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*Pseudanthias marcia*, a marine ornamental fish

see page 7



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

*Agrisearch with a human touch*

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

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## DIRECTOR SPEAKS



Warm greetings to all.

Crossing the last quarter of 2016, it is encouraging to note that several milestones have been crossed successfully and we are moving closer towards the targets set in our research activities. The breakthrough in seed production of orange

grouper, an important food fish, the successful captive broodstock development and larval rearing of a marine ornamental serranid are critical first steps in building robust technologies for their culture in controlled conditions in the future. Several training programmes relevant to the needs of the stakeholders have also been organised and this can be further enhanced to reach the concerned stakeholders. As we move into a New Year 2017 let the vision of a clean, healthy and vibrant marine fisheries sector in the country guide and motivate our activities.

**A. Gopalakrishnan**  
Director

## About ICAR-CMFRI

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

ICAR-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.





# Dr. Trilochan Mohapatra, DG, ICAR visits Mangalore Research Centre

The Honourable Secretary, DARE and Director-General, ICAR, Dr. Trilochan Mohapatra made a brief visit to the Mangalore Research Centre of ICAR-CMFRI on 11<sup>th</sup> December 2016. He was accompanied by Dr. M. G. Nayak, Director, NRC for cashew, Puttur. The Scientist-in-Charge, Dr. Prathibha Rohit and the staff of the Research Centre extended a warm welcome to the visitors. The DG was briefed about the major activities and achievements of the Research Centre and the vital role played by the Centre in the field of marine capture and culture fisheries. Expressing his happiness on the good work done at the Mangalore Research Centre, DG asked the scientists to make an impact analysis of the fish culture in small-scale cages demonstrated by the institute which is now widely practiced by the coastal fishers of the region.



DG meeting with Staff of Mangalore Research Centre

## Breakthrough in seed production of orange spotted grouper

In a major breakthrough for the mariculture sector in the country, ICAR-CMFRI has succeeded in the mass scale seed production of orange spotted grouper (*Epinephelus coioides*), and the achievement is the first of its kind in India. The hatchery seed production of the species, achieved by the Vishakapatnam Regional Centre is expected to boost the sea cage culture enterprises in the country. The orange spotted grouper is a commercially important carnivorous fish with high market demand in many parts of the world. Although initial success in seed production of the fish was achieved in 2014, the survival rate of the larvae was very low. After manipulating different water quality and feeding protocols, enhanced survival rate of >10% was achieved this time. The larvae are now in advanced fry stage with a size of around 3 cm after 42 days of rearing in the hatchery and ready to be moved to the nursery rearing phase. After this the fingerlings can be used for mariculture in grow-out cages. Orange spotted grouper is a potential species for



Larval rearing phase of orange grouper

mariculture because it is compatible with high temperatures hardy in nature and has high market value. In most of the major fish landing centres, the fish fetches ₹ 400-450 per kg in wholesale market. The live fish sale in international markets fetches 3-4 times higher prices, indicating the prospects of mariculture of the species. Orange spotted grouper forms the mainstay in the world Live Reef Food

Fish Trade (LRFF) particularly in several Asian countries such as Hong Kong, China, Taiwan, Singapore and Malaysia. In India, it is distributed on the east and west coasts.

(Reported by Ritesh Ranjan, Biji Xavier, Sekar Megarajan, Shubhadeep Ghosh, Chinnibabu B., Vamsi B., Narasimhulu Sadhu and Biswajit Dash, Visakhapatnam Regional Centre)



# Bumper Harvest of Pearlspace under TSP



*Inauguration of pearlspace harvest*

The tribal community in Thandassery Colony in Maradu Municipality were ecstatic as they got a bumper harvest of pearlspace (Karimeen) in the cage culture project of ICAR-CMFRI started eight months ago under the Tribal Sub Plan (TSP) programme of the Government of India. During the harvest, the farmers got pearlspace having an average weight of 300 g from two 4x4 m cages made of GI pipes. Fingerlings of pearlspace were stocked in the two cages at a density of 20 numbers per square metre. Pearl Plus,

the feed developed by the institute for pearlspace farming was used in the cage culture which had the participation of five tribal families in Thandassery. The ICAR-CMFRI team under the leadership of Dr Bobby Ignatius, Principal Scientist trained the tribes in the farming activities and empowered them to become entrepreneurs in cage culture enterprise, a less expensive farming method. Divya

Anilkumar, Chairperson of Maradu Municipality inaugurated the harvest in the presence of Dr A Gopalakrishnan, Director, ICAR-CMFRI. Dr Imelda Joseph, Chairman of the TSP in ICAR-CMFRI, Vinu Joseph, Councillor, Mr. Rajendran, Leader of the tribal group in the area and Mr. Prakashan, leader of the farming group were present on the occasion.

# Installation of GI cages in Pulicat under the Tribal Sub Plan programme



*Scientists interacting with the Irular community members*



*Installation of GI cage at site*

Under the alternative livelihood programme for the Tribal community in coastal Thiruvallur, the fishermen members of the Irulars in Senjiamman Nagar, Kottaikuppam Panchayath were chosen as the beneficiaries and trainings were extended to the young members. Four GI cages were fabricated and installed on 19<sup>th</sup> November 2016, in the northern end of the Pulicat lake near the bar mouth, after necessary siting studies and consultation with the Wild life department officials and

other fishermen communities. As the culture conditions favour euryhaline species, Asian sea bass was chosen for culture. 7-8 cm sized seabass seed procured from Rajiv Gandhi Centre for Aquaculture (RGCA), Sirkazhi was stocked in the nursery *hapas* on 19<sup>th</sup> November, 2016. Training on grading was extended on 25<sup>th</sup> of November 2016. Two families were identified to operate the cage units on a daily basis. The cage units also serve the community as a temporary grow out/live holding unit for locally fished species

(Pearlspace, mullets, milkfish, scads, carangids, snappers) caught at smaller sizes in usual fishing methods so that higher earnings are possible.

*(Reported by Joe K Kizhakudan, Madras Research Centre)*



*Stocking of nursery hapas inside cages*



# Seaweed farming technology transferred to stakeholders in Andamans

The emerging seaweed farming industry in the country will get a major boost, with ICAR-CMFRI transferring its technology of seaweed cultivation suitable for the Islands to the Andaman administration. The scientific inputs on methods of seaweed farming came as the institute's initiative for intensifying its consultancy services. ICAR-CMFRI has recently developed nutraceutical products from seaweeds such as Cadalmin<sup>TM</sup> Antidiabetic extract (ADe) to combat type-2 diabetes and Green Algal extract (Cadalmin<sup>TM</sup> GAe), to combat arthritis. Seaweed cultivation is generally perceived as an environment friendly mariculture activity while a feasibility study in South Andamans by a team of ICAR-CMFRI scientists revealed that these regions are highly favourable for seaweed farming. Practical training on methods of monoline culture method including fabrication of floating rafts with bamboo, tying of seed material (seaweed fragments) in the ropes and seeded ropes in the bamboo rafts besides collection of wild seaweed and identification of



*Participants practising tying of seaweed seed material in the rope*

commercially important seaweed species were given to the participants from the Fisheries Department of Andaman Field visits were arranged to the seaweed farms at Munaikadu, Thonithurai and

Kottaipattinam and the seaweed processing unit at Manamadurai. Dr. A. K. Abdul Nazar and Dr. B. Johnson of Mandapam Regional Centre co-ordinated the training programme.

# ICAR-CMFRI extends technical support in marine fish stock assessment to Bangladesh

As part of the follow up of the recommendations by India-Bangladesh Joint Working Group (JWG) on Co-operation in the field of fisheries and aquaculture, technical guidance in the area of marine fish stock assessment was imparted by ICAR-CMFRI to Bangladesh for developing necessary manpower and expertise in the area of marine fish stock assessment, a significant tool for conserving the fishery wealth. In association with the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO), ICAR-CMFRI trained the selected 12 middle-level officials from the Bangladesh Fisheries Department, Bangladesh Fisheries Research Institute in Mymensingh and the Institute of Marine Sciences and Fisheries, University of Chittagong, Bangladesh.



*Inauguration of the training programme by Dr. E. G. Silas, former Director, ICAR-CMFRI*

The officials were trained on using various statistical tools, softwares and applications

for the assessment of fish stock and related data collection. Concept of

genetic stock characterisation using molecular markers and its relevance for stock assessment, practical sessions and field visits were given importance in the training. The trainees were also provided an opportunity for fishing experience onboard the institute's fishing vessel *Silver Pompano*. Dr. E. M. Abdussamad, Dr. Somy Kuriakose and Dr Shoba Joe Kizhakudan (Principal Scientists) headed various sessions of the training programme which was coordinated by the HRD Cell of ICAR-CMFRI.



Participants of the training programme with organisers

## Stakeholders Consultation on tuna fisheries held at Veraval

Veraval Regional Center of ICAR-CMFRI hosted the Stakeholders consultation on Tuna Fisheries for the Bay of Bengal Programme-Inter-Governmental Organization (BOBP-IGO) under the Ocean Partnership for Sustainable Fisheries and Biodiversity Conservation - Models for Innovation and Reforms programme on 22<sup>nd</sup> October, 2016. The Programme was inaugurated by Dr. Y.S. Yadava, Director, BOBP-IGO. Dr. E. Vivekanandan, Technical Advisor, BOBP-IGO, Shri. Veljibhai Masani, President, GFCC, Govt. of Gujarat, Shri. Jagadishbhai Fofandi,

President, Veraval Municipality, Shri. Lakhanbhai Bhensla, President, Sea Food Exporters Association, Gujarat and Shri. K. Mohammed Koya, Scientist In-Charge, Veraval RC were present. Around 70 stakeholders comprising fishermen skilled in tuna fishing, exporters, processors and traders, officials of the CIFT, MPEDA, EIA, Collage of Fisheries, JAU, Department of Fisheries, Govt. of Gujarat, WTI etc attended the programme and actively interacted in the discussions on future developmental plans and road map for the development of tuna fisheries in Gujarat.

Mini IRC meeting was held from 24 – 25 November, 2016 at Headquarters in which Project leaders and scientists from various centres made presentations on achievements during the 12<sup>th</sup> Plan period and proposed future research programmes. 46 projects were presented and discussed of which 35 projects and 8 sub projects were shortlisted for detailed presentation at the 24<sup>th</sup> Institute Research Committee (IRC) to be held shortly.

## Cage culture trials initiated in Ashtamudi Lake

As a recent initiative under All-India Network Project (AINP) Mariculture, one 4x4m floating cage made of 1.5 inch GI pipe with net cages was installed in Kochuthuruth, Ashtamudi Lake. 400 seeds of sea bass of 8-10 g size reared at Vizhinjam Research Centre of ICAR-CMFRI were stocked on 2<sup>nd</sup> November, 2016. A group of five farmers from Kochuthuruth Island have been selected for the demonstration programme. Farmers were given training on cage culture aspects such as fabrication of cage, floatation, mooring, preparation of net cages and stocking. Sea bass seeds reared in sea water were acclimatized to brackish water of 20 ppt and weaned from pellet feed to trash fish before stocking. Initially there was an attack of cirrolanid isopods which was controlled by regular cleaning of net cages and by shifting the cage to an area with more water flow.

(Reported by Vizhinjam Research Centre)



Cage culture trial at Kochuthuruth island of Ashtamudi Lake



## A new species of mackerel identified

A new species of mackerel named as Indian chub mackerel, *Scomber indicus* which is distinctly different from the other members of the mackerel family both morphologically and genetically has been identified from the west coast of India (available in [eprints @cmfri.org.in](mailto:cmfri.org.in)). The fish was first found off Gujarat coast in 2015, later it appeared in other areas of the west coast of India up to Kanyakumari. This year, the species is reported only from Kerala waters being caught mainly by ring seines and trawls and in small quantities by hooks and lines



*Scomber indicus*

operated around knolls which is landed in fishing harbours of Kochi, Vizhinjam, Alappuzha, Kollam and Kozhikode. Mainly immature fishes were landed this

year, and catch is being monitored continuously to understand their biology and interaction with other species.

