



# Flying Fish

Beyond horizon...



Message from  
**M.S. SWAMINATHAN**  
Founder Chairman  
M.S. SWAMINATHAN  
RESEARCH FOUNDATION



I am happy to know that College of the Mangaluru under Karnataka Veterinary Animal and Fisheries Sciences University, University of Bidar is bringing out this newsletter highlighting the college activities and providing a holistic view of fisheries in a nutshell. I know College of Fisheries and its role in the area of development of fisheries, its research and extension that has been assisting the traditional fishing communities and fish farmers in improving their livelihood. This College has one of the great faculties with eminent professors who have been providing all round development of students both in academic, research extension and allied subjects of global significance. The College of Fisheries was established in the year 1969 as country's first Fisheries College and second in Asia after Japan.

As all of us are aware that about 25 per cent of the population lives along the coastal line of the country and the majority of the population are the fishing communities. Among these fishing communities the traditional fisherman play an important role in the fisheries of the country. They practice sustainable fishing there by not depleting the fishing stock. However due to increased economic activities, population, erosion, destruction of habitats and due to adverse impact of climate change has put enormous stress on the traditional and marginalized communities.

## IN THIS ISSUE

The College of Fisheries, Mangaluru (CoFM) is a premier, scientific research body in the country in the area of aquatic and fishery sciences. This issue highlights some of the salient features of the College and its activities undertaken during April to June 2019.

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College of Fisheries, Mangaluru



Fisheries Food Processing Unit



RTV Nethravathi Fisheries & Research Vessel



Swimming Pool

I am sure this College of Fisheries, Mangalore will be able to address all the issues in a scientific manner so that these traditional communities are not put to hardship and their livelihood is not adversely affected.

I also understand that Dr A Senthil Vel has taken over as Dean of this prestigious Institution. I know him for over 15 years who has worked closely in the area of Coastal Management promoting the livelihood of the coastal communities including conservation and protection of the coastal environment. Under his guidance and Leadership I am sure the college will be able to address the emerging issues in the area of fisheries and will initiate necessary steps to promote livelihood security of coastal communities and also undertake protection and conservation of this fragile marine and coastal environment.

*M.S. Swaminathan*  
- M.S. Swaminathan

### Message from Vice Chancellor, KVAFSU



The initiative taken by the College of Fisheries, Mangaluru in bringing out the college quarterly newsletter is highly appreciated. This newsletter highlights the college activities, its faculties, publication etc. As you all may be aware the College of Fisheries, Mangaluru was the first institution established in 1969 as the premier Institute to provide academics in fisheries sector. Since then the college has been able to bring out high quality fisheries graduates, postgraduates and PhDs who have established not only nationally but also internationally as academicians, researchers, policy makers, entrepreneurs in the area of fisheries and aquatic management. The college has excellent academic faculties, fully fledged technology wing that can be operated on industrial scale with state of art, laboratories and also facilities for sports and extra-curricular activities includes gymnasium, swimming pool, play grounds all located in a lush green scenic environment. The students in College of Fisheries are provided with all opportunities and skills so that they can take up entrepreneurship in the area of fisheries development. The newsletter will provide a window to highlight some of the achievements of the staffs and students of the College of Fisheries.

*H. D. Narayanaswamy*  
- H. D. Narayanaswamy

**Environment and Fisheries**



**International Yoga Day 2019, Date: 21.06.2019:** International Yoga Day was observed in CoFM for a fortnight from 5<sup>th</sup> - 21<sup>st</sup> of June, 2019. A non-profit organization Shree Sahara Prakrithi Chikitsa, a renowned Naturopathy and Ayurvedic Institute in Mangalore conducted these Yoga sessions in the college. Staffs and students of the college actively participated in the sessions. Yoga is extremely important especially for fishery students and staffs as it improves concentration, addresses stress and makes them mentally fit for strenuous activities like fishing, aquaculture and other field and laboratory related activities.



