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भारतीय कृषि अनुसंधान परिषद

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No. 137

April - July 2013

ISSN 0972-2386

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CMFRI Newsletter

<http://www.cmfri.org.in>



Hon'ble Union Minister for Agriculture Shri. Sharad Pawar
at Karwar Research Centre of CMFRI



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

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DIRECTOR SPEAKS

Dear Colleagues,

I am very happily laying down the office as Director, CMFRI on superannuation. During the last five years of my tenure the institute has attained new heights, mainly due to the untiring efforts of all scientists and staff of different categories. The peaceful atmosphere that prevailed gave the impetus for the best relations between the different sections, divisions and centres that has transformed into very good achievements. The same type of cooperation and encouragement received from ICAR in the form of approvals of our proposals



matched by excellent funding support that has made CMFRI a global player in marine fisheries research on several counts. It gives me immense pleasure that the institute has taken up the ChloRIFFS project as flagship project during XIIth plan. Through this we are entering the international arena in the marine fisheries forecasting and management, as a global first and taking up a task, which is considered as almost impossible initiative. I am grateful to the Hon'ble Director General Dr. S. Ayyappan for all guidance, support and encouragements during my entire tenure. I gratefully acknowledge the guidance and support given by DDG (Fy), ADG (M.Fy) and the Directors of ICAR fisheries institutes. I am also thankful to the administrative section headed by Mr. Rakesh Kumar and finance section headed by Shri A.V. Joseph who made the CMFRI vibrant by efficiently executing the administrative and financial matters. I am very grateful to my scientific colleagues for their outstanding contributions, which brought laurels to the Institute. My compliments are due to Shri. V. Edwin Joseph who made the documentation centre very vibrant with global visibility. Finally I salute the entire staff of CMFRI for making the Institute to realise many of long cherished dreams and for laying the foundation for CMFRI to become Global Marine Fisheries Research Institute (GMFRI) in the next decade as dreamt by many including the Hon'ble DG. May Lord Saranam Ayyappa bless, protect and guide the Institute toward this endeavour.

Namasthe

Dr. G. Syda Rao
Director

About CMFRI

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

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



Hon'ble Union Minister, Shri Sharad Pawar having close look on a snapper broodstock at the marine cage farm of Karwar RC



Shri. Sharad Pawar, Hon'ble Union Minister for Agriculture visits marine cage farm at Karwar RC of CMFRI

Hon'ble Union Minister for Agriculture and President, ICAR Shri. Sharad Pawar, accompanied by Shri G.C. Pati, Secretary, Dept of Animal Husbandry, Dairying and Fisheries; Dr. S Ayyappan, Secretary, DARE and Director General, ICAR; Dr. G. Syda Rao, Director, CMFRI; Dr N. P. Singh, Director, ICAR Research Complex for Goa; Scientists from Veraval, Mumbai, Mangalore Centres, Head Quarters, Kochi and several other dignitaries visited the marine cage farm at Karwar on 19th April 2013. A book entitled 'Cage Aquaculture in India' published by CMFRI was also released by Hon'ble Agriculture Minister on board the vessel during this occasion. Later the dignitaries visited the Laboratory cum Office Complex at Karwar Research Centre of CMFRI and the exhibition stalls arranged within the office. The Minister interacted with dignitaries, researchers as well as with local fishers, entrepreneurs from different parts of India and tribals engaged in cage farming.

Hon'ble Minister for Agriculture appreciated the cage culture technologies developed by CMFRI and assured assistance in establishment of brood banks to increase the number of species cultivated and also utilize the natural seed resources without hampering the environment. In this connection, installations of Artificial Reefs by CMFRI to utilize the natural resources for conservation of biodiversity, habitat protection towards management of

Director General, ICAR showing the Mussel Culture model to Hon'ble Union Minister



Hon'ble Minister seeing the cobia in the exhibition





Director, CMFRI felicitating Hon'ble Union Minister

fisheries and increasing production was highly appreciated. Hon. Minister then declared that CMFRI would prepare a roadmap for mariculture in India.



Dr. G. Syda Rao presenting research outputs to Hon'ble Minister and other dignitaries

The Director General apprised the Union Agriculture Minister about the capture fisheries management in India and the way forward for enhancing the fish production in India. He also updated the minister on the need for establishing brood banks, satellite hatcheries and feed production units along the west coast to meet the seed and feed demands.

Secretary DAHDF, Dr. G.C. Pati assured all support from NFDB and MoA to CMFRI for enhancing production through cage culture and establishment of seed and brood banks.

The open sea cage technology developed, demonstrated and popularized by CMFRI is a classic example of transfer of scientific



Hon'ble Minister on board the vessel along with Shri. G. C. Pati, Secretary DAHDF, Admiral B. K. Jain and Dr. S. Ayyappan, DG, ICAR

technology from lab to the field in a participatory mode for the benefit of mankind.

(Reported by Karwar RC)



Hon'ble Union Minister, Shri Sharad Pawar visiting the museum at Karwar RC



Hon'ble Union Minister discussing with Sidi tribals at Karwar. Dignitaries are also seen

Dr. G. Syda Rao, Director, CMFRI retires

Dr. G. Syda Rao, Director, CMFRI retired from service on superannuation on 31.07.2013. Appointed in the first batch of Agricultural Research Service on 6.1.1977, Dr. G. Syda Rao, one of the renowned marine fisheries scientists in India assumed the charge as Director, CMFRI on 8th July, 2008. Under his stewardship during 2008-'13, CMFRI reached pinnacle of glory in the world arena of marine fisheries. During his momentous tenure as Director, the research outputs of CMFRI have been able to integrate with all states, as timely interventions, advices on several issues and enabled the country to manage marine fisheries in a sustainable manner and the institute's research data regained the status of official figures of Govt. of India. During this period CMFRI filed 15 patents and commercialized two products viz. Cadalmin™ Green Mussel extract and Cadalmin™ Green Algal extract. Pioneering the innovative cage mariculture in India and simultaneously achieving breakthrough in breeding of Cobia, Silver Pompano, Greasy Grouper, Pearlsnapper and Red Snapper, he has demonstrated technologically viable and economically feasible cage-culture, which will revolutionize the marine fish production. Signs of large scale adoption of this technology are already visible. Successful pop-up satellite tagging of Yellowfin Tuna, land based culturing of Pearl Oyster in marine body, feed for Silver Pompano and ornamental fish are other important scientific achievements attributable to his leadership. Conceptualization and initiation of chlorophyll based remote sensing assisted Indian Fisheries Forecasting

System project is another milestone achievement. CMFRI witnessed an accelerated infrastructure development during 2008- '13 with the remarkable achievement in construction of lab cum office building at RCs of Mandapam, Mangalore, Vizhinjam, Karwar, Tuticorin, extension of laboratory building at Visakhapatnam, face lift to Veraval RC's Office building, residential quarters at Headquarters, laboratory building for Kovalam, Chennai RC, permanent space for Puri Field Centre, additional floor at H/q, International trainees hostel at Mandapam, VPN connectivity linking all RCs, furnishing all the new lab cum office at the above RCs, obtaining permanent lab cum office space for Mumbai RC at the entire second floor of CIFE old campus, 27 residential quarters in Central Government residential complex at Malwan, Mumbai, Establishment of RAS facility, Environmental chamber and mariculture complex at Mandapam RC. After a long hiatus two new fishery research vessels have been added to the fleet, viz. FV Silver Pompano which got commissioned recently and the other due in next quarter. The visibility of CMFRI output and outcome reached global level through e-prints @CMFRI. Institute publication "Indian Journal of Fisheries" has gone online and captured International impact factor 0.195 and NAAS rating of 6.2.

The international collaboration Indo-Australia strategic partnership on climate change, NACA - CMFRI seminar on emerging issues in Asian Aquaculture, International Belmont Forum and G8 Research Councils International Opportunities



Fund, International Symposium on status of good practices and lessons learnt in Aquaculture in SAARC region and hosting 9th Indian Fisheries Forum are significant events during his glittering reign.

The Krishi Vigyan Kendra of Ernakulam attained unprecedented heights and visibility during his tenure. Institute was able to bag Indira Gandhi Raj Bhasha Puraskar.

Under TSP, he led the Institute in empowering the Sidi tribal community of Gujarat by helping them to thrash out a permanent livelihood option in cage based mariculture.

Dr. G. Syda Rao's outstanding contribution lies on the creation of an ambience of happiness, security and feel good factor among the staff of this Institute which paved way for CMFRI to scale new peaks in scientific output.

We salute our indomitable leader who has left an indelible mark in the annals of CMFRI.

Dr. A. Gopalakrishnan joined as Director of CMFRI

Dr. A. Gopalakrishnan, Principal Scientist and Scientist-in-Charge of NBFGR unit, Cochin has taken charge as the Director of CMFRI on 31st July, 2013.

Born in 1962, Dr. Gopalakrishnan took his Doctorate from CAS in Mariculture at CMFRI during 1991.

He was appointed as Scientist at NBFGR, Lucknow/Allahabad during 1989. His area of specialisation includes Genetic stock identification of fishes using DNA markers; DNA barcoding of the fishes using mtDNA markers; Development of protocol for cryopreservation of milt of indigenous fishes for conservation; Captive breeding of indigenous fishes, Fish reproduction and fish genetic stock identification. He has several National and International scientific papers to his credit. He got several Awards for his outstanding contributions in the field of cryopreservation of fish gametes.