(Reported by E. M. Abdussamad, Pelagic Fisheries Division)

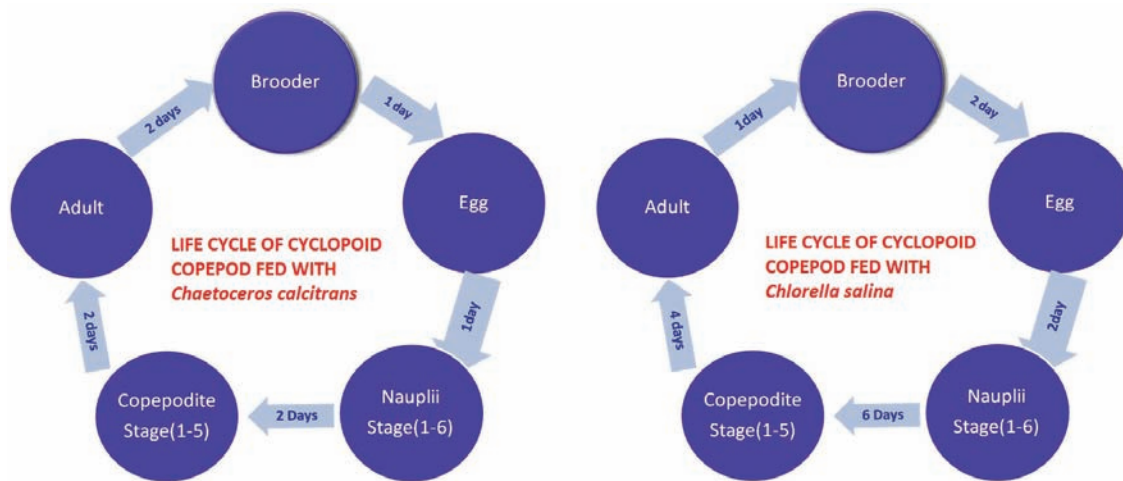
## Copepod *Apocyclops* sp. nov. isolated for live feed

Life cycle of hatchery reared *Apocyclops* sp. nov., a cyclopoid copepod, was studied in the live feed laboratory of Karwar Research Centre. This hatchery reared copepod was fed with different microalgal diets, namely, *Nannochloropsis oculata*, *Chlorella vulgaris*, *Isochrysis galbana* and *Chaetoceros calcitrans*, with a density of  $1 \times 10^8$  cells/ml. Variations were observed

in the fecundity of the copepod and the average egg production per day ranged between 25 and 35 eggs/female/day. Maximum number of eggs were produced by *Chaetoceros* fed copepods, with 90% hatching rate and a survival rate of 95%. When fed with different microalgal diets, wide variations (25% to 100%) in the survival rates of nauplii into adults were observed. The shortest life

cycle (8 days) of cultured *Apocyclops* sp. nov., was recorded when fed with *Chaetoceros*, whereas the life cycle was lengthy (15 days) when fed with *Chlorella*. The study revealed that *Chaetoceros* is the best algal diet for high fecundity and survival of this cyclopoid copepod isolated from Karwar waters.

(Reported by Jayasree Loka, S. M. Sonali, Purbali Saha, Smruta Phal and K. K. Philipose)



Life cycle of *Apocyclops* under different feeding regimes

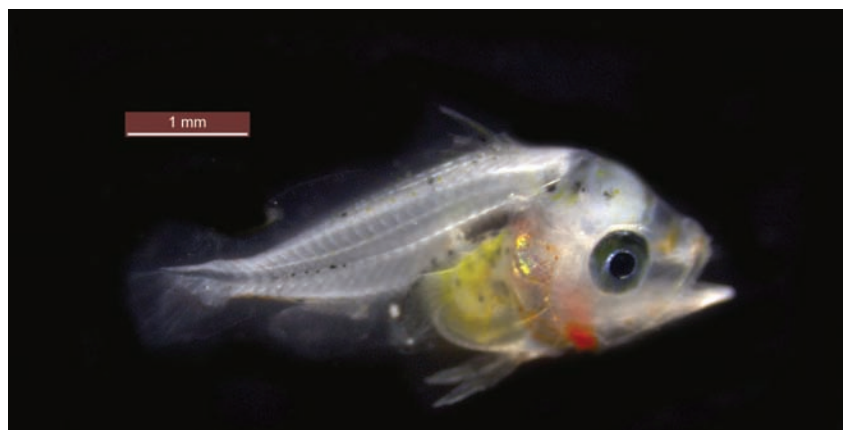
## Breakthrough in captive broodstock development and breeding of Marcia's anthias

Successful captive brood stock development and spawning of the marine ornamental serranid commonly called the Marcia's anthias, was achieved

at Vizhinjam Research Centre of ICAR-CMFRI. This research work were done under the All India Network Project (AINP) on Mariculture. *Pseudanthias*

*marcia* of the Subfamily Anthiinae is one of the most expensive reef fishes traded in the marine aquarium export trade and fetches around \$25 per fish in

international market. Being protogynous hermaphrodite with complicated breeding habits, reports on captive broodstock development and successful larval rearing are not available. At Vizhinjam Research Centre, brood stock of this species was developed in 5 ton Recirculation Aquaculture System (RAS). A total of 12 wild caught juveniles were stocked in the tank during the month of May, 2016. Spawning took place on 22<sup>nd</sup> December 2016, after 7 months of rearing in the RAS. The eggs hatched out the next day after an incubation period of about 14 hours. Around 4000 eggs in optic vesicle stage of embryo development were collected from the broodstock tank. The newly hatched



21 days Post Hatch (DPH) Juvenile of *Marcia's anthias*

larvae measured 1400 microns and standardisation of larval rearing protocol development is in progress at the centre.

(Reported by: M. K. Anil, P. Gomathi, K. K. Philipose, P. K. Raheem, B. Raju, O. Shalini, P. M. Krishnapriya and A. S. Shibina)



Developing eggs (8 hours)



Hatching 12 hours



2 days old larvae

## Viral Nervous Necrosis (VNN) in broodstock of orange spotted grouper detected

Viral Nervous Necrosis (VNN) or Viral Encephalopathy and Retinopathy (VER) has been reported in several cultured marine fish species worldwide. The causative agent is *Betnodavirus* that usually causes high mortality in fish fry and broodstock fishes. Affected fishes exhibit darkening of body colour, no response to feed and swirling movement and hyper-inflated swim bladders. Temperature plays an important role in the replication and pathogenicity of piscine nodavirus and in most Asian countries it has been reported frequently during summer months. VNN has been earlier reported in broodstock fishes of orange spotted grouper in different countries, however for the first time the study confirmed presence of VNN from orange spotted grouper broodstock maintained in recirculatory system and sea cages from Visakhapatnam Regional Centre of ICAR-CMFRI. A total of 9 brooders (4 from sea cage and 5 from RAS system) of size ranging between 3 to 6 kg observed with

symptoms were collected and tested for VNN using reverse transcriptase polymerase chain reaction (RT-PCR) with OIE listed primers specific for detection of VNN in groupers. Total RNA was extracted from tissue samples collected from brain, optic nerve, gills and gonad regions. First strand cDNA was synthesised using Oligo dT Primer and then the target gene for VNN located in RNA2 was amplified with specific primers. Presence of 430 bp amplicon in agarose gel electrophoresis confirmed the VNN infection in the fishes. The expression of viral load was more in the tissue collected from brain and optic nerves. The amplified products were sequenced and submitted in NCBI Genbank database (Accession no: KX608915 & KX608916). Generally, VNN carrier broodstocks are the source of inoculum of the virus to their larvae. Therefore, pre-spawning screening of broodstocks for VNN using PCR is very important. Only VNN-negative fish should be used for broodstocks and

spawn from these brooders, obtained by disinfecting the fertilized eggs with ozone, be used for preventing the vertical transmission of the disease to the larval rearing system.

(Reported by Sekar Megarajan, Ritesh Ranjan, Biji Xavier, Shubhadeep Ghosh, Narasimhulu Sadhu and B. Chinnibabu, Visakhapatnam Regional Centre)

## Two rare species of acanthurids reported

Squarenose unicorn fish *Naso smcdadei* and the humpback unicorn fish *Naso brachycentron* were collected from the Gulf of Mannar. Both are reef associated, macro algae feeders.

(Reported by R. Saravanan, I. Syed Sadiq and K. K. Joshi, Marine Biodiversity Division)



## Unusual landing of large sized queenfish

Heavy landings of large sized queen fish (*Scomberoides commersonianus*) locally known as "Katta" in trawl net (*Meenmadi*) from Pamban area was recorded at Therkuvadi landing centre, Gulf of Mannar on 21<sup>st</sup> November 2016. Such high volumes of landings are rare. The average length and weight of the fish landed was 96 cm and 7

kg respectively. Following a glut situation, market price per kg of the queen fish was only ₹ 90 per kg, lower than the usual price about ₹ 200. The whole fishes were taken for making dry fish which consumers prefer.

(Reported by Surya S., Shanmughanathan K., Saravanan R., Rajkumar M., Remya L., Vinothkumar Ramar and Abdul Nazar A. K., Mandapam Regional Centre)



Large sized Talang queenfish landings

## Unusual landings of Bullseyes by ring seines

Unusual landings of *Priacanthus hamrur*, was recorded on 6-7<sup>th</sup> October 2016 at Cheruvathur landing centre in Kasargod District, Kerala. The catch was landed by six ring seines and their carrier boats. These ring seiners

operated 2 to 3 hauls per day. Total catch per haul was about 1,500-2,000 kg. The ring seiners operated about 8-10 km off Cheruvathur fish landing centre, at a depths ranging from 24 to 26 m. The length range of the fishes were around

17 cm, and total estimated landing of the species on the observation days was 35 t. The price ranged from ₹ 20 to ₹ 25 per kg.

(Reported by M. Chaniyappa, Mangalore Reserach Centre)

## Occurrence of large sized cobia in Lakshadweep

Fishery for cobia (*Rachycentron canadum*) by hook and line operation is slowly emerging in the Lakshadweep

waters. A large female cobia that measured 84 cm was reported from hook and line fishery off Kavaratti. The occurrence of

small sized cobia only has been reported earlier from Lakshadweep seas.

(Reported by Mangalore Research Centre)

## Report on unusual occurrences in Lakshadweep seas

The September to November 2016 period was replete with many unusual phenomena in the marine fisheries sector of Lakshadweep. Unusually heavy landings of fishes like tunas, trevallies, rainbow runner, queen fishes, scads, bill fishes, wahoo, needle fishes, milk fishes, cobia, rays, parrot fishes, Bullseye etc. occurred in drift gill nets from 12-20<sup>th</sup> September at Androth. As a result, the prices of all varieties of the fishes crashed to record low levels. The billfishes and wahoo usually sold @ ₹ 400-500 per kg was sold for < ₹ 100 per kg and rainbow runners were sold for < ₹ 20 per kg. The gut content of these fishes caught in drift gillnet and encircling gill nets from Androth Island during 12-16 September 2016 indicated massive feeding on sprats and small prawns suggesting the aggregation of these forage organisms near the Island during the period. A massive bloom that remained for nearly one month occurred in Lakshadweep Sea from 17<sup>th</sup> September, 2016 onwards. The colour of the water in the near shore areas

between Kalpeni and Androth Islands on 18<sup>th</sup> September 2016 was murky. A fairly high mortality of reef associated fishes like trigger fishes, surgeon fishes, parrot fishes, groupers, squirrel fishes, butter fly fishes, box fishes and turtles were observed at Androth Island from 9<sup>th</sup> September onwards. Many fishes were found surfacing and making circular movements as late as second week of October 2016. Swarms of blue and gold fusilier (*Caesio caeruleus*) used as tuna live bait, was recorded during dusk hours near the Kalpeni Island from 23-25 September 2016. The sizes of the fusilier ranged from 18 to 20 cm and during the same period, Yellow fin tunas measuring > 100 cm (total length) were found in the Minicoy lagoon near the Thundi-Viringly Islets. Swarming of millions of striped round herring, *Spratelloides gracillis*, a highly preferred tuna live bait, near the breakwater area at Androth island during 2 - 6 October 2016 was observed. Several tonnes of these fish were caught on all the 5 days. Subsequently, the swarms disintegrated, and formed

comparatively smaller shoals spread into wider areas and were available in the usual fishing grounds near the Island. The very large spawning aggregations are locally known as 'Manzhachala' and livebaits in quantity sufficient for nearly 10 pole and line units can be easily caught in a single haul from such aggregations. During the same period thousands of blue stripe snapper, *Lutjanus kasmira* measuring 15-18 cm formed large shoals and were caught in encircling gill nets. Stray numbers of soldier fishes and bull's eye were also caught along with snappers. Landings of big sized torpedo scad and seer fishes like *Scomberomorus commerson* and *S. guttatus* was also observed in the gill net catches at Androth during October and November 2016. On an average 15-20 members of Wahoo weighing 20-25 kg each were landed by the troll line units operated off *Elikalpeni Bank* area. An earthquake of 5.3 magnitude was also reported on 12<sup>th</sup> October, 2016.