Tar balls found in shore

**“War against tarball” , Date: 08.06.2019:** The CoFM received information with regard to dead Turtles and Dolphins being washed ashore along Gunddekopla and Hosabettu beach near Surathkal in the month of June 2019. On receiving the information professors and researchers immediately rushed to the site. The carcasses of the animals were examined by the team. Based on the external observation a report was prepared and the samples of tar ball and other material collected from the beach were sent to National Institute of Oceanography (NIO), Goa for toxicology studies. Further, the visiting scientist found the beach of 2-3kms stretch spread with tar balls of various sizes. The origin of tar



Cleaning along shore

ball could be from various sources including industrial discharge from the vicinity or from the ports where the crude oil tanker must have unloaded the crude, pipeline leakages or wash from the tanker after unloading. All these possibilities are being examined. The information has been published in various print media accessible in [www.cofm.edu.in/news.html](http://www.cofm.edu.in/news.html)

**World Ocean Day 2019, Date: 08.06.2019:** Keeping in view the tar ball problem along the Mangaluru coast, the CoFM decided to observe “War against tar ball” as a theme for the World Ocean Day 2019. The staffs and students of the college assembled at Sasihithlu beach at Mangaluru where the tar ball occurrence was maximum. Tar ball deposits were estimated on physical sampling and statistical methods. Further the staff and students interacted with the local fisherman communities of Sasihithlu village. The local communities indicated that there has been; Depletion of fishes in the area . The shore line is highly eroding more than 5-10m due to various unscientific constructions along the coast including build up of sand bar, reduced inflow of river flow bringing in loss sediments and removal of sand at certain stretches. To stop the erosion the State Government has installed rubble wall all along the beach which has harmed the beauty of the beach. Further dumping of solid waste, plastics



and unused nets where seen on the beach. The river namely Shambahavi and Nandini which flows from the Western Ghat to the Arabian Sea has shifted its discharge point by 4kms towards South. The reason for the change of riverine mouth is mainly due to reduced flow and build up of sand bar at the mouth. The statement from CoFM in this regard has been given to the print media requesting concerned agencies including State Government to address the issue at the earliest. Taking into account all the above impacts that has adversely affected the coastal stretch and the riverine area, its hydrodynamics including the socio-economics of the fishing community of the Sishithlu Village, the CoFM has adopted the village and shall carry out detailed studies through its staff and students so that a report could be prepared and submitted to the State Government including concerned agencies for the purpose of mitigating the impacts.



Students Paintings

**World Environment Day, Date: 05.06.2019:** The CoFM last year 2017-2018 participated actively in the World Environment Day on “Beat Plastic Pollution” theme declared by United Nations. The activities undertaken on the said theme by the college were widely appreciated not only nationally but also internationally. Similarly this year 2019-20 has been declared by UN to “Combat Air Pollution”. In this regard awareness programmes were undertaken which included plantation of trees in the college campus by various staffs and students, painting & slogan writing by the students, guest lecturers from the experts. Steps have been taken to ban burning of wastes and plant materials in the campus, install water conservation measures in the hostels and campus. Banning of single use plastic and make the campus plastic free. Use of mass transport and banning of motor cycles in the campus by students. Further the college has embarked upon use of electronic version for official and academics purpose rather than the paper. Proposals are being prepared for solar electrification of the campus, usage of sewage treated water for farming in the KVK land and aquaculture. Installation of gober gas plant to provide fuel to hostels. The cow dung from the dairy, hostel wastes and other organic waste will be used for generating fuel gas. Water auditing is being done in the college.

**Hundreds of fish found dead in rivulet (Deccan Herald, 25th June, 2019):** Following the death of scores of fish in Kamini rivulet at Hejamadi Muttalive



Mass mortality in river

area, scientists from CoFM, visited the spot and collected the samples of fish and water from the estuary. After detailed assessment of the water and sediment quality in the Department of Aquatic Health Management, it was concluded that the fish kill was due to oxygen depletion. Further high quantities of fecal coliforms were present to indicate that there was sewage contamination. The CoFM also suggested removing the sand bar in the river mouth to facilitate free flow of river water so that there is no stagnation and also to reconstruct the existing hume discharge pipeline. The above



report of CoFM was widely published in various print media. Read more at: <http://bit.ly/2Jr3PFB>

## Activities

A Whale shark was reported beached along the Surathkal beach on 29.06.2019. State Forest Department, Government of Karnataka assigned the College of Fisheries, Mangaluru to study the animal and provide the post mortem report (The Hindu, Times of India, Indian Express, Prajavani, Udayavani - 30.06.2019).

Details of the Whale Shark and the process adopted by College of Fisheries is detailed below.

