAR, New Delhi.

- **Dr. R. Narayana Kumar,** PS & Head, SEETTD attended the syllabus revision committee meeting in the Fisheries Economics and Extension Division, CIFE, Mumbai on 20-22 Feb 2014.

Foreign deputation

- **Dr. P. U. Zacharia at Malaysia**

  Dr. P. U. Zacharia, Principal Scientist & Head, DFD attended the BOBLME Marine Protected Area (MPA) working Group Meeting at Penang, Malaysia during 11-12 February 2014 and presented the status and updates on MPA and fish refugia after 2012 in India. The policy brief for India was made and recommendations for capacity development other potential project interventions from a country and transboundary perspective have been drafted

Dr. P. U. Zacharia with participants

- **Dr. Shyam S. Salim at USA**

  Dr.Shyam S. Salim, Senior Scientist was invited to visit Michigan State University (MSU), Michigan, USA as a visiting faculty member under their Visiting Scholars to Advance Science Grants (VISTAS) funded by the MSU Environmental Science and Policy Programme for developing joint proposals for funding by the US National Science Foundation Coastal SEES programme during 6-13 January, 2014.

- **Dr. Grinson George at UK**

Dr. Grinson George with Dr. Trevor Platt FRS and Dr. Shubha Sathyendranath

  Dr. Grinson George, Senior Scientist, Fishery Resources Assessment Division completed NAIP international training in the area of Carbon Sequestration (Fisheries Sciences) under invitation from Dr. Trevor Platt FRS and Dr. Shubha Sathyendranath at Plymouth Marine Laboratory, Prospect Place, The Hoe, Plymouth, UK during 17 October 2013 - 15 January 2014.

- **Dr. Jayasree Loka at USA**

  Dr. Jayasree Loka, Senior Scientist, Karwar RC was deputed to NOVA University Fort Lauderdale, Florida, USA for three months from October 2013 to January 2014 as part of International training programme under NAIP of ICAR, New Delhi.

- **Dr. Divu Damodaran at UK**

  Dr. Divu Damodaran, Scientist, Karwar RC deputed to University of Stirling, U.K. during October 2013 to January 2014 as part of International training programme under NAIP programme of ICAR, New Delhi.

- **Dr Veerendra Veer Singh,** Principal Scientist and Scientist in-Charge, Mumbai RC

  Participated TCE, NAIP and NFBSFARA project planning meetings at Delhi, with the DG, Chairperson Empowered committee, co-ordinators, project leaders and other project investigators on 08.01.2014 and 09.01.2014

  Appraisal meeting with World-Bank TTTL (Technical Team Task Leader) Dr.Ranjan Samantaray and Dr.Sudhirendra Sharma (World Bank) along with NAIP Project Team on 24th January 2014.

  Attended Stakeholders' Workshop of NAIP Comp-III, Sub project "Strategies to enhance adaptive capacity to climate change in vulnerable regions"(World Bank -GEF) at IARI in Delhi on 7-8th March, 2014.

- **Dr. K. Vinod,** Principal Scientist & SIC, Madras RC attended the 3rd meeting of Task Force for the conservation of dugongs held on 25.03.2014 at Ministry of Environmental Forest, New Delhi.

- **Dr. K. K. Philipose,** Principal Scientist and SIC, Karwar RC**,** Participated in the inaugural function of open sea cage culture programme conducted by MFDC at Ratnagiri on 25-01-2014.

  Participated in the second meeting of the national cage revalidation committee meeting organized by Ministry of Agriculture on 29th January 2014.

  Participated in the NICRA TDC review meeting at CRIDA, Hyderabad on 03-03-2014.

- **Dr. Prathibha Rohit**, Principal Scientist and SIC Mangalore attended the fourth meeting of the expert committee for comprehensive review of deep sea fishing policy and guidelines at Krishi Bhavan, New Delhi on 13-03-2014.

  Attended the annual review meeting of SATTUNA Project at INCOIS, Hyderabad on 19-03-2014.

- **Dr. K.K. Joshi**, Principal Scientist attended the 'General Management Programme for Scientists' sponsored by DST, GOI at Administrative Staff College of India, Hyderabad from 30th December 2013 to 10th January 2014.

- **Dr. P. K. Asokan**, Principal scientist served as a member of the judging panel of Best paper and poster in Fisheries and Veterinary Sciences session on 28-01-2014 in connection with the 26th Kerala Science Congress (KSC).