(Reported by K. P. Said Koya, Hashim K. K. N., Latheef C. P. and Suhail C. E. K, Calicut Research Centre)

## Recommendations to resolve the crisis in mussel farming in Kerala

The mussel farming sector of Padanna Backwaters (Kasaragod District) was confronted with several problems since 2014-15. The scientific team from ICAR-CMFRI monitoring the mussel farming activity in the area, set up a task force to identify the issues and suggest solutions to farmers and the Government. The results of the *in situ* experiments conducted by the institute was analysed and the draft report was presented to Kerala State Fisheries officials in a meeting organised by the Deputy Director of Fisheries, Kasaragod, on 14<sup>th</sup> October, 2016.

Following this, the report "Recommendations to resolve the crisis in mussel farming in Padanna Backwaters,

Kasaragod, Kerala" was presented at the 'Mussel farmer's and agent's awareness programme' at Cheruvathur, Kasaragod, on 15<sup>th</sup> October, 2016. In this meet around 200 farmers and agents from Kasaragod, Kanhangad and Valiyaparamba Panchayats participated and interacted with the scientists, state fisheries officials and local Panchayat officials. Among the 21 recommendations proposed by the task force to tackle these challenges are the adoption of sustainable aquaculture practices in Padanna Backwaters by improving the quality of seeds, enhancing the flushing rates, modifying the farm layout and reducing the farming density per unit area.

(Reported by MFD and FEMD)



Discussion with stakeholders regarding mussel farming

## Unprecedented heavy spatfall of mussels

Heavy spatfall of green mussel, *Perna viridis*, was observed in intertidal and sub-tidal mussel beds along Goa, Karnataka and Kerala coast during September to December 2016. In the intertidal mussel beds off Karnataka, the onset of spatfall was noticed from September, 2016. The average size of the mussel spat was 8.7 mm. Mussel spat settlement was also observed extensively on oyster shells and sandy substratum near bar mouths and estuaries along the Karnataka coast. Large scale settlement of the spat of brown mussel *Perna indica* was observed along Vizhinjam coast from August 2016 and they grew to seed size (35-40 mm) by October. Similar spat settlement was observed at Perumathura in Kerala and Kadiyapattanam and Enayam in Tamil Nadu. Along with brown mussel spat, stray numbers of green mussel spat was also observed in these places. Spat settlement was also observed on ropes suspended from rafts at Vizhinjam harbour.

(Reported by: Geetha Sasikumar, P. Gomathi and M. K. Anil, Molluscan Fisheries Division)

## Continued adoption of sea cage farming Technology

The fishermen Self Help Group from Munaikadu engaged in integrated seaweed and cobia farming continued the adoption of the farming with their own investment during 2016. Hatchery produced cobia fingerlings supplied by the ICAR-CMFRI, Mandapam stocked in two GI cages of 6 meter diameter and 3.5 meter depth during first week of May 2016 were reared with technical guidance and support from the scientists. After 195 days of culture 2.2 tonnes (t) of cobia were harvested on 24<sup>th</sup> November 2016. Each fish having an average weight of 2 kg was sold at farm gate price of ₹ 225 per kg and a gross revenue of ₹ 4,90,500/- was realized. The operating (cost: benefit) ratio was 0.53, indicating 47 % profit due to the farming.



(Reported by A.K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, P. Rameshkumar, B. Johnson, Amir Kumar Samal & K. K. Anikuttan, Mandapam Regional Centre)



## Emerging clam fishery at Chirayinkeezhu in Kerala

Nearly 400-500 people including 50-60 women from Perunkuzhi, Madam Palam and Aroor area of Chirayinkeezhu in Thiruvananthapuram district are involved in clam (*Paphia malabarica* and *Meretrix casta*) fishery that

began in 2016 due to the increased market demand. Nearly 90% of the clams are harvested by hand picking from the near shore area. From deeper waters these clams are harvested by groups of 2-3 fishermen each using hand dredges,

working in wooden canoes from early morning till evening. Harvested clams packed in gunny bags are sent to cities in Kerala, Goa and Karnataka.

(Reported by: M.K.Anil, Vizhinjam Research Centre)

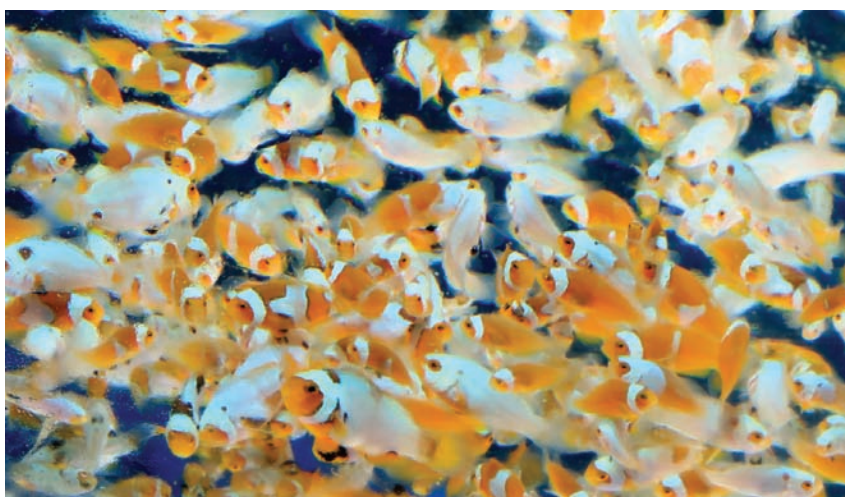
## Bulk sale of marine ornamental fish

The Mandapam Regional Centre has been consistently successful in the breeding and seed production of

marine ornamental fishes for more than a decade. Recently the centre has successfully raised hybrid clown fishes or

designer clowns and the protocols for larval rearing and fingerling production have been standardised. The designer clowns such as Picasso, platinum, snowflake, etc are highly sought-after varieties in the domestic as well as international markets. These are being sold to hobbyists or traders at nominal rates fixed by the institute. The recent bulk sale of percula clown, tomato clown, maroon clown and designer clowns to a trader in Chennai, fetched revenue of ₹ 1,62,500 which was deposited in ICAR account. This is the first time that such a bulk sale of marine ornamental fishes is reported from any R & D institute in India.

(Reported by A.K. Abdul Nazar, R. Jayakumar, G. Tamilmani, M. Sakthivel, P. Rameshkumar, Johnson, B., Amir Kumar Samal & K.K. Anikuttan, Mandapam Regional Centre)



Mass produced hybrid marine ornamental clownfishes

## Live oysters on the menu becomes popular

Live oysters are promoted for its health benefits and women SHGs from Moothakunnam trained by ICAR-CMFRI are now supplying live oysters to the growing clientele for such foods. This item on the menu cards is opening new avenues for marketing of the cultured oysters to the members of these SHGs.

Serving of live oysters at the National Cardiologists Conference



## ICAR-CMFRI extends support to Kerala state funded black clam relaying programme

CMFRI will provide the technical inputs black clam relaying programme at southern side of Thanneermukkom bund of Vembanad Lake operated by the Fisheries

Department of Kerala. After a series of meetings conducted for implementing this programme, it was decided that ICAR-CMFRI will select the sites suitable for relaying black clams and monitor the

growth and related parameters at these sites. Five clam marketing societies' of Vembanad will benefit from this programme.

## Cyclone Vardah impacts fisheries sector in Tamil Nadu

Disastrous Vardah Cyclone struck Chennai, Kancheepuram and Thiruvallur coastal districts on 12<sup>th</sup> December and affected nearly 25000 fisher families. Wind speed of 140 km per hour and huge tidal waves inundated the low lying areas of coastal villages causing heavy damage and impacted their normal life. The Tamil Nadu Fisheries Department reported loss of lives of 10

fishers with only 3 bodies recovered. The cyclone badly damaged mechanised and motorised fishing boats, gears, engines and catamarans in coastal villages and landing centres. Fishers at Kasimedu told unexpected changes in wind direction ended up in heavy loss for all the fishers as boats couldn't escape the fury of the cyclone and several were damaged beyond repair. Total economic

loss due to Vardha Cyclone in Chennai, Kancheepuram and Thiruvallur coastal districts was estimated to be ₹ 32.5 crores. The state's Fisheries Department worked round the clock and paid relief amount to the fishers based on the assessment of damages.

*(Reported by R. Geetha, E. M. Chhandaprajnadarsini and P. Laxmilatha, Madras Research Centre)*

## Lab facilities at Kovalam Field Lab affected by Cyclone Vardah

The strong winds during cyclone Vardah damaged the roof of sedimentation /filter unit and algal culture facilities in the Kovalam Field Lab. Several doors and window panes and sea water pump installations were damaged. The power was restored after ten days. The animal stock and the larval stock has been sustained with lot of efforts. The cages under TSP installed at Pulicat were not directly affected although the village infrastructure was badly damaged, with several houses flooded and fishing boats damaged.



*Kovalam lab damaged by Cyclone Vardah*

*(Reported by Joe K. Kizhakudan, Madras Research Centre)*

## National Workshop on Digital Library Management

A two-day national workshop cum training on Digital Library Management was held at ICAR-CMFRI organized by its Library and Documentation Centre. Inaugurating the workshop, Dr. A. Ramachandran, Vice Chancellor, Kerala University of Fisheries and Ocean Studies (KUFOS) said the library professionals must be well trained with the latest information management technologies in order to extend the efficacy of the digital library system to the users. The development in information technology has revolutionized the concept of library and digitization of information has made the research activities easier and effective. Dr. Ramachandran also inaugurated D-Space@CMFRI, a digital archive of information related to the institute. In his presidential address, Dr. A Gopalakrishnan, Director, ICAR-CMFRI said its library would be made the information gateway in the field of fisheries and marine science in the country. The workshop was intended to bring together library and information professionals on a



*Dr. A. Ramachandran, VC, KUFOS inaugurating the workshop*

common platform for in depth analysis and discussion of various aspects and new developments in the field of digital library system. A special publication 'Glimpses of Marine Fisheries- A Caricature', authored by Dr. A. A. Jayaprakash Principal Scientist (Retd.) was also released. Dr. V. Gopakumar, Librarian, Goa University,

Dr. B. S. Sivaram, National Aeronautics Laboratory, Bangalore and B. Ravishankar Informatics, Bengaluru spoke in various technical sessions. Dr. K. S. Shobhana, Principal Scientist, Mrs. P. Geetha, Officer-in-charge, Library and Documentation Centre and Dr. V. Mohan also spoke on the occasion.



## Stranding of olive ridley turtles along Chennai coast

From 2<sup>nd</sup> to 7<sup>th</sup> January, 2017, a total of seven adult carcasses of the Olive Ridley (*Lepidochelys olivacea*) turtles,

carapace length ranging between 64 cm and 72 cm, were observed between Marina beach and Kanathurreddy kuppam. Mortality of these individuals are attributed to hit by boats and entanglement in fishing nets.

(Reported by J. Balaji, K. S. S. M. Yousuf, S. Chandrasekaran, P. Laxmilatha, Madras Research Centre)



## Bottlenose dolphin washed ashore on Puri coast

One dead bottlenose dolphin (*Tursiops truncatus*) was found washed ashore near Digabarini khunti of Puri coast on 5<sup>th</sup> November 2016. Injury marks were found near the snout and the flippers. The female dolphin weighed approximately 80 kg. It was taken by the Wildlife Department of Puri and buried after post mortem by its Veterinary surgeon. The dolphin was dark blue with white in the posterior portion. Inshore and offshore individuals vary in colour and

size with former being smaller in size and lighter in colour. Dolphins move in groups particularly during October and

November months off Puri coast.