Awards/Honours: Asian Fisheries Society (AFS) Merit Award, 2011; NBFGR Best Scientist Award 2008-09; Dr. V.G. Jhingran Swaran Padak, 1992 (Team Member) by the Nature Conservators; Senior Scientist Award, 1992 by NATCON and Fellow of National Academy of Agricultural Sciences.



New Fishing Vessel *Silver Pompano* arrived

As part of the NICRA project, CMFRI has procured a 19.75 m research vessel *F.V. Silver Pompano* for carrying out climate related impact studies on Indian marine fisheries at a cost of Rs.4.75 crores. The vessel was constructed by Goa Shipyard Ltd and handed over to CMFRI on 24-7-2013 in the presence of Dr. B. Meenakumari, DDG (Fy.), Prof. Dr. K. A. Simon, Director, KMSME, Dr. T. K. Srinivasa Gopal, Director, CIFT, Dr. G. Syda Rao Director CMFRI and other dignitaries. NICRA is the network project initiated by ICAR for studying the vulnerability, impact and adaptation options for Indian agriculture to climate change. CMFRI is the lead institute conducting research related to climate change in marine fisheries sector of India.

Major facilities and equipment

Navigation and power

The vessel is fitted with a 4 stroke Volvo Penta make 500 hp @ 1800 rpm marine engine. The main deck of the vessel contains cabin for scientists and crew, wet laboratory, weather station, galley, mess room and toilet. The hydraulically operated trawl winch consist of 1000 m long, 12 mm diameter steel wire rope on each drum with a speed of 0 to 40m/minute which draws hydraulic power from main engine. A pair of hydraulically operated Conductivity, Temperature, and Depth (CTD) winch is provided on the port and starboard side for operation of CTD probe. Water samplers and other small equipment can be lowered through the port and starboard davits. A diesel generator is provided for operation of hydraulic equipment, navigation light, air conditioners, light and other supplies. A separate emergency generator is also provided

Life Saving Appliances and Fire Control Appliances All required Life Saving Appliances (LSA) (Life rafts, buoys with self-ignition light and life line and jackets) are installed. Fire control appliances like fire extinguishers and hoses are provided. Oceanographic and sampling equipment The vessel will be used for trawl fishing and collection of oceanographic parameters and marine samples from the sea. The vessel will be equipped with CTD sampler, current meter, automatic weather station, instruments for chlorophyll measurements, zooplankton net and sediment samplers. The vessel is equipped with a wet laboratory for preliminary analysis and to fix the samples for further analysis. A portable fish storage freezer of 400 litre capacity is installed for preserving the fish samples. Weather station includes space for Niskin water samples, CTD probe, Van veen grab and plankton nets.

(Reported by P.U. Zacharia, Chairman Vessel Management Cell, CMFRI, Kochi)



F. V. Silver Pompano arrived



Commissioning of National Marine finfish brood bank

India's first Marine Finfish Brood Bank; Recirculating Aquaculture System and Mariculture Complex at Mandapam RC

Commissioned by
Dr. S. Ayyappan, Secretary,
DARE & Director General, ICAR

At Mandapam Regional Centre of CMFRI, India's first marine brood fish bank facility, a state of art Recirculating Aquaculture System (RAS) laboratory and a Mariculture complex were commissioned by the Secretary, DARE & Director General of ICAR, Dr. S. Ayyappan on 12th May 2013. A new Research & Administrative Block and an International Trainees' Hostel were also inaugurated by the Director General. The function was graced by Dr. B. Meenakumari, Deputy Director General (Fy.), ICAR, Dr. Madan Mohan, Assistant Director General (M.Fy.), ICAR, Shri. K. Nanthakumar, IAS, District

Collector, Ramanathapuram and Commandant H.H. More, Commanding Officer, Indian Coast Guard, Mandapam Station.

A national marine finfish brood bank where the brooders of high value finfishes can be developed for breeding and seed production was designed and built. The concept of broodstock bank was evolved, designed and the same was constructed at Mandapam Regional Centre. The broodstock tanks with continuous biofiltration system can be used to maintain broodstocks of high value marine finfishes like cobia, silver pompano, groupers, snappers, breams, healthily. Maintenance of marine finfish broodstock in land based system is generally expensive, time consuming and labour intensive which prohibits the private sector/entrepreneurs to venture in mariculture. Understanding this bottleneck, the CMFRI has established a National Marine Fish Brood Bank at Mandapam aimed to hold broodstocks of commercially important marine finfishes and to supply quality eggs / newly hatched larvae to the private hatcheries for fingerling production. This facility is the first of its kind in India and was commissioned by the Director General.

A recirculation aquaculture system with components such as drum filter, fluidized-bed bioreactor, protein skimmer, UV sterilizer and egg collection facility, is inevitable for healthy maintenance of the marine finfish broodstocks and year-round breeding. The system will serve to develop the broodstocks into spawners. The photo-thermal conditioning for accelerating maturation



Unveiling of plaque by District Collector, Ramanathapuram at RAS



DG viewing the brood bank facility



DG viewing the RAS facility with dignitaries



DG examining a brood fish

can also be incorporated into the system. The safety of the spawners and year-round controlled spawning are ensured in this system. The RAS facility, which was installed at Mandapam by importing sophisticated equipment from M/s. Aquatic Ecosystems, USA, is the first of its kind in India. This facility was commissioned by the Director General.

Massive infrastructure for broodstock development is needed for developing the broodstocks of larger species such as yellowfin tuna. The large scale fingerling



Inauguration of Research and Administrative block by DDG (Fy.) Dr. Meenakumari



View of Research and Administrative block



Unveiling of plaque by ADG (M.Fy.) at mariculture complex

support standardising the technologies for broodstock development, grow-out culture and on-farm trials. This complex was dedicated to the nation by the Director General.

In addition, a Research & Administrative block has been built with facilities to accommodate the Scientists, Technical personnel, Administrative and Accounts sections. Besides, the facility incorporates an interpretation centre, dry and wet laboratories.



DG addressing the staff at Mandapam RC



Viewing the mariculture complex by DG

rearing also requires extensive facilities. To meet these requirements, a mariculture complex consisting of high volume concrete tanks (4 numbers each of 1250 tonne capacity) was designed and established on the Palk Bay side of the Mandapam Regional Centre of CMFRI. This facility would

An International Trainees' hostel consisting of 13 furnished one-room apartments to accommodate overseas trainees deputed to the Centre to acquire technical knowledge on the various technologies developed at the centre, was also inaugurated during this occasion.

The Director General inaugurated a small-scale marine ornamental fish production unit run by all women self help group established within the premises of the Mandapam Regional Centre of CMFRI.

The Director General delivered the inaugural address and honoured the fish farmers and entrepreneurs.



Inaugurating the international trainees hostel by Dr. G. Gopakumar, SIC, Mandapam RC

International trainees hostel at Mandapam RC



Unveiling of plaque by the DG at international trainees hostel



Inaugurating the all women small-scale hatchery unit by DDG



Director General holding a harvested lobster

Empowerment of Sidi tribals of Gujarat through cage mariculture

A TSP fructification by CMFRI

On 13th April 2013, CMFRI elated the spirit of one of the primitive tribes of India, the 'Sidi', by successfully harvesting the seacage farms off-Veraval and handing over the produce and the seacage farm assets to tribal community. The harvest of the seacage farm established by the CMFRI off-Veraval for the tribals was inaugurated by Dr. S. Ayyappan, Secretary DARE and Director General, ICAR, New Delhi. The farm was established by the CMFRI under the Tribal Sub Plan outlay of the Institute for 2012-13 for the benefit of 20 selected families of the Sidi tribe in Veraval and Talala of Junagadh district through a cooperative society of the tribals as a livelihood support to the tribal community.

After 110 days of culture, the farm yielded an estimated production of 2.5 t of lobsters which was sold at a price range of Rs. 1000 - 1200/kg based on the size group of the lobsters and 300 kg of cobia. The farm assets worth about 33 lakh rupees and the produce valued about 26 lakh rupees at the prevailing market price was handed over to the 'Sidi' tribals by the Director General, ICAR on 13th May 2013. The august presence of Dr. N.C. Patel, VC of JAU, Junagadh, Shri Darbar IAS, Commissioner of Fisheries, Gujarat, Dr. Madan Mohan, ADG (M. Fy.), Dr. T. K. Srinivasa Gopal Director CIFT, Dr. Mishra, Director, DGR, Junagadh and several farmers, entrepreneurs,

fishermen and Press people made the moment precious. The tribals led by Mr. Hasin Bhai expressed their gratitude for ICAR and expressed that this was the first Government agency that has helped for their upliftment in their history. Dr. S. Ayyappan complimented the CMFRI staff led by Dr. G. Syda Rao, Director and Veraval RC staff for this illustrious cause of integrating technology for social benefit of tribal community and hoped for more initiation in this direction by several other ICAR Institutes. In the harvest program, Director General, Dr. S. Ayyappan released a book on Handbook of Marine Prawns of India published by CMFRI.





Fattened lobsters from the sea cages of Veraval



Dignitaries with the beneficiary families

The endeavour of CMFRI is lauded as a novel initiative, as it involves not just provision of a high end livelihood to one of the primitive tribal group but also made these tribals the custodians and mentors of a promising technology which is inevitable for the existence of the coastal population in the long run in view of the dwindling catch share and vulnerability of the coastal areas to

climate change. The tribal community members who were marginal labourers with an average daily earning of less than Rs. 150/day would now earn nearly Rs. 810 per day during the crop period of 115 days in addition to winning the farm assets handed over to them for continued farming in the coming crop seasons. The capacities of the tribals have been built with adequate training on all aspects of the technology from fabrication of the seacages to regular monitoring and best practices for higher yield. Hence, the initiative of the CMFRI would go a long way in boosting their overall socio-economic status.

