



CHALLENGER

NEWSLETTER OF
KERALA UNIVERSITY OF FISHERIES & OCEAN STUDIES (KUFOS)

June 2019

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06

International
Centre for Mangroves
coming up
at Puduveyypu in Kochi



04
KUFOS
Budget



09



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"Wetlands
are not wastelands"
Dr E J James



Newly elected /
nominated
members of
KUFOS
Governing
Council



Dr.S.Sureshkumar
(Director, School of
Ocean Science & Technology)
**Representative of
School Directors**



Dr.Abhiliash Sasidharan
(Asst Prof – Dept of Fish Processing
Technology)
Representative of Faculty Members



Anurag T
(B F Sc 2017 Batch)
**Representative of
students**

Retired from KUFOS Service



Dr.V.M.Victor George,
Registrar
Retired on 23.04.2019



Sri.Thomas A.V.,
Office Superintendent (Hr.Gr.)
Retired on 30.04.2019

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Grievance Redressal Cell



A Grievance Redressal Cell (GRC) has constituted in Kerala University of Fisheries and Ocean studies (KUFOS) recently for redressing the student grievances. Dean Fisheries (Chairman), Director-SOST, Director-