COLLEGE OF FISHERIES, MANGALURU
Karnataka Veterinary, Animal and Fisheries Sciences University, Bidar, Karnataka, India
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Flying Fish

Beyond horizon...

IN THIS ISSUE

In this issue, the College of Fisheries which is one of the premier, scientific research body in the country in the area of aquatic and fishery sciences, highlights some of the salient features of the college and its activities undertaken during **August to October 2020**

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BLUE ECONOMY

LAUNCHING OF RKVY PROJECT

Message from

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Pondicherry University

It is my privilege to write a foreword to the quarterly newsletter, periodically published by the College of Fisheries, Mangalore, which has a worldwide recognition. I am happy that this edition focuses on "Blue Economy".

"Blue Economy" is an emerging concept which needs a thorough discussion and understanding. The concept is an ocean-related development model. The main components of the Blue Economy are fisheries, sea-minerals including oil and gas, ports and shipping, marine tourism, marine biotechnology, deep-sea mining, and transport and logistics. The role of Blue Economy is optimum and sustainable use of oceanic resources for growth and development.

Fisheries sector is an important constituent of the "Blue Economy" and has a long history compared with other emerging Blue Economy sectors such as marine biotech and renewable energy. Traditionally, fisheries management has operated in isolation and the relationship of fisheries with other sectors has not been fully considered. Fish is a key source of nutrition, employment and export revenues in many coastal states and is essential for economic survival of the state. Marine fisheries contribute more than $270 billion annually to global GDP. The world's population is expected to rise to 9.6 billion by 2050, creating a considerable demand for food and sources of protein. The World Bank's 2016 "Sunken Billions Revisited" study shows that fisheries could provide an additional $83 billion to the global economy each year if they are properly managed with a significant reduction in overfishing. Food and Agriculture Organisation estimates that about 57% of fish stocks are exploited and 30% are over exploited / depleted / recovering. Fish is exploited further by illegal, unreported and unregulated fishing, which is roughly 11 to 26 million tons of fish catch annually, or $10-22 billion in unlawful or undocumented revenue. Demand for fish products has been increased due to: population growth, higher incomes and increased globalization of seafood markets. In India, there are about 3,432 villages and 1,537 fish landing centres and about 8,74,749 families who depend on fishing. Hence environmental degradation will have serious implications not only on marine ecology but also on the livelihood of the fishing community. Sea level rise will damage aquaculture industries, fish productivity, due to higher risks of increased frequency and intensity of coastal surges and cyclones. Intrusion of sea-water into ground water, changes in temperature can reduce agricultural and fishing incomes. This will create a large number of environmental refugees, especially from low-lying delta regions.

Hence, the Indian Government needs to show concern in protecting the sea from environmental degradation. There should be more emphasis on practices such as employing responsible and eco-friendly fishing practices, implementation of eco-labelling and certification schemes for harnessing the potential of the sector. Further, the government needs to invest on exploring and exploiting marine resources, which would not only enhance gross domestic product but also eradicate poverty in the coastal areas. There should be an exclusive ministry to look after the development of the Blue Economy, as there is poor coordination among the multiple ministries/ institutions. I wish the College of Fisheries would become a nodal agency to develop "Blue Economy" for the South Indian coastal states in particular and for India in general.

Date: 12 October 2020
Place: Pondicherry University

A.Subramanyam Raju

Environment and Fisheries

CoFM celebrates Independence Day 2020 (15.08.2020)

The 74th Independence day was celebrated at CoFM. The national flag was hoisted by Dr. Senthil Vel, Dean CoFM in the presence of college staff in the main campus. The function was celebrated taking all precautionary measures for COVID-19. As a part of the independence day celebration painting competition and sports activities were organized for the staff and their family members.