The farm which was a centre of attraction to the fisheries fraternity of the state of

Gujarat, in addition to having functioned as a platform for research on key issues in open sea farming, have also been used for training other stakeholders in the state such as the fishermen from various coastal districts, officers of the state Department of Fisheries, fisheries and marine sciences students, NGO workers, CSR teams of corporate bodies in the region etc. This is yet another example of success of open seacage farming technology developed by the Institute and a testimony to the potential of developing sea farming as a major source of fish production in Gujarat owing to its vast maritime resources spread over 1600 km long coastline.

(Reported by Veraval RC)



Fisheries Managers, ICAR Scientists, Sidi tribals with DG and the Director



Director General holding the harvested lobsters



Marine cage farm at Veraval sea Somnath



CMFRI-SAARC International Workshop on "Status of Good Practices and Lessons Learnt in Aquaculture in the SAARC Region" at Kochi

Inauguration of the workshop was held at CMFRI auditorium on 5th June and concluded on 7th June 2013. The programme was inaugurated by Dr. R. Paul Raj, Member Secretary, Coastal Aquaculture Authority, Chennai. He emphasized the relevance of aquaculture production in the scenario of fish graduating from the so called 'cheap protein' to an expensive protein. The current practices, need for good aquaculture practices and the various legal issues involved in having coastal Aquaculture programmes. He exhorted the South Asian Association for Regional Cooperation (SAARC)

countries to adhere to proper solutions for the lessons learnt from aquaculture practices in the region. Dr. Dilip Kumar, Former Director, Central Institute of Fisheries Education (CIFE), Mumbai was the Guest of Honour and he shared his experiences in the SAARC countries, the types of similar problems envisaged in the region and the resources available to resolve them. Dr. G Syda Rao, Director, CMFRI in his presidential address indicated the strength of CMFRI in resolving mariculture issues and shared the success stories of the Institute, which rightly helped SAARC to identify CMFRI as the lead



Dr. S. K. Mamgain



Dr. Dilip Kumar



Dr. J. R. Bhatt



Dr. Paulraj delivering inaugural address

institute to coordinate the issues in SAARC region. Dr. S.K. Mamgain, Dy. Director, SAARC Coastal Zone Management Centre (CZMC), Maldives, Dr. J. R. Bhatt, Adviser to the Ministry of Environment and Forests, Dr. J.K. Jena, Director, National Bureau of Fish Genetic Resources (NBFGR) and Dr. P. Jayasankar, Director, Central Institute of Freshwater Aquaculture (CIFA) have delivered felicitation address. Delegates from SAARC centre, Maldives, Bhutan, Nepal, Bangladesh and Sri Lanka, invited speakers from Central Institute of Brackishwater Aquaculture (CIBA), CMFRI, NBFGR, aquaculture entrepreneurs and other Indian delegates had participated in the deliberations. About sixteen presentations were made by eminent personalities in their areas of aquaculture expertise during the technical sessions on Developments in Aquaculture: Country Status Reports,

Special Review/ Case Studies on BMP/ Lessons learnt and Core Issues in Aquaculture Practices, held on 5th and 6th June at CMFRI, Cochin. On the occasion, the SAARC nominees expressed their happiness in getting an opportunity to visit the premier national fisheries institute and interacting with eminent scientists in fisheries in India, whose publications they have read during studies and in job. On June 7th the delegates were taken for an exposure visit to cage farms of CMFRI at Paravoor, West Coast Marine Ornamental Fish Hatchery, Andhakaranazhy and a Freshwater Ornamental Fish Hatchery and Farm at Thakazhi, Alappuzha District. The Workshop paved way for showcasing the achievements of CMFRI as well as other fisheries institutes of ICAR to the SAARC countries.

The leading Indian Journal in the field of Fishery Science since 1954

ISSN 0970-6011



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International Impact Factor 0.195
NAAS rating 6.2



Dr. J. K. Jena



Dr. P. Jayasankar



A view of participants



Participants at cage culture site



Participants with Dr. G. Syda Rao and faculties

First harvest of cobia under technology demonstration component of NICRA

Flagged off by the DG, ICAR at Mandapam RC



Harvested cobia in the hands of Director General, ICAR

A participatory technology demonstration of cage farming of cobia under NICRA by two SHGs with Mandapam Regional Centre of CMFRI was initiated during 29th September 2012 at Mandapam Sea. About 1,800 cobia seeds which were hatchery produced at Mandapam Regional Centre were stocked in four circular GI metal cages of 7 m dia and 3.5 Mts depth. The initial length and weight of fingerlings ranged from 10 to 15 cm and 20 to 30 g respectively. The stocking density was 4.1 /m³. They were

fed with trash fish ad libitum twice a day. During the farming period of 7 months they reached a size range of 2.0 to 3.5 kg weight, with an average size of 2.5 kg. The FCR was 5.9.

The harvest of cobia farmed by self help groups was flagged off by the Hon'ble Director General on 12th May 2013. A total of 4 tonnes of cobia was produced and a farm gate price of Rs. 250/kg was realised. The per kg cost of production was Rs. 134/-, with the net income of Rs. 4, 65,976/-



Harvest of Cobia



SHG members and scientists with harvested fishes



View of the harvested cobia

Volitional spawning of cobia achieved at the Mandapam RC



3rd DPH Cobia larvae



Cobia larval rearing



Feeding the cobia larvae



Cobia larvae

Two sets of cobia broodstock, each with one female and two males, which were maintained at the National Marine Fish Brood Bank facility at the Mandapam Regional Centre, spawned volitionally without any hormonal induction during the month of May 2013. The water quality

parameters are maintained at highest standards with indigenous filtration systems. The broodstock are fed with squid and crabs. A total of 2.5 million of fertilized eggs were obtained and 85 % hatching was achieved. The larviculture is progressing well.

Seed production of Silver Pompano at Mandapam RC

A total of three spawning of silver pompano, *Trachinotus blochii* was achieved during April to May 2013. A total of 5.5 lakh fertilized eggs were obtained with 85% hatching. The larviculture is under progress.



Pompano larval rearing



Pompano fingerlings



Feeding the pompano larvae



DG viewing the pompano larvae

Fish Harvest Mela at Uppunda, Mangalore

The Research Centre of CMFRI, Mangalore organized a Harvest Mela of finfishes at Uppunda village on 28.05.2013. The Programme was inaugurated by the Hon'ble MLA of Byndoor Sri. Gopal Poojari. The Uppunda Gram Panchayath President Sri. Jaganath presided over the programme. Sri. V. K. Shetty, Managing Director, KFDC, Mangalore, Dr. K. K. Philipose, Scientist-in-charge of Karwar Research

cultured were harvested on this day. Fishes cultured in 3 cages (4x2x2 m area) were harvested in a phased manner for about a week.

A total of 1200 Kg of Seabass and 100 Kg of Red Snappers each weighing 1.5 to 2.0 Kg were harvested. The fishes were reared for a period of one year. The demonstration was conducted by Mangalore Research Centre of CMFRI, Mangalore by providing cages, seeds and technical



Inauguration of Harvest Mela by Sri. Gopal Poojari, MLA of Byndoor

centre of CMFRI, Sri. Suresh Kumar, Deputy Director of Fisheries and the presidents of PLD bank and Farmers Co-operative Bank participated in the programme. Fishermen from in and around Uppunda village attended the programme. Only part of the total fish

information to the fishermen. This time as fishing ban is in force, the harvested fishes fetched a local price of Rs. 340/Kg. Earlier 13 cages stocked with Seabass and Red Snappers in Uppunda and Alivekodi were harvested in the month of April and May 2013.



Sri. Gopal Poojari, MLA of Byndoor at the Harvest Mela



Fishermen with the harvested fishes



Harvested fishes

Successful breeding and larval rearing of yet another species “Grouper” at Visakhapatnam RC

An another milestone

The greasy grouper *Epinephelus tauvina* is a major marine species in India and not available in sufficient quantities in the capture fisheries. It is one of the fast growing groupers and commands excellent live markets. Farmers are in great need for the seed of this species for farming in cages and ponds which can tolerate wide range of salinities. It can grow up to one kg in about 9 months after the initial nursery phase. It fetches a farm gate price of Rs.200 in domestic market.

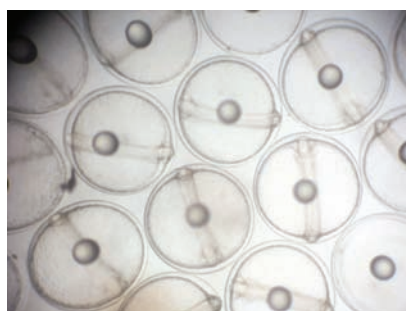
CMFRI initiated the challenging task almost two decades ago. However, induced breeding and seed production technology was developed at Visakhapatnam RC of CMFRI with the improved and state of the art laboratory facilities. Now arrangements are being made to grow the seed of this fish in ponds and cages on a participatory mode.

The non-availability of sufficient quantity of seeds from the natural grounds at the right time for farming purpose is the major constraint in the farming of groupers. At Visakhapatnam Regional Centre of CMFRI, live groupers of varying sizes (2.0 to 10.0 kg) were collected from the wild and were stocked in cages maintained near to the shore. Groupers being protogynous, all individuals stocked were females. Successful sex reversal (female to male) was achieved with hormonal and enzymatic manipulation. Fishes were implanted with different doses of enzymes. Female fish with intra ovarian ova of diameter $>450\mu$ and sex reversed male were used for induced spawning.

