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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
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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 Centers distributed along the Indian coast line, catering to the marine fishery policy needs of all maritime states of the country.

Director speaks

I am glad to inform that we have successfully completed the National Marine Fisheries Census-2010 against all odds. The entire team involved in the census operation under the guidance of Fishery Resource Assessment Division deserves full compliments for accomplishing this arduous task.

Our efforts spent on collection of marine fish landings data will be fully recognized only when our statistics is declared as the official fisheries statistics of the Government of India, for which serious attempts are being made. A re-look in to the fishery resources assessment coverage revealed that at present CMFRI's National weighted coverage of landing centres per annum is about 5.3%, which is highly significant.

In our journey towards sustainable open sea cage farming, we have reached another milestone by harvesting mullets *(Mugil cephalus)*, sea bass *(Lates calcarifer)* and pearl spot (Etroplus suratensis) reared in a cage (as integrated farming) in the backwaters at Moothakunnam, near Kochi. Also at Karwar we achieved the highest Feed Conversion Ratio (FCR) with oilsardine as feed to sea bass. The fish reached about 1kg from a mere 9 g of stocking weight in 135 days, which is a record. This became possible with a well planned feeding strategy which needs to be implemented on a large scale to reap production benefits. The results from similar demonstrations at Mangalore and Diu are also encouraging. All these results bear testimony to our committed effort towards reaching our goal. Let us all resolve to further enhance our efforts in bringing out many such success stories in the days to come.

With best wishes,

Dr. G. Syda Rao
Director

About the front cover: Lighting of the ceremonial lamp by Ms. Leena Nair, IAS, Chairperson, MPEDA, Kochi at the inaugural function of All India Marine Fisheries Census 2010. Dr. G. Syda Rao, Director, CMFRI, Dr. E.G. Silas, Former Vice Chancellor, KAU, Dr. K. Gopakumar, Former DDG, Dr. E. Vivekanandan, Head, FRAD and Dr. M. Srinath are also seen.

All India Marine Fisheries Census 2010

Availability of reliable and latest data on fishermen population, craft and gear and infrastructure facilities is important for evolving appropriate policies for fisheries development and governance. These data could be collected from a national level census on important attributes of marine fisheries. To achieve this, CMFRI conducted an All India Marine Fisheries Census 2010 during 16 April – 15 May 2010 in the mainland of India by availing funding support from the Department of Animal Husbandry, Dairying and Fisheries (DAHD&F), Ministry of Agriculture, Government of India with a total budget of Rs. 1.63 crores. The census was coordinated by Fishery Resources Assessment Division (FRAD) and executed by the scientists and technical staff of CMFRI.

CMFRI is conducting Marine Fisheries Census from time-to-time in the last 60 years. The first survey of marine fishing villages and landing centres was carried out by CMFRI in 1948-49. It yielded information on village-wise fishermen population, number of active fishermen, fishing units of different types used in the fishery, varieties of fish caught and fishing seasons in the country. Successive surveys were carried out during 1957-58, 1961-62 and 1973-77. Results of the 1973-77 survey was published in Marine Fisheries Information Service No.3, 1978 and information on number of mechanized boats, categories of fishing crafts and categories of fishing gears were collected in this survey.

A mammoth task successfully carried out. CMFRI does it again following the surveys/census conducted during the years 1948-49, 1957-58, 1961-62, 1973-77, 1981 and 2005

The first systematic marine fisheries census was carried out in 1981 covering all maritime states except Maharashtra, in less than a month. In Maharashtra the state government had carried out census in the previous year. In this census micro-level information on different aspects were collected. About 165 staff of CMFRI were involved and 1500 enumerators were employed for data collection and they collected information from 2,132 marine fishing villages. This census revealed social status of 3,33,038 marine fishermen households and recorded 1,442 marine fish landing centres. Summary of the census was published in Marine Fisheries Information Service, No.30, 1981. The last Marine Fisheries Census took place in 2005 after a gap of 25 years. It was funded by Department of Animal Husbandry Dairying and Fisheries, Ministry of Agriculture, Government of India with a total budget of Rs. 81 lakhs. Over 300 staff of CMFRI supervised the 2005 census operations and 1,492 enumerators were employed for collection of information. The total number of marine fishing villages covered was 3,202 and there were 1,332 marine fish landing centres. The 2005 census generated a wealth of information on various aspects which were published as reports one each for the maritime states and consolidated reports

Institute staff collecting data from fishermen's at Devipatnam, Tamilnadu

for all India as Part I & II. It revealed that the total number of fishermen was 3.52 million living in 7,56,212 households spread across 3,202 marine fishing villages. In 25 years there was 2.3 fold increase in the number of households. There were 2,38,772 craft in the fishery of which 58,911 were mechanized, 75,591 were motorized and the rest non-motorized or non-mechanized. Women formed 48.6% of the population with 948 females for 1,000 males. Out of 29,241 trawlers in the fishery Gujarat (8,002) accounted for the maximum number followed by Tamil Nadu (5,300), Maharashtra (4,219), Kerala (3,982) and other states. Two third of the motorized craft were in Tamil Nadu (22,478). Nearly 62% of the fisherfolk families involved in fishing did not possess any craft.

The objectives of the Census 2010 are:

- To determine active and part-time fishermen population size;
- To assess their educational, occupational, social and religious status;
- To determine gender-wise occupation in fishery related activities;
- To collect details on the total as well as fishermen-owned craft & gear in the fishery; and
- To obtain information on infrastructure facilities available in fishing villages as well as landing centres.

To address these objectives, the following three schedules were used:

Schedule I was details on individual households;

Schedule II was on infrastructure available in each fishing village;

Schedule III was details on fishing craft.

Questions on fishermen perception on fisheries management measures such as closed fishing season, protection of endangered species, climate change etc. were also included in the Schedule.

The planning for the Census commenced in June 2009; two workshops were conducted for the CMFRI staff involved in census operation in the research centres of CMFRI in

Enumerators at Bhidia fishing village,Veraval, Gujarat

Enumerators at Sathankuppam,Chennai,Tamilnadu

Training of Enumerators at Thankassery Kollam, Kerala

Glimpses of Marine Fisheries Census 2010

Enumerators at Cherai village, Ernakulam,Kerala

Enumerators at Hope Island, Kakinada, Andhra Pradesh

Scientist verifying the census data with the fisherman family at Mumbai

Scientists verifying the Census Data at Village Jeunkhali, East Midnapore, West Bengal

Enumerators collecting data from fisherwomen at Rameswaram, Tamilnadu

Census Brochures published in different languages

November 2009 and February 2010; in March 2010, a pre-census survey was conducted to enumerate the number of households, and to fix the enumerators and training for all the enumerators was completed during April 12-15, 2010.

On April 19, 2010, the Census operation was inaugurated by Ms Leena Nair, IAS, Chairperson, Marine Products Export Development Authority, Kochi. The inaugural function was presided by Dr G. Syda Rao, Director, CMFRI. Dr E. Vivekanandan, Head, Fishery Resources Assessment Division welcomed the gathering. Dr E. G. Silas, Former Director, CMFRI & Former Vice-Chancellor, KAU, Dr K. Gopakumar, Former DDG (Fisheries), ICAR and Dr M. Srinath, Principal Scientist, Directorate of Research for Women in Agriculture felicitated the function. Dr T.V. Sathianandan, Senior Scientist, FRA Division proposed Vote of Thanks.

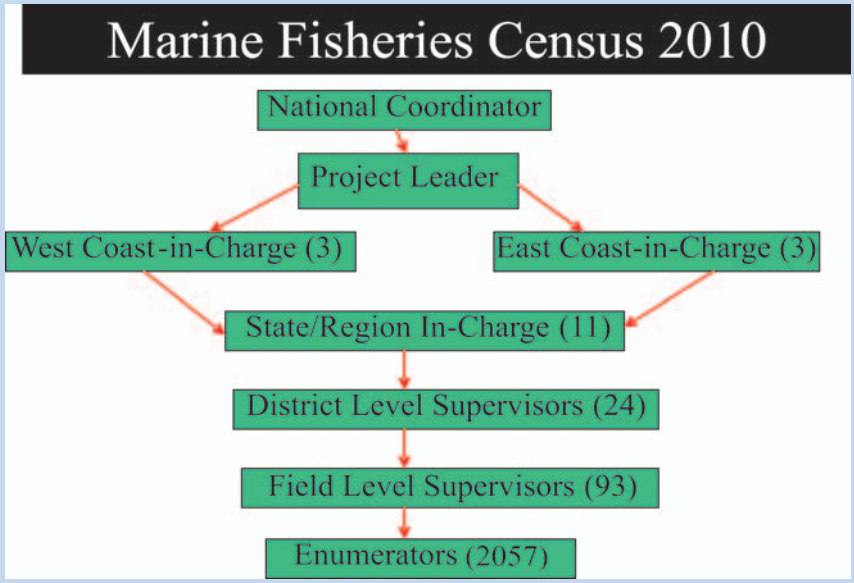
The basic frame for the census is the list of marine fishing villages collected from the state departments of the maritime states, which were verified, validated and updated through field visits. About 120 field, technical and scientific staff of CMFRI supervised the operation at field, district and state level. About 2,057 enumerators trained by CMFRI were employed for the 30-day census. The enumerators have collected information from about 11 lakh marine fishermen households distributed across 4,044 fishing villages in the country. The states and union territories covered were West Bengal, Orissa, Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra, Gujarat, Puducherry, Daman and Diu. About 75,000 copies of the schedules in eight regional languages, namely, Gujarati, Marathi, Kannada, Malayalam, Tamil, Telugu, Oriya and Bengali, in addition to English and Hindi were printed.