(Reported by Reeta Jayasankar, Puri Field Centre)



## Climate Change & Fisheries: ICAR-CMFRI submits Country Status Report to SAARC

The Country Status Report (CSR) about the impact of climate change on coastal fisheries and aquaculture sector in India was presented in a meeting between SAARC Agriculture Centre (SAC) and representatives from SAARC nations during a video conference convened by the Dhaka headquartered SAC.

A 3-member team headed by CMFRI Director Dr. A. Gopalakrishnan represented India in the conference. The team India presented the report which included the details of issues and challenges being developed owing to the climate change in the coastal fisheries and aquaculture sector in India. Dr. P. U. Zacharia, Project Coordinator of National Innovations on Climate Resilient Aquaculture (NICRA) and Dr. Grinson George, Senior Scientist were the other members of the CMFRI team who prepared the CSR which exposed disruptions being occurred due to the climate change in areas such as marine ecosystem, fish stock, harvesting sector, aquaculture, market and trade etc. The present condition of fishing communities was also included in the report. During the conference member countries reviewed the remedial steps to be taken

to mitigate the impact of climate change on fisheries and aquaculture, and finalised a set of recommendations to be followed by the member countries in future. The meeting prioritised, in the recommendations, developing collaborative and comprehensive efforts to address climate vulnerabilities and commissioning of SAARC level task-force to formulate strategies to mitigate climate change impacts. Conduct of awareness programmes on reducing greenhouse gas emissions and expansion of open sea cage farming and pen culture in coastal water bodies were also listed as the major recommendations. Other noteworthy recommendations finalised during the meeting include, introduction of saline/ temperature tolerant and fast-growing fish species for coastal aquaculture; establishment of fish sanctuary for improvement of natural stocks; setting up common gene bank for vulnerable species; development of alternate energy and fuel sources for inland and marine capture fisheries; utilisation and e-commerce ventures and Information Communication Technology (ICT) for social and livelihood security of fishers and fish farmers; framing of wetland conservation policies to manage

coastal ecosystem; community based coastal fisheries and aquaculture management; upgrading and modernizing the fishing industry related infrastructure and setting standards for fishing practices; human resource development through education, training and exchange programmes, supporting member countries including visits, project support and resource sharing; development of ecologically sensitive habitats such as mangroves, corals and wetlands; farming of potential carbon sequestering species such as seaweeds and Integrated Multi-trophic Aquaculture (IMTA) and development of low cost fish farming technologies in tune with climate variability.

Dr. Mohammed Anwar Sadaf from Afghanistan, Sayed Mehdi Hassan from Bangladesh, Namgay Dorji from Bhutan, Shafiya Naeem from Maldives, Suresh Kumar Wagle from Nepal and Dr. Rehana Kausar from Pakistan also presented their country status reports and joined the discussion at the conference. Dr. S. M. Bokhtiar, Director of SAARC Agriculture Centre (SAC) and Dr. S. S. Giri, Senior Programme Specialist (Fisheries), SAC coordinated the conference.

## Mapping of natural seed resources and mariculture sites

Under All India Network Project on Mariculture, a study was carried out on the availability of natural seed resources, along the Kali estuary of Karwar. Weekly castnet surveys during 2015-16 using cast nets and data collection from local fishermen on daily basis was done. Based on data collected most dominant fish seeds available are carangids, snappers and mullets and of the 24 prioritised species, 8 species are available in Kali estuary. Dominant species identified were *Caranx ignobilis*, *Sillago sihama*, *Lutjanus johnii*,

*L. argentimaculatus*, *Mugil cephalus*, *Lethrinus lentjan*, *Psettodes erumei* and *Epinephelus coioides*. Highest abundance of *C. ignobilis* was recorded in Sunkeri while seeds of snapper were abundant in Halga. Abundance of snapper seed was more in areas where the salinity ranged between 12-20 ppt. Carangids and mullets were found abundant in all the seasons. CPUE (numbers per haul) of carangids and snappers was 1800 and 700 respectively. Potential sites identified were Nandangadda, Sunkeri, Kadwad, Siddar, Kinner, Halga, Majali, Devbagh.

Out of the eight sites identified, three sites viz., Halga, Kanasgiri and Sunkeri were found potential for snapper fish seed resources. *Gerres limbatus*, *Gerres filamentosus*, *Etroplus suratensis* and *Scatophagus argus* were found to be the most abundant among non-prioritised species.

Four Indigenously designed HDPE cages with 10m diameter have also been installed at marine farming sites of Karwar on 7<sup>th</sup> November, 2016.

(Reported by Jayasree Loka & Praveen N. Dube, Karwar Research Centre)

### Training Programmes

## National Training Programme on Fisheries Management

A 21-day National Training Programme on 'Monitoring Structure and Functions of Pelagic Ecosystem at Regional Sectors: Relevance for Fisheries' was held from 16<sup>th</sup> November - 6<sup>th</sup> December, 2016 at Headquarters. Prof. Trevor Platt, an eminent marine-optics scientist from the UK and a Jawaharlal Nehru Science Fellow (JNSF), currently with the institute inaugurated the training programme. The training programme aimed at promoting an ecosystem based approach to fisheries management and sponsored by National Innovations in Climate Resilient Agriculture (NICRA) project. Dr. Shubha Sathyendranath, Plymouth Marine Laboratory, UK, Dr. P U Zacharia,



Inauguration of the programme by Dr. Platt

Principal Scientist and Head of the Demersal Fisheries Division and Dr. Grinson George, Senior Scientist, ICAR-CMFRI spoke on the occasion.

## Second phase of training programme for fisherwomen empowerment

In a bid to empower the fisherwomen in Kerala, a two-month training programme for skill enhancement and capacity development of fisher youth, 'Theeranaipunya' was launched. The programme was organized with the support of the Society for Assistance to the Fisherwomen (SAF), functioning under the Fisheries Department. C. R. Satyavathi, Executive Director, SAF inaugurated the training programme which focuses on skill development and imparting on job training to the girls from the fishing community. Dr. Vipin Kumar and Dr. V. Kripa ICAR-CMFRI spoke at the inaugural function. Around 70 faculty members within and outside the institute took classes on various topics. Yoga practices and cultural programmes were also scheduled



as part of the training programme. The first phase of 'Theeranaipunya' conducted during the period February-April this year

was a great success, with almost all the participants securing jobs in tune with their educational qualifications.

(Reported by: Dr. Shyam S. Salim, Course Director)



## Training program on Integrated Multi-Trophic Aquaculture (IMTA) - A Climate Change Resilient approach

Tuticorin Research Centre organised two days awareness cum training program on 'Integrated Multi-Trophic Aquaculture (IMTA) - A Climate Change Resilient Approach' under the project National Innovations in Climate Resilient Agriculture (NICRA) - Marine Fisheries (Mariculture Component) during 16<sup>th</sup> and 17<sup>th</sup> November 2016 for the sea cage farmers of Thoothukudi district. A total of 23 participants from 6 coastal villages attended the programme. Dr. I. Jagadis, Dr. P. S. Asha, (Principal scientists) Dr. L. Ranjith, and Mr. C. Kalidas (Scientists), Mr. N. Jesuraj and Mr. P. Muthukrishnan (Divers) delivered lectures and practical sessions. On the

second day, field visit to model sea cage farm at Sippikulam followed by the practical demonstration on site selection for sea cage farming, GI cage fabrication, cage culture of sea bass, lobster, pearl

oysters and seaweeds (IMTA) were given to the trainees. Participation certificates for the trainees were distributed by Dr. P. P. Manojkumar, Scientist-in-charge, Tuticorin Research Centre.



Release of Training manual by Dr. Reena Selvi, Joint Director (Regional), State Fisheries Department, Thoothukudi District

## Training Programme under FIMSUL-II

Training Programme on 'Marine Sea Cage Farming' for the fishers and fisheries officials under FIMSUL-II project of State Fisheries Department, Tamil Nadu was held in three batches at the Mandapam Regional Centre. Eight fishers

and one Inspector of Fisheries attended the training for Kanyakumari district conducted during 20<sup>th</sup>-22<sup>th</sup> September 2016. For Pudukottai district, 17 fishers and two Inspectors of Fisheries participated in the programme, held in

two batches. The training for Ramanathapuram district was conducted during 1<sup>st</sup>-3<sup>rd</sup> November 2016, in which 12 fishers and one Inspector of Fisheries took part. There were 19 fishers and one Inspector of Fisheries in the training for Kancheepuram district held during 22<sup>nd</sup>-24<sup>th</sup> November 2016. The participants were given hands-on training on cage farming, feeding, cage and net fabrication, net exchange, and disease management. Besides, they were appraised with latest information on broodstock development and seed production technologies of marine finfishes and ornamental fishes. Field visits were also arranged to sea cage farm at Mandapam and a seaweed farm at Munaikadu. Dr. A. K. Abdul Nazar and Dr. B. Johnson coordinated the training programme.



Shri. Issac Jayakumar, Deputy Director of Fisheries, Ramanathapuram distributing the certificates

## Training programme on 'Cage Culture of Finfishes' at Visakhapatnam Regional Centre

A training programme on "Cage Culture of Finfishes" was conducted under All India Network Project on Mariculture (AINP-M) at Visakhapatnam Regional Centre of CMFRI from 7<sup>th</sup> -12<sup>th</sup> November, 2016. The programme was organized with an aim of developing skills on cage culture technology and also to disseminate the technology in different part of the country. The programme was attended by 20

participants including fishermen, aqua farmer and entrepreneurs from different districts Andhra Pradesh and Telangana. The training programme was inaugurated by Mr. V. Venkateswara Rao, Joint Director of Fisheries, Visakhapatnam on 7<sup>th</sup> November, 2016. During the course of the programme different aspects of cage culture including overview of cage culture, cage fabrication, installation, maintenance,

candidate species for cage culture and financial support for cage culture were taught and the trainees were given hands on training on cage fabrication, mooring and net exchange. A bilingual (English and Telugu) training manual on cage culture of finfishes covering different aspects of cage culture were given to all the trainees. Dr. Sekar Megarajan, co-ordinated the programme.

## Training Programme on bivalve farming

Training programme on bivalve farming was organised by Mangalore Research Centre and Department of Fisheries, Udupi on 23 December, 2016

at Sasthan, Udupi. Dr. Geetha Sasikumar and Shri. Nataraja G.D. imparted hands-on training on "Green mussel and oyster farming in estuarine and coastal waters

including demonstration on mussel seeding to 47 participants comprising fishermen and farmers from Udupi District.

## Cage culture technology demonstration under AINP Mariculture

Under the All India Network Project on Mariculture at the Karwar research centre of CMFRI a seven-days training program on "Open sea Cage farming of marine finfish and shellfish" was organized from 5<sup>th</sup>-11<sup>th</sup> December, 2016. Hands-on training on different aspects of open sea floating cage culture

was imparted to participants from six research and regional centres of ICAR-CMFRI and five collaborating agricultural universities. Theory as well as practical sessions to acquaint the participants with the intricacies of different faces of open sea cage farming right from site and species selection, cage designing,

mooring, nets and netting materials for cage culture, maintenance of brooders in the RAS, live feed culture, nursery rearing of fingerlings, growth monitoring, cage maintenance, environmental monitoring, health management, harvesting and marketing of cage cultured fishes was organised.

## Cage culture technology demonstration for state fisheries officials



Visit to cage farm site



Hands on training in cage fabrication

Training programme on 'cage culture technology demonstration and development' was conducted for the employees of State Fisheries Department of Kerala at the Karwar research centre during 6<sup>th</sup> to 12<sup>th</sup> December, 2016. 8 participants attended the programme. Hands on training on cage farming

including feeding, cage and net fabrication, net exchange etc was provided to the officials. Visit to hatchery facilities to understand brood stock development and seed production technologies of marine finishes was arranged besides field visits to sea cage at Karwar and Polem.

