



Flying Fish

Beyond horizon...



Message from



Mrs.Sangeetha S Kartha,

Assistant General Manager (DD) -
Dakshina Kannada and Udupi,
NABARD

At the outset, I record my heartfelt gratitude to Dr Senthilvel, Dean, other faculty and staff of College of Fisheries, Mangaluru for having bestowed me the privilege of contributing the Foreword for "Flying Fish... Beyond Horizon", a quarterly newsletter published by them. India, with about 7.7% of the global fish production, is the third largest fish producing country and the second largest aquaculture fish producer in the world. The country is home to more than 10% of the global fish biodiversity and is one of the 17 mega biodiversity rich countries. Fisheries and aquaculture witnessed manifold rise in its production from 7.5 lakh tonnes in 1950-51 to 142 lakh tonnes in 2019-20 and during the past 6 years, the fisheries sector registered an annual growth rate of 10%. The fisheries sector in India has witnessed 3 major transformations, viz., growth of inland aquaculture, mechanization of capture fisheries and development of brackish water aquaculture. The sector provides livelihood to about 2.8 crore people. However, it is estimated that only about 58% of inland and 71% of marine potential has been tapped so far. In this scenario, the College of Fisheries, Mangaluru, has undertaken education, research and extension in fisheries science forward.

There are several Governmental interventions in place to improve the fisheries sector as a whole. The Pradhan Mantri Matsya Sampada Yojana (PMMSY) aims to enhance the current fish production to 220 lakh tonnes, employment for about 55 lakh persons and export earnings to Rs. 1.0 lakh crore, with thrust production and productivity, quality, sustainability, post-harvest infrastructure, modernization and strengthening of value chain, traceability from 'catch to consumer', enhancing export competitiveness etc. In order to

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This issue highlights the activities, programmes and events undertaken by staff and students of the College of Fisheries, Mangaluru during the quarter from August to October 2021.

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on Value added fish



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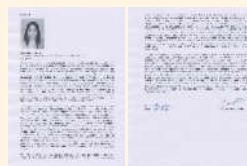


Carrying capacity analysis of cage culture in Udupi district

improve the returns to fish farmers through enhanced bargaining power through collectivization the Government encourages formation of Fish Farmers Producer Organizations (FFPOs). Also a Fisheries and Aquaculture Infrastructure Fund (FIDF) has been constituted by the Government of India for funding infrastructure projects in fisheries sector with a corpus of Rs.7522 crore with NABARD, NCDC and scheduled banks serving as Nodal Loaning Entities (NLE). Under the "Prime Minister Formalization of Micro Food Processing Enterprises (PMFME)" scheme of the GoI, fishermen are encouraged to set up new micro food processing enterprises either individually or in group mode. Support is also available under Agriculture Infrastructure Fund (AIF) for creating infrastructure with interest subvention of 3% and credit guarantee support.

Karnataka, specially the coastal districts of Dakshina Kannada and Udupi are home to a vibrant fisheries ecosystem which has helped to increase the State revenue. The major marine products exported from the district are frozen fish (frozen mackerel, cuttlefish, ribbon fish etc.) & fish products, ornamental fishes, fish meal, fish oil, etc. Fishing infrastructure like harbours, fish landing centers, jetties, ice plants, freezing units, processing centers, fish meal plants, fish markets, boat building yards, etc. are adequately available here. The Government of Karnataka has further undertaken creation of fishing infrastructure with the support from NFDB and NABARD underRIDF. Under "One District One Product", Dakshina Kannada has been identified for promotion of the Fisheries sector. NABARD has successfully completed a training programme in Fish Value Chain in association with the College of Fisheries which is expected to promote micro entrepreneurship in the sector. Bankers have also been supportive of the fisheries sector in the districts with about Rs. 550

crore of credit being extended in the twin districts. The Potential Linked Plan (PLP) for 2022-23 envisages a credit potential of Rs.319 and Rs.385 crore in Dakshina Kannada and Udupi district respectively. To optimally achieve the potential, certain critical interventions like development of HACCP compliant conditions, cold chains, promotion of cage culture, establishment of fish seed hatcheries, optimum utilization of inland water resources, introduction of new fish species for fish culture in inland and brackish water areas, awareness generation among fishermen to reduce the juvenile fishing in marine fisheries, promotion of ornamental fisheries, promotion of Joint Liability Groups (JLGs) of fisherwoman etc., have been indicated. Also coverage of all eligible fishermen under Kisan Credit Card (KCC) for fisheries enabling them to avail benefit of credit with subvention facility from institutional sources and subvention measures, formulation of management practices for sustainable marine fish production, conservation of valuable fisheries resources, establishment of testing laboratories for ensuring quality of fish, enabling hassle free transportation and export are suggested action points. It is commendable that the College of Fisheries, Mangaluru have taken actions in this regard like giving training to fisher-folk, consultancy to different bodies, conducting research in required areas, extension activities etc.