- **Dr. M. Vijayakumaran,** Senior Scientist, Madras RC, Attended and coordinated the stakeholder consultation meeting at Regional Centre of CMFRI, Visakhapatnam on 6th January 2014 in connection with the requirement of the Technical Committee (TC) *to review the duration of the ban period and to suggest further measures to strengthen the conservation and management aspects*.

  Attended and coordinated the stake holder consultation meeting at the Fisheries Department, Government of Tamil Nadu on 10th January 2014 in connection with the requirement of the Technical Committee (TC) *to review the duration of the ban period and to suggest further measures to strengthen the conservation and management aspects*.

  Attended the Inception Workshop of the *Technical Cooperation Programme on Support to the Implementation of the Strategy for Fisheries Management for Sustainable Livelihoods (FIMSUL)* at Hotel GRT Grand, Chennai during 29 – 30 January 2014,

  Attended *Integrating BIMSTEC 2014 "Focussing Fourteen Pillars of Cooperation"* on 8th February 2014 at Imphal, Manipur organized by Indian Chamber of Commerce (ICC), and delivered a lecture on *Evolving Ecosystem Based Fisheries Management in the Bay of Bengal – Opportunities and Challenges*.

- **Dr. P. T. Sarada,** Senior Scientist attended Training programme on Data analysis using SAS at CIFT, Kochi from 01.02.2014 to 07.02.2014.

- **Dr. B. Santhosh**, Senior Scientist, Vizhinjam RC attended training on DNA barcoding of aquatic organisms: a tool for molecular taxonomy from February 5-14, 2014. National Bureau of Fish genetic Resources, Lucknow.

- **Dr. Sujitha Thomas,** Senior Scientist, Mangalore RC attended the international workshop under auspices of UK in support of regular process for global reporting and assessment at ESSO-NIOT, under MoES, Govt. of India from 27 to 28th January, 2014.

- **Dr. Sujitha Thomas**, and **Dr. Geetha Sasikumar**, Senior Scientists, Mangalore RC attended the training programme on finfish cage culture and bivalve farming at the ICAR Research Complex for Goa as resource personnel and made presentations on estuarine cage culture and mussel farming from 11-02-2014 to 12-02-2014.

- **Dr. R. Jeyabaskaran,** Senior Scientist participated in the 'Annual Review Meeting' for INCOIS funded project held at INCOIS, Hyderabad on 19th March 2014.

- **Dr. A. K. Abdul Nazar, Dr. R. Jayakumar,** Senior Scientists and **Dr.G.Tamilmani,** Scientist**,** participated in 'Aqua-India-2014' organized by Society of Aquaculture Professional (SAP) at Vijayawada on 24th & 25th January, 2014.

  Presentation on the project proposal 'Upgradation of seed production technology of silver pompano and dissemination of hatchery and farming technologies' at NFDB, Hyderabad on 17th February 2014.

- **Dr. R. Jayakumar,** Senior Scientist and **Dr. G. Tamilmani,** Scientist, visited the pompano demonstration farm at Elandarimedu, South Pitchavaram, Chidambaram taluk, Tamil Nadu on 9th January, 2014.

- **Dr. R. Jayakumar,** Senior Scientist participated in the interaction meeting on 'Impact of shrimp farm effluents on marine fish population' with the fishermen association organized by SIFFs at Pattukottai 5th March, 2014.

- **Dr. Jayasree Loka**, and **Dr. Senthil Murugan,** Senior Scientists, Karwar RC participated in the Aqua Goa festival on 01-02-2014 at Navelim Goa and presented a paper on open Sea cage farming in the scientific session.

- **Dr. S. Lakshmi Pillai,** Senior Scientist, CFD attended the 5th PAC meeting (Animal Sciences) SERB, DST on February 14th, 2014 at JNCASR, Bangalore.

- **Dr. B. Johnson,** Scientist, Mandapam RC participated and delivered a lecture on mariculture as alternate livelihood options for Responsible Fisheries Management' to 75 fishermen in 'Responsible Fishing' training programme on 14th February 2014 organized by Fisheries College, Tuticorin.

  Participated in an interaction meeting with the representatives of 50 Country Craft fishermen of three coastal districts to ascertain their views on 45 days fishing ban at Thondi on 17th January 2014 organized by State Fisheries Department, Tamil Nadu.

- **Shri. R. Saravanan,** Scientist, Mandapam RC participated in Comprehensive Management Action Plan Meeting for Gulf of Mannar Biosphere Reserve organized by Wildlife Warden, Ramanathapuram on 21.02.2014

- **Dr. S. N. Sethi, Smt. Mukta Menon** and **Mr. S. Ramkumar,** Scientists, attended an awareness Workshop on **"**Challenges and Opportunities in Intellectual Property Management and Commercialization of Technologies in Fisheries and Agriculture Sectors" on 20.03.2014 at NBFGR, Lucknow.