## Students trained



Dr. R. Narayanakumar distributing certificates to the students

Dr. N. Aswathy and Dr. P. Shinoj organised 10 days on the job training programme from October 24<sup>th</sup> to 4<sup>th</sup> November, 2016 for 79 Vocational Higher Secondary School students from Kaippamangalam, Thevara and Kadamakkudi on 'Advances in capture fisheries and aquaculture' under ATIC.

## Journal Club organised invited talks

Dr. Gustav Paulay, Curator of Florida Museum of National History, University of Florida, USA delivered a lecture on 'Reef Biodiversity: the Inside Story' at Headquarters. Dr. Gustav, who has specialized in reef biodiversity research and is also an editor of WORMS, the world's largest online database for taxonomy marine species, urged the scientific community to participate in developing online database of the marine biodiversity, helping interested stakeholders get access to the information of the nation's resources. He visited the National Marine Biodiversity Museum at ICAR-CMFRI which is

designated as the National Repository by the Government of India and appreciated its showcasing of varieties of marine species regarded as the largest of its kind in the country. Director Dr. A. Gopalakrishnan presented a memento to Dr. Gustav. Dr. K. K. Joshi, Head, Marine Biodiversity Division and Dr. Shyam S. Salim, Principal Scientist and co-ordinator of the Journal Club, also spoke on the occasion.



Dr. Gustav being welcomed by Dr. A. Gopalakrishnan, Director



## Cleanliness drive at Headquarters and Centres

As part of the *Swachh Bharat Abhiyan*, the institute observed *Swachhta Pakhwada*, a 14-day cleanliness drive, at headquarters in Kochi and its various research and field centres in the country. It commenced on Gandhi Jayanthi and culminated on the *Rastriya Ekta Divas* (31<sup>st</sup> October) with activities implemented at ICAR-CMFRI Headquarters and its ten regional/ research centres. At HQ, Dr. A. Gopalakrishnan, Director, administered the 'Swachhata Pledge' to all staff with the commitment to make self, community,

society, villages and cities clean and strive towards taking the nation into the exemplary list of the Clean Countries in the world. The programmes conducted ranged from cleaning the public utility areas like harbour, hospitals, schools, parks, beaches, bus shelters, boat jetties, public walkways, playgrounds; cleaning the office premises; to planting trees, vegetable gardening, setting up of biowaste utilization plants besides creating awareness among public by conducting various competitions in this connection, Awareness in Yoga; health, positive thinking and water conservation etc, was generated by special programmes. Involvement of VIPs in the institute's *Swachhta Awareness* programmes was also done. Some of the major events included human chain on awareness, cleaning beaches, developing products and processes leading to better waste disposal / reduction. A talk on Environment and Development : Role of individuals and society on 20<sup>th</sup> October, 2016 by Mr. C. R. Neelakantan, noted

environment activist and lecture by Mr. Sarvesh Shashi, Chief Executive Officer, Zorba - A Renaissance Studio, Chennai popularising yoga on 28<sup>th</sup> October, 2016 was arranged at Headquarters. One of the hallmarks of the *Pakhwada* has been developing fruitful linkages with the civic societies and other government agencies in partnering with them for future initiatives. Daily Reporting which featured in dailies as well as official websites including that of the ICAR was also a highlight.

Staff of Mumbai RC jointly participated in the world's largest mass cleanup drive at Versova beach along with the Versova Residents' Volunteers (VRV), Bombay Municipal Corporations (BMC) staffs and local citizens on 22<sup>nd</sup> October, 2016 from 8.00 to 11.00 am. During the drive three truck loads of garbage was removed to the dumping station. Veraval Regional centre organised awareness rally, cleaning of the Somnath Beach and competitions for school children.



Human chain at Headquarters



Beach clean up at Fort Kochi



Awareness campaigns among fish processing fisherwomen groups organized by Vizhinjam Research Centre



Schoolchildren gathered for the painting competition organised at Veraval



Clean up drive at Versova Beach, Mumbai



Biowaste management unit set up at Mangalore Research Centre



Cleaning of premises at Tuticorin Research Centre



Planting of saplings at Mandapam Regional Centre



Awareness Rally organised at Tuticorin



Elocution competition on 'CLEAN INDIA' for school children organized by Tuticorin Research Centre



Dr. Jasmine.S. and team comprising Ranjith, L.; Ramkumar, S. Miriam Paul Sreeram, Sobhana, K. S., K. K. Joshi and Jose Kingsley bagged the Best Poster Award for their poster on 'Hard Coral diversity Of Minicoy Island, Lakshadweep' in the Session: Animal, Aquatic, Insect, Microbial Genetic Resources at First International Agrobiodiversity Congress (IAC 2016) held in New Delhi in November 2016.

Mr. S. Chandrasekar, scientist won the best paper award for his presentation on "Comparison of growth performance and survival of cobia, *Rachycentron canadum* fingerlings fed with commercial pellet feed and low value fish" at International Conference on Science and Technology for National Development 25<sup>th</sup>-26<sup>th</sup>, October, 2016 at KUFOS, Panangad, Kochi.



**ICAR-CMFRI Team who won the poster competition with Dr. Jena, DDG (Fisheries) ICAR at IAC 2016**

Dr. T. M. Najmudeen, Senior Scientist, received the Best Poster Award for the poster presentation entitled "Bioeconomic model to estimate economic loss due to juvenile fishing using population parameters authored by T. M.

Najmudeen, P. U. Zacharia and T. V. Sathianandan at the International Congress on 'Post-Harvest Technologies of Agricultural Produce for Sustainable Food and Nutritional Security' held at Lucknow during 10<sup>th</sup>-12<sup>th</sup> November, 2016.

**New Publications**



**CMFRI Special Publication No.121**

Dineshbabu, A P; Thomas, Sujitha and Dinesh, A C (2016) Handbook on Application of GIS as a Decision Support Tool in Marine Fisheries



**Marine Fisheries Policy Brief - 4**

Mohamed, K S (2016) Marine Fisheries Policy Brief-4; Fishing Using Lights How should India handle this new development.



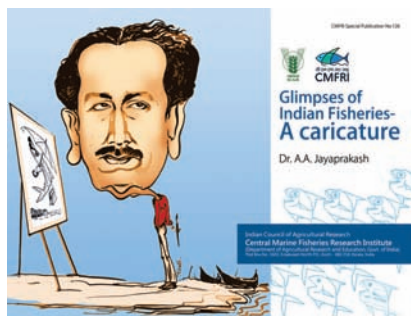
**CMFRI Special Publication No.125**

Zacharia, P. U., Dineshbabu, A. P., Thomas, Sujitha, Kizhakudan, Shoba Joe, Vivekanandan, E., Pillai, S Lakshmi, Sivadas, M., Ghosh, Shubhadeep, Ganga, U., Rajesh, K. M., Nair, Rekha J., Najmudeen, T. M., Koya, Mohammed, Chellappan, Anulekshmi, Dash, Gyanaranjan, Divipala, Indira, Akhilesh, K. V., Muktha, M. and Dash, Swatipriyanka Sen (2016) Relative vulnerability assessment of Indian marine fishes to climate change using impact and adaptation attributes



**CMFRI Poster No.19/2016**

Saji Kumar, K. K., Venkatesan, V., Jestin Joy, K M and Mohamed, K S (2016) Oceanic cephalopod fauna of Southeastern Arabian Sea



**CMFRI Special Publication No.126**

Jayaprakash, A A (2016) Glimpses of Indian Fisheries - A Caricature



Dr. A. Gopalakrishnan, Director, inaugurated the sale of T-shirts and coffee mugs imprinted with the images of marine ornamental aquarium fishes, corals and slogans promoting awareness of the protection of marine environment, at Vizhinjam Research Centre on 20<sup>th</sup> October, 2016.



## Recreation Club

A special cardiology camp was organised on 16<sup>th</sup> December, 2016 at Tuticorin Research Centre to provide health care support for the staff and their family members. Dr. M. Sampathkumar,

Cardiologist, three General Physicians and 11 medical assistants from Meenakshi Mission Hospital and Research Centre rendered their services in the camp. Nearly 60 members attended the medical

camp and benefited.

Staff Recreation club of the Mangalore Research Centre celebrated Diwali and Christmas.



Health check up organised at Tuticorin Research Centre



Diwali Celebrations at Mangalore Research Centre

## Visitors

Prof. Richard Hay, MP, Lok Sabha visited Kochi HQ on 28<sup>th</sup> December, 2016.

centre's activities. Later, Dr. Jena jointly addressed the staff of ICAR-CMFRI and

interest in the mariculture activities of the centre.



Prof. Richard Hay in the Museum



Dr. Jena, DDG, ICAR in the marine fish hatchery

Dr. J K Jena, Deputy Director General (Fisheries), ICAR, New Delhi visited the Visakhapatnam Regional Centre of ICAR-CMFRI and Visakhapatnam Research Centre of ICAR-Central Institute Fisheries Technology on 15<sup>th</sup> October, 2016. At ICAR-CMFRI he visited the the RAS and Hatchery facility where larval rearing of orange spotted grouper is in progress as part of mariculture programmes at the centre. The Scientist-In-Charge(s) of both the institutes made power point presentations and briefed about the

ICAR-CIFT at Visakhapatnam.

Dr. C N Ravishankar, Director, ICAR-CIFT visited the Visakhapatnam Regional Centre on 30<sup>th</sup> November 2016. He interacted with the scientists and was apprised of the research activities and mariculture facilities of the centre.

Mr. Ram Sankar Naik, Commissioner of Fisheries, Govt. of Andhra Pradesh visited the Visakhapatnam Regional Centre on 2<sup>nd</sup> December 2016. He evinced a keen

UGC accreditation committee members interacting with SIC of Mumbai Research Centre

University Grant Commission (UGC) Accreditation Committee for ICAR-CIFE, Mumbai visited Mumbai Research Centre of ICAR-CMFRI on 25<sup>th</sup> October, 2016.





ICAR-CMFRI participated in an exhibition organized in connection with the Kisan Mela and Mega-Exhibition-Centenary Expo at ICAR-CPCRI, Kasaragod from 10<sup>th</sup>-13<sup>th</sup> December, 2016. The staff of Mangalore Research Centre co-ordinated the arrangements and showcased the activities and technologies developed by the institute. Shri. Radha Mohan Singh, Union Minister for Agriculture and Farmers' Welfare, Shri Anant Kumar

Hegde, Member of Parliament, Shri. N.A.Nellikunnu, MLA, Kasargod and other dignitaries visited the stall.

Dr. P. S. Swathilekshmi, Principal scientist and team set up the CMFRI stall in the exhibition "Science Expo-2016" organised by Karthika Thirunal Government vocational and Higher Secondary school for girls, from 21<sup>st</sup>-23<sup>rd</sup> October 2016.

ICAR-CMFRI participated in the exhibition at St. Mary's school, Thamarachal on 20<sup>th</sup> November, 2016 and Government Sanskrit School, Tripunithura from 28<sup>th</sup>-29<sup>th</sup> November, 2016.

Mumbai Regional Centre of ICAR-CMFRI participated in the Exhibition "Vigyan Yagnya-2016", at K. J. Somaiya College, Vidyavihar during 7<sup>th</sup> to 10<sup>th</sup> December, 2016.



Exhibition stall at Kisan Mela



Stall at Science Expo 2016

## Official Language Implementation

### Hindi Workshops

A One day Hindi workshop on 'Official Language Policy' was conducted for



Workshop at Headquarters



Valedictory functions of Hindi Chetana Mas celebrations at Mumbai Research Centre

the Officers and staff members of CMFRI Headquarters on 8<sup>th</sup> December, 2016. Shri Navin Kumar Yadav, Assistant Director (OL), conducted the class in which 15 Officers and staff attended.

At Madras Research Centre, Hindi workshop on 'Use of Hindi in daily life' was conducted on 21<sup>st</sup> December, 2016, by Smt. Dr. P. Saraswathi, Assistant Professor, University of Madras, Chennai. It was attended by 20 staff members of the Centre.

Mumbai Research Centre of ICAR-CMFRI conducted Hindi Workshop on the topic related to *Swacch Bharat Abhiyan* and cleanliness on 22<sup>nd</sup> October, 2016. Hindi Karyanvayan Committee meeting of the Centre was conducted on 5<sup>th</sup> November, 2016. Dr. Veerendra Veer Singh, Scientist-in-Charge, participated in the meeting of Hindi Coordination Committee of Nagar Rajbhasha Samithi (TOLIC) at ICAR-Central Institute of Fisheries Education on 29<sup>th</sup> November, 2016.