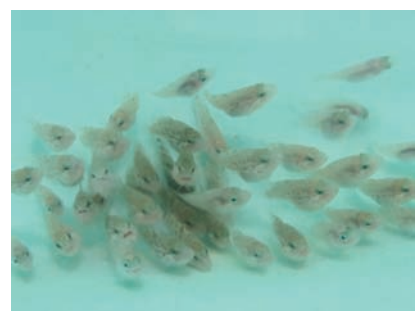
The eggs hatched out with hatching rate of 78% after 19 - 20 hrs of incubation at a temperature range of 28-30°C. The newly hatched larvae were in length range of 1.0-1.4 mm. The mouth opening was formed



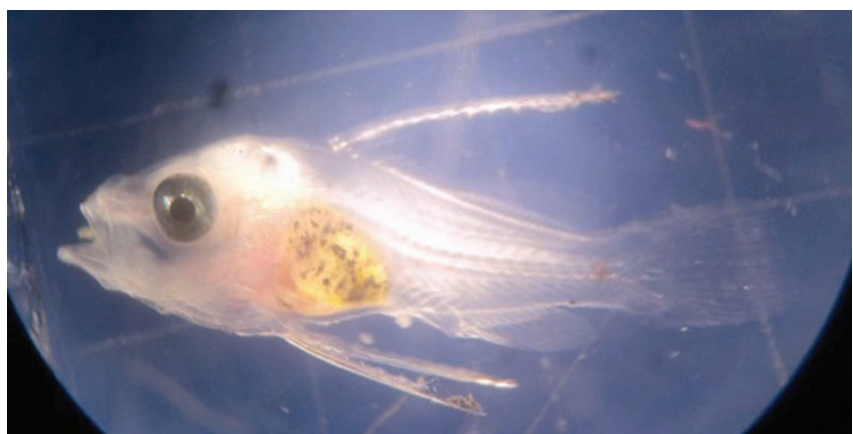
Grouper brood stock maintained in the cage



Fertilized eggs



Larvae of greasy grouper on DPH I



12th day old larvae of greasy grouper long spine stage



Larvae of greasy grouper on DPH 23
Free swimming stage



Larvae of greasy grouper in the hatchery tank

after 60 hrs post hatching. Mixed feeding schedule was followed from 15th day post hatch with *Artemia* nauplii, copepods and artificial diets. Metamorphosed fingerlings of length 5 - 6 cm were obtained after 44 days. This success will go a long way in

promoting grouper aquaculture in cages as well as in grow-out ponds in the country. This is the first successful larval rearing of greasy grouper in India.

(Reported by Visakhapatnam Regional Centre)

Large Tooth sawfish landed at Malpe Harbour, Karnataka

The large tooth sawfish *Pristis microdon* of the family Pristidae of Elasmobranch was accidentally caught in trawl net at Malpe Karnataka. The fish weighed about 800kg. This fish is included in the IUCN list and MoEF ban list. Generally the fishermen in Karnataka avoid catching sawfish as it destroys their nets and is considered as a badus omen.

(Mangalore Research Centre)



Accidental catch of *Pristis microdon*

Landing of a juvenile whale shark at Madhvad Harbour, Gujarat

A juvenile of Whale Shark (*Rhincodon typus*) measured upto a length 30 feet was found near Madhvad harbour about 100 meter far from Kodinar in a dead condition. It was caught by a multiday trawler on 29th April, 2013. With the help of the state fisheries department the specimen was dissected for further analysis. Information about shark fish was first reported to fishermen and then to the state fisheries officer. The Whale Shark (*Rhincodon typus*) is a cosmopolitan tropical and warm temperate species and is the largest living chondrichthyan. The fish is a highly

migratory species and its life history is poorly understood. Populations appear to have been depleted by harpoon fisheries in Southeast Asia and perhaps incidental capture in other fisheries. Small-scale harpoon and entanglement fisheries have taken place in various regions of the world, including India (whale shark fishing banned in 2001), Pakistan, Taiwan Philippines (banned in 1998) and the Maldives (prior to protection in 1995). It has a high international market demand and normally low abundance make this species vulnerable to commercial fishing.



Dorso-lateral view of a whale shark landed at Madhvad Harbour, Gujarat

(Reported by Swatipriyanka Sen Dash and Kamaliya Kiran R, Veraval Regional Centre)

Egg case found in the Arabian carpet shark from Gujarat

On 18.04.2013, a single female specimen of *C. arabicum* measuring 52.5 cm (TL) and weighing 405gm was

obtained from the trawl landing at Mangrol. Being an oviparous species, the egg cases were found inside the uterus attached by an anchoring core. The uterus was found to be very thin. The keratinous egg cases were more or less rectangular in shape, strongly convex on both the broader sides, and dark brownish in colour with the eggs inside. Only one egg case was present in each uterus. The content

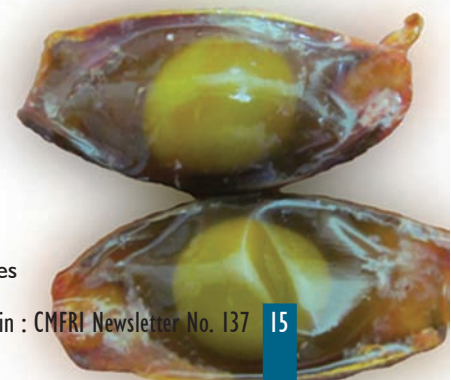
of the egg-cases was a viscous fluid of dull white colour. As the egg is laid, salt water hardens the egg case, forming a protective exterior which contains an internal yolk that provides the developing embryo with food. Arabian carpet shark eggs hatch after 70 to 80 days of incubation.

(Reported by Swatipriyanka Sen Dash, Sangita A. Bharadiya, M.S. Zala and Kamaliya Kiran R, Veraval Regional Centre)



C. arabicum with egg cases

A view of the egg cases



Occurrence of short fin mako, *Isurus oxyrinchus* (Rafinesque, 1810) from Dwarka, Gujarat



Isurus oxyrinchus (Rafinesque, 1810) from Dwarka, Gujarat

A single male specimen was landed and collected from Veraval fishing harbour, on 18th March, 2013. The specimen was caught by a multiday gill netter (OAL 52 ft) operated in the waters from Veraval to off Okha. The information and GPS location of the fishing ground (21°55'26"N, 68°11'42"E) given by the fishermen indicated that the

fish was caught at a depth of 104 m from the waters off Dwarka at 11 hrs in the morning. The mesh size of the gill net was 120 mm. The fishermen called it as "Dolphin shark". The specimen was brought to the laboratory, photographed and its identification was confirmed following Compagno, 1984. Detailed morphometric measurements were

noted down and the shark was dissected for its biological observation.

(Reported by Swatipriyanka Sen Dash, Sangita A. Bharadiya, M.S. Zala and Kamaliya Kiran R, Veraval Regional Centre of CMFRI)

Yellow foot clam depuration and processing in Ashtamudi Lake gets a boost

The Quilon social service society (QSSS) has adopted the oyster depuration and processing technologies developed under the NAIP scheme on High-value Shellfish for processing yellow foot clam (*Paphia malabarica*) in Ashtamudi Lake.

A small beginning to popularise clam products in the domestic market has been made by the Quilon Social Service Society (QSSS) by producing quality assured yellow foot clam products. The



Yellow clam shells after depuration and steam shucking is being processed at the newly constructed VAP unit

meat is produced from depurated clams and three minute pressurised steaming is used for sucking. Molluscan Fisheries Division of CMFRI and NIFPHATT have given technical and scientific support to them. On 14th June 2013 they launched the product under the trade name "Ashtamudi". The Hon'ble Minister for Fisheries, Govt. of



Yellow foot clam meat processed with new method



Presidential address by Shri. Shibu Baby John, Hon'ble Minister for Fisheries

Kerala, Sri. K. Babu inaugurated the function and Hon. Minister for Labour. Sri. Shibu Baby John presided over the function. The first sale of the ready to cook yellow foot clam meat was handed over to Smt. Beena Dayal, President, Thekkumbhagam Grama Panchayath by Sri. N. Peethambara Kurup, Hon. Member of Parliament, Kollam. The "Samruddhi" Shellfish Value Added production unit was also inaugurated by the Hon. Minister Sri. K. Babu and he took keen interest to see the activities in the VAP unit.

Oyster Harvest in North Vembanadu Lake

An all time bumper harvest commenced at Moothakunnam and Puthenvelikkara for farmed oysters under the NAIP scheme. About 15 farms with 300 strings each, commenced harvests in May 2013. The fully grown string attained 10kg weight within one year and gave approximately 400 to 500g meat. Depurated, steamed and individually quick frozen oyster meat is sold through the outlet of NIFPHATT in Kochi.

Yellow foot clam (*Paphia malabarica*) in Ashtamudi Lake moves into full assessment for ecolabelling by the MSC

Under Wild Capture Fisheries Certification Schemes of WWF, Marine Stewardship Council (MSC) conducted surveys in Ashtamudi Lake with the help of Molluscan Fisheries Division, CMFRI. Based on the "Ashtamudi Lake Clam Resources

Survey" report prepared by Molluscan Fisheries Division, MSC has finalised the process to announce the yellow foot clam fishery in Ashtamudi is a sustainable one. Within a year the yellow foot clam will get the MSC ecolabel.