The census operation started off on 16th April 2010 as planned after a couple of days of enumerator training preceding it at all the nine states and two UTs. Operational modalities were laid in a very meticulous way so as to reach the remotest of the villages in time and the entire scientific and administrative machinery of CMFRI and its sub stations were fully involved in making this exercise successful and trouble free. The reports reaching the headquarters from various state supervisors indicate that there has been a marginal to moderate spurt in the number of households to the tune of 15% with most of the villages covered in 2005 being again covered this time too. It was also gathered that the participation of the fisherfolk was more voluntary than the last time with the importance of this operation being well driven. The migratory pattern in the East coast especially in the North East region was well noticed so much so that a couple of villages were found to be temporarily emptied by fishermen from neighbouring states. The issues pertaining to the local setup of governance when it comes to various settlements and hamlets was also came under focus. Overall the participation of the fishermen families was more than enthusiastic and the help rendered by the local heads of Panchayats and other state government officials was laudable. There were reports of curiosity and satisfaction amongst fishers while being asked about their opinion on various issues pertaining to fishery , its present status and future possibilities. In all this was yet another successful operation put into effect by the CMFRI towards a national cause.

The data will be analyzed by the scientists of CMFRI to develop a comprehensive Census Database which will be helpful in facilitating formulation of fisheries related plans and policies in the marine sector. The final report of the Census will be submitted to the DAHD&F, Ministry of Agriculture in March 2011.

(E. Vivekanandan, Head, FRAD)

Organisational set-up of Marine Fisheries Census 2010



Manpower involved: The following table gives an indicative figure of the manpower deployed for this mammoth activity which was completed all along the Indian coast.

State	Villages	Households	Enumerators	Supervisors
West Bengal	900	112500	146	4
Orissa	836	119324	204	9
Andhrapradesh	577	222440	393	14
Tamilnadu& Puducherry	592	245348	477	25
Kerala	215	140418	174	23
Karnataka	153	50893	98	10
Goa	42	2620	10	1
Maharashtra	436	121809	304	16
Gujarat, Daman & Diu	293	83349	251	15
Total	**4044**	**1098701**	**2057**	**117**

Experiments in cost-effective open sea cage design at Karwar Bay- Maximizing returns

GI cage in the farm at Karwar

Central Marine Fisheries Research Institute being the pioneer Institute to initiate open sea cage culture in Indian waters has been striving hard to promote open sea cage culture at selected locations in all the Maritime states with the involvement of the fishermen community. Cage design and mooring technology has been undergoing refinement. Efforts were continuously made of the cage and mooring systems more economic so as to make it affordable for the fishermen and also to help them to take it up as a livelihood alternative. The present High Density Poly Ethyline (HDPE) cage alone costs about Rs.4,00,000/- per cage and together with the mooring systems and net, the cost increase to about Rs.5,50,000/- making it unaffordable to the fishermen. While interacting with the fishermen they expressed their desire to have cage costing less then Rs. 1,00,000/- and lasting at least for 5 years to make it sustainable and economical. It was with their interest in mind the Karwar Research Centre has searched for alternatives for HDPE cages for promoting Cage Culture in the coastal waters and developed this fifth generation cage.

Design

The cost effective cage developed at Karwar is made of good quality 1.5" GI pipe (B class). The diameter of the cage was 6 meter and the height was 120 cm from Base to the railings. All the joints are double welded for ensuring extra strength. After fabrication the structure was provided with single coat epoxy primer and double coat epoxy grey paint to prevent rusting. The total weight of the cage is about 700 kg only.

Floatation

Puff or foam field HDPE cage is buoyant enough to float in the water however, metal cage needs additional floatation. Ten fibre barrels of 200 lit. capacity filled with 30 lb air were used for floating the cage. The cage when floated on inflated barrels provides a stable platform around the cage where fisherman can stand and safely attend work like net clearing, net replacement etc.

Advantage of the Cost-effective cage

The HDPE cages float on water surface. Since the outer net is always in the water level predatory fishes enters into the area in between outer and inner net. In the case of low cost cage the outer net is 60cm above water level and provides no chance for predatory fishes to enter in the middle space.

HDPE cage sinks if more than three person climb on the side frame where as the low cost cage can take the weight of as many as 20-25 persons on the platform safely. The cost of 1 HDPE cage including netting, mooring etc, together costs about Rs. 5,50,000, whereas the low cost cage including netting, mooring all together cost only Rs. 1,00,000. The HDPE cage may take a minimum 4 to 5 crops to recover the input cost whereas low cost cage can recover the investment in a single crop itself. The diameter of the HDPE cage and low cost cage is 6 meters and depth of the net also is 6 metre. Hence area wise both cage give the same performance.

Cost-effective cage before epoxy coating

Disadvantages

Unlike HDPE cage wind action is more on metal cage as it is floated on barrels. Hence it will be difficult to float in open sea condition from June to August unless heavy duty mooring is provided. Except for this performance of the metal cage is far superior to HDPE cages.

(K.K. Philipose and S.R. Krupesh Sharma, Karwar Research Centre)

Newly designed Metal raft in the Karwar Bay

Successful Demonstration of Seabass Open Sea cage culture at Mangalore Research Centre of CMFRI

Culture of Seabass in open sea cages was successfully demonstrated by Mangalore Research Centre of CMFRI. Seabass seeds obtained from Rajiv Gandhi Centre for Aquaculture (RGCA) were further reared in hatchery and nursery and were then transferred to open sea cages moored 2 kms off Uppunda, Byndoor, Udupi district. The nursery phase was carried out in the cages installed in earthen ponds as well as in saline creeks. 6,000 nursery reared seeds of Seabass (*Lates calcarifer*) of 160 to 200 mm length and of weight ranging from 80 to 100g, were stocked in open sea cage during December 2009. After rearing them in open sea for four to five months, partial harvest was carried out in three batches during April- June, 2010. Total number of fishes survived was 4,194, survival 70%.

Harvested seabass from cage culture

Harvesting mela of open sea cage culture at Uppada, Kakinada, Andhra Pradesh

Handing over the harvested fish to the Society President by Hon'ble Minister Shri M. M. Pallam Raju

Open sea floating cage culture demonstration project, sponsored by the National Fisheries Development Board, was operated by the Central Marine Fisheries Research Institute at Uppada, Kakinada, East Godavari District of Andhra Pradesh. The harvest mela was inaugurated on June 3rd 2010, by the Hon'ble minister, Shri M. M. Pallam Raju, Minister of State for Defence, Govt. of India and handed over the cultured fish to the President of the Burma Repatriates Marine Fishermen Multipurpose Cooperative Societies United Limited, Rangampeta, Uppada, Kakinda, Andhra Pradesh . Smt. Vanga Geetha Viswanath, Hon'ble Member of Legislative Assembly, Andhra Pradesh and Shri. Ponnada Venkata Satish Kumar, Hon'ble Member of Legislative Assembly, Andhra Pradesh also attended the function and gave felicitations. Dr. K. A. Narasimham, Former Head, Molluscan Fisheries Division, CMFRI gave the keynote address. The 6 meter diameter floating cage was stocked with 4,000 nos. of sea bass *Lates calcarifer* fingerlings with average length and weight of 137 mm TL and 30.83 g respectively. About 1.227 tons of fish was harvested after 7.5 months of culture duration with 53.0% survival. The total length of harvested fish was ranged from 260 to 481 mm and the weight ranged from 0.130 – 1.425 kg respectively with an average wt. of 0.580 kg.

Hon'ble Ministers and other dignitaries with the harvested Asian Seabass.

Releasing Cobia fingerlings in a cage at Mandapam

In a major breakthrough in the development of cobia aquaculture, this Centre has produced fingerlings of cobia fish [*Rachycentron canadum*], through hatchery for sea cage farming for the first time in India.

Dr. Madan Mohan, ADG, (M.Fy.) releasing Cobia fingerlings in a cage at Mandapam

Remarkable growth of Seabass in Cage culture at Karwar

Record high Feed Conversion Ratio perfecting Seabass Cage Culture Technology in India

Harvested Sea bass in the beach

The experimental farming at Karwar, Central Marine Fisheries Research Institute achieved a record growth rate for Seabass. Seabass seeds with an average weight of 9 g. were introduced in the cage maintained in the marine farm of CMFRI on 01st February 2010. Feeding was done thrice a day with chopped oil sardines. Initially oil sardines were chopped into very small pieces and were fed. As the fish grew the size of the feed was increased. These fishes were harvested after a gap of 135 days on 15th June. The maximum weight of the fishes recorded was 1150 g. and the minimum was 860 g. The total number of seeds introduced in the cage was about 2500 numbers which yielded total crop of 2 tonnes. The feeding ratio followed in the experiment was 1:6 to 1:8 and the FCR obtained was 1:3. The high FCR obtained at Karwar is considered as one of the best FCR obtained anywhere in the world for Seabass culture. The feeding protocol developed at Karwar for seabass includes demand feeding, domestication of the stock to take the feed in a better way right from nursery rearing to farm, frequent net changing for better water exchange, development of better disease management protocols and twice a day monitoring of the stock. The present culture was conducted under the constant monitoring of the Principal investigator, Dr. G. Syda Rao, Director, CMFRI and Co- PI Dr. K. K. Philipose, Scientist in Charge, Karwar Research Centre of CMFRI. The Scientists and Staff of the research centre worked as a dedicated team along with a committed fishermen group.

(Karwar Research Centre of CMFRI)

Harvesting in progress

Weighing the harvested fishes at Karwar

Proud moment for CMFRI

Harvest at Ghoghla, Diu

Harvesting of mullets and lobsters from cage at Ghoghla, Diu

Lobsters harvested from cage at Ghoghla, Diu

At Ghoghla, Diu, the cage was harvested in May, 2010 after 150 days of culture.