Hindi Pakhwada/*Hindi Chetana Maas* was celebrated at Mumbai Research from 1<sup>st</sup> October 2016 to 15<sup>th</sup> October 2016 by organising various competitions for

staff to promote the use of official language. Dr. S.D. Tripathi, former Director, ICAR-CIFE and Dr. Anil Chaubey, SIC, CSIR-NIO were present during the valedictory function.

### OLIC Meeting

The quarterly meeting of Official Language Implementation Committee of the Institute was held on 05.10.2016 under the Chairmanship of Dr. A. Gopalakrishnan, Director.

### Participation in Kochi TOLIC Joint Hindi Celebration - 2016

Officers and Staff members actively participated in the Joint Hindi Celebration - 2016 conducted by Kochi TOLIC in Income Tax Office, Kochi during 21<sup>st</sup>-25<sup>th</sup> November, 2016. Dr. J. Jayasankar, Principal Scientist, Smt. A. Ramya, Assistant and Shri A.T. Sunil, UDC won prizes for various competitions in Hindi proficiency, held during the event.



## World Fisheries Day celebrated with launch of Aqua Task Force

The Krishi Vigyan Kendra Ernakulam of ICAR-CMFRI introduced an Aqua Task Force named *Kadamakudy Malsya Karma Sena* on 21<sup>st</sup> November 2016 to help boost fish culture. The task force, comprising a group of youngsters trained by the KVK, was launched by Dr. A. Gopalakrishnan, Director, ICAR-CMFRI at a function held on Pizhala Island, as part of the World Fisheries Day celebration. Under the technical guidance of experts from the KVK, the young people in the Aqua Task Force will undertake various works to assist fish farmers on payment basis. They are able to help farmers in areas such as farm design, cage fabrication, cleaning, pond preparation, seed sourcing, quality control, feed selection etc. KVK will assist the task force in making project reports to avail bank loans for aquaculture projects. For availing the services of the task force, KVK can be contacted at 8281757450. A hand book on FAQs on cage farming and a leaflet on GIFT Tilapia



Launch of the Aqua Task Force

farming were also released during the function. These publications can be purchased from KVK sales counter at ICAR-CMFRI in Kochi. A seminar on 'Cage Aquaculture' was also conducted as part of the programme. Smt. Shalini Babu,

President, Kadamakkudy Grama Panchayat presided over the function. Dr. Shinoj Subramannian, Senior Scientist and Head, KVK, Dr. P. A. Vikas, Subject Matter Specialist (Fisheries) were present.

## World Soil Day celebrated

The World Soil Day celebration of KVK was held at Palluruthy, Ernakulam on 5<sup>th</sup> December 2016. Shri K.J. Maxy, Member of Kerala Legislative Assembly from Kochi, inaugurated the programme with the launch of KVK's new Drip irrigation kit (irrigateasy). Smt. Hema Prahladan, Councillor, Kochi Corporation presided. Dr. Shinoj Subramannian, Senior Scientist & Head of KVK and Dr. R. Narayanakumar, Head, SEETTD division, ICAR-CMFRI were present. A yearly calendar for Nutmeg farming indicating month wise recommendations was also released during the programme. A seminar on soil test based fertilizer application followed.

The basic concept behind introducing Irrigateasy suitable for kitchen gardens upto 1 cent area or 80 growbags is to



Release of KVK's Annual calendar on Nutmeg farming

attract non traditional farmers to self farming for safe food production. The kit that can be installed easily works under low pressure or in gravity flow. The flow to each drip line can be controlled through an electronic control system. The whole unit is portable and its modular design

helps to expand it to bigger area. The cost of the unit that contains 50 meter drip tape, 6 end caps, 5 connectors with lock and valve, 2 meter connecting hose, take off with control valve along with a CD on installation procedure is only ₹ 500/.

## KVK launches initiative to tackle menace of aquatic weeds

At a time when the excessive growth of aquatic weeds is posing threat to the ecosystem of the fresh water resources, an initiative of growing fishes such as grass carp (*Ctenopharyngodon*

*idella*), which consumes the aquatic weeds as feed to tackle the weed menace in the ponds has been launched. Dr. A. Gopalakrishnan, Director launched the programme by releasing fingerlings

of grass carp into the Perunnakkulam Shiva temple pond in Tripunithura. Dr. Shinoj Subramannian and Dr. Vikas P.A. from KVK were also present during the launch of the programme.

- **Dr. A. Gopalakrishnan**, Director attended the meeting with the Director General, ICAR at CTCRI, Thiruvananthapuram on 20<sup>th</sup> October 2016.

Attended the final meeting of the Task Force related to the use of technology for Agriculture Insurance under the Chairmanship of Dr. Ramesh Chand, Member (Agriculture) at NITI Aayog, New Delhi on 24<sup>th</sup> & 25<sup>th</sup> October, 2016.

Attended the review meeting of ICAR Network Projects and Outreach Research Projects at NASC, New Delhi on 3<sup>rd</sup> & 4<sup>th</sup> November 2016.

Attended the 25<sup>th</sup> meeting of ICAR Regional Committee No. VIII at Sugarcane Breeding Institute, Coimbatore on 11<sup>th</sup> & 12<sup>th</sup> November 2016.
- **Dr. K. S. Mohamed**, Head, MFD attended a meeting of awareness programme on "Minimum Legal Size and Stock Depletion" for the Fishermen of Ernakulam District organized by Department of Fisheries, Kerala held on 20<sup>th</sup> October, 2016 at the Relief Boat Owners Association Hall, Munambam, Kerala.

Attended the meeting of the Working Group on Fisheries 27<sup>th</sup> October, 2016 at State Planning Board, Pattom, Trivandrum.

Attended the 3<sup>rd</sup> meeting of the Expert Committee for making amendments in KMFR Act held on 31<sup>st</sup> October, 2016 at CIFT, Kochi.

Attended the Fisheries awareness programme for fishermen of Ernakulam District 7<sup>th</sup> November, 2016 at Salwa Hall, Thoppumpadi.

Attended the meeting with Minister of Fisheries and Deputy Director of Fisheries (Alappuzha) for black clam project on 10<sup>th</sup> November, 2016 at Alappuzha.

Attended the meeting of the Clam resource management committee held on 22<sup>nd</sup> November, 2016 at Collectorate, Kollam.

Attended the meeting of the MSC Technical Advisory Board held on 29<sup>th</sup>-30<sup>th</sup> November, 2016 at London.

Attended the meeting "Clam restoration programme in Vembanad Lake held on 17<sup>th</sup> December, 2016 at CMFRI, Kochi.
- **Dr. P. U. Zacharia**, Head, DFD attended the NICRA Review Meeting at Mumbai on 17<sup>th</sup> December, 2016.

Attended the Video Conference meeting with SAARC member countries on Climate Change Impact on Coastal Fisheries and Aquaculture on 20<sup>th</sup> December, 2016.
- **Dr. R. Narayanakumar**, Head, SEETTD, attended the RGCA Project Evaluation Committee Meeting at DTSF Project, Port Blair, Grouper Project, Rudland Island A&N Islands, 21<sup>st</sup>-22<sup>nd</sup> October 2013; Visakahapatnam, Vijayawada 1<sup>st</sup>-2<sup>nd</sup> November, 2016.

Attended the Admission Supervisory Committee of Professional Colleges in Kerala (ASC)-KUFOS Workshop on Modernization of Syllabus for MBA Programmes in Kerala, Panagad, 10<sup>th</sup>-11<sup>th</sup> November 2016.

Attended the Meeting with Dr. Anup Wadhwan, Additional Secretary, Ministry of Commerce to discuss the possible strategies to deal with the ongoing negotiations on fishery subsidies in WTO, at Udyog Bhavan, New Delhi, 9<sup>th</sup> November, 2016.

Attended the RGCA Project Evaluation Committee Final Report Presentation Meeting at MPEDA, Kochi on 30<sup>th</sup> November, 2016.
- **Dr. V. Kripa**, Head, FEMD attended the Scoping meeting of the IPCC Special Report on Climate Change and Oceans and Cryosphere held at Novotel Monte Carlo in Monaco as National nominee during 6<sup>th</sup>-9<sup>th</sup> December, 2016.

Attended the inaugural meeting of cleaning programme of Cochin backwaters conducted by Deewara Sabha on 2<sup>nd</sup> October, 2016 and handed over the materials for creating awareness programmes to the youth.

Attended the Consultative Workshop as an Expert advisor organized by the Institute for Climate Change Studies at ICCS Office at Kanjikuzhy, Kottayam on 29<sup>th</sup> December, 2016.
- **Dr. Prathibha Rohit**, SIC, Mangalore Research Centre **Dr. P. Laxmilatha**, SIC, Madras Research Centre, **Dr. P. P. Manojkumar**, SIC, Tuticorin Research Centre and **Dr. A. K. Abdul Nazar**, SIC, Mandapam Regional Centre attended the 25<sup>th</sup> ICAR Regional Committee No. VIII during 11<sup>th</sup>-12<sup>th</sup> November, 2016 at Tamil Nadu Agricultural University, Coimbatore.
- **Dr. K. K. Joshi, Dr. K. S. Sobhana, Dr. Molly Varghese, Dr. M. K. Anil, Dr. B. Santhosh, Dr. S. Jasmine, Dr. Rekha J. Nair**, (Principal Scientists), **Dr. Jayasree Loka, Dr. Miriam Paul Sreeram** (Senior Scientists) and **Dr. L. Ranjith**, Scientist, participated in the 1<sup>st</sup> International Agrobiodiversity Congress-2016 held at New Delhi during 6<sup>th</sup> - 9<sup>th</sup> November, 2016.
- **Dr. K. K. Philipose**, Project coordinator attended AINP (All India Network Project) on Mariculture. Review Meeting held at Delhi on 3<sup>rd</sup> November, 2016.
- **Dr. Veerendra Veer Singh**, SIC, Mumbai Research Centre attended workshop on cage culture organized by Maharashtra State Fisheries Department and presented Mariculture activities of the Institute at Mahila Vikas Kendra, Colaba on 18<sup>th</sup> October, 2016.

Was invited expert regarding signals extension in the sea along with hydrographer, TCS representatives and Asian Development Bank representatives at meeting convened by Maharashtra Maritime Board (MMB), Mumbai on 17<sup>th</sup> October, 2016.

Attended meeting with Hon'ble. Minister of State for Home (Rural), Finance and Planning Government of Maharashtra Shri. Deepak Kesarkar, Principal Secretary Fisheries, Commissioner of fisheries Gov. of Maharashtra along with the group of fishers and UNDP officials regarding development of fisheries in Sidhudurg District of Maharashtra on 19<sup>th</sup> October, 2016.

Attended Meeting of Head of the Institutions and ICAR-CIRCOT programme in presence of Hon'ble Minister of State for Agriculture, Shri Parshottam Rupala on 24<sup>th</sup> October, 2016.

Attended meeting with Mr. Pravin Pardesi, Principal Secretary, Govt of Maharashtra and Mr. Jaco Cilliers, Country Director, UNDP in India along with other higher officials of Govt. of Maharashtra, representatives of the ICAR institutes, Mangrove Cell and Maharashtra State Fisheries Department regarding review of UNDP Projects and discussions on



new projects in coastal districts of Maharashtra on 16th November, 2016.

- **Dr. Prathibha Rohit**, SIC Mangalore Research Centre attended meeting convened on 20<sup>th</sup> December, 2016 by the State Fisheries Department regarding use of LED light in fishing boats at Bengaluru.

- **Dr. P. Laxmilatha**, SIC Madras Research Centre attended the 3<sup>rd</sup> State Level Technical Committee Meeting in connection with FIMSUL II project held on 19<sup>th</sup> October, 2016 at Commissionerate of Fisheries, Tamilnadu Fisheries Department, Chennai

Attended the Stakeholder consultation meeting at Office of Commissioner of Fisheries, Chennai on 07<sup>th</sup> November, 2016 in connection with the action to be taken during the nesting and breeding season of sea turtles commencing 2017.