- **Dr. Sekar Megarajan**, Scientist, Visakhapatnam RC attended a training on "Development and Nano-sizing of Biotechnological Products for Fisheries and Aquaculture" at Central Institute of Fisheries Education, Mumbai from 5-25th February, 2014

- **Dr. Ritesh Ranjan,** Scientist, Visakhapatnam RC and CCPI, NFBSFARA project attended the advisory committee meeting at Kolkata on 22nd February, 2014.

- **Dr. Purushottama G.B.** Scientist, Mumbai RC**, p**articipated in training on "Communicating Science through Mainstream Media" at National Academy of Agricultural Research Management (NAARM), Hyderabad, from 17.12.2013 -26.12. 2013.

- **Ms. Karthireddy Syamala,** Scientist, Mumbai RC **a**ttended "Special translation training course", conducted by central translation bureau, (Department of official language, Ministry of Home affairs) at Bandra from 13-18th January 2014.

- **Dr. Biswajut Dash,** STO, Visakhapatnam RC attended Hilsa project review meeting with DG, ICAR at CIFRI, Kolkata on 1st March, 2014.

We salute the seniors on their retirement

Dr. V. D. Deshmukh retires

Dr. Vinay Deshmukh, Principal Scientist and Scientist-in-Charge of Mumbai RC retired from CMFRI on superannuation on 31-01-2014. He joined as Scientist S1 in ICAR service during 1977. Owing to specialization in Crustacean biology, population dynamics and stock assessment and close relationships with fishing community in Maharashtra, he made valuable contributions for the management of marine fisheries of the state. He was member of several state level committees to advice the State Fisheries Department of Maharashtra for Assessment of Fish Famine, Impact of oil pollution on marine fisheries and compensation to fisher-folk, Regulation of Purse seine fishery so also incidence of Sting ray and jelly fish menace during September, 2013. He was an invited teaching faculty member of Mumbai University and CIFE deemed university and guided 10 Ph. D. students. He has more than 75 research papers published in reputed journals.

Dr. P. C. Thomas retires

Dr. P. C.Thomas, Principal scientist and Head i/c, PFD retired from ICAR service (CMFRI) on superannuation on 31st March 2014. He belongs to the first batch of Agricultural Research Service, joining ICAR as Scientist S1 in the year 1976. He is basically a Veterinarian, specialized in Animal Genetics and Biotechnology. Prior to his services being transferred to the CMFRI in 1989, he served in the ICAR Research Complex for NEH Region, CARI for A&N Islands, Port Blair and the Central Avian Research Institute, IVRI Campus, Bareilly, contributing much in the field of Avian Genetics. In CMFRI he has been engaged in the research and development, in the division of Marine Biotechnology ,carrying out research projects and guiding Post-graduate and Doctoral students in the frontier and promising areas like population genetics, oyster triploidy, molecular diagnostics, Artemia genetics and functional genomics as evidenced by the number of publications in peer reviewed journals. He has 130 Research papers published in journals and presented in symposia. He has successfully guided the research work of eight Ph.D scholars and many M.F.Sc students. He served as Head in charge of the Pelagic Fisheries Division and Scientist in charge of HRD.

Shri M. Bose
Technical Officer
31.01.2014
Tuticorin RC

Shri S. Seetharaman
Technical Officer
31.01.2014
Madras RC

Shri S. Kemparaju
Technical Officer
31.03.2014
Mangalore RC

Smt. Martha Mascernhas
Assistant
31.03.2014
Mangalore RC

Shri E. J. James
Skilled Support Staff
31.01.2014
CMFRI Hqrs.

Ph.D. AWARDED

M.P. Paulton

Mr. M. P. Paulton, Senior Technical Officer, MBT Division, was awarded Ph.D for his thesis *entitled 'Studies on the deference and stress related factors of oyster and mussels of mariculture importance'* from Mangalore University, Karnataka under the supervision of Dr. P.C. Thomas, Principal Scientist, CMFRI, Kochi during February, 2014.

Won best paper award

An abstract entitled "spring warming of the near-surface water around the Andaman Islands during 2011-2013" co-authored by Dr. Grinson George, Senior Scientist, Fishery Resources Assessment Division won the best paper award for oral presentation at the national seminar on climate change and marine ecosystem (CCMEE-2014) held during 20-21 March 2014 at CUSAT Marine Campus, Kochi.