Webinar on proposal and implementation of PMMSY by CoFM (18.09.2020)

A webinar on Pradhan Mantri Matsya Sampada Yojana (PMMSY) was organized by CoFM in collaboration with the Field Outreach Bureau, Ministry of Information and Broadcasting, Mangaluru. The purpose of the webinar was to create awareness among the farming communities on various schemes of PMMSY to be implemented in the country in general and Karnataka State in specific. PMMSY has a financial outlay of Rs.20,050 Crore of which, Rs. 11,050 Crore has been earmarked for marine, inland fisheries and aquaculture activities and Rs. 9,000 Crore for fishing harbour, cold chain and market setup and development. PMMSY aims at an additional fish production of 70 lakh tonnes in over five years period, employment generation to over 55 lakh people and doubling the fish export to an extent of Rs. 1 lakh Crore. Dr. A. Senthil Vel, Dean of the college spoke on the occasion, highlighting the method of implementation by the college upon release of budget from the Central Government. Dr. A.T. Ramachandra Naik, Professor, Dept. of Aquatic Environment Management gave an overview of the 22 project proposals prepared and submitted by the faculty of the college to the Department of Fisheries, Government of Karnataka. He also presented detailed information on vision, aim, objectives, investment procedure, various components, beneficiary oriented schemes under the components I and II of PMMSY. Read more: **https://bit.ly/3jTl1sZ**

Visit by Honorable Board member (KVAFSU, Bidar) (25.09.2020)

The newly appointed Board member (KVAFSU, Bidar) **Shri Deepak Doddaiah**, visited the CoFM campus on 25th Sep 2020. During his visit, an interactive session with the faculty members was arranged wherein, he was appraised of the teaching, research and extension activites of the college. On the occasion of his visit, the Board member released the "Flying Fish" newsletter (Vol.2, issue 2),. On his visit to the farm he also released ornamental fish and planted saplings.

Launching of RKVY Project at CoFM (28 .09.2020)

The proposed RKVY project which involves Modernization of Research and Instructional Fish Farm with New Aquaculture Technologies has been sanctioned to CoFM by the Govt of Karnataka with an outlay of INR 790 Lakh. Dr. Ganapathi Naik M., Professor and Head, Dept of Aquaculture is the Principle Investigator of the project. The project involves upgradation of the existing instructional and research fish farm into a high tech farm. Under this project, newer technology for well water resources, live fish gallery, RAS systems, hatcheries, etc., will be created and used in skill development, training and extension activities. The project plan and implementation is to be provided by experts from NITK, Surathkal. Dr. H.D Narayanaswamy, Honorable Vice Chancellor, Dr. K. C. Veeranna, Registrar and The Estate Branch Officer Shri Ramappa, KVAFSU, Bidar visited the campus on 28th September 2020 to review the RKVY project and other ongoing projects. During their visit a presentation was made by Dr. Gangadharan K.V., HoD, CSD, NITK, Surathkal regarding their tentative plan of the RKVY project implementation. An MoU between the institutes was agreed to be signed upon. As a mark of the visit and launch of the RKVY project, the dignitaries released ornamental fish in the farm and also planted saplings in the main campus.

Fishcos Family - Recipe Corner

Tuna pickle

Ingredients

Tuna: 1kg
Red long chillies (Badige): 200gms
Fenugreek seeds: 20 gms
Cumin seeds: 50 gms
Garlic: 3 - 4 pods
Vinegar: 200ml
Curry leaves optional
Salt to taste
Oil for frying

1. For Marination: In a large pan mix salt and vinegar and add the cut tuna pieces
2. For Masala: Dry roast fenugreek seeds, chillies, cumin and coarsely powder
3. Chop garlic and set aside
4. Fry the marinated tuna until crispy, drain and allow to cool
5. In the same oil add garlic and fry until brown
6. Take a large clean and dry glass bottle. Add a layer of fried Tuna, sprinkle the coarsely powdered masala few fenugreek seeds and fried garlic. Keep repeating layer after layer
7. Now add required amount of salt to half cup of vinegar, mix and pour on top
8. Pour the remaining oil used initially for frying tuna after filtering through a muslin cloth

Note: The pickle should be completely immersed in oil to prevent spoilage. Seal the bottle and use it after 48 hrs. For immediate consumption you can add curry leaves and grated ginger but this is optional. Ginger has more moisture and can spoil pickle quickly.