Best Regards,

Sangeetha
(Sangeetha S Kartha)

Date: 27.10.2021
Place: Mangalore

Health, Environment and Fisheries

College of Fisheries, Mangaluru (CoFM) participated in Workshop on Modern Technologies in Fish Farming

The workshop was organised by the Department of Fisheries, Government of Karnataka (GoK) at KVG College, Sullia, Dakshin Kannada. Shri. S. Angara, Hon'ble Minister of Fisheries, Ports and Inland Transport, GoK inaugurated the workshop in the presence of Director, Department of Fisheries; Dean, CoFM, Members of Taluk Panchayat, Sullia and other dignitaries on September 04, 2021. The faculty and staff of the Department of Aquaculture and ICAR-AICRP on PHET, CoFM participated in the workshop and exhibited aquaculture models and different ready-to-eat fish products viz. prawn chutney powder, prawn pickle, fish papad, fish chakkuli etc. and other fish by-products. A team of 4 women who had undergone training on Value added fish products preparation at CoFM exhibited and sold these products to the localities, participants and the dignitaries. Experts from CoFM interacted with local fish farmers and cleared their queries at the exhibited stall. Dr M. Ganapathi Naik, Professor and Head, Dept. of Aquaculture and Dr A.T. Ramachandra Naik, Professor, Dept. of Aquatic Environment and Management, as subject experts, exchanged their views with the participants.



Report on "Impact of Noise and Vibration of Main Conveyor Belt (MCB) on Aquatic fauna at Narihalla Dam from Nandihalli Railway yard at JSW plant, Toranagallu, Ballari District" assigned by EMPRI, Government of Karnataka

CoFM undertook the concerned study as per the Environmental Management & Policy Research Institute (EMPRI), GoK letter No. EMPRI/CR-64/Admin/2020-21/327 dated 02.08.2021.

A team comprising faculty and scholars of CoFM namely Dr Lakshmipathi M. T., Professor, Dr T. S. Annappaswamy, Assistant Professor, Mr. Amogha, K. R., Ph.D. Scholar and Mr. Venugopal P. P., Field Assistant visited the site and carried out the observations, water analysis, noise analysis etc. Based on these and the information collected at the local level and from the literature, the team made following recommendations to reduce noise level, to minimize vibrations and to maintain the water quality;



Since the conveyor belt passes through forest and wildlife regions, the proponent should take all measures to reduce the noise pollution to the lowest. Since no standard limit is set yet for noise according to the Wildlife Act or Forest (FC) Act, 1980 the noise emitted from the conveyor belt shall be significantly below 40 dB which is the limit set for silence zones (40-50 dB) as regulated by Environment Protection Act 1986- Noise Pollution (Regulation and Control) Rules, 2000. The noise in the area at present is reaching a level of 66.2 dB which is above the noise standard for commercial zones as regulated by the Rules. The EMPRI may examine if the noise including the vibration is in compliance with the FC Act, 1980 and the Wild life Act.

Measures have to be taken to minimize the vibrations to negligible due to the adverse effects it causes on wildlife, humans and physical structure. These vibrations affect the biorhythm of animals and disturb their life cycle especially of nocturnal animals. The continuous exposure to the noise level and sound also affects human mental stability particularly of the aged and the children. To minimize the vibrations various measures like running the conveyor belt on HDEP hydrlers, calibrating the speed of the conveyor belt, laying concentric circular trenches below the stills etc. may be followed. The concentric circular trenches could be laid with a 1 m gap between each concentric circle. The gap may be brick pitched with sand to reduce the transmission of the vibrations at the ground level.

No pollutants were identified in the water in and around the pillar, which showed normal water quality. No fishing activities have been reported in the reservoir of 255.08 hectares of water area. It is suggested that the Department of Fisheries may examine the water and take over for fisheries development.