PROMOTIONS

Names & Designation	Promoted as	w.e.f	Center
1. Dr. R. Narayanakumar, Senior Scientist	Principal Scientist	01.01.2011	CMFRI Hqrs.
2. Dr. (Smt.) D. Prema, Senior Scientist	Principal Scientist	01.01.2011	CMFRI Hqrs.
3. Dr. (Smt.) N. Aswathy, Scientist	Senior Scientist	08.02.2014	CMFRI Hqrs.
4. Shri V.A. Leslie, Technical Officer	Senior Technical Officer	01.10.2012	Vizhinjam RC
5. Shri M.P. Paulton, Technical Officer (Training)	Senior Technical Officer (Training)	01.10.2012	CMFRI Hqrs.
6. Smt. Jenni. B, Technical Officer	Senior Technical Officer	06.08.2013	CMFRI Hqrs.
7. Dr. (Smt.) S. Gomathy, Technical Officer	Senior Technical Officer	23.09.2013	Madras RC
8. Shri Prakash C. Shetty, Senior Technical Assistant	Technical Officer	01.01.2013	Goa FC
9. Shri T. Nageswara Rao, Senior Technical Assistant	Technical Officer	16.11.2012	Visakhapatnam RC
10. Shri Ramesh B. Rao, Senor Technical Assistant	Technical Officer	01.07.2013	Alibag FC
11. Shri N. Jesuraj, Senior Technical Assistant (Skin Diver)	Technical Officer (Skin Diver)	01.03.2013	Tuticorin RC
12. Shri S. Rajan, Technical Assistant	Senior Technical Assistant	19.11.2012	Madras RC
13. Shri M.E. Durgekar, Technical Assistant	Senior Technical Assistant	10.03.2013	Karwar RC
14. Shri P. Jaiganesh, Technical Assistant	Senior Technical Assistant	01.01.2013	Madras RC
15. Shri N.P Ramachandran, Technical Assistant	Senior Technical Assistant	10.08.2013	Calicut RC
16. Shri G.D Nataraja, Technical Assistant	Senior Technical Assistant	05.07.2012	Mangalore RC
17. Shri G. Sampathkumar, Technical Assistant	Senior Technical Assistant	07.10.2012	Mangalore RC
18. Shri S. Selvanidhi, Senior Technician	Technical Assistant	01.01.2012	Madras RC
19. Shri K. John James, Technician	Senior Technician	16.11.2012	Tuticorin RC
20. Shri R. Sundar, Technician	Senior Technician	16.11.2012	Madras RC
21. Shri R. Vasu, Technician	Senior Technician	16.11.2012	Madras RC
22. Smt. Gouri Hareendran, Upper Division Clerk	Assistant	04.01.2014	CMFRI Hqrs.
23. Smt. T.C. Chandrika, Upper Division Clerk	Assistant	13.03.2014	CMFRI Hqrs.
24. Shri K.S. Ajith, Upper Division Clerk	Assistant	13.03.2014	CMFRI Hqrs.
25. Shri G.K. Rajan, Lower Division Clerk	Upper Division Clerk	25.03.2014	Mandapam RC
26. Shri K.M. Sreekumar, Skilled Support Staff	Technician	13.03.2014 (AN)	CMFRI Hqrs.
27. Shri Vijayan M.T., Skilled Support Staff	Technician	13.03.2014 (AN)	CMFRI Hqrs.
28. Shri Bhangara Sunil Ramachandra, Skilled Support Staff	Technician	13.03.2014 (AN)	Mumbai RC

COMPASSIONATE APPOINTMENT

Name	Designation	Centre	w.e.f
1. Shri Rajesh T.K	Skilled Support Staff	CMFRI Hqrs.	10.02.2014
2. Smt. M. Muthuvelu	Skilled Support Staff	Mandapam	12.02.2014

TRANSFERS

Name & Designation	From	To	w.e.f
1. Shri C.K. Sajeev, Senior Technical Officer	CMFRI Hqrs.	Mumbai RC	28.02.2014
2. Shri Rishikesh Aandi, Assistant	Mangalore RC	CMFRI Hqrs.	10.02.2014

RESIGNATION

Names & Designation	Centre	w.e.f
1. Shri Haris N.K, Assistant	Karwar RC	24.12.2013

MEETINGS

1. The 75th meeting of the Institute Management Committee of CMFRI held on 25.02.2014 at CMFRI Hqrs., Cochin.
2. The 18th meeting of the Research Advisory Committee of CMFRI held on 26 - 27th March 2014 at CMFRI Hqrs., Cochin.