- **Dr. M. K. Anil**, SIC, Vizhinjam Research Centre attended the National Conference on Tropical Tuber Crops for the Sustenance and Welfare of Tribal Communities (NCTTC-2016) on 20<sup>th</sup> October, 2016 at ICAR-CTCRI, Sreekaryam, Thiruvananthapuram.

- **Dr. A. K. Abdul Nazar**, SIC, Mandapam Regional Centre attended the 11<sup>th</sup> meeting of Fish, Fisheries and Agriculture Sectional Committee FAD 12 at New Delhi on 26<sup>th</sup> October, 2016.

Attended the All India Network Project on Mariculture Review meeting at New Delhi during 3<sup>rd</sup>-4<sup>th</sup>, November 2016.

- **Dr. Shubhadeep Ghosh**, SIC, Visakhapatnam Regional Centre attended the AINP Review meeting at NAAS, New Delhi during 3<sup>rd</sup>-4<sup>th</sup> November, 2016.

Participated in a meeting with the Secretaries of the Department of Agriculture and Department on Commerce, at Krishi Bhavan and Udyog Bhavan, New Delhi respectively on 9<sup>th</sup> November, 2016.

- **Dr. P. Kaladharan**, Principal scientist attended workshop on Biodiversity and Conservation of Aquatic Resources at Fisheries Training and Research Centre, Parakkai, Nagarcoil of Tamil Nadu Fisheries University and presented a keynote address on Biodiversity of seaweeds and seagrasses along southwest coast of India.

- **Dr. D. Prema** and **Dr. P. Kaladharan** (Principal scientists)

attended the inaugural meeting of cleaning programme of Cochin backwaters conducted by Deewara Sabha on 2<sup>nd</sup> October, 2016.

- **Dr. K. Vijayakumaran**, Principal Scientist conducted an interactive training workshop on Philosophy methods and ethics in Science at Kerala University of Fisheries and Ocean studies during 15<sup>th</sup>-17<sup>th</sup> December, 2016

- **Dr. Somy Kuriakose**, Principal Scientist delivered an invited talk during XVIII National Conference of Agricultural Research Statisticians at IIFSR, Modipuram on 16<sup>th</sup> December, 2016.

- **Dr. Joe K. Kizhakudan**, Principal Scientist attended an IFAD-PTSPLP (International Funding for Agriculture development-Post Tsunami Sustainable Livelihood Programme) consultancy project review workshop at The Secretariat, Chennai on 18<sup>th</sup> November 2016.

Conducted Artificial Reef Management committee meeting with stakeholders at Panayur Periya kuppam on 23<sup>rd</sup> November 2016.

Conducted cage farming stakeholders meeting and formation of Association of Pudhunemmelikuppam Progressive Fishermen (APPF) at Pudhunemmelikuppam and Association of Chemmencherry Progressive Fishermen (ACPF), Kancheepuram District on 3<sup>rd</sup> December 2016

- **Dr. Mini K. G.** (senior scientist) and **Mr. S. Chandrasekar, Mr. C. Kalidas** and **Mrs. M. Kavitha** (scientists) attended and presented papers at conference on "Science and Technology for National Development" organised at Kerala University of Fisheries and Ocean Studies (KUFOS) during 25<sup>th</sup> - 26<sup>th</sup> October, 2016 in Kochi.

- **Dr. Shyam S. Salim** attended the SAF review meeting held at Fisheries training centre, Kadungalloor on 14<sup>th</sup> November, 2016.

- **Dr. Jayasree Loka**, Senior Scientist participated in International Conference on "Recent Advances in Aquaculture-2016" held at Andhra University, Visakhapatnam, Andhra Pradesh.

Made a presentation on "Technology Demonstration Component" in NICRA Annual workshop held at NASC, New Delhi during 9<sup>th</sup>-10<sup>th</sup> December, 2016.

- **Dr. A. K. Abdul Nazar, Dr. P. P. Manojkumar**, Principal Scientists **Dr. R. Jayakumar**, Senior Scientist, **Dr. B. Johnson** and **Dr. K. K. Anikuttan**, Scientists attended the Working Group Meeting on 'Development of a Mariculture Policy for India' at CMFRI, Kochi during 16<sup>th</sup>-17<sup>th</sup>, December 2016.

- **Dr. A. P. Dineshbabu** and **Dr. Sujitha Thomas** (Principal Scientists) organized appraisal workshop 'Remote Sensing & GIS for ecosystem based marine living resources management' for the CMFRI-SAC Collaborative project at Veraval from 8<sup>th</sup>-10<sup>th</sup> November 2016.

- **Dr. A. P. Dineshbabu** and **Dr. Sujitha Thomas** (Principal Scientists) attended Annual national review meeting of NICRA at NASC New Delhi from 8-10<sup>th</sup> December, 2016.

- **Dr. T.M. Najmudeen**, Senior Scientist attended the 'Brainstorming Workshop on measuring resilience indicators to climate change' impacts held at CRIDA, Hyderabad on 28<sup>th</sup> October, 2016 and made a presentation on "Indicators of resilience in marine fisheries to climate change impacts".

Attended and presented a paper and a poster in the International Congress on 'Post-Harvest Technologies of Agricultural Produce for Sustainable Food and Nutritional Security' during 10<sup>th</sup>-12<sup>th</sup> November, 2016 at Lucknow.

Attended NICRA Review workshop at NASC, PUSA, New Delhi during 9<sup>th</sup>-10<sup>th</sup> December, 2016.

Attended the Webinar organized under NICRA on 08<sup>th</sup> November, 2016 at ICAR-CMFRI, Kochi and made a presentation on 'Identification of Indicators of Resilience in Marine Fisheries to Changing Climate'.

- **Dr. R. Jayakumar**, Senior Scientist attended the Board of studies meeting organized by Department of Marine Biotechnology, School of Marine Sciences, Bharathidasan University, Tiruchirappalli, on 9<sup>th</sup> December, 2016.

- **Dr. B. Johnson**, Scientist **Dr. R. Saravanan**, Scientist participated the Training of Trainers on 'Participatory methods of training delivery for curriculum on coastal and marine biodiversity' held in Goa on 15<sup>th</sup>-18<sup>th</sup>, November, 2016 organized by GIZ under the CMPA Project.

- **Dr. P. Rameshkumar**, Scientist attended the International conference on 'Recent Advances in Aquaculture (RAA-2016) at Visakhapatnam during 16<sup>th</sup>-17<sup>th</sup>, December 2016.
- **Mr. S. Chandrasekar** and **Mr. C. Kalidas**, Scientists attended and presented paper Scientist participated in National seminar on Aquaculture Diversification: The way forward to blue revolution, during 1<sup>st</sup>-3<sup>rd</sup>, December, 2016 at CIFA, Bhubaneswar.
- **Mr. M. Rajkumar**, Scientist attended the 'Tamil Nadu Fisherwomen Conference' organized by Community Development Organization Trust at Ramanathapuram on 8<sup>th</sup> November, 2016.
- **Dr. Shelton Padua** attended the ESRI India Geo Vision Seminar at Trivandrum on 9<sup>th</sup> December, 2016.
- **Dr. L. Ranjith**, Scientist, attended the sensitization program organized by the Wildlife Crime Control Bureau and delivered lecture on "Marine Animal Trade in India" to the different stakeholders including forest officials on 05<sup>th</sup> October, 2016 at District Forest Office, Kanyakumari.  
Attended & served as a member in the "Stakeholders Consultation Meeting and Technical Committee meeting on Squid Jigging" at the Deputy Director of Fisheries (Regional), Kanyakumari on 19<sup>th</sup> October, 2016.
- **Dr. I. Jagadis**, Principal Scientist and **Mr. C. Kalidas**, Scientist attended Ttechnical meeting followed by field visit to sea cage farm at Sippikulam under the project Fisheries Management for sustainable livelihood (FIMSUL), State Fisheries Department on 13<sup>th</sup> December, 2016.
- **Dr. P. S. Swathilekshmi**, Principal scientist, attended the training programme on "Enhancing capacities of women fish workers in India for the implementation of SSF guidelines "organized by the International Collective in Support of Fish Workers at Chennai from 21<sup>st</sup> to 23<sup>rd</sup> November, 2016 and presented a paper on Fisherwomens access to Resources.
- **Dr. Ritesh Ranjan**, Scientist, attended a two day USFDA-MPEDA workshop on "Good Aquaculture Practices and Food Safety Preventative Control for Aquaculture Farms" at Visakhapatnam during 17<sup>th</sup>-18<sup>th</sup> November 2016.
- **Dr. Divu**, Scientist participated as a resource person for the training programme on "Lobster Traps" organized jointly by World Wildlife Fund-India and ICAR-CIFT on 10<sup>th</sup> November, 2016 at Mandvi, Kutch, Gujarat
- **Mr. Pralaya Ranjan Behera**, Scientist, **Dr. Phalguni Pattnaik**, ACTO and **Mr. Jishnudev M. A.**, Technician participated in the Exhibition organized by ICAR- CIFA, Bhubaneswar in collaboration with Association of Aquaculturists (AoA), Bhubaneswar on the occasion of National Seminar on 'Aquaculture diversification: the way forward for blue revolution' from 1<sup>st</sup>-3<sup>rd</sup> December 2016
- **Mr. Pralaya Ranjan Behera**, Scientist, **Dr. Phalguni Pattnaik**, ACTO and **Mr. M.A. Jishnudev** Technician participated in the Exhibition organized on the occasion of National Seminar on "Aquaculture diversification: the way forward for blue revolution" by ICAR- CIFA and Association of Aquaculturists from 1<sup>st</sup>-3<sup>rd</sup> December 2016 at Bhubaneswar.
- **Ms. Saloni Shivam**, Scientist and **Mr. N. G. Vaidya** attended 44<sup>th</sup> half-yearly TOLIC, Karwar meeting held on 9<sup>th</sup> November, 2016 at Karwar.
- **Mr. Aju K. Raju**, Technical Assistant, **Mr. K. M. Sreekumar**, Technician and **Mr. Thobias P. Antony**, Skilled Support Staff, Marine Biodiversity Division participated in the 26<sup>th</sup> Swadeshi Science Congress, held at ICAR-CMFRI, Kochi during 7<sup>th</sup>-9<sup>th</sup> November, 2016.

## Human Resources Development

### IUCN Grouper Reassessment Workshop in Azores, Portugal

**D**r. Rekha J. Nair, Principal Scientist, was deputed to participate in the IUCN Groupers and Wrasses Specialist Group (GWSG) meeting in the Azores, Portugal in November 2016 to assess the extinction risk of 164 species of this group globally. The Azores workshop, supported by the IUCN Biodiversity Unit staff, is key because Red List re-assessments must be completed at least once every ten years. Dr. Rekha Nair an IUCN Specialist Group member was one among the 35 experts from 13 countries who gathered in the Azores. Revisiting species status of groupers such as Spinycheek Grouper, Longspine Grouper, Malabar grouper, Orange Grouper etc. is significant because of the growing exploitation pressure on this group of fishes which is a source of



Participants of the IUCN GWSA meeting

food in many locations around the globe and are important for livelihoods of fishers. The workshop was co-organized by the GWSG, IMAR - Institute of Marine Research based at the University of the Azores - and MARE - Marine and

Environmental Sciences Centre, and funded by the Ocean Park Conservation Foundation (Hong Kong), the Mohammed bin Zayed Fund, the University of Hong Kong and the Regional Government of the Azores.



## The First International Agrobiodiversity Congress

This international conference was held in New Delhi, India, from 6-9 November, 2016 and attended by over 900 participants from 60 countries. Congress delegates discussed various aspects of conservation, management, access and use of agrobiodiversity in 16 technical sessions, four satellite sessions, a genebank roundtable, a public forum, a farmers' forum and poster sessions. ICAR-CMFRI participants attended in the sessions on Agrobiodiversity for Food, Nutrition and Ecosystem Services, Agrobiodiversity for Adaptation and Mitigation of Climate Change, Intellectual Property Rights (IPRs), Access and Benefit Sharing (ABS) and Farmers' Rights, Quarantine, Biosafety and Biosecurity Issues and Conservation Strategies and Methodologies.