(Reported by Molluscan Fisheries Division)

Pre-Census 2015 workshop

A one day pre-census workshop for the Marine Fisheries Census 2015 was organized at CMFRI, Cochin in collaboration with DAHDF, Ministry of Agriculture, New Delhi on 28th May 2013. The workshop was attended by Dr.G. Syda Rao, Director, CMFRI, Mr. O.P. Mishra, Deputy Director General (Fisheries), DAHDF, Dr. Vijayakumaran, Director General, Fishery Survey of India, other officials from CMFRI, DAHDF, FSI and state fisheries departments. Discussions on various problems encountered during the last census were discussed and remedies were suggested. Different data collection schedules used in Marine Fisheries Census 2010 was displayed and discussed and modifications suggested by the participants were incorporated.



Workshop in progress

A two days workshop under the NFDB funded research project on "Development of digital knowledge management platform for fisheries - Fishpedia" was organized at CMFRI, Kochi during 29-30 April 2013. The project is headed by ICRISAT under the leadership of Dr. N. T. Yaduraju who is the Principal Investigator of the project and all the fisheries research institutes of ICAR

are partners to the project. The workshop was held to sensitize the partner institutes about Fishpedia project and to demonstrate and give hands on training to participants on Knowledge models and use of C-map tools. Dr. G. Syda Rao, Director CMFRI was the chief guest and officials from various partner institutes participated in the workshop.



CMFRI Awarded

International research project - Initiative under Belmont Forum and G8 Research Councils

The CMFRI research project on "Global learning for local solutions: Reducing vulnerability of marine-dependent coastal communities" (GULLS) under the theme on Coastal Vulnerability was sanctioned under the International research project initiative by Belmont Forum and G8 Research Councils International Opportunities Fund. Of the 50 proposals submitted only seven proposals were successfully awarded by the reviewing agency - Natural Environment Research Council, United Kingdom

Consortium partners:

Organisation	Country
Rhodes University, Grahamstown	South Africa
Central Marine Fisheries Research Institute, Cochin	India
CSIRO Marine and Atmospheric Research, Hobart	Australia
University of São Paulo, São Paulo	Brazil
National Oceanography Centre, Southampton	United Kingdom
University of California Santa Cruz, Santa Cruz	United States
Service D'Appui A le Gestion De L'Environnement (SAGE- Fampandrosoanamaritra)	Madagascar
University of Otago, Dunedin	New Zealand
University of Victoria, Victoria	Canada
Eduardo Mondlane University, Maputo	Mozambique
Aberystwyth University, Aberystwyth	United Kingdom
University of Southampton, Southampton	United Kingdom

The team includes around 40 scientists across 12 international research Institutes. The project will be in operation for a period of three years starting October 2013 .

This project will address the Belmont Challenge priorities in the area of coastal vulnerability - specifically to challenges that arise for food security and sustaining coastal livelihoods as a

result of global warming and increasing human coastal populations. The project will contribute to improving community adaptation efforts by characterizing, assessing and predicting the future of coastal-marine food resources and identification of suitable adaptation options. The overall project objectives will be to build regional skill-sets that can reduce coastal vulnerability by evaluating and characterizing likely impacts, create predictive systems that will inform decision makers about the expected consequences of coastal changes; deliver alternative options in terms of adaptation and transformation within coastal communities; and to define the long-term implications of selecting a particular option in terms of economic, social and environmental outcomes.

Dr. Kevern Cochrane, Rhodes University, South Africa will be the lead Principal Investigator. Dr.G.Syda Rao, Director, Central Marine Fisheries Research Institute, Kochi, will be the Principal Investigator for the Indian side. Dr. Shyam S. Salim, Co-Principal Investigator will be the Research Programme Co-ordinator. He will be co-ordinating the research of the Indian team and also will correspond across the different international research teams. The Indian team comprises Dr. P. U. Zachariah, Dr. R. Narayanakumar, Dr. T. V. Sathianandan, Dr. Pratibha Rohit and Dr. P. S. Swathilekshmi with expertise under physical, economic social and governance dimensions of the project.

Official Language Implementation

Hindi Workshop on UNICODE

In order to popularize the Hindi UNICODE & software a two day workshop was organized for the staff of CMFRI Headquarters on 5th and 6th June, 2013. Shri K.K. Ramachandran, Assistant Director (OL), Income Tax Office, Kochi conducted classes on 5th June. The practical session was led by Smt. E.K. Uma, Technical Officer (Hindi) on 6th June paving the way to digital disposal of official work in Hindi.

Dr. B. Meenakumari, DDG inaugurates extended laboratory cum office building of Tuticorin RC



Extended Laboratory-cum-Office Building of Tuticorin Research Centre of CMFRI

The newly built 'Laboratory cum office building' was inaugurated on 21st April 2013 by Dr. B. Meenakumari, DDG (Fisheries), ICAR, New Delhi, by lighting the ceremonial lamp, in the presence of Dr. G. Syda Rao, Director, CMFRI, Shri. S. Natarajan, Deputy Chairman, VOC Port Trust (Tuticorin), Engineers of CPWD, Scientist in charge, Mandapam Regional Centre, Retired Scientist and staff of CMFRI, the Dean, Fisheries College & Research Institute and

other invited guests from colleges and various government departments and Press and Media.

The Inaugural Ceremony was conducted at the Shore Hall of TRC of CMFRI. Dr. M.S. Madan, Scientist in Charge, TRC of CMFRI welcomed the dignitaries. The Director, CMFRI, gave the Presidential address and spoke about the present fishery research requirements. The guest of honour, Shri S. Natarajan, Deputy

Chairman, VOC Port Trust, Tuticorin address recalled his long association with TRC of CMFRI and assured continued support. Dr. G. Gopakumar, SIC, Mandapam Regional Centre and Dr. C. Muthiah, Rtd., Principal Scientist, Mangalore Research Centre of CMFRI gave the felicitations. Dr. B. Meenakumari, DDG, ICAR, New Delhi in her Inaugural Address spoke about the research needs and the status of the current research.



Inauguration of the Extended Laboratory-cum-Office Building of Tuticorin Research Centre of CMFRI

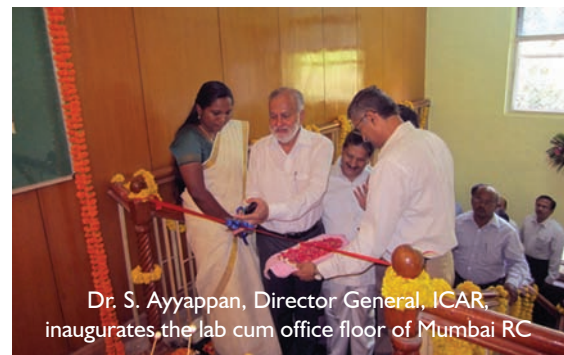


Inaugural address by Dr. B. Meenakumari DDG (Fy.), ICAR

Mumbai RC gets permanent space in the entire second floor of CIFE old campus

The Mumbai Research Centre of C.M.F.R. Institute was established as Bombay Sub-Station of the Central Marine Fisheries Research Institute in September 1947. The Centre has been playing pivotal role in the area of sustainable development of marine capture fisheries of Maharashtra and efforts were taken to popularize cage culture to ensure livelihood of fisher folk. In 1967, the Institute along with its Research Centre's came under Indian Council of Agriculture Research (ICAR) and the sub-station was moved to Botawala Chambers, in Fort area of Mumbai. The Research Centre was shifted to the spacious Army and Navy Building,

M. G. Road, Bombay in July 1978 and functioned till February, 2006. The Centre was shifted to the campus of Central Institute of Fisheries Education (CIFE) building with few rooms allotted by CIFE at Versova in March 2006. On 27th May, 2013 Dr. S. Ayyappan, Hon. Secretary, DARE & Director General, ICAR, inaugurated the lab cum office floor of CMFRI ie, the the 2nd Floor of the CIFE old campus handed over by Dr. W. S. Lakra, Director / Vice-Chancellor, CIFE, Mumbai to Dr. G. Syda Rao, Director, CMFRI, Cochin. Hon. DG lauded the occasion and appreciated the CIFE for this gesture as blooming partnerships in ICAR.



Dr. S. Ayyappan, Director General, ICAR, inaugurates the lab cum office floor of Mumbai RC



Shri. Tariq Anwar Hon'ble Union Minister of State for Agriculture and Food Processing Industries visits Visakhapatnam RC

Shri Tariq Anwar, Hon'ble Union Minister of State for Agriculture and Food Processing Industries, Government of India visited the Visakhapatnam Regional Centre of CMFRI on 11th May, 2013. The Honourable Minister was accompanied by Shri. Subbarami Reddy, Member of Parliament. The dignitaries were welcomed by Dr. G. Maheswarudu, Scientist-In-Charge, Visakhapatnam Regional Centre of CMFRI and were shown the facilities at the Regional Centre. Honourable



Hon'ble Union Minister Shri. Tariq Anwar addressing the staff

Minister showed keen interest in mariculture activities of the centre and was apprised of the mariculture activities of the centre mainly grouper breeding and larval rearing, algal culture, rotifer and copepod culture, pearl oyster breeding and pearl production, green mussel seed production and cage culture of finfish. Honourable Minister was also apprised of the capture fisheries activities

conducted at VRC of CMFRI i.e. assessments of marine resources, collection of fishery resource data of three maritime states of the region and also consultancy and outreach activities. While addressing the scientists and staff of the centre he appreciated the technologies developed at VRC of CMFRI that will be helpful to fishermen for years to come.