CoFM celebrated Independence Day 2021

The 75th Independence day of India was celebrated on August 15, 2021 at CoFM. Dr Senthil Vel, Dean, CoFM hoisted the national flag in the presence of staff and students of the college. As part of the Independence Day celebration, a painting competition was organized for the staff and students. The whole celebration was conducted maintaining COVID-19 protocol.



Livelihood and Enterprise (LEDP)- Skill Development Program on Value added Fish conducted at CoFM



ICAR-AICRP on PHET was involved in training program organized by Bharathiya Vikasa Trust- Manipal, NABARD, CoFM and Skill Development Centre (Smart City)- Mangaluru on "Livelihood and Enterprise (LEDP)- Skill development program on value added fish". The program was conducted from 23/08/2021 to 28/08/2021 at the Technology Wing in the Department of Fish Processing Technology, CoFM, Hoige Bazar, Mangaluru. There were about 34 participants of various self help groups. The participants were trained in evaluating the fish freshness by sensory analysis, retention of fish freshness by using sufficient quantity of ice, scientific cleaning and hygienic practices to be followed, beneficial effects of eating fish and fish products, fish based fish products preparation etc. The products prepared included ready-to-fry masala coated dried Silver Bellies, ready-to-use fish based snacks such as fish spirals (chakkuli) and fish papad, ready-to-cook frozen battered and breaded fish Products, warm-and-serve hot fried cutlet and squid rings (chill stored), prawn chutney powder, hot and spicy prawn pickle etc. The participants also showed their talent by preparing Seer fish Biryani and different flavoured chakkuli mainly palak, spicy, pepper and salt. They were also introduced to licensing and marketing channels like documents to be produced to get FSSAI certificate, financial assistance, subsidiaries and other facilities available from Canara Bank and NABARD. Field visits were arranged to KFDC, Hoige Bazaar, Fish Curing Yard, Hoige Bazaar and Presto Foods Corporation, Morgan's Gate.



CoFM celebrated Ganesh Chaturthi : PARVA 2020-21

Ganesh Chaturthi was celebrated in the College with all the festivities. It was organised by 4th year B.F.Sc. students. Ganesh Pandal was arranged in the Boys hostel and all the staff and students were served with a sumptuous vegetarian feast on the third day. Ganapati visarjan was done in the nearby KVK pond. This year's celebration was named as "Parva 2020-21".



Proposal for Revamping the Website of Department of Fisheries, Government of Karnataka assigned by Department of Fisheries.

CoFM invited proposals for revamping the website of the Department of Fisheries, Govt. of Karnataka from identified vendors having experience of designing websites. Based on the proposed, the work order was issued by Government of Karnataka.

CoFM submitted a Project Proposal on Development of Tuna Fisheries and Tuna Products in Karnataka

In India tuna is distributed along the south-west coast, east coast and Lakshadweep. They are abundant along Lakshadweep islands, Goa, Vizhinjam and Ratnagiri coasts. Along the coast of Karnataka the catches of tuna are moderate. The landings of Tuna in Karnataka during the last decade fluctuated between 665 t (2009) to 16801 t (2016). The contribution of tuna to the total landings of large pelagic fisheries ranged from 3.7% in 2009 to 4.2.1% in 2018. The post monsoon period (September to December) is the major fishing season for tuna in Karnataka and accounted for 52.9% of the total annual tuna landing. The tuna is generally not consumed in Karnataka due to its high blood content and poor taste of red meat. The catch generally goes to Kerala and other places outside the State for consumption. Lakshadweep produces maximum Tuna catch in the country (1.8 million metric tons (mmt)/year). If these are transported to Karnataka through a ship, cleaning and pre-processing could be carried out onboard during the voyage and thereafter various products could be developed upon landing in Karnataka (Mangaluru) coast. Thereby the fishermen would get much higher revenue. Presently a ship operates between Lakshadweep to old Mangaluru Port regularly transporting cargo and passengers. In view of these, there is a good case for developing a tuna processing centre in Mangaluru port on account of good facilities and connectivity. In this regard CoFM proposed to locate the tuna processing unit at Technology Wing of CoFM to utilize these advantages which is adjacent to the existing old port. This wing houses a huge fish processing unit which has been lying unutilized for more than 25 years due to lack of funds. All the facilities such as can making, retorts, quality control facility, etc are available there. However, there is a requirement for renovating the existing facility to an international standard Tuna processing unit. The equipment/ machineries available in CoFM could be upgraded by the entrepreneur. Dr S. Siddappaji, Associate Professor, Department of Fish Processing Technology, CoFM is nominated as a nodal officer to provide concerned information of the proposed Tuna Processing Unit.