The biomass production and total production of lobsters from cage was 126.1 kg and 234.6 kg. Their average body weight gain was 116.18%, carapace length gain was 43.14% and total length gain was 31.34%. The average increment in weight was 0.82 g/day. Specific Growth rate was 0.514 and survival rate was 79.7 %.

The biomass production and total production of mullets from the cage was 145.25 kg and 186.5 kg. Average body weight gain was 350.9%. Average weight increment per day was 0.386 g. Survival was 78.13 % and Specific Growth rate was (1.0).

(Veraval Regional Center of CMFRI)

Inauguration of stocking of baby lobsters in cages at Kanyakumari

The floating cages under the NFDB project handed over to the fishermen group at Kanyakumari were stocked with baby lobsters.

In a function held at Kanyakumari field centre of CMFRI on 19-5-2010, Dr. P. Paul Pandian, Deputy Commissioner - Fishery, DAHD&F, Ministry of Agriculture, Krishi Bhavan, New Delhi inaugurated the stocking by handing over the baby lobsters to the team members.

(A. P. Lipton, Principal Scientist)

NFDB cage team members receiving lobster seeds from Dr. Paul Pandian

Launching of NFDB cage at Kanyakumari

Seabass Harvest from cage at Moothakunnam, Kochi

With the funding from National Fisheries Development Board (NFDB), Hyderabad, Central Marine Fisheries Research Institute (CMFRI) has selected Moothakunnam, a fishing village at north Kochi as one of the locations for demonstration of cage culture. The cage site located at about one km from the Munambam barmouth, had a depth of 7m with good water exchange during tidal flow and was accessible by small canoe from the shore. Fixed mooring system was followed using anchors fixed at both sides in the river bed of the flowing system. The indigenous cage installed at Moothakunnam was cost effective and was provided with an outer predator, inner grow out and bird nets with a net depth of 4.5 m. The nets were connected to the HDPE cage frame measuring 6 m diameter.

Dr. G. Syda Rao, Director, CMFRI and scientists giving a basket of seabass to the beneficiary

Hatchery produced Asian Seabass *Lates calcarifer* (Kalanchi, Narimeen) seed procured from RGCA, Sirkali was stocked in the cages after 45 days of post hatchery rearing in nursery pond. About 3500 fish of 15-25 g were stocked during the end of December 2009 and were fed thrice a day with chopped low value fish *ad libitum*. About 1000 numbers of pearl spot *Etroplus suratensis* (Karimeen) were also stocked for maximum utilization of the water area in the cage. After a period of six months, on June 19, 2010, during the trawl ban period in West coast, the stock was harvested. About one tonne fish were harvested with more than 80% in the size range between 560 and 1450g. The fish were sold to the local markets @Rs.135- 275/ kg. About 75 kg pearl spot of size ranging from 110-175g were also harvested from the cage, which was sold at Rs.175/kg.

Harvested Seabass

Aqua Marine Export Meet-2010

Cochin International Airport Limited (CIAL) in association with CMFRI, MPEDA, NFDB, Dept of Fisheries & KAVIL,CIFT and SEAI organized the "Aqua Marine Export Meet" at Cochin International Airport on 17 April 2010.

The meet highlighted the opportunities in export of marine ornamental fish from Kerala through the State of the art Centre for Perishable Cargo facilities available at the Cochin international airport.

Dr. G. Syda Rao, Director CMFRI gave a felicitation address in the inaugural session of the meet which acted as a business platform for exporters, ornamental fish entrepreneurs, and technocrats. Dr. K. K. Philippose , Dr. R. Sathiadhas, Dr. C. Ramachandran, Dr. Aswathy, Dr. Vipinkumar , Dr. R. Geetha, Dr. Madhu and Dr. Rema Madhu actively participated in the deliberations that resulted in policy oriented recommendations to the Govt.

Training programme in Marine pearl culture at Tuticorin

A two week's training programme on Marine pearl culture was conducted at Tuticorin Research Centre of CMFRI from 17th to 29th of May 2010. Two trainees, one freshwater pearl farmer from Kerala and one post graduate student from Madras Christian College, Chennai successfully underwent the training programme. The training consisted of theory classes and hands on practical on various aspects of marine pearl culture ie., basic biology, anatomy, technique for nucleation of spherical nucleus and image in pearl oyster *Pinctada fucata,* farming and pearl production. The Course Director of the training programme was Dr. I. Jagadis, Senior Scientist, Mariculture Division, TRC of CMFRI, Tuticorin. Dr. M.S. Madan, SIC, TRC of CMFRI complemented the trainees on the successful completion of the programme.

Trainees in the pearl farm

Evaluation of performance

Distribution of Certificate by Dr.M.S.Madan, Scientist-in-Charge, Tuticorin Research Centre

(Tuticorin Research Centre of CMFRI)

Training programme on Taxonomy of Marine Algae

The Marine Biodiversity Division organized a training programme on 'Taxonomy of Marine Algae' at CMFRI, Kochi on 24.03.2010. There were 36 participants, including Research Fellows from Central Marine Fisheries Research Institute and Cochin University of Science & Technology. Dr. Umamaheswara Rao, Retired Professor, Andhra University and Dr. V.S.K. Chennubhotla, Retired Principal Scientist, CMFRI, both experts in the subject, were invited to conduct the training programme. The training included both theory and practical sessions followed by a visit to the Designated National Repository at the Institute where seaweeds are exhibited as colour preserved specimens and herbarium.

Dr. Umamaheswara Rao, Rtd. Prof.Andhra University conducting class on seaweeds

Video film on 'Lobster culture in marine cages'

Release of Video film on New Horizons in mariculture-cage culture of Lobsters by Dr.S.Ayyappan, Secretary, DARE and Director General, ICAR. First copy was received by Shri. Rudra Gangadharan, IAS, Secretary, DAHD&F on 23.05.2010 at a function held at New Delhi. Dr. Krishnaiah, IAS, Chief Executive, NFDB, Hyderabad and Dr. G. Syda Rao, Director, CMFRI are also seen.

Released by the Director General, ICAR

An 8-minutes video film (DVD) on "New Horizons in Mariculture – Lobster Culture in cages" prepared by the CMFR Institute was released in New Delhi on 23-5-2010 by Dr. S. Ayyappan, Director General, ICAR in a function held in NASC complex, New Delhi. The DVD was received by Shri. Rudhra Gangadharan, IAS, Secretary, Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India.

The contents of DVD provide complete information on farming of lobsters in marine floating cages. The film provides details regarding export potentials of lobsters, recipes, novel live packing and transportation techniques, utilization of under sized lobsters for farming in cages, their feed, feeding pattern, cage maintenance, growth observations and profitable harvest. The DVD also contains new information on early egg bearing lobsters which grew in the cages and aggregation of tiny baby lobsters in the floating cage vicinity. The use of floating cages for conservation of lobsters in their natural ground areas are also explained.

CMFRI establishes Open Access Institutional Repository

CMFRI has established Open Access Institutional Repository, Eprints@CMFRI, for its research publications. The formal inauguration of Open Accesss Insitutional Repository was accomplished by Dr. G. Syda Rao, Director by launching Institutional Repository on 28-6-2010 at CMFRI. Eprints@CMFRI is an open access digital collection containing the research output of CMFRI scientists. Included are journal articles, conference papers, book chapters, theses and more, with full text authored by CMFRI researchers. Shri. V.Edwin Joseph, Administrator of this Repository narrated the importance of the open access policy of the Institute.

Dr. G. Syda Rao, Director, launching the IR. Shri. Edwin Joseph, Administrator of IR is also seen

This Repository is maintained by CMFRI Library and ARIS.

Our CMFRI IR will be a model for other ICAR labs in our country.

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(V. Mohan, Technical Officer (Library))

Occurrence of the *Scyllarides tridacnophaga* Holthuis, 1967 a new record from west coast of India

Occurrence of the scyllarid lobster *Scyllarides tridacnophaga* is reported for the first time from the west coast of India. Two male specimens of *S. tridacnophaga* commercially known as Clamkiller slipper lobster were collected from trawl landings at Sakthikulangara, Kollam on the southwest coast of India. The morphological features of the specimens are:

Carapace length (CL) (mm)	Total length (TL) (mm)	Weight (g)
107.0	250.0	675
106.5	245.0	665

Landing of one male specimen of *S. tridacnophaga* (CL 71 mm) was reported from Gulf of Mannar on the southeast coast of India, which was a first report of the species from Indian coast. The species is of limited economic interest due to rare occurrence of the species.

The species has a depth distribution range of 5-112 m and the present specimens were fished from 70 m off Kollam. The known geographical distribution range of the species is Indo-west Pacific region comprising Red Sea, East Africa, Gulf of Aden, Pakistan and west coast of Thailand.

(Crustacean Fisheries Division)

Dorsal view of Scyllarides tridacnophaga

Purse Seines bring huge catch of red snapper, *Lutjanus argentimaculatus* (Forsskal, 1775) at Mumbai

Lutjanus argentimaculatus

An unprecedented high catch of *L. argentimaculatus* was landed at Sassoon Docks on 23-10-09 by purse seiners. The total catch of the species was about 4.5 t. The fishing ground was south of Mumbai up to Ratnagiri in the depth range 40-50 m. As the size of each fish was fairly large weighing 1.5 – 2.5 kg, they were sold at the rate of Rs. 250/kg at the landing centre. Other species of snappers observed in the catch was *Lutjanus johni*. Although landings of red snappers were common in Mumbai during October-November prior to 1990, the landing of *L. argentimaculatus* in such magnitude was uncommon and hence the present observations gains importance.