### Conservation and management of the whale shark:

The fish species was identified as *Rhincodon typus*. This species has been added to the Schedule 1 of India's Wild Life (Protection) Act, 1972 in May 2001, thereby according it the highest level of protection in the country. The Whale Shark also receives international protection due to its inclusion in the Appendix II of the Convention in International Trade in Endangered Species of Fauna and Flora (CITES). However, critical information are needed to improve the conservation and management of the whale shark, such as biological characteristics, ecology, behaviour, accurate population sizes, migratory routes etc.

Whale shark (*Rhincodon typus*) is a gigantic, harmless and the largest known fish found in open waters of the tropical oceans worldwide. Whale sharks are the only species of the Genus *Rhincodon* classified within the order *Orectolobiformes*. The whale shark is a slow swimmer with an average speed of only around 5km/hour (3.1 mph).

### Physiology of the whale shark:

The skin of whale sharks is relatively thin, a couple of millimetres, and is covered in tiny teeth-like scales called denticles, which provide a tough, hydrodynamic surface layer. Below the skin is a layer of fatty tissue that can be 10-15 cm thick and is probably important for insulating the shark's muscles and vital organs.

**Distribution:** The fish is primarily pelagic, living in the open sea but not in the greater depths of the ocean, although it is known to occasionally dive to depths of as much as 1,800m (5,900 ft). Distributed along Kerala, Lakshadweep, Gulf of Kutch and Saurashtra coast of Gujarat. Although typically seen off shore, it has been found closer to land, entering lagoons or coral atolls, and near the mouths of estuaries and rivers. Its range is generally restricted to about 30° latitude or lower.

**Feeding:** The whale shark is a filter feeder; it feeds on plankton, including phytoplankton and zooplankton such as krill, as well as small nektonic life, such as small squid or vertebrates. The many rows of teeth play no role in feeding; in fact, they are reduced in size in the whale shark. Instead, the shark sucks in a mouthful of water, closes its mouth and expels the water through its gills. During the slight delay between closing the mouth and opening the gill flaps, plankton is trapped against the dermal denticles that line its gill plates and pharynx. This fine sieve-like apparatus, which is a unique modification of the gill rakers, prevents the passage of anything but fluid out through the gills (anything above 2 to 3 mm in diameter is trapped).

**Reproduction:** Whale sharks are Ovoviviparous (Ovoviviparous animals develop within eggs that remain within the mother's body until they hatch or are about to hatch). The males can be distinguished from their female counterparts by the presence of two claspers near the pelvic fin. Male whale sharks do not usually mature before they reach a length of around 8-9m.

### The Post mortem Report:

A Whale Shark washed ashore at Surathkal beach Mangaluru on 29th June 2019 was brought to the CoFM by Karnataka Forest Department by crane. Detailed study of all parts of the animal was carried out and it was observed that: a) The length of the animal was 5.9m and weighing around 1.2 tons. b) The age of the animal was around 5 to 6 years. c) The study of the reproductive organs revealed that



Crane bringing the fish to college

the fish was male as it has claspers in the exterior and well developed testis. d) The gut content primarily consisted of large amount of sand and shells. From the texture of the sand, it is possible that the animal has gulped the sand from the water along the shores of Surathkal, Karnataka. e) The stomach also contained small amount of semi-digested matter mainly composing of various species of planktons. These semi-digested matters are stored for further studies to ascertain the possible migratory route of the animal. f) The organs / tissues like liver, pancreas, heart, gills, gall bladder, fins, reproductive organs, etc., were weighed; their length measured and stored in refrigerated condition in cold storage at -30° for further studies. No internal injuries were observed.



Gut content analysis



Beached whale shark



Organ removal

Based on the above observations it is concluded that the animal which was starving due to lack of food had strayed from its migratory route and had deviated from deeper waters to shallow coastal waters of Karnataka. On account of prevailing monsoonal conditions along the Karnataka coast the animal must have got entangled in the rough sea conditions as it is a poor swimmer. The strong currents and wave actions must have pushed the tired starved fish towards the coast which is rocky in nature. The animal probably got hit by the boulders and rocky platform along the Surathkal beach which has led to profuse bleeding from the mouth and external injuries observed on the body. Finally the animal has got beached along the shore. Read more here <http://bit.ly/2xmDh8j>