Hon'ble Minister seeing the cage model



Hon'ble Minister observing Grouper fingerlings

17th Research Advisory Committee meeting of CMFRI held at Mandapam Regional Centre

The 17th Research Advisory Committee meeting of CMFRI was held at Mandapam Regional Centre on 25th April 2013 from 9.00 AM to 3.00 PM. Dr.G.Gopakumar, SIC & Head Mariculture Division delivered the



17th RAC meeting



Chairman & Members, RAC & Director, CMFRI viewing the pompano larvae



Chairman & Member RAC & Director, CMFRI visiting the Environmental Chamber facility

welcome address. Dr.M.V.Gupta, Chairman, RAC gave the introductory remarks. Dr.G.Syda Rao, Director, CMFRI presented the institute research activities for the year 2012-2013. Dr.R.Narayanakumar, Head, SEETT Division & Member Secretary, RAC, presented the Action taken report of 16th

RAC Meeting. Division and centre wise presentation was made by the respective Heads of the Division and Scientist in-Charges. Director,CMFRI in his final remarks thanked the RAC Chairman and members. Dr.R.Narayanakumar, Head, SEETT Division & Member Secretary, RAC, proposed the vote of thanks. From 3.00 to

6.00 pm, RAC Chairman and members, HOD's and SIC's visited the mariculture facilities of the centre namely National Marine Fish Broodbank, Recirculating Aquaculture System (RAS) Laboratory, Mariculture Complex, Cage farm and New hatchery.

World Environment Day Celebration at Mangalore RC

World Environment Day and World Oceans Day was celebrated at the centre on June 5th 2013. A poster on awareness creation for the World Environment Day was prepared by the centre. Dr.U.Mahesh Kumar, the Regional Director (Environment) of CRZ was the chief guest for the event.

Celebration of World Environment Day



Technology transfer

Demonstration of hatchery and farming technologies of cobia and silver pompano

A private hatchery at Bogapuram near Visakhapatnam, Andhra Pradesh, has entered into a MoU with the CMFRI for transfer of hatchery technologies of cobia and silver pompano. The hatchery was inspected by the scientists of CMFRI and intensive live feed culture has been initiated. Minimum required infrastructural changes are being carried out for taking up the seed production of cobia and silver pompano.

A private farm at Nagayalanka near Vijayawada, Andhra Pradesh, has entered into a MoU with the CMFRI for taking up the demonstration of silver pompano farming. The pond preparation works are



Inside view of private hatchery at Bogapuram, AP

completed. Dr. A.K. Abdul Nazar and Dr. R. Jayakumar, Senior Scientists visited the private hatchery at Bogapuram near

Visakhapatnam and a private farm at Nagayalanka near Vijayawada, Andhra Pradesh during the month of May 2013.

Hon'ble Union Minister of Agriculture Shri. Sharad Pawar releases CMFRI book - The Indian Sacred Chank



The CMFRI book "The Indian Sacred Chank" authored by Drs. A. P. Lipton, G. Syda Rao and I. Jagadish released by Hon. Union Minister of Agriculture Shri. Sharad Pawar on 16.07.2013 on the occasion of 85th ICAR Foundation day at New Delhi

Preface of the book by Dr. G. Syda Rao, Director, CMFRI

The Sacred Chank, popularly known as Dakshinavarti Shankh, has been one of the very few tangible epitomes which have straddled the Indian culture and history from time immemorial. The trace of history of this Sacred Chank spills over many centuries with the earliest cited evidence dating back to 785 BC. Korkai, a bustling port town in the south eastern part of Tamil Nadu, under the rule of Pandiya kings was a flourishing centre for trade of the Chank as per the mid first century CE recordings of Periplus of the Red Sea, who is also credited with the publication of navigation manual of the Silk Route.

Indian epics are replete with references of Sacred Chank and the Hindu religious beliefs have this Chank at the centre of many auspicious activities. In Hindu religion, Shankh, is of great importance and symbolizes luster, brilliance, purity and auspicious. In India the sound of the conch is associated with the sacred syllable OM, the first sound of creation. The protector God, Lord Vishnu, is the original bearer of the Chank as per puranas which he holds with elan in his left hand. As per the legend the Dakshinavarti Shankh was one of the by products of the Samudra Manthan jointly performed by Devas and Asuras, Sudarshana Chakra being the other. The conch is used as a trumpet to ward off negative vibes and evil spirits and is also the container of sacred water. As an integral part

of Hindu symbolic and religious tradition, its blowing marks the beginning of ceremonies and even wars in the past.

The designing of the sacred conch is such that the ones which open towards Left right hand (Dakshinavarti Shankh) can magnify the very low frequency natural cosmic vibration of the Earth and would be made audible as a humming noise to human ears. This extremely low frequency (ELF) resonance referred to as heartbeat frequency of earth has been studied in detail and popularly referred to as Schumann's resonance. The innards of the conch is shaped as the morphogenetic fields of consciousness which is basis of intelligent shaping of matter and higher organisms. Needless to stress, Sacred Chank has a permanent veritable place in the religio- cultural history of India.

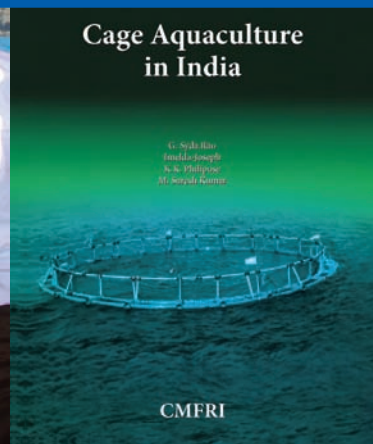
In Buddhism, blowing of the conch signifies victory over suffering. In Chinese Buddhism, the conch shell signifies a prosperous journey, and in Islam it represents the hearing of the divine word. Quetzalcoatl created life with the aid of a conch shell and he is always pictured wearing a conch pectoral. Triton the son of Poseidon and Amphitrite, in ancient Greece is depicted with a trumpet made from a conch which he used to raise or calm storms.

In modern day India, chank has always been treated more with reverence than as an ornamental entity with even the products

like bangles made out of it, being used exclusively on sacred occasions like marriages etc.

This monograph elucidates the relevant bio-parameters of the Sacred Chank as a natural resource belonging to the Indian oceanic region which had always been a focus of research and study by many other countries. The rarity of this species and its unique habitat prevalent around the Indian peninsula makes it binding on the our part to conserve, preserve and rejuvenate the common tracts of this resource. This book studies in detail the various conservation and replenishment methods like sea ranching which would serve well to sustain the slide of the stock. The management of this resource unlike other fishery resources, has to be given a special status because of the place and importance it has in the socio-cultural visage of our country. As the consumerism of chank is closely and exclusively intertwined with the religious activities, any effort in the conservation and replenishment of the resource and its post harvest handling must involve religious intelligentsia. The science and ensuing methods of management of this rare resource propounded by the researchers must be given a channelization into action with the active involvement of religious heads of the country as it would ensure innate awareness and self correcting balancing mechanism at the community level whose impact would be positive and perpetual.

Hon'ble Union Minister for Agriculture Shri. Sharad Pawar releases CMFRI book - Cage Aquaculture in India



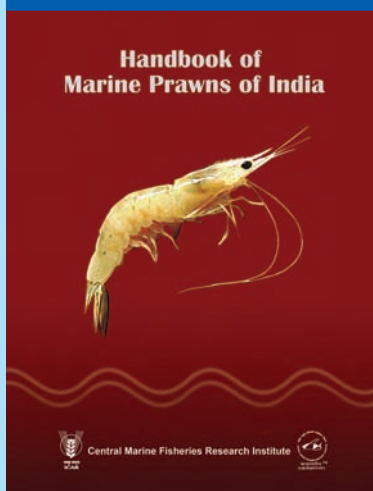
Hon'ble Union Minister for Agriculture Shri. Sharad Pawar releases CMFRI Book - Cage Aquaculture in India on board

The book "Cage Aquaculture in India" authored by Drs. G. Syda Rao, Imelda Joseph, K.K. Philipose and M. Suresh Kumar and published by the Central

Marine Fisheries Research Institute (CMFRI) is a monumental work by the authors and first comprehensive publication on the subject.

The book was released by Hon'ble Union Minister for Agriculture Shri. Sharad Pawar on board at Karwar on 19th April 2013.

Dr. S. Ayyappan, DG of ICAR releases CMFRI book - Handbook of Marine Prawns of India



Dr. S. Ayyappan, DG of ICAR releases CMFRI book at Veraval RC

Dr. S. Ayyappan, Director General, ICAR released CMFRI book entitled Handbook of Marine Prawns of India edited by Drs. Sudhakara Rao, E. V. Radhakrishnan and Josileen Jose at Veraval RC during harvest mela on 13.5.13

E book of CMFRI released at Mandapam RC

The Secretary, DARE and Director General, ICAR, Dr. S. Ayyappan released the 'e book' entitled 'Coastal Rural Indebtedness and Impact of Microfinance in Marine Fisheries Sector' authored by Vipinkumar. V.P., Shyam. S. Salim, Narayanakumar R., Sathiadhas R., Madan M. S., Ramachandran.C, Swathilekshmi P.S. and Johnson B. in the inaugural function at Mandapam Regional Centre of CMFRI on 12.05.2013.



Releasing of e book by DG at Mandapam RC

Movie on "Successful sea cage farming by Sidi tribals of Gujarat" Released by Director General

The movie on "Successful sea cage farming by Sidi tribals of Gujarat" has been produced under the Institute Technology Management Unit of CMFRI. This movie describes how CMFRI imparted skills in fabrication of galvanized iron cages, mooring, net handling, feeding and other farm management practices required for sea farming to the Sidi tribals of Gujarat under the Tribal Sub Plan programme of ICAR.