Employment to Students under Multi-Purpose Support Services (SAGAR MITRAS) under Pradhan Mantri Matsya Sampada Yojana (PMMSY)

The Department of Fisheries engineering and Technology, CoFM got sanctioned of Rs 54 lakhs for the implementation of project entitled “Multi Purpose Support Services (SAGAR MITRA)” under PMMSY scheme for a period of one year. The Sagar Mitras will be the first person of contact for any marine fisheries related demands/ services of fishers. The CoFM is nominated as the nodal agency for implementation of this programme by the GoK. It is envisaged to engage a total of 40 Sagar Mitras and deploy each Sagar Mitra in a coastal fishing village in Dakshina Kannada, Udupi and Uttara Kannada District for a period of 9 months. The call for employment as Sagar Mitra has been advertised in leading dailies both in Kannada and English.

Establishment of Advanced Biotech Innovation Centre (ABIC) for Aqua-Marine in College of Fisheries by Department of IT& BT, Government of Karnataka

CoFM is identified by the Dept. of IT&BT, GoK to set up ABIC as response to the announcement by the honorable Chief Minister, GoK in the budget speech 2021-22, for establishing an Advanced Biotech Innovation Centre for Aqua-Marine in Mangaluru and allocation of Rs. 6 crores is made. This centre will support biotechnology enterprises and innovative start-ups, with a special focus on functional food products from seafood and seaweed. The major area of focus will be the following; Boosting the aqua-marine biotech sector by scientific validation of innovative ideas and facilitating Intellectual Property Rights; evolving means for sustainable utilization of the most valued biodiversity treasures - fishes and seaweeds; promoting scientific knowledge and imparting training in the areas of aquatic and marine biotechnology. This incubation facility is targeted at researchers at universities and research bodies interested in commercializing the results of their research, young professionals interested in developing innovative business ideas and the entrepreneurs interested in diversifying their activities to set up a new company. CoFM shall develop the advanced biotech innovation centre of global standards of excellence, making it an attractive destination for domestic and multinational companies wishing to set up manufacturing or research units.

Carrying Capacity Analysis of Cage Culture in Udupi District assigned by Department of Fisheries, Government of Karnataka

The study was conducted by the CoFM as per the request by the Dept. of Fisheries, GoK. The Dept. has been receiving queries from fisher community and entrepreneurs for establishing cages in rivers under PMSSY Scheme. In this connection, the department has sought (a) viability of the cage culture project (b) places for establishing the cages and (c) culture practices. CoFM collected the details of the rivers flowing in Udupi district from Google maps and other literature references. Further, the types of fish, riverine ecology, and demography were studied. A team of five members headed by Dr Ganapathi Naik M., Professor and Head, Dept of Aquaculture, Dr Abhiman P. B., Mr Rakesh, Mr. Amogha K. R. and Mr. Dheeraj S. B. visited the four estuaries in Udupi District viz. Swarna, Sita, Panchagangavali and Sumana connected to the rivers.

The team made observations regarding physical presence of the cages and correlated it with the official data. Biochemical and microbial analysis of water were carried out on the samples collected at three locations in each estuary viz. upstream, downstream and middle area where the cages were located. Based on these, a report was prepared for each of the four estuaries. It has been observed that though the Dept. has sanctioned 248 number of cages, only 15-20 number of cages could be observed. To prevent further loss, it is recommended that the Dept. may enumerate these cages based on the sanctioned amount and take necessary action against the persons who do not maintain the cages. As per the water quality parameter study, the area is found to be congenial for cage culture of groupers, sea bass etc and for crab fattening. However, to decide upon the carrying capacity, further study on bathymetry, currents, wave patterns, seasonal changes of water parameters etc. may be needed. Fish farmers may be encouraged to adopt standard management practices to prevent the danger of viral or other infections in large scale cage culture. The area should be protected from discharge of effluents or sewage, sand mining, dredging, and disposal of municipal solid waste.