Obituary

With profound sorrow CMFRI family pay homage to our beloved colleagues

Shri Mohan E. Durgekar
Senior Technical Assistant
Karwar RC, 04.01.2014

Shri C.K. Dinesh
Technical Officer
Karwar RC, 23.01.2014

Sampling of cobia fishes from the cage at Mandapam

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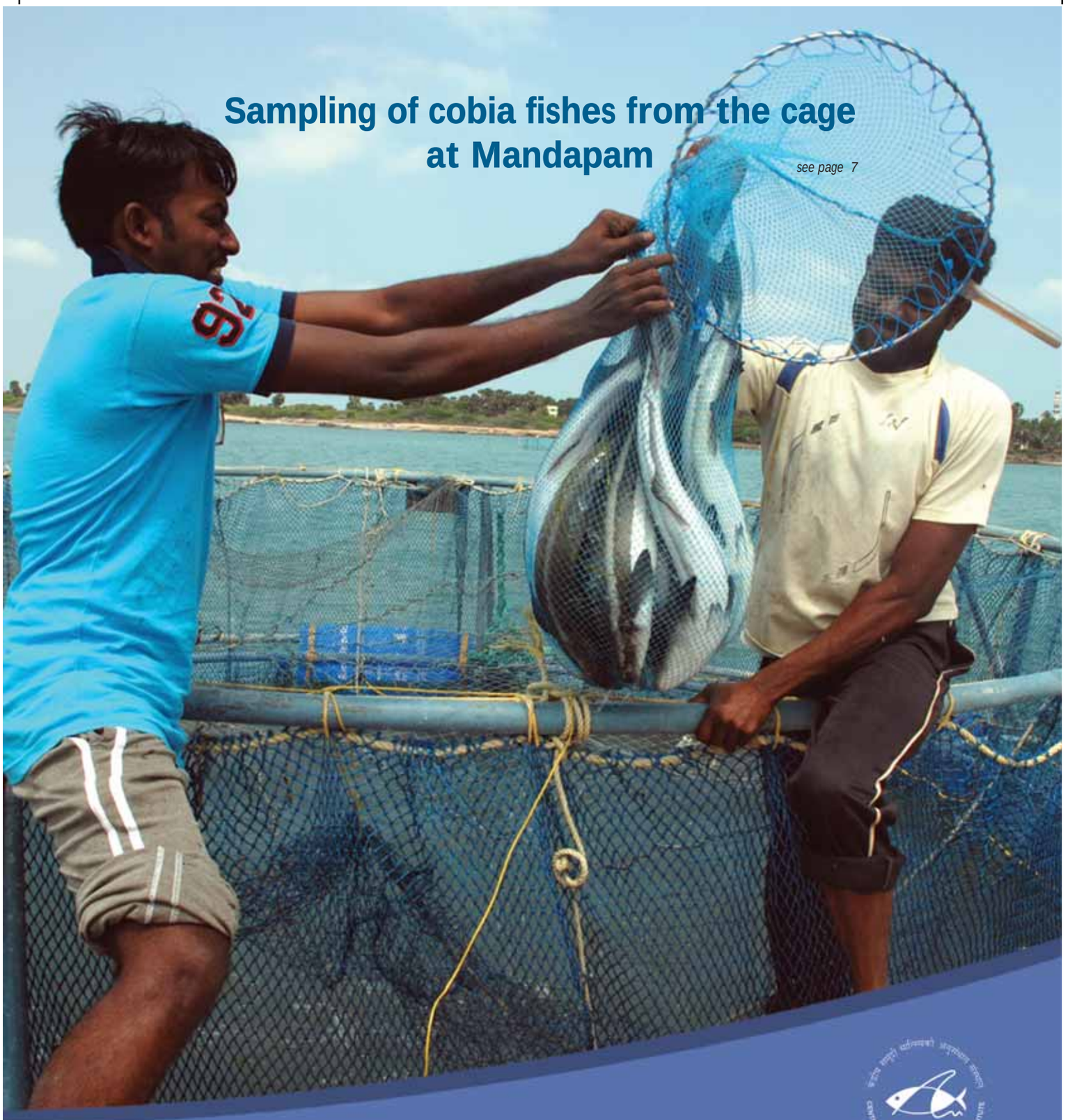

cadalmin

CMFRI Newsletter

Cadalmin, the CMFRI Newsletter is a quarterly publication of the Central Marine Fisheries Research institute, Cochin. 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.