These tribals developed a sea cage farm off Somnath coast in the Arabian Sea for their benefit under Tribal Sub Plan programme with their active participation. The produce from this farm reaped benefits of about 26 lakhs rupees. Indian Council of Agricultural Research has empowered these tribals the permanent livelihood option from the stage of hunger.



Movie on "Successful sea cage farming by Sidi tribals of Gujarat" released by the DG and Secretary DARE Dr S. Ayyappan on 12th May 2013 at Mandapam Regional Centre of CMFRI

Global visibility of CMFRI publications through eprints@cmfri

CMFRI Repository gets India's Best Open Access Institutional Award 2012

The Library & Documentation Centre has developed its Open Access Institutional Repository eprints@cmfri for Institutional publications, now recognized world wide as a leading research information centre. The Institutional repository facilitates browsing by year of publication, author, department, subject category and document type. Advanced search is possible by author, title, subject and with many options. More than 350 full text articles contributed by the scientists and staff of CMFRI were uploaded during the period 2012-13, and are available in 'eprints@cmfri'. We have uploaded more than 9600 scientific papers.

The usage of eprints@cmfri for the period April, 2012 to 31st March 2013 has been recorded. More than 198 countries used the repository and 137303 times visited and downloaded full text of scientific papers. Notably, visits from India are highest with 80,563 times followed by USA 9030, Philippines 3801, Malaysia 2953, UK 2181,



Indonesia 1975, Australia 1692, Mexico 1431, China 1311, Thailand 1286 times

and so on. Eprints@cmfri gets India's Best Open Access Institutional Award 2012.

Quantum jump in IJF Impact Factor

The Library & Documentation Centre has taken earnest efforts to index Indian Journal of Fisheries in Thomson Reuter's Science Citation Index and Elsevier's Scopus and other databases. Now the international impact factor of Indian Journal of Fisheries has been increased from 0.04 to 0.195. NAAS Rating of Indian Journal of Fisheries has also been increased from 4.5 to 6.2.

Exhibitions

Exhibition in connection with the international symposium on 'Greening Fisheries: Towards Green technologies in Fisheries' organized jointly by the Society of Fisheries Technologists (India) and CIFT, during the period from 21st to 23rd May, 2013, at Center Hotel, Kochi.

Pokkali Paddy-Shrimp-Fish integrated farming demonstration of KVK: A success story

KVK (Ernakulam) of CMFRI has successfully demonstrated the new method for revival of pokkali farming system wherein culture of paddy, shrimp and fin fish all integrated in a package for pokkali fields under the technology demonstration programme of National Initiative on Climate Resilient Agriculture (NICRA) Project in the pokkali fields at Ezhikkara, Pizhala and Kadamakkudy. In this new method, high density cage farming of fin fish is integrated with the conventional pokkali farming of alternate paddy and shrimp culture. KVK has been conducting the frontline demonstration of this new method for the last one year. The harvest of this new farming system has been inaugurated by Shri B Ramachandran, Additional District Magistrates (ADM) Ernakulam District on 10th April at Ezhikkara Vadakkumbhagam Padasekharam in presence of Dr. G. Syda



Pokkali fish harvest mela inaugurated by ADM (Ernakulam)

Rao, Director, Central Marine Fisheries Research Institute and Dr. P.U. Zachariah, Principal Investigator of the NICRA project. The fixed cost required for cages, catwalks and other facilities for 1 ha Pokkali field is ₹88,200/-. These facilities can be used for 5 years. Hence the fixed cost per year would be ₹17,640/-. The operational cost per year is ₹89,380/-. It is estimated that 324 kg of Pearlsport and 312

kg of Mullet can be harvested from one field. The gross income per year would be ₹ 90,200/- at the rate of ₹ 250/- per kilogram for Pearlsport and ₹ 350 per kilogram for Mullet at farm gate. Hence the first year profit would be ₹ 83,180/-. The present profit from paddy alone field is only ₹ 15,000/- and that from paddy-shrimp field is ₹ 50,000/-.

Entrepreneurship development programmes (EDP) of KVK

KVK has conducted three entrepreneurship development programme during the last quarter. One day programme on *Value Added products from Nutmeg rind*, conducted at Samskara, Kothamangalam was attended by 80 prospective

entrepreneurs. The method of manufacturing Jam, Squash and Wine from Nutmeg rind on industrial level was demonstrated. There was a training on food safety and standards authority of India registration, trade mark protection, labeling, packing and marketing. The

programme was inaugurated by Sri. V.V Kurian, Standing Committee Chairman of Kothamangalam municipality. Similarly, another programme on Mushroom Cultivation was conducted at Thevara campus on 26.04.2013, where in 30 prospective entrepreneurs attended.

KVK successfully cultivated Palak in Ernakulam district

The On Farm Testing of palak cultivation was successfully conducted in four farmers field at Kumbalangi, Edavanakad, and Chotanikara. A Palak harvest mela was organized at Kumbalangi on 12.4.13. The programme was inaugurated by Smt. Usha Pradeep, President Kumbalangi Grama Panchayath. Shri. Tony Kochery, Panchayath member, Smt. Jagadambal, Agriculture officer, Mrs.Usha Devi, Astt. Director Agriculture were present. The variety Harit Shobha gave an yield of 2.2 tones /ha compare to all green which gave an yield of 2 t/ha.



Shri. Shoji Joy Edison, SMS (Horticulture) received National Award

The poster entitled Testing the suitability of different cocopeat based media for protected growing of vegetable seedlings authored by Shri. Shoji Joy Edison has won the First prize and the Best Poster Award during the National Seminar on Advances in Protected Cultivation organised by Indian Society for Protected Cultivation (ISPC), Centre For Protected

Cultivation Technology (CPCT), Indian Agriculture Research Institute, New Delhi on 21st March, 2013. Award was given by Dr. R.B.Singh (Former ADG, FAO, Former ASRB chairman) in the presence of Dr. N.K Krishna Kumar (DDG, Horticulture), Dr. Brahma Singh, Executive Director, DRDO and Dr. Anwar Alam (Former VC, SKUAST, Jammu).



Shri. Shoji Joy Edison receiving the award

- **Dr. (Mrs.) V. Kripa**, Head, FEMD, **Dr. K. S. Mohamed**, Head, MFD and **Dr. R. Jeyabaskaran**, Senior Scientist attended Indo-German Project Planning Workshop conducted at MoEF at India Habitat Centre, New Delhi from 13-14 May, 2013.
- **Dr. P. U. Zacharia**, Head DFD and Chairman, Vessel Management Committee visited Goa Shipyard Ltd to inspect the construction of vessel in Goa on 5th April 2013.
- **Dr. T. V. Sathianandan**, Head FRAD Attended the meeting as a member of the expert committee to study “the impact of trawl ban along Kerala coast” in the chamber of Hon'ble Minister for Fisheries, Government of Kerala at Trivandrum on 18-5-2013.
- **Dr. G. Maheshwarudu**, Scientist-in-charge, VRC of CMFRI attended a session on “Opportunities in financing to Mariculture activities” on 30th April, 2013 at NIRD, Hyderabad.
- **Dr. A. P. Dineshbabu**, Scientist-in-charge, Mangalore RC and **Dr. P. S. Swathi lekshmi**, Senior Scientist participated in the second annual workshop of NICRA at IARI campus New Delhi from 17th to 19th June, 2013.
- **Dr. Prathibha Rohit**, Principal Scientist attended and presented the

Deputation abroad

Dr. Somy Kuriakose and Dr. Mini K. G. at Thailand



Dr. Somy Kuriakose and **Dr. Mini K.G.** attended the BOBLME - IOTC Fisheries Stock Assessment Training Workshop organized by Bay of Bengal Large Marine Ecosystem Project and the Indian Ocean Tuna Commission at Bangkok, Thailand during 20-24, May 2013.

- project on “Sustainable blue food security and carbon issues under changing climate: challenges in Australia and India at the Department of Science and Technology, New Delhi on 13th June, 2013.
- **Dr. Subhadeep Ghosh**, Senior Scientist and **Dr. Biswajit Dash**, Technical Officer, VRC of CMFRI, attended second advisory committee meeting and inauguration of Hilsa Project at, CIFRI, Barrackpore on 13th – 14th April, 2013.
- **Dr. R. Jeyabaskaran**, Senior Scientist participated as expert team member in Coastal Protection and Development Advisory Committee (CPDAC) in context at Anti Sea Erosion Measures in Lakshadweep from 16-20th April, 2013 organized by coastal Erosion Directorate, Central Water Commission, New Delhi.
- **Dr. T. M. Najmudeen**, Senior Scientist attended the training programme on ‘Projects’ under workshop on User Acceptance Testing of ERP solution for Implementation of Management Information System (MIS) including Financial Management System in ICAR on 8-10 May 2013 at Indian Agricultural Statistics Research Institute, New Delhi.

Best paper award

The paper titled “GIS based resource mapping of fishery resources to reduce CO2 emission by multiday trawlers” authored by Sujitha Thomas and A.P. Dineshbabu received the Best Paper Award (Oral) under the technical session on **Green Fishing-Fishery Resources and Energy Efficient Eco friendly Capture Systems** in The International Symposium on Greening Fisheries- Towards Green Technologies in Fisheries” jointly organised by Society of Fisheries Technologist (India) and CIFT Cochin from May 21-23, 2013.