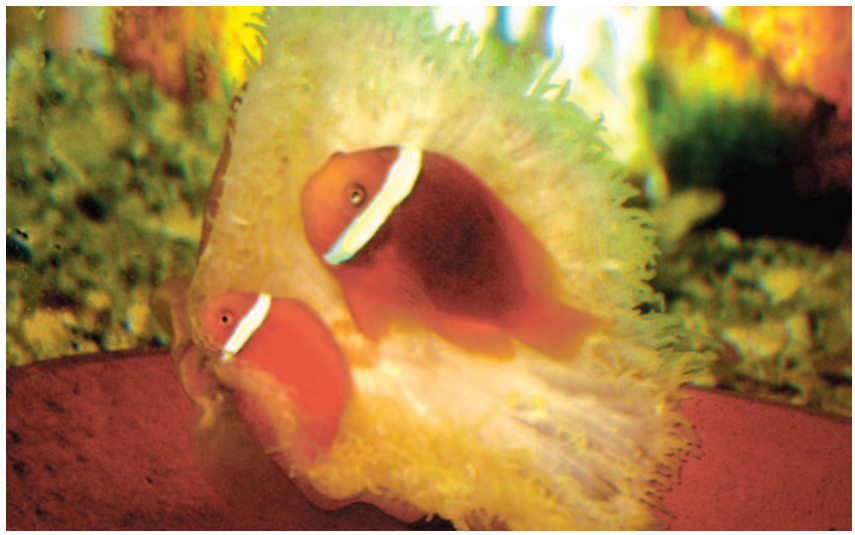
In view of prospect for open sea culture in cages, such fast growing large snappers like *L. argentimaculatus* have assumed great importance in recent years. Owing to its fast growth, delicately flavored flesh, high market value and export potential, red snappers are an important culture species in countries such as Indonesia, Thailand etc. Since *L. argentimaculatus* is a highly commercial species and can be cultured in captivity, further biological studies on the species are required.

(Reported by: Sujit Sundaram and V.D.Deshmukh, Mumbai Research Centre)

Success achieved in Captive Breeding and Seed Production of Tomato Anemonefish *Amphiprion frenatus*

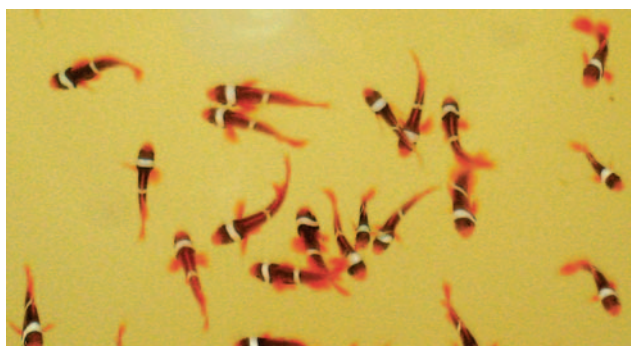
Breakthrough in captive breeding and spawning of *A. frenatus* was accomplished for the first time in India at the marine hatchery, Kochi, Central Marine Fisheries Research Institute. The first spawning was obtained in the month of October, 2009. In each spawning, approximately 200 to 600 capsule shaped eggs were laid at an interval of 15 to 30 days. The spawning was noticed between 0600 hrs to 1530 hrs during day time and the spawning lasted for one hour to one and a half hour. The egg size ranged between 1.2 mm 3.0 mm in length with a width of 0.8 1 mm and adhered to the sides of earthen pot with stalk. The newly spawned eggs were red or reddish brown in colour for initial two days and as the embryo developed, it turned to black on 3 rd to 5th day and later turned to silvery on 6th to 7th day of incubation. At 27 to 29° C, the hatchling emerged on completion of 7th day of incubation and hatching initiated shortly after sunset. The newly hatched larvae measured 1.5 to 3.5 mm in length and each had a transparent body, large eyes, visible mouth, and a small yolk sac and is free swimming. Through various experimental trails, the larval rearing of *A. frenatus* were standardized. At 15 to 17th day of post hatch (dph), the size of the juveniles ranged between 10.0 to 12mm, all attained bright reddish colour and most of the fry had three white bands for initial two month and later the tail band and middle bar started disappearing. The six months old juveniles attained a growth of 5 to 6 cm total length and in 90% of the juveniles and most of the tail and middle bar disappeared. The hatchery produced juveniles will be available for sale in the marine hatchery of CMFRI, Kochi.

(K.Madhu, Mariculture Division)



Adult pair of *A. frenatus*

Pair of *A. frenatus* with egg



Hatchery produced juveniles

Rearing of snappers at Calicut

Beach Fish culture pond stocked with Malabar red Snapper

The malabar red snapper *L. argentimaculatus* is being reared at the beach finfish pond of the centre. 300 numbers of young ones collected by traps were stocked in the pond.

(Calicut RC of CMFRI)

Mussel farming in estuarine areas through participatory programme

Mussel farming practice was adopted by 13 shrimp farmers during 2009-2010 as a group farming activity in Kodi Kanyan, Udupi. MPEDA, Karwar extended financial support to four mussel-farming groups. Six racks were fabricated at 1.5-2.5 m depth (during low tide) in Sita estuary by 13 fishermen. Coir ropes of 0.75-2.5 m length were seeded in batches with green mussel, *Perna viridis* at the rate of 750-1500 g/m. Seeding was carried out in two phases. Initially the seeding was carried out from last week of October to the first week of November 2009. The next phase commenced by January 2010. Mussel seeds ranging from 46 to 50 mm in size at seeding attained 90 mm in five months, with a monthly growth rate of 8.4 mm. The mussels were harvested from five racks and marketed shell-on. The produce realized a farm gate value of Rs. 1.15 – 1.25/ shell-on without depuration. About 25,000 of shell-on mussels were harvested and transported to Goa for marketing during the last week of March, 2010.

(Mangalore Research Centre of CMFRI)

Mussel harvest in progress

Mussel rack at Kodikanyana

Bleaching of hard corals in Lakshadweep atolls

Bleaching of hard corals (species of branched and massive corals) in Androtт island was observed during 24-25th April 2010.

Subsequent snorkeling observation carried out in the month of May had shown that the bleaching has spread to wider areas and has become severe. Large scale bleaching of corals has been reported in May at Agatti and Kavaratti Islands also. The bleaching of similar magnitude was reported from the Laccadvies in 1998 which happened to be *EL Nino* year.

Bleaching of *Zoanthus* sp in Thikkodi beach

Wide spread bleaching in colonies of *Zoanthus* sp due to loss of chlorophyll from their symbiotic zooxanthellae was noticed at Thikkodi beach during the third week of May 2010.

The zooxanthellae are normally expelled from the zoanthids when the polyps are placed under stress conditions such as higher salinity, higher temperatures or under starvation. In Thikkodi beach, sea surface temperature during this period ranged from33- 34° C. Samples of *Zoanthus* sp from bleached as well as healthy colonies were preserved for detailed observation.

First record of hound shark, *Mustelus mosis* from Calicut

Mustelus mosis landed at Calicut

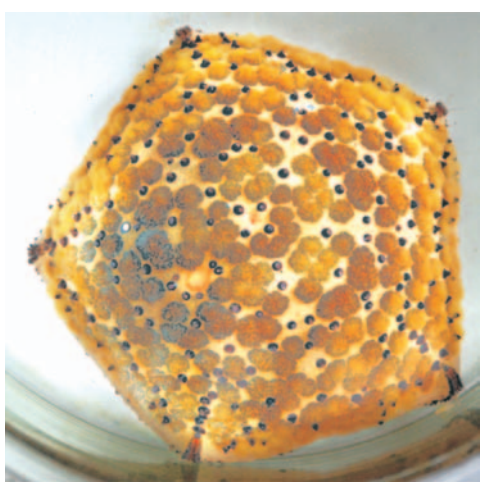
Occurrence of a houndshark, *Mustelus mosis,* was noticed during the last week of May, 2010 in the landings of multi-day trawlers operating from at Beypore. *Musteus mosis,* belongs to the family Triakidae, inhabiting the continental shelves of western Indian ocean at depths ranging between 200 and 250 m. They are small to medium sized sharks and grow up to 150 cm. Houndsharks are distinguished by possessing two large spineless dorsal fins, an anal fin, and oval eyes with nictitating eyelids. They are found throughout the world in warm and temperate waters, where they feed on fishes and invertebrates on the seabed and midwater.

(Reported by: P. P. Manojkumar, Calicut Research Centre of CMFRI)

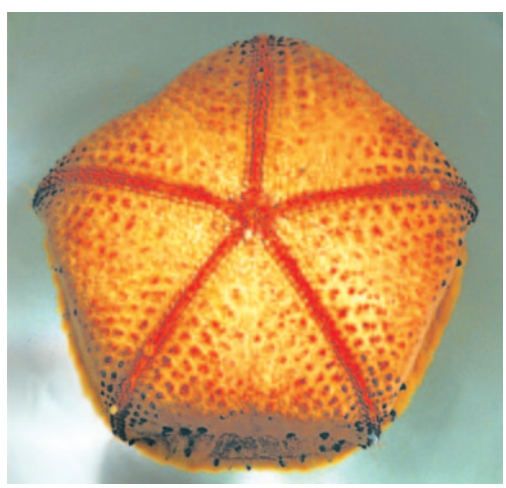
Pin cushion star fish spotted at Palk Bay, Mandapam

Culcita novaeguinea, the Pin cushion star fish reoccurred after five decades in the Palk Bay area of Mandapam., which generally feeds on young polyps of coral reefs.