Recipe by:
Mrs. M.S Lakshmi
Dubai

Activities

Rapid Assessment of the Blue Economy Potential in Karnataka

The State of Karnataka, located along the Arabian sea on the South West coast of India has a coastline of 320km with 27,000km^2 of continental shelf and 87,000km^2 of exclusive economic zone (approximately, 4 percent of India's EEZ of 2.272 million km^2). Karnataka has fourteen rivers that drain around 70 billion m^3 into the Arabian Sea; 26 estuaries with water spread area of more than 70,000ha and brackish water area of more than 8000 ha, which make the coastal areas rich in marine, estuarine and riparian resources. In addition, Karnataka has about 593,000 ha of inland water resources (3,799 government tanks with water spread of 172,000 ha; 22,624 village tanks with water spread of 121,000 ha; and 82 reservoirs with water spread of 272,000 ha), 5,813km of river stretches, 9,000ha private ponds and 21 fish sanctuaries.

In Karnataka, marine capture fishery is the most acknowledged part of the state's 'Blue Economy', around 328,000 coastal and marine fisher persons live in 144 marine fishing villages (86 in Uttara Kannada, 41 in Udupi and 17 in Dakshina Kannada districts) in Karnataka. A further 633,000 fishworkers in other villages in Karnataka are directly or indirectly connected to the marine/coastal fisheries. The state has 96 landing centers. The total marine fish landings for Karnataka in 2017-18 was 548,000 tons (fourth largest in India) with another 188,000 either captured or cultured inland.

The Western Ghats, one of the world's biodiversity hotspots, transcends the coastal Karnataka. The Western Ghats has some of the most unique and endemic biodiversity resources (includes large varieties of fish, shellfish, crabs, several aquatic animals and aquatic plants in the 30 rivers/rivulets that originate from these Ghats). Karnataka's coastal, marine, estuarine and Ghat ecosystems are already under stress from overexploitation, overfishing, habitat destruction, past conversion of mangroves, unplanned urban/industrial development and pollution. Climate change impacts including increased extreme weather events and sea level rise add to the prevailing concerns. As part of any assessment of the Blue Economy of the state, it will be important to develop a framework for conservation of these ecological resources and background biological productivity levels that generate the current benefits realized by the society from these ecosystems.

On the other hand, many areas of 'Blue Economy' are either unexplored or unreported. Examples include rare earth mining from the sand dunes and sandy beaches or underwater sand deposits, or unexplored tourism resources, or potential cultivation of seaweeds, and so on. For true 'Blue Economy', it is important to understand the nature of sustainable production potential from each of these unexplored/underutilized/unreported areas.

The State of Karnataka as indicated above has large reserves of freshwater, estuarine water, coastal and marine waters which provide ample opportunities for economic development such as tourism, fisheries, mining, urban settlement, port and harbor development, sea plane ports, agriculture, industrial estates, renewable energy generation plants, bio fuel, pharmaceutical industries, chemical industries, conservation and protection strategies, etc. Apart from economic development these developmental activities provide huge scope for employment such as skilled, semi-skilled and unskilled. In this connection, the World Bank has assigned CoFM a short-term study on "**Rapid assessment of Blue Economy potential of Karnataka**" . This study is being undertaken under the Chairmanship of Dr. Shailesh Nayak, Director, Indian Institute of Science Campus, Bengaluru, Karnataka, eminent experts from National and International level and CoFM staff. The study addresses several developmental topics in a systematic manner, in order to come out with economic potential of the aquatic system of the state and the possible economic opportunities associated with such economic development based on which the State of Karnataka would be in a position to initiate development in each of the sectors listed below;

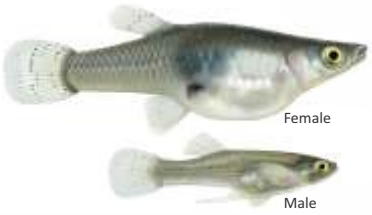
a) Sustainable harvesting and conservation strategies for living resources
b) Scientific extraction and potential for utilization of non-living resources
c) Alternative efforts to maximize social benefits from Blue Economy resources
d) Strategies for pollution management, improved resources efficiencies, recycling and waste to useful products
e) Rehabilitation and conservation and protection of priority ecological resources
f) Strategy for augmentation of institutional capacity and human resources development in a Blue Economy context

In order to achieve the above goals with regard to economic development and employment generation the Government should first put in place a policy for restoration/rehabilitation and conservation of the aquatic environment and thereafter promote sustainable development as listed under the sustainable development goals.