Since most of the examined cages were found to be located among mangrove vegetation it attracts clearance from MOEFCC and KCZMA as the mangroves are classified as CRZ-IA. Conservation and protection measures also should be taken up for mangroves. The Dept. may obtain approval from CRZ authorities and Coastal Aquaculture Authority as cage culture in tidal influence water bodies i.e. estuaries attract CRZ notification.



Sampling at top stretch of river



Cage



Cages around mangrove areas

Fisheries Research/Publications

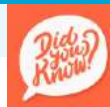
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Fun Facts - Parrot fish



Kingdom : Animalia
Phylum : Chordata
Class : Osteichthyes
Order : Perciformes
Family : Scaridae

- The name "Parrot fish" is derived from their fused teeth which bear close resemblance to a bird's beak. Their teeth are specialized for scraping algae and invertebrates from coral reefs and rocks
- They secrete mucus, particularly at night forming a protective cocoon that envelops the fish, presumably hiding its scent from potential predators
- There are about 60 species of parrotfish that live in reefs all around the world. They generally live about 5 to 7 years and grow up to 1 to 4 feet in length and 20 kilograms in weight
- Parrotfish are colorful tropical creatures that spend about 90% of their day eating algae off coral reefs and thereby keeping the reefs clean and healthy
- If it weren't for parrotfish, corals would quickly become suffocated by seaweeds on many reefs around the world



Fishco's Family - Recipe Corner **Spicy Malabar Seer Fish Curry**

Seer fish or fish of your choice	: ½ kg cleaned & cut into pieces
Raw mango	: 1 cut into pieces after peeling
Tomato	: 1 cut into pieces
Green Chilies	: 3 splitted
Turmeric Powder	: 1½ teaspoon
Red Chili Powder	: 4 teaspoon
Coriander Powder	: 1 teaspoon
Grated Coconut	: 1½ cup
Ginger	: 1 inch piece peeled & crushed
Garlic	: 6 pods crushed
Shallots	: 6 sliced
Curry Leaves	: 3 springs
Mustard seeds	: ¼ teaspoon
Fenugreek	: ¼ teaspoon
Coconut Oil	: 3 table spoonz

Method:

1. Saute ginger, garlic and shallots in 1 tablespoon coconut oil for a few minutes. Add red chili powder, coriander powder and turmeric powder and saute till the raw flavour is gone. Add grated coconut, mix

well and saute for ½ a minute. Let it cool and grind well into a smooth paste after adding a little water.

2. Heat 1 tablespoon coconut oil in a pan. Add mustard seeds and fenugreek. When it's spluttered, add green chilies and saute for 1 minute. Add tomato and half of the curry leaves. Saute for a minute. Add the previously ground paste and 3 cups of hot water.
3. When it gets boiled, add fish and raw mango. Let it get cooked and the oil surfaces. Remove from the stove and add remaining curry leaves and a tablespoon of coconut oil. Cover with a lid.
4. This can be used as a side dish for rice, chapati and paratha.

Recipe by:
Dr Madonna T. Thachil,
CoFM Mangaluru



Dean's Desk

I am happy to inform that the Flying Fish Team has been successful in bringing out 10th edition of the quarterly newsletter. I am thankful to Ms. Sangetha S Kartha, Assistant General Manager, NABARD, D.K. & Udipi for providing the foreword for this edition. Ms. Sangetha has also been kind enough to assist the college for undertaking skill development programme under which 45 women from rural D.K. were benefited. They have been successful in starting their own entrepreneur which is running successfully. Further, the staff of the college have been able to write proposal thereby 2 major proposals namely; Development of Tuna processing and Establishment of advanced aquamarine bio technology unit which has been agreed upon by the Government of Karnataka. I sincerely hope the staff and the students will work as the team in promoting entrepreneurship among local communities.

I will be extremely happy to receive comments and suggestions at the below given feedback email.

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Suggestions and feedback to
newsletter@cofm.edu.in

College of Fisheries, Yekkur, Kankanady P.O.
Mangaluru - 575 002, Karnataka, India
Tel No: 0824 - 2248936/ 2249256/57/58/59

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Editorial Team: Dr Malathi Shekar, Dr Madonna T. Thachil, Dr Abhiman B., Mrs Vandana K., Ms Swathi and Mr Srinath