(Reported by: Kakati, V. S., N. Ramamurthy and K. Vinod)



Culcita novaeguinea Ventral view

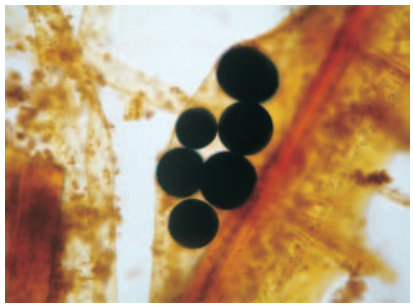


Dorsal view

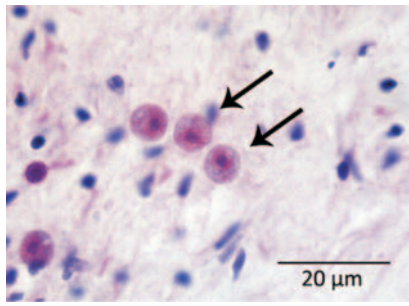
First report of an OIE listed protozoan parasite, *Perkinsus olseni*, from Indian pearl oyster population

World over, there have been many reports on the mass mortalities in natural and farmed bivalves and protozoan parasites of the genus *Perkinsus* have been incriminated as a cause of mass mortalities in various bivalves. So far, incidence of Perkinsosis/ other OIE notified pathogens in mollusks has not been reported from the Indian subcontinent (NACA 2009).

Pearl oysters from the traditional oyster beds at Tuticorin were examined using OIE approved diagnostic techniques. Ray's Fluid Thioglycollate Medium (RFTM) assay of the *P. fucata* tissues showed enlarged blue-black hypnospores characteristic of *Perkinsus* sp. with a prevalence of 100%. Histopathological examination of the gill and mantle tissues revealed the presence of the trophozoites of *P. olseni* in the connective tissues.

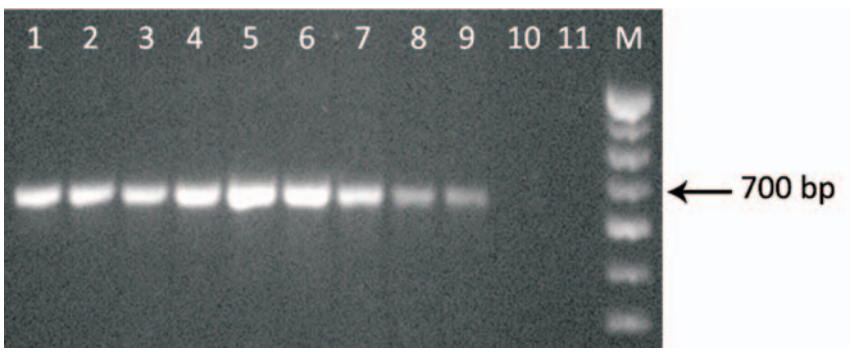


Perkinsus Hypnospores in mantle



Trophozoites of Perkinsus sp.

For confirming the RFTM results and the generic level identity of the pathogen, the samples were further screened using Perkinsus genus-specific ITS-85 and ITS-750 primers. All the samples were positive for PCR and specific amplicons of *Perkinsus* sp. was obtained (ca. 700 bp), confirming the presence of *Perkinsus* sp. in *P. fucata.*



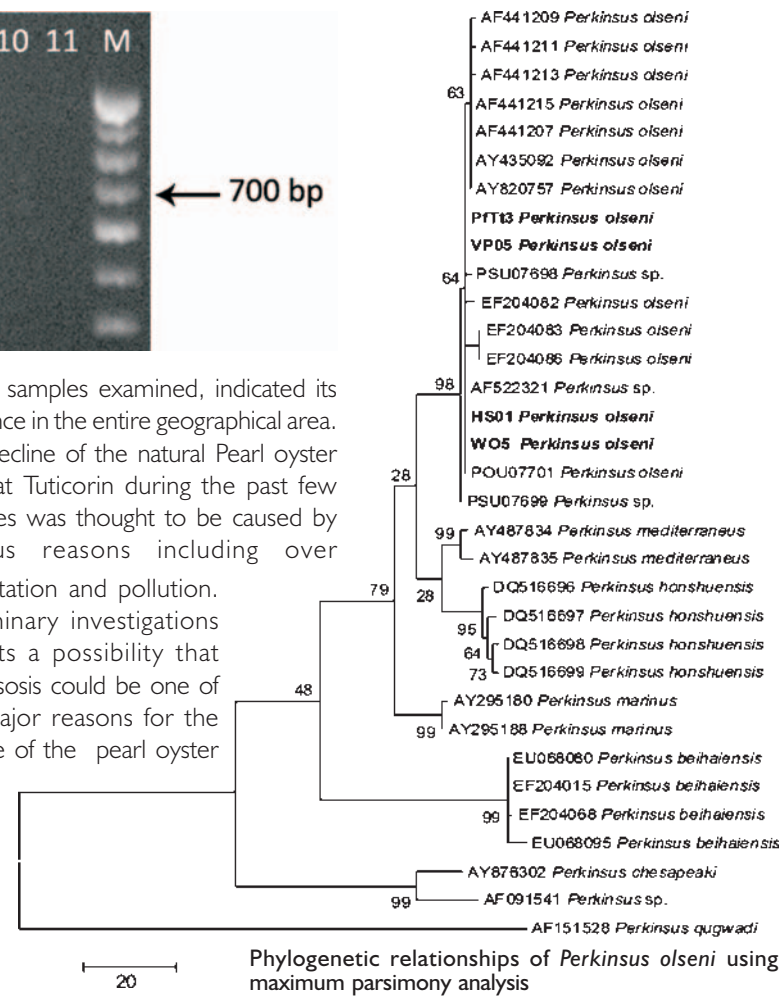
Agarose gel electrophoresis of the amplified products of the PCR using *Perkinsus* genus specific ITS 85 & ITS 750 primers (703 bp); lanes 1-3, DNAs of oysters from Tuticorin; 4-5, DNAs of oysters from Vellapatti; 6-7, DNAs of oysters from Kayalpatanam; 8-9, DNAs of Hatchery reared oysters from Tuticorin; 10, negative tissue control; 11, negative control and M, molecular size marker (100 bp ladder)

The amplified PCR products were sequenced and phylogenetic analysis done. The pairwise genetic distance between the present isolate and other members of the *P. olseni* group studied, was very low, confirming the taxonomic identity of the parasite as *Perkinsus olseni.* The maximum parsimony and neighbor joining analysis of the nucleotide sequences of the ITS region of the parasite further confirmed its identity as *Perkinsus olseni.*

Presence of *Perkinsus* sp. in all the oyster samples examined, indicated its presence in the entire geographical area. The decline of the natural Pearl oyster beds at Tuticorin during the past few decades was thought to be caused by various reasons including over exploitation and pollution. Preliminary investigations reflects a possibility that Perkinsosis could be one of the major reasons for the decline of the pearl oyster beds at Tuticorin over a period of time.

This forms the first report on the existence of a *Perkinus olseni.*, a protozoan parasite in *P. fucata* from the southeast coast of India and is also the first report of an OIE listed pathogen from the Indian sub-continent and south Asia. The host range and epizootiology of the parasite in Indian waters remains to be determined and more studies are required.

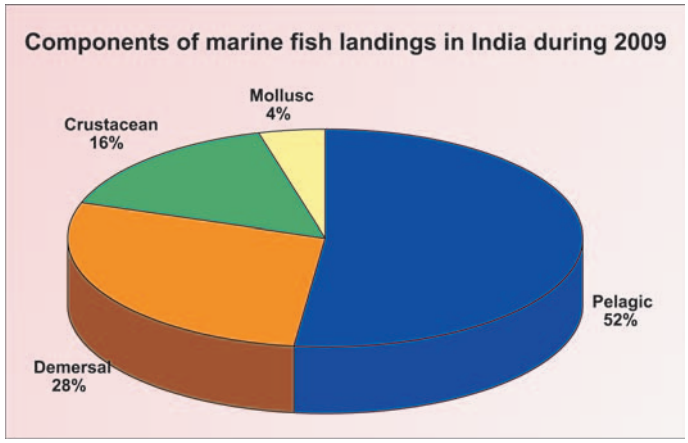
(Marine Biotechnology Division)

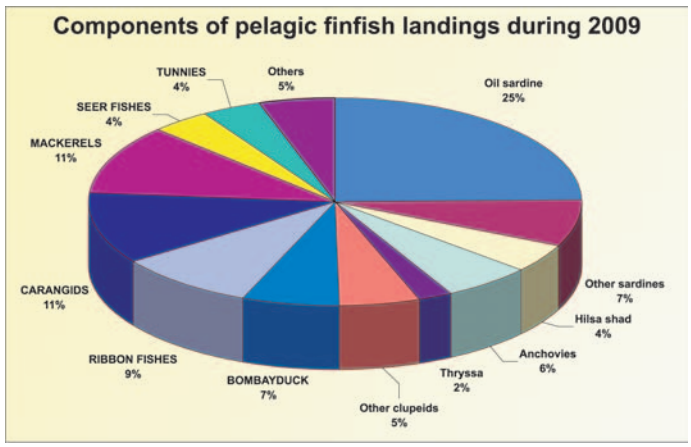


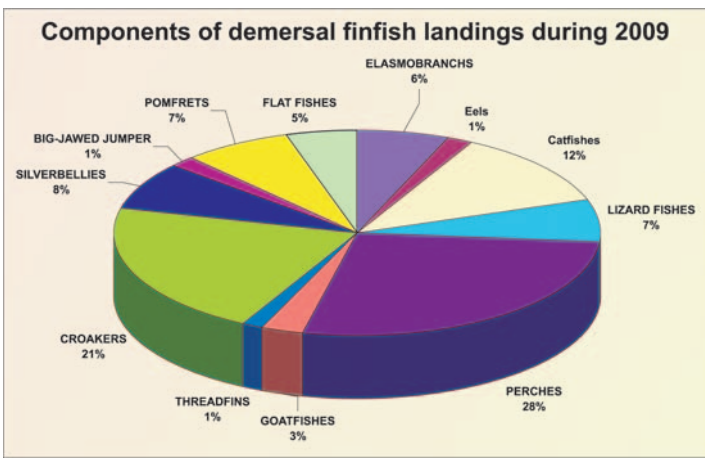
Phylogenetic relationships of *Perkinsus olseni* using maximum parsimony analysis