Fisheries Research/Publications

1. Chandravanshi, A., Naik, G.M., Chandravanshi, P., Rathore, S.S., Jaiswal K.and Sahu. D. 2020.*Camellia sinensis* (green tea) as feed additive enhanced immune response and disease resistance of *Cyprinus carpio* (common carp) against *Aeromonas hydrophila* infection.J. Exp. Zool. India 23 (2): 1711pp
2. Chandravanshi, Naik, G.M., Chandravanshi, P., Rathore, S.S., Jaiswal K., Sahu. D and Keer, N.R 2020. Effect of green tea *(Camellia sinensis)* on growth and survival of common carp (Cyprinus carpio).J. Exp. Zool. India 23(2): 1265pp
3. Devanand, T.N., Kumar, G., Anjanayappa, H. N., Naveen Kumar, B. T., Soman C. and Panda, K. 2020. Identification of *Coilia dussumieri* and Sardinella gibbosa from Mangaluru waters using 16S rRNAgene .J. Exp. Zool. India 23(2):. 1355pp
4. Chandravanshi, Naik, G.M., Chandravanshi, P., Rathore, S.S., Jaiswal K., Sahu. D and Keer, N.R 2020. *Camellia sinensis* (green tea) as feed additive enhanced immune response and disease resistance of *Cyprinus carpio* (common carp) against *Aeromonas hydrophila* infection.J. Exp. Zool. India 23(2): 1383pp
5. Devanand, T.N., Kumar, G., Anjanayappa, H. N., Kumar, G., Naveen Kumar, B. T. , Gopan, A. and Panda., K. 2020. A comparative study of COI and 16S rRNA genes for DNA barcoding of Indian marine clupeids. J. Exp. Zool. India 23(2): 1439pp
6. Rakesh, K., Naik, G.M., Pinto, N., Shankar, K.M., Naveen Kumar,B. T., Poojary, S.R. and Abhiman, P. B. .2020. Evaluation of efficacy of oxolinic acid against *Vibrio parahaemolyticus* in pacific white shrimp, *Litopenaeus vannamei*.J. Exp. Zool. India 23(2):1783pp
7. Lingadhal,C., Sruthisree, C., and Padmanabha, A. 2020. Physico-chemical characteristics of mangrove region in Keni creek, Ankola, Uttara Kannada District, Southwest coast of India.J. Exp. Zool. India 23(2):1227pp

Fish Facts - *Gambusia affinis* (Local name: Mosquito Fish)



Kingdom	: **Animalia**
Phylum	: **Chordata**
Class	: **Actinopterygi**
Order	: **Cyprinodontiformes**
Family	: **Poecillidae**
Genus	: **Gambusia**
Species	: ***Gambusia affinis***

- Gambusia Italian is a freshwater fish commonly referred as **"The mosquito fish"**
- 'Mosquito fish' are small freshwater fish, with females attaining a maximum length of 7 cm (2.8inches) and males 4 cm (1.6 inches).
- The life span of this fish is 2-3 years and they can tolerate extreme water conditions such as high salinity and low oxygen content.
- **'Mosquito fish'** are known to breed throughout the summer months
- The new broods with 50-100 young ones are produced at intervals of about six weeks and measure approximately 1/4 inch in length.
- **"Mosquito fish'** can thrive in shallow waters, fresh water, brackish water or even in areas that have doubled salinity
- Gambusia Italian is classified as larvivorous fish and feeds on mosquito larvae
- This fish can eat mosquito larvae as fast as they hatch from eggs.
- A large female can eat upto 100-200 mosquito larvae in a day. They also eat other insect larvae and fish fry.
- This fish has been used in the biological control of diseases such as dengue, malaria, chikungunya spread by mosquitoes in ponds and water bodies

Staff and Student News

Superannuation:

Mr. Ramesh D. Belchada, Cook, College of Fisheries Hostel superannuated on 30th September 2020 CoFM wishes him a happy retired life!

Dean's Desk

This edition of 'Flying Fish' is also being brought out when the entire country is facing serious crisis of COVID-19 pandemic. While all other activities have almost come to stand still, College of Fisheries, Mangaluru has been performing its duties and addressing the needs of local communities. The Aquaculture Department and Technology Wing of the college have initiated innovative activities for promoting aquaculture and developing new products for the public. I sincerely hope with the support of the Karnataka Fisheries Department including KFDC, these products will be launched soon for the public.

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

We're on the Web! www.cofm.edu.in
Suggestions and feedback to newsletter@cofm.edu.in

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