Dr. Sujitha Thomas receiving the best paper award

- **Dr. Shubhadeep Ghosh, SIC; Mrs Muktha M; Mr. Loveson Edward, Shri N. Rajendra Naik**, Scientist attended an interactive meeting with the President and the Executive Director, Scientific Committee on Oceanic Research (SCOR) at Conference hall of the centre for studies on Bay of Bengal, Andhra University on 17th May, 2013.
- **Dr. Vipinkumar. V. P.**, Senior Scientist participated in the Management Development Workshop for Technology Management for Researchers during 28th February to 6th March, 2013 at NAARM, Hyderabad.
- **Dr. Shyam. S. Salim**, Senior Scientist attended the 120th meeting of the Academic Council on 3rd April, 2013 at the Kerala Agricultural University Headquarters, Vellanikkara

Attended the Programme Advisory Committee of the Department of Science and Engineering Board meeting for the project proposal presentation on 'Sustainable blue food security and carbon issues under a changing climate: Challenges in Australia and India' on 13th June 2013 at Vasant Square Mall, Lower Ground Floor, Vasant Kunj, New Delhi

Delivered an interactive lecture on "Trade Agreements and Impacts in the Indian Fisheries Sector: Constraints and Prospects for the Graduate Students of Michigan State University on 24th April 2013 as part of ongoing MSU-CMFRI partnership via Skype

BEST PAPER AWARD : Shyam. S. Salim, V. Kripa, P. U. Zachariah and Ambrose (2013) Best paper award for Oral presentation on 'Coastal Fishers perception on Climate change causes and effects: A PARS methodology framework', International Symposium, Theme on Greening Fisheries: Towards Green technologies in Fisheries, Technical Session 4: 'Action Blue' - Special Initiatives for a Better Tomorrow in Fisheries 21-23 May 2013, Organised by Central Institute of Fisheries Technology, Cochin and Society of Fishery Technologists (SOFTI), India, Cochin

BEST POSTER AWARD: The poster entitled Organic Aquafarming Initiatives in Karnataka: a success story authored by Dr. Geetha Sasikumar, Dr. K. S. Mohamed and Dr. P. K. Asokan received the best poster award. This was presented under the technical session on Clean Aqua-Aquaculture Production systems for the future in the International Symposium on Greening Fisheries-Towards Green Technologies in Fisheries jointly organised by Society of Fisheries Technologist (India) and CIFT Cochin from May 21-23, 2013.

Personnel

ASSUMPTION OF CHARGES

1. Dr. G. Maheswarudu, Pr. Scientist, Visakhapatnam Regional Centre of CMFRI has assumed the charge of Head of Division, Crustacean Fisheries Division, CMFRI, Hqrs., Cochin on 16.05.2013.
2. Dr. Shubhadeep Gosh, Sr. Scientist has assumed the charges of Scientist-in-charge, Visakhapatnam Regional Centre of CMFRI on 14.05.2013.

APPOINTMENTS

Names & Designation	Appointed as	Center	w.e.f
Smt. G. Hemlata	Assistant Finance & Accounts Officer	Visakhapatnam RC	13.03.2013
Ms. Priyanka Kumari	Assistant	Mandapam RC	09.04.2013
Dr. Amir Kumar Samal	Scientist	CMFRI Hqrs.	10.04.2013
Dr. Sekar Megarajan	Scientist	CMFRI Hqrs.	10.04.2013
Smt. Karthireddy Shyamala	Scientist	CMFRI Hqrs.	11.04.2013
Shri Vinay Kumar Vase	Scientist	CMFRI Hqrs.	11.04.2013
Shri Ashish Chobey	Assistant Administrative Officer	Visakhapatnam RC	17.05.2013
Shri Chandra Mauli Sharma	Assistant Administrative Officer	Veraval RC	21.05.2013

PROMOTIONS

Names & Designation	Promoted as	Center	w.e.f
Smt. K. P. Shylaja, UDC	Assistant	Calicut RC	27.12.2012 (AN)
Smt. Ponnamma Radhakrishnan, Assistant	Assistant Administrative Officer	CMFRI Hqrs.	17.04.2013
Shri C. Purandara Shetty, UDC	Assistant	Mangalore RC	17.04.2013
Shri M. M. Vanvi, UDC	Assistant	Mumbai RC	25.04.2013
Smt. P. N. Deepa, LDC	Upper Division Clerk	CMFRI Hqrs.	17.04.2013
Smt. Febeena P. A., LDC	Upper Division Clerk	CMFRI Hqrs.	17.04.2013
Smt. Manju Jose, LDC	Upper Division Clerk	CMFRI Hqrs.	29.04.2013
Shri V. Muniyasamy, SSS	T-I (Field Assistant)	Mandapam RC	30.04.2013
Shri Rajendra D. Hulswar, SSS	T-I (Field Assistant)	Karwar RC	01.05.2013
Shri D. Jaganna, SSS	T-I (Field Assistant)	Visakhapatnam RC	30.04.2013 (AN)
Smt. M.P. Shyamala, SSS	T-I (Field Assistant)	CMFRI Hqrs.	01.06.2013
Shri Sunil P. V., SSS	T-I (Filed Assistant)	CMFRI Hqrs.	01.06.2013
Shri A. K. Shaji, SSS	T-I (Field Assistant)	CMFRI Hqrs.	01.06.2013
Smt. Sheela P. P., SSS	T-I (Filed Assistant)	CMFRI Hqrs.	01.06.2013
Smt. Pramila Harish Borkar, SSS	T-I (Filed Assistant)	Karwar RC	01.06.2013
Smt. P. S. Sumathi, Assistant	Assistant Administrative Officer	Mandapam RC	12.06.2013

MEETINGS

1. 17th meeting of the Research Advisory Committee of CMFRI held on 25.04.2013 at Mandapam Regional Centre of CMFRI, Mandapam Camp.
2. 20th meeting of the Institute Research Council of CMFRI held at CMFRI Hqrs., Cochin during 10-14 June 2013.
3. 74th meeting of the Institute Management Committee of CMFRI held on 18.06.2013 at CMFRI Hqrs., Cochin.

Dr. R. Sathiadhas, Chairman, Cadalmin Editorial Board retires

Dr. R. Sathiadhas Principal Scientist, Vizhinjam Research Centre of CMFRI, retired from service on superannuation by 30th June 2013. He joined as Scientist at CAZRI, Jodhpur belonging to ARS of 1977 batch in the discipline of Agri-economic after a brief stint as project fellow, New Delhi. He joined CMFRI during 1978 and initially worked under the Fisheries Resource Assessment Division till the formation the separate Division on Fisheries Economic & Extension in 1982. He became senior scientist in 1984 and Head in-charge of SEETT Division in 1994 and he joined CIFE, Mumbai as Professor of Fisheries Economic in 1998 and served as HOD of Fishery Economics and Extension Division for about 2 years (1998-2000). He joined back at CMFRI as



Head of SEETTD during January 2000 and continued in that position for 2 Tenure till 2010. Since joining CMFRI Dr. R. Sathiadhas has undertaken a number of Research projects and special assessment in the field of Fisheries Economics and Extension pertaining to socio-economic impact assessment, Resource Management,

Marketing Environmental economics, participatory co-management and Technology Transfer. He has been actively involved in organising a number of village level farmers meet for Technology Transfer in fishing villages and institutional in establishing the ATIC of CMFRI and initially served as its Manager. He is having more than 200 publications to his credit including reputed national and international and International journals. He has authorised ten books/special publication of CMFRI in which some are prescribed as reference books in university and Fisheries Colleges. He served as Chairman, Cadalmin editorial board during 2008-2013. He organised the First National Conference on Fisheries Economics and Extension at Mumbai on 6th January 2000 as convener.

We salute the seniors on their retirement



Shri A. Yagappan
Assistant Admn. Officer
Mandapam RC
31.05.2013



Shri P. K. Ravindran,
Upper Division Clerk
CMFRI Hqrs.
31.05.2013



M. R. Arputharaj
T-6 (Technical Officer)
Mandapam RC
30.04.2013



Smt. Uma S. Bhat
T-5 (Technical Officer)
Mangalore RC
30.04.2013



Shri G. Subramania Bhatt
T-5 (Technical Officer)
Mangalore RC
31.05.2013



Shri M. Chellappa
T-5 (Technical Officer)
Tuticorin RC
31.05.2013



Shri C. J. Josekutty
T-5 (Technical Officer)
Mumbai RC
31.05.2013



Shri B. G. Kalbate
T-4 (Sr. Technical
Assistant)
Mumbai RC
31.05.2013



Shri Paul Sigamony
T-4 (Sr. Technical
Assistant)
Kanyakumari FC
31.05.2013



Dr. (Smt.) S. Girijakumari
T-6 (Technical Officer -
Library), CMFRI Hqrs.
30.06.2013



Shri V. Achutha Rao
T-5 (Technical Officer)
Visakhapatnam RC
30.06.2013



Shri Ch. Ellithathayya
T-5 (Technical Officer)
Visakhapatnam RC
30.06.2013



Shri K. Narayana Rao
T-5 (Technical Officer)
Srikakulam FC
30.06.2013



Shri B. Thangaraj
T-1-3 (Jr. Technical
Assistant), Tuticorin RC
30.06.2013



Shri S. Balakrishnan
Skilled Support Staff
Tuticorin RC
31.05.2013



Shri V. Samayamuthu
Skilled Support Staff
Tuticorin RC
30.06.2013

Obituary

With profound sorrow
CMFRI family pay homage to
our beloved colleague
Shri R. Somu



Shri R. Somu, T-5
(Technical Officer)
Madras RC
04.04.2013



Hon'ble Union Minister for Agriculture viewing the Marine Cages at Karwar



cadalmin

CMFRI Newsletter

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