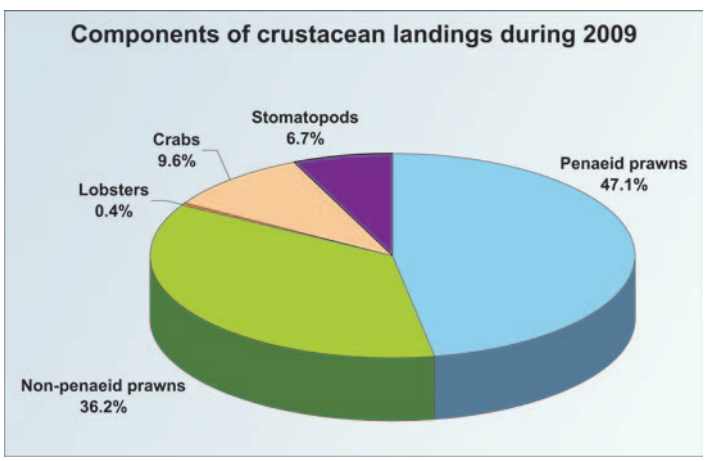
Trends in Marine Fish Landings in India, 2009*

- Oil sardine landings decreased to 3,92,486 t (12.48% of total) from 4,44,593 t in 2008.
- Penaeid prawn landings increased to 2,32,313 t (7.3% of total) from 2,13,327 t in 2008.
- Non-penaeid prawns landings decreased to 1,78,504 t (5.6% of total) from 187173 t 2008.
- Croakers landings increased to 1,82,109 t (5.8% of total) from 1,81,810 t in 2008.
- Cephalopods landings decreased to 1,28,692 t (4.0% of total) from 1,60,320 t in 2008.
- Indian mackerel landings increased to 1,74,760 t (5.5% of total) from 1,58,913t t in 2008.
- Ribbonfishes landings increased to 1,45,635 t (4.6% of total) from 1,45,398 t in 2008.









- Threadfin breams landings increased to 1,31,263 t (4.1 % of total) from 1,26,943 t in 2008.
- Lesser sardines decreased to 1,15,343 t (3.6% of total) from 1,16,101 t in 2008.
- Bombay duck landings decreased to 1,03,489 t (3.3% of total) from 1,04,969 t in 2008.
- Catfish landings increased to 1,03,320 t (3.3% of total) from 92,357 t in 2008.
- Stolephorous landings decreased to 52,739 t (1.7% of total) from 87,687 t in 2008.
- Silverbellies landings decreased to 65,034 (2.1% of total) from 70,059 t in 2008.
- Other clupeids landings increased to 82,858 (2.6% of total) from 69,938 t in 2008

(Fisheries Resources Assessment Division)

* Provisional

Patents submitted for CMFRI products

Cadalmin™ Varna Marine Ornamental Fish Feed

The following patents have been submitted in the patent office (Chennai) for provisional application:

1. A device for breeding and culturing marine fish in open sea by Dr. G. Syda Rao *et al.* 31/CHE/2010 (G 424) (Patent Submitted in Chennai Patent office during 2010)
2. Formulated feed for marine ornamental fishes and a process therefore by Drs. P. Vijayagopal, K.K. Vijayan, G. Gopakumar, Kajal Chakraborty, and G. Syda Rao 32/CHE/2010 (G 425) (Patent Submitted in Chennai Patent office during 2010).

The details of the patents submitted are illustrated below:

(1) A Device For Breeding And Culturing Marine Fish In Open Sea

The open sea cages are used for cultivating marine fishes, and may be used in domestic and export oriented marine sea farming in cages. The present invention describes a cage culture device for open sea fish farming. The cage net with frame of about 1.2 m diameter is equipped with a main cage hanging rope, hook for top rope, and multiple side ropes of 16 mm maxima with lead. The circular rearing net is surrounded by a predator net sidewise and bottomwise to deter predators in sea to feed on cultured fishes. Anchoring with suitable dead weights was devised to anchor the entire structure of net in the open sea thereby providing stability. The present invention also describes the open sea farming of selected marine finfish seabass (*Lates calcarifer*). These interventions optimally maintain the size and quality of the marine fishes. This invention further describes an optimized protocol to harvest mature seabass in about 6 months. The system is eco-friendly without any human intervention, and a higher survival of above 75% was achieved and sustained. The mariculture in open sea cage deviced under the present invention will expand a new mariculture space, thereby the mariculture scale can be expanded greatly; simultaneously the self-pollution of mariculture can be solved.

(2) Formulated feed for marine ornamental fishes and a process therefore

Marine ornamental feeds are used in the aquariculture of marine ornamental fishes, which include maintenance, breeding, larval rearing, and aquarium keeping. This invention describes an optimized method to produce feed for marine ornamental fishes. Presently, formulated feed for marine ornamentals is not indigenously produced and the demand is met through imports with a price tag in the range of Rs.4000 a kg. CMFRI has developed and launched a sequel of dry formulated feeds named Cadalmin *Varna. Varna* series of formulated feeds is an import substitute. They are slow sinking crumbles available in three particle sizes, 0.25 mm, 0.75 mm and 1 mm. produced through twin-screw extrusion technology which is the state-of-the-art in aquatic feed production. Presently, these feeds are available in limited quantities through the Agriculture Technology Information Centre (ATIC) of CMFRI. These feeds are sold in 50 g pouches and containers costing Rs.20/- i.e., Rs.400 a kg. CMFRI is on the lookout for a commercial partner for upscaling the product and making it available in the open market. These feeds being used for feeding freshwater ornamental fish in the farms of Kerala Aqua Ventures International (KAVIL), Kerala and by the Ornamental fish Farmers Association of Kerala in their homesteads, another series of feeds which are less costly and meant for freshwater ornamentals is developed and evaluated.

World Environment Day

CMFRI initiates Community based Marine Ecosystem Restoration Programme

Dr. G. Syda Rao, Director, CMFRI distributing Mangrove seedlings

On the **World Environment Day, 5th June, 2010**, CMFRI initiated a programme on Community based Marine Ecosystem Restoration in Kerala. The CMFRI whose mandate is to support sustainable development of fisheries has decided to take up initiatives in restoration programme. Witnessing the drastic changes taking place in the coastal ecosystem it is felt that targeted research on restoration of coastal habitats is required to prevent further degradation and attempt revival of selected habitats. With this in view, the CMFRI has launched a program on restoration of mangroves in Kerala. Restoration of mangroves in addition to increasing the extent of healthy mangrove areas, will prevent further degradation of adjoining patches, support sediment stabilization, help in carbon sequestration and increase fish nursery areas

In the first phase of this programme "Mangrove Nurseries" will be developed in collaboration with women Self Help Groups, school students, teachers and youth . Seeds of three species of mangroves viz *Rhizophora mucronata* (red mangrove), *Brugeira gymnorrhiza* (large –leafed mangrove) and *B. cylindrica* collected from the natural beds will be reared to plantable size sapling in the nurseries for two to three months. The Fishery Environment Management Division of CMFRI will lead the ecosystem restoration and development programme with active collaboration of the villagers. The nursery reared saplings will be planted in scientifically selected sites. Their growth and survival will be monitored and its impact on the environment especially juvenile fish /shrimp aggregation will be studied.

A function was organized to launch the community based marine ecosystem restoration program at the Asan Memmorial Library Hall at Moothakunam which was presided by Dr. G. Syda Rao, Director, CMFRI. In the Presidential address Dr Syda Rao pointed out that this long term plan would help to restore the degraded environment to protect the coastal ecosystem. He further highlighted that Mangroves are presently at the risk of depletion/over exploitation. Implementation of this practical programme will facilitate to preserve these species to a considerable extent and the impact of this project will be assessed in future. The programme was inaugurated by Shri. T. R. Bose, President Vadakkekera Service Cooperative Bank by lighting the traditional lamp. In the inspiring inaugural address Shri Bose emphasized the need to protect and conserve the ecosystem and the importance of mangrove afforestation which would support fishery development and CO_2 sequestration.

During the function mangrove seed placed in nursery packets were handed over to 6 women Self help Groups, two nature clubs of local schools and Youths of three active Environment Protection Groups.

Felicitations were offered by Dr. E. Vivekanandan, Head, Demersal Fisheries Division, Shri. P. B. Venu, Secretary, HMDP Sabha and Shri Sasi Menon, Agriculture Officer, Vadakkekara Panchayat. The programme was organized in collaboration with Sree Narayana Dharma Padana Kendram, Moothakunnam.

In connection with this programme different types of mangrove plants such as *Rhizophora mucronata, Bruguiera gymnorrhiza, Bruguiera cylindrical, Avicennia officinalis, Acanthus ilicifolius, Premna latifolia, Clerodendron inerme, Excoecaria agallocha, Acrostichum aureum* and *Sonersia cascolaris,* propagules of major mangroves, zooplankton and commonly found seed of finfishes and shrimp were exhibited. Many students of local schools and public visited the exhibition.

World Environment Day

At Manglore RC

World Environment Day was celebrated on 5-06-2010 at the Mangalore RC of CMFRI, Mangalore. A sapling planting programme was undertaken in the premises of the new campus of CMFRI, at Hoige Bazar. All the staff of the centre participated in this programme wherein a neem sapling was planted to emphasize on the need to protect our environment and mobilize action.

Planting of Neem sapling in the premises of CMFRI campus at Mangalore RC

World Oceans Day celebrated

Staff members at Mangalore celebrating the world Oceans Day 2010

The World Oceans Day was celebrated at Mangalore RC of CMFRI, Mangalore on 8-06-2010.As a part of the celebration, a meeting at the centre was organized in which all the staff members of the centre participated. Dr. A.P. Dineshbabu, Scientist-in-Charge of the centre and Dr. Pratibha Rohit, Senior Scientist, spoke on the need for protecting the oceans through personal involvement and community action. On this day caps bearing the logo of world oceans day and posters bearing the theme "Our oceans: Opportunities and Challenges" were distributed to the staff as well as to children of various schools in the city.

Institute Research Council (IRC) meeting

The 17th IRC meeting (SRC meeting) was held in Institute Headquarters at Cochin from 28-30 June 2010. The Heads of Divisions, Principal Investigators and Co-PIs from Headquarters, all Regional and Research Centres attended the meeting and the progress under the inhouse projects of the Institute was critically evaluated. The new projects presented by the PIs were also evaluated and recommended by IRC for implementation during 2010-2012.

World Bank team visits CMFRI

The mid-term review mission of the World Bank headed by Sri. Paul Singh Sidhu, Team Leader visited CMFRI from 23-24 May 2010 to review the progress of the NAIP funded projects (component 1-4) in the Kerala region.

Dr. E. V. Radhakrishnan, Nodal officer of NAIP in his welcome address thanked the World Bank for supporting six projects of which CMFRI is the Consortium Leader for three projects. Dr. R. K. Goyal, National Co-ordinator (Component 2), NAIP in his introductory remarks highlighted the objectives of the mission. The World Bank team critically reviewed the presentations by 17 Consortia. The Consortia presented their activities, achievements and displayed the value added products developed by them in the exhibition hall. The World Bank team visited the farms, infrastructure facilities and training centre developed under various projects and had interaction with the stakeholders. The team visited NIFPHATT and CIFT on 24 May 2010 and reviewed the implementation of the projects. The procurement specialist of the World Bank conducted audit of procurement under the NAIP projects.

World Bank MTR team interacting with women oyster farmers

(NAIP cell)

Official Language Implementation

Hindi Workshops

Headquarters, Cochin

A three day Hindi workshop on Official correspondence and Noting & Drafting was conducted at CMFRI Headquarters, Cochin during 28-30 April, 2010. Twenty staff members from Scientific, Technical and Ministerial categories attended the workshop.

Mandapam

A four day Hindi workshop on Hindi correspondence was organized at Mandapam Regional Centre of CMFRI during 22-25 March, 2010. Thirteen staff members attended the workshop.

Veraval

A one day Hindi Workshop was organized at Veraval Regional Centre of CMFRI on 27-03-2010 on Official Noting and Drafting. Seventeen staff members of the Centre attended the workshop.

Mumbai

A one day Hindi workshop on *Karyalayeen Hindi* was conducted at Mumbai Research Centre of CMFRI on 03-03-2010. Twentyfour staff members attended the workshop.

Calicut

A one day Hindi workshop on correspondence and Noting & Drafting was conducted at Calicut Research Centre of CMFRI on 06-03-2010. Thirty staff members attended the workshop.

A view of Hindi workshop

Hindi Inspection

Assistant Director (OL) has inspected the Official Language Implementation activities of the Mandapam Regional Centre of CMFRI from 15 to 29 March 2010 . Necessary measures have been taken for the improvement of Official Language Implementation at the Centre.

TOLIC meeting

The 52nd meeting of Kochi Town Official Language Implementation Committee (TOLIC) was conducted on 21-04-2010 at the Income Tax Office, Cochin. Sr. Adm. Officer and Assistant Director (OL) attended the meeting.

Programme Participation

Dr. K.R. Manmadhan Nair, Scientist-in-Charge, Calicut Research Centre of CMFRI attended a seminar on *Problems and Solutions in the implementation of Official Language* Hindi conducted on 23-04-2010 under auspicious of Kannur Town Official Language Implementation Committee.

OLIC meeting

The 81st Meeting of Official Language Implementation Committee of the Institute was held on 18-03-2010 under the chairmanship of Director, CMFRI. All Heads of Divisions, Sr. Administrative Officer and Sr. Finance and Accounts Officer attended the meeting. The progress made in the implementation of Official Language during the period was reviewed in the meeting.

Visit to Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australia

Dr. Joe K. Kizhakudan, Senior Scientist, Mariculture Division, Madras Research Centre of CMFRI, underwent a training programme on lobster seed production at the Australian Institute of Marine Science (AIMS), Townsville (QLD, Australia) for a period of 14 days, from 31st March to 16th April 2010 under the NAIP project - A Value Chain on High Value shellfishes from Mariculture Systems. The training programme focused on different aspects of lobster hatchery rearing, including broodstock maintenance and performance, larval holding systems, water quality management, morphometric staging of larvae, lipid profiling, feed preparation and feeding regimes, larval health issues and combat measures.

Dr. Joe K. Kizhakudan with the lobster research experts at the Tropical Aquaculture Laboratory, AIMS

Visit to CSIRO Australia

Mr. Bineesh K.K. with Dr. Peter Last, Ichthyologist, CSIRO and Dr. George H. Burgess, Director, Florida programme for shark research.

Mr. Bineesh. K. K, Research Fellow, Pelagic Fisheries Division attended the Sharks International Conference, the first fully international elasmobranchs conference, held at Hotel Rydges Esplanade, Cairns, North Queensland, Australia during 6th-11th June, 2010. The intention of this conference is to bring researchers together from around the world to discuss the state- of-the- art in elasmobranchs research. The conference was organized by James Cook University and delegates from 23 countries are participated in this event. Sharks and rays experts from Hong Kong, South Africa, Australia, New Zealand, Mexico, Canada, U. S. A, U. K, Brazil, Indonesia are participated and presented papers on different aspects of elasmobranchs. Dr. Bruce, D. B, CSIRO, delivered keynote lecture on research on white sharks in Australian waters and most of the other papers concentrated in shark behavior research by using satellite technology for tracking and the use of micro-underwater remotely operated vehicle for behavioral observations and photo identifications. Mr. Bineesh presented a paper on "DNA based identification of elasmobranchs of the Arabian Sea: application to fisheries management and conservation" and actively involved in discussions with famous taxonomists from participating countries. The came out discussion focussed mainly on management and conservation of sharks and rays of the world.

Participation in IV Indian Scientific Expedition to Southern Ocean 2010

Shri. Hashim Manjebrayakath JRF, PFD participated the IV Indian Scientific Expedition to Southern Ocean 2010 organized by National Centre for Antarctic and Ocean Research, Ministry of Earth Science Govt. of India by vessel ORV *SAGAR NIDHI.* The team sailed from Goa on 11th January 2010. The vessel ORV *Sagar Nidhi* crossed the Equator on 16th January 2010, at 10:30 hrs (IST). The team reached Mauritius on 22nd January 2010, 10.00 hrs (IST). On 25th January 2010 the vessel started sailing to Antarctic coastal waters. The vessel reached the utmost at Lat. 66^{0}35' S Long. 58^0 29' E on 16th of February 2010. After the Antarctic coastal transect, on 21st February 2010 team started the return journey, during which all the observations were continued up to Mauritius and reached Mauritius on 10th March 2010. The journey from Mauritius was set off on 12th March and reached Goa after the successful completion of the very useful and historical IV Indian Scientific Expedition to Southern Ocean 2010 on 25th March 2010.

During the cruise Shri. Hashim conducted study on the project "Role of Antarctic krill *Euphausia superba* in the biogeochemical cycle in the Indian Ocean sector of Southern Ocean". Hydrographic data and Krill samples were collected, preserved and brought for further analysis.

Shri. Hashim Manjebrayakath during IV Indian Scientific Expedition to Southern Ocean

Dr. G. Syda Rao, Director

- Visited Tuticorin Research Centre of CMFRI on 02.04.2010
- Visited Karwar Research Centre of CMFRI on 30.04.2010
- Attended NFDB National level meeting at New Delhi on 06.05.2010
- Attended the XXII meeting of the ICAR Regional Committee No.VIII at Bangalore on 13th and 14th May 2010.
- Attended the KVK Interaction meeting on 15th May 2010 at Bangalore.
- Attended the Indian Aqua Invest Congress and Expo-2010 organized by CIFE, Mumbai on 26th and 27th May 2010.

Dr. R. Sathiadhas, Head, SEETTD and Dr. R. Narayankumar, Senior Scientist presented the final report of the consultancy project "Socio economic impact of tsunami rehabilitation in the UT of Puducherry" at Project Implementation Agency, Puducherry on 12th April, 2010. Attended the Agricultural Scientists Recruitment Board Interview Board, New Delhi as expert in the panel on 13th and 14th May, 2010. Attended the meeting at NCAP, New Delhi for the DAHD & F funded project entitled "Literacy, Health and Income of fishers in India" on 16th and 17th May, 2010.

Dr. G. Gopakumar, Principal Scientist & Scientist-in-Charge participated as a special invitee and interacted in the Research Advisory Group (RAG) organized by GOMBRT, Ramanathapuram at the Conference Hall of the Regional Centre of CMFRI, Mandapam Camp on 17.5.2010.

Dr. A. P. Dineshbabu, Scientist-in-Charge, Manglore RC of CMFRI gave a lecture on "Open sea culture of fin fishes – its prospects in India" to a group of 40 fishermen at a seminar organized by the Matsyafed, at Cheruvathoor, Kasargode district, Kerala on 12-04-2010.

Attended the ICAR Regional Committee Meeting at KVAFSU, Hebbal, Bangalore from 13-05-2010 to 15-05-2010.

Dr. G. Maheshwarudu, Principal Scientist, Dr. Prathibha Rohit and Dr. P. Laxmilatha, Senior Scientists, Shri Ritesh Ranjan, and Mrs Biji Xavier Scientists from this centre participated in National inception workshop of the FAO-GEF sponsored project of Bay of Bengal Large Marine Ecosystem (BOBLME), during 6 - 7 May, 2010 at Hotel Green Park, Visakhapatnam.

Dr. G. Mahesewarudu, Principal Scientist and Shri. Ritesh Ranjan, Scientist of VRC of CMFRI attended the awareness campaign on "Introduction of Gardil STR Nets" to the mechanized boat owners of Visakhapatnam, conducted by the Garware-Wall Ropes Ltd, Pune.

Dr. Gulshad Mohammed attended workshop on "Combating Environment-Degradation and Climate Change – a Roadmap for Gujarat" funded by Gujarat Ecology Commission at Ahmedabad, Gujarat on 22.04.2010

Delivered lectures on "Open Sea Floating Cage Culture" at Simar on 24.05.2010, at Sutrapada on 26.05.2010, at Okha on 27.05.2010 and at Navibunder on 28.05.2010 as part of the Krishi Mahotsav programme organized by Gujarat state.

Delivered lecture on "Potentiality of Open Sea Cage Culture in Gujarat" at the seminar " New avenues for fisheries & aquaculture development in Gujarat" as part of the Swarnim Gujarat Mahotsav held at Ahmedabad on 14.06.2010 organized by Dept. of Fisheries, Gujarat state.

Dr. G. Mohanraj, Principal Scientist : Attended the XXII Meeting of the ICAR Regional Committee No.VIII during 13 - 15th May 2010 at Kannada Sabhangana Auditorium, Bangalore

Attended the FIMSUL Inception Workshop on "Sustainable Fishery Management" at GRT Convention Centre, T. Nagar Chennai on 20th May 2010 and presented a status paper on the Tamil Nadu and Puducherry Fisheries sector.

Attended the 3rd meeting of the Management Committee of Fisheries Institute of Technology and Training (FITT) at the Agricultural Conference Hall, Secretariat, Chennai on 1.6.2010 at 15.30 hrs.

Shri. K. P. Said Koya, Scientist (SG) and Dr. P. P. Manojkumar, Sr. Scientist attended one day workshop on "Coastal Regulatory Zone "organised by MICTRA on 26.5.10.

Dr. M. K. Anil - Attended International conference on recent advances in lobster Biology, Aquaculture and management, RALBALM, 5-8 January, NIOT, Chennai, India and presented a paper on Sea-cage farming of spiny lobster *Panulirus homarus* (Linnaeus) along south-west coast of India.

Dr. R. Jeyabaskaran, Participated as Resource person in the field of Coral taxonomy and ecology and delivered a lecture on Biodiversity and ecology of coral reefs in Indian waters in the National Workshop on Marine Biodiversity Data management held at National Institute of Oceanography, Goa from 17th to 19th March 2010.

Participated and presented a paper titled Marine mammals conservation and Research in India in the Internaitonal workshop on conservation of the Irrawadi dolphin with special reference to the underwater acoustic study from 25th to 26th March 2010 organised by Chilka Development Authority, Bhubaneswar.

Dr. Satyanarayan Sethi, Scientist : Underwent the "Advance Faculty Training in Fisheries Resource Management" from 22nd March - 11th April, 2010 at CIFE, Mumbai.

Shri. J. Narayanaswamy, Technical Officer T-5 attended the IMPCC meeting held at All India Radio, Thiruvananthapuram on 26th April, 2010.

Participation in Exhibition

Exposition entitled 'Krishidarpan' at Rajendramaidan, Kochi on 11th and 12th March, 2010.

APPOINTMENTS

Name	Designation	Center	w.e.f
Dr. Pradeep M. A.	Scientist	Karwar RC	11.03.2010
Dr. Divu Damodaran	Scientist	Karwar RC	12.03.2010
Shri Johnson B.	Scientist	Mandapam RC	15.03.2010
Shri Sreenath K. R.	Scientist	Veraval RC	26.04.2010
Shri Saravanan R.	Scientist	Mangalore RC	24.04.2010
Shri Purushottama G. B.	Scientist	Mangalore RC	24.04.2010
Smt. Muktha M.	Scientist	Visakhapatnam RC	24.04.2010
Shri Loveson Edward L.	Scientist	Visakhapatnam RC	26.04.2010
Shri K. Mohammed Koya	Scientist	Veraval RC	26.04.2010
Shri Gyanaranjan Dash	Scientist	Mumbai RC	26.04.2010
Smt. Anulekshmi Chellappan	Scientist	Mumbai RC	24.04.2010
Dr. P. Ramesh Kumar	Scientist	Mandapam RC	24.05.2010
Smt. Karikkathil Smitha Sivadasan	T-6 (SMS)	KVK, Narakkal	03.02.2010
Ms. Rincy K. R.	Stenographer Grade - III	KVK, Narakkal	08.04.2010
Smt. Saritha L.	Stenographer Grade - III	Hqrs., Kochi	07.04.2010

PROMOTIONS

Names	Promoted		Center	w.e.f
	From	To		
Shri P. K. Harikumar	T-6 (Technical Officer)	T-7-8 (Technical Officer)	Hqrs., Kochi	01.07.2008
Shri S. Haja Najeemudeen	T-5 (Technical Officer)	T-6 (Technical Officer)	Hqrs., Kochi	01.01.1999
Smt. P. L. Ammini	T-6 (Technical Officer)	T-7-8 (Technical Officer)	Hqrs., Kochi	01.01.2005

TRANSFERS

Name	Designation	From	To
Shri K. K. Joshi	Sr. Scientist	Tuticorin RC	Hqrs., Kochi
Dr. (Mrs.) Pratibha Rohit	Sr. Scientist	Viskahapatnam RC	Mangalore RC
Smt. Bindu Sulochanan	Scientist	Mandapam RC	Mangalore RC
Shri J. Narayanaswamy	T-5 (Technical Officer)	KVK Narakkal	Hqrs., Kochi
Shri V. K. Suresh	T-3 (Technical Assistant)	KVK Narakkal	Hqrs., Kochi
Shri Lakshman Sankar Korabu	T-1 (Skin Diver)	Mandapam RC	Karwar RC
Shri R. Balakrishnan	Lower Division Clerk	Hqrs., Kochi	Vizhinjam RC

RETIREMENTS

Name *Retirement on Superannuation*	Designation	Center	w.e.f
Dr. M. Rajamani	Principal Scientist	Mandapam RC	31.05.2010
Shri D. Nagaraja	T-5 (Technical Officer)	Mangalore RC	31.03.2010
Shri K. Jayabalan	T-3 (Technical Assistant)	Tuticorin RC	30.04.2010
Shri L. Chidambaram	T-5 (Technical Officer)	Madras RC	31.05.2010
Shri M. P. Harikantra	T-5 (Serang)	Karwar RC	31.05.2010
Smt. A. Renjini	Assistant	Kochi	31.05.2010
Smt. V. S. Savithri	SSS	Kochi	31.05.2010
Shri R. Madhusudanan Nair	SSS	Vizhinjam RC	31.05.2010
Shri C. O. Viswambharan	SSS	Kochi	31.05.2010

ACADEMIC NEWS

Smt. Mini K. G., Scientist was awarded Ph.D (Statistics) degree on the topic *"A study on evaluation of CMFRI sampling design for estimation of marine fishery resources in Kerala"* by Kannur University.

Obituary

With profound sorrow CMFRI family records the demise of Shri C.S. Xavier, Technical Officer(Driver) T-5 on 10-5-2010.

Marine Farm at Karwar

CMFRI established a marine farm in a small bay outside the harbour break water at Karwar, in Uttar Kannada district of Karnataka, a coastal area which is blessed with large number of smaller and bigger bays potentially suitable for developing mariculture activities without affecting the traditional or mechanized fishing activities.

The farm is protected on the eastern side by the harbour breakwater and on the south and south western side by forest and no habitation is present around the farm.

The farm is having three square raft cages of 6 m x6 m x 4 m size and one round cage of 6 m diameter size made of 1.5" GI pipe coated with marine epoxy paint to prevent corrosion. Apart from these three High Density Poly Ethyline (HDPE) cage of 6 m diameter for sea bass and one bamboo raft of 6 m x 3 m for mussel culture is also established in the farm. All the round cages are moored with gabion boxes and shock absorbers and the raft cages are moored with heavy duty grapnel anchors. The farm is also provided with a mini lab cum watch men's cabin of 10' x 8'. Besides using for watch and ward this cabin is also used for sampling and field analysis of environmental parameters and also to study the growth parameters of fishes and mussels in the cages.

The circular cages are provided with one outer netlon net of 80 mm mesh size and an inner HDPE net of 25 mm mesh size. Whereas the square cages are provided with an outer net of 25 mm mesh size and an inner net of 14 mm mesh size. For the round cages ballast pipes provided with 30 mm wire rope weighing 120 kg is provided for the outer net and with 18 mm wire rope weighing 80 kg is provided for the inner net. Whereas for the square net ballast pipe made of 1" GI pipe is provided to the inner net.

For the cages made of GI pipes and bamboo raft, floatation is provided with fibre barrels filled with 30 lb air. Unlike the HDPE cages the metal rafts are about 0.5 metre above water and is also provided with a working platform in the middle for square cages and around for circular cage.

Seabass, mullets, red snapper and mussels are cultivated at present in the farm.

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.

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