Participants at the IAC 2016

### Workshop on Advances in Fish Stock Assessment Methods

Fishery Resources Assessment Division (FRAD) organized a workshop on 'Advances in Fish Stock Assessment Methods' at the headquarter of ICAR-CMFRI, Kochi during 15<sup>th</sup>-17<sup>th</sup> November, 2016. The objective was to introduce new fish stock assessment methods among scientists of ICAR-CMFRI working in fisheries resource management and

motivate them to adopt new methods of fish stock assessment and management of Indian marine capture fisheries sector. Nine new methods of fish stock assessment were covered by the scientists in FRAD during the workshop such as SeaMice model, Size spectrum model, Stock Synthesis, OSMOSE model, Multispecies Surplus Production model,

Dynamic Multi-species model, Bio-economic model, Empower, and Multispecies Virtual Population Analysis. 27 scientists from headquarters, research and regional centres of the institute participated in the workshop.

(Reported by T. V. Sathianandan, J. Jayasankar, Somy Kuriakose, K. G. Mini, Grinson George and Mr. Vivekanand Bharti)

Workshop/Training/Conference etc.	Date and Venue	Participants
Advances in Experimental Data Analysis	06 <sup>th</sup> -26 <sup>th</sup> October, 2016 ICAR-IASRI, New Delhi	Mr. Vivekanand Bharti
International Conference on Science and Technology for National Development	25 <sup>th</sup> -26 <sup>th</sup> October, 2016 KUFOS, Kochi	Dr. K. S. Mohamed, Dr. P. U. Zacharia, Dr. Somy Kuriakose, Dr. Sumithra T. G. Dr. Mini K. G., Dr. Grinson George, Dr. R. Vidya, Ms. Reshma K. J.
Advances in Fish Stock Assessment Methods	15 <sup>th</sup> -17 <sup>th</sup> November, 2016 ICAR-CMFRI, Kochi	Dr. T.V. Sathianandan Dr. G. Maheswarudu , Dr. P.U. Zacharia, Dr. K. Sunil Mohamed, Dr. Prathibha Rohith Dr. V. Kripa, Dr. J. Jayasankar, Dr. Somy Kuriakose Dr. E.M. Abdu Samad, Dr. M. Sivadas , Dr. U. Ganga Dr. Josileen Jose, Dr. Lakshmi Pillai, Dr. K. G. Mini, Dr. Grinson George, Dr. Rekhadevi Chakraborty Dr. Shubadeep Ghosh, Dr. T.M. Najmudeen Dr. V. Venkatesan, Dr. R. Vidya Mr. Vinaya Kumar Vase, Mr. Vivekanand Bharti Mr. Subal Kumar Roul, Mr. N. Rajendra Naik Mr. K. Mohammed Koya, Mrs. Anulekshmi Chellappan Mrs. M. Muktha
'Monitoring structure & Function of Pelagic Ecosystem at Regional Sectors: Relevance for Fisheries'	16 <sup>th</sup> November - 6 <sup>th</sup> December, 2016, ICAR-CMFRI, Kochi	Dr. Miriam Paul, Sreeram, Dr. R. Vidya, Mr. Vivekanand Bharti, Mr. Subal Kumar Roul, Mr. Vinaya Kumar Vase, Dr. Shelton Padua, Dr. K.V Akhilesh, Mr. Ajay D. Nakhawa and Mr. R. Ratheesh Kurmar

Training programme on 'Geospatial Analysis for Natural Resource Management'	18 <sup>th</sup> -27 <sup>th</sup> November, 2016 NAARM, Hyderabad	Dr. Shelton Padua
Hands on Training on Next Generation Sequence Data Analysis	6 <sup>th</sup> - 12 <sup>th</sup> December, 2016 CIFA, Bhubaneswar	Dr. Sandhya Sukumaran Dr. N. S. Jeena
International conference on 'Climate Change Adaptation: Ecological Sustainability and Resource Management for Livelihood Security'	8 <sup>th</sup> - 10 <sup>th</sup> December, 2016 organised by Andaman Science Association, Port Blair, Andaman & Nicobar Islands	Mr. Vivekanand Bharti, Mr. Subal Kumar Roul
FMP project review workshop	19-20 December 2016 ICAR-CMFRI, Kochi	Dr. T.V. Sathianandan, Dr. J. Jayasankar Dr. Somy Kuriakose, Dr. Mini K. G. Dr. Grinson George, Mr. Vivekanand Bharti
Training on "Management Development Programme on Leadership Development (a pre-RMP programme)"	19 <sup>th</sup> -30 <sup>th</sup> December 2016 National Academy of Agriculture Research and Management (NAARM), Hyderabad.	Dr. P. P. Manojkumar
National level Hands on training workshop on Quantitative Research and Techniques using IBM SPSS	26 <sup>th</sup> to 28 <sup>th</sup> December, 2016 at Christ University Nodal Office, hiruvanthapuram	Dr. P. S. Asha

## Personnel

<b>TRANSFERS</b>			
Name & Designation	From	To	w.e.f
Ms. Livi Wilson, Scientist	-	ICAR- CMFRI, Kochi	26.10.2016
Mr. Kurva Raghu Ramudu, Scientist	ICAR-CMFRI, Kochi	Karwar Research Centre	07.11.2016
Ms. Saima Rehman, Scientist	ICAR-CMFRI, Kochi	Madras Research Centre	07.11.2016
Mr. Adnan Hussain Gora, Scientist	ICAR-CMFRI, Kochi	Madras Research Centre	07.11.2016
Mr. Abdul Azeed P., Scientist	ICAR-CMFRI, Kochi	Veraval Regional Centre	07.11.2016
Mr. Ambarish P. Gop, Scientist	ICAR-CMFRI, Kochi	Vizhinjam Research Centre	27.10.2016
Mr. Bhendekar Santosh Nagnath, Scientist	ICAR-CMFRI, Kochi	Mumbai Research Centre	26.10.2016 (AN)
Dr. Mahesh V., Scientist	ICAR-CMFRI, Kochi	Calicut Research Centre	07.11.2016
Mr. Tarachand Kumawat, Scientist	ICAR-CMFRI, Kochi	Veraval Regional Centre	16.11.2016
Mr. Vinothkumar R., Scientist	ICAR-CMFRI, Kochi	Mandapam Regional Centre	27.10.2016
Mr. Rajan Kumar, Scientist	ICAR-CMFRI, Kochi	Tuticorin Research Centre	04.11.2016
Ms. Shikha Rahangdale, Scientist	ICAR-CMFRI, Kochi	Tuticorin Research Centre	04.11.2016
<b>PROMOTIONS</b>			
Name & Designation	Promoted as	Centre	w.e.f
Mr. P. Chidambaram, Senior Technical Officer (Library)	Assistant Chief Technical Officer (Library)	Mandapam Regional Centre	01.07.2011
Mrs. P. Geetha, Senior Technical Officer (Library)	Assistant Chief Technical Officer (Library)	ICAR-CMFRI, Kochi	01.12.2014
Dr. V. Mohan, Senior Technical Officer (Library)	Assistant Chief Technical Officer (Library)	ICAR-CMFRI, Kochi	02.03.2015
Dr. (Ms.) Madhumita Das, Senior Technical Officer	Assistant Chief Technical Officer	Visakhapatnam Regional Centre	25.05.2015
Mr. Suresh Kumar Mojjada, Senior Technical Officer	Assistant Chief Technical Officer	Veraval Regional Centre	14.07.2015
Dr. Phalguni Patnaik, Senior Technical Officer	Assistant Chief Technical Officer	Visakhapatnam Regional Centre	31.07.2015



Mr. S. Mohan, Senior Technical Officer	Assistant Chief Technical Officer	Madras Research Centre	01.01.2015
Mr. P.S. Anil Kumar, Senior Technical Officer	Assistant Chief Technical Officer	ICAR-CMFRI, Kochi	01.01.2015
Mr. M. Manivasagam, Senior Technical Officer (Retd.)	Assistant Chief Technical Officer	Madras Research Centre (Cuddalore FC)	01.01.2015
Mr. P. Thirumilu, Senior Technical Officer (Retd.)	Assistant Chief Technical Officer	Madras Research Centre	01.01.2015
Mr. A. Kumar, Senior Technical Officer	Assistant Chief Technical Officer	Mandapam Regional Centre	01.01.2015
Dr. Biswajith Dash, Senior Technical Officer	Assistant Chief Technical Officer	Visakhapatnam Regional Centre	25.05.2015
Mr. Shoji Joy Edison, Senior Technical Officer	Assistant Chief Technical Officer (SMS-Horticulture)	KVK of CMFRI, Narakkal	21.01.2015
Mr. F. Pushparaj Anjelo, Senior Technical Officer	Assistant Chief Technical Officer (SMS- Agr. Extension)	KVK of CMFRI, Narakkal	21.01.2015
Dr. (Ms.) Karikkathil Smitha Sivadasan, Senior Technical Officer	Assistant Chief Technical Officer (SMS - Animal Husbandry)	KVK of CMFRI, Narakkal	03.02.2015

#### RESIGNATION

Name	Designation	From	w.e.f
Mr. K. M. Jijil,	Skilled Support Staff	ICAR-CMFRI, Kochi	5.12.2016

#### RETIREMENTS ON SUPERANNUATION



**Mr. H. K. Dhokia**  
Senior Technical Officer  
31.10.2016  
Veraval Regional Centre



**Mr. R. Chandrakesha Shenoi**  
Personal Assistant  
30.11.2016  
ICAR-CMFRI, Kochi



**Mr. Thomas Kuruvila**  
Technical Officer  
30.11.2016  
Quilon Field Centre



**Mr. N. Chennappa Gowda**  
Technical Officer  
30.11.2016  
Mangalore Research Centre



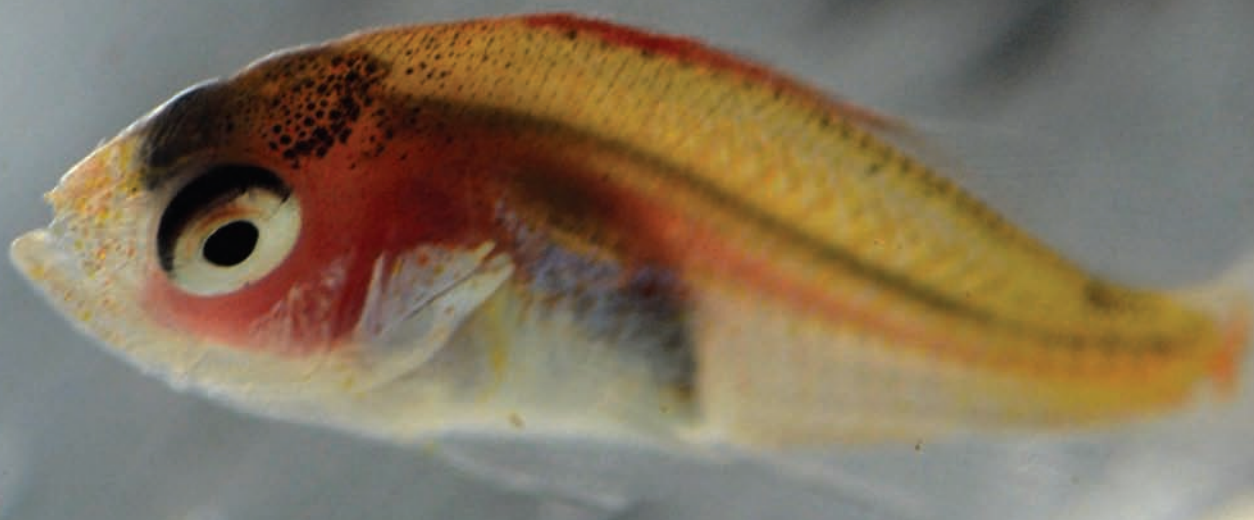
**Mr. G. Subbaraman**  
Technical Officer  
31.12.2016  
Mandapam Regional Centre



#### OBITUARY

**Shri R. Selvakumar**  
Senior Technician  
13.11.2016  
Mandapam Regional Centre





35 DPH Juvenile of *P. marcia*  
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## **cadalmin**

CMFRI Newsletter

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