## Fisheries Research/Publications

1. Malathi Shekar and Venugopal M.N. (2019). Identification and characterization of novel double zinc finger encoded by putative proteins in genome of white spot syndrome virus. *Archives of Virology* 164:961-969.
2. Moumita M., Shankar K.M, Abhiman P.B., (2019). Development of a sandwich vertical flow immunogold assay for rapid detection of oxytetracycline residue in fish tissues. *Food Chemistry*, 270 :585-592.
3. Pallavi Baliga, Malathi Shekar, Shaik Thahur Ahamed and M. N. Venugopal., (2019). Antibiotic resistance pattern and its correlation to the presence of tdh gene and CRISPR-Cas system in *Vibrio parahaemolyticus* strains isolated from seafood. *Indian Journal of Fisheries*, 66: 100-108.
4. Thimmaiah M., Rajashekar K Patil, Gopal M, Ajay S Khandagale, Somashekarappa, H.M., Ananda D. and Chandrashekar G. (2019). Cytotoxicity based screening for radioprotective properties of methanolic extract of *Tragia involucrate* on cultured human peripheral lymphocytes exposed to gamma radiation. *Indian Journal of Experimental Biology*, 57: 469-477.
5. Rakesh K., Ganapathi Naik M, Nevil Pinto, Padala Manjulesh Pai and Anjusha K.V. (2019). A review on drugs used in shrimp aquaculture. *International Journal of Applied Bioscience*. 6: 77-86.
6. Pallavi Baliga, Malathi Shekar and M.N. Venugopal. (2019). Investigation of direct repeats, spacers and proteins associated with clustered regularly interspaced short palindromic repeat (CRISPR) system of *Vibrio parahaemolyticus*. *Molecular Genetics and Genomics* 294:253-262.
7. Mamun M. A. A., Nasren S., Srinivasa K. H., Rathore S. S., Abhiman P. B and K. Rakesh., (2019). Heavy infection of *Ichthyophthirius multifiliis* in striped catfish (*Pangasianodon hypophthalmus*, Sauvage 1878) and its treatment trial by different therapeutic agents in a control environment. *Journal of Applied Aquaculture*, <https://doi.org/10.1080/10454438.2019.1610541>.

## Upcoming Conferences/Events

1. International conference on "Aquatic resources and Blue economy 2019", organized by Kerala University of Fisheries and Ocean studies 28<sup>th</sup>-30<sup>th</sup> November, Kochi, India
2. First international conference on "Sustainable Fisheries" (ICSF 2019) Sylhet Agricultural University, Bangladesh. 25-27 August, 2019
3. 13th world congress on Aquaculture and fisheries, October 28-29, 2019, Tokyo Japan
4. 10th International conference on Fisheries, and Aquaculture September 27-28, 2019, Ontario, Canada
5. Golden Jubilee Celebration, December 2019, College of Fisheries, Mangaluru, India

## Staff and Student News

Dr. H. R.V. Reddy superannuated from the KVAFSU as a Registrar KVAFSU, Bidar. He was formerly a student of CoFM and joined as Professor and Head in the Department of Aquatic Environment Management in CoFM. He served and contributed for 35 years.

College of Fisheries wish him a happy retired life!



## Fun Facts

Starfish or sea stars are star-shaped echinoderms belonging to the class Asterozoa. Common usage frequently finds these names being also applied to ophiuroids, which are correctly referred to as brittle stars or basket stars.

### Did you know that a Starfish



- Have no brain and no blood. ...
- They can be really heavy. ...
- They have a lot of birthdays! ...
- A Starfish is not a fish. ...
- There are around 2,000 species of sea star. ...
- They usually have five arms. ...
- They cannot survive in fresh water. ...
- They can regenerate.
- They eat inside out.



The largest known starfish, the sunflower star (*Pycnopodia helianthoides*), manages to break several records. It is the largest sea star in terms of arm span, reaching nearly 40 inches from arm tip to arm tip, and is also the heaviest, weighing in at up to 11 pounds. It also has the most arms of any known species.

## Dean's Desk



It is a great pleasure that various faculties of the CoFM have been able to put together some of the major activities undertaken during this quarter ending on June 2019. This is the first edition of the newsletter. I congratulate the "Flying Fish" team consisting of Dr. Malathi Shekar, Mrs. Vandana K., Dr. Abhiman B., Mr. Darren D' Mello, Ms. Swathi in making this possible. The next edition for the subsequent quarter shall carry some more interesting facts and activities undertaken in CoFM.

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](http://www.cofm.edu.in)  
Suggestions and feedback to  
[newsletter@cofm.edu.in](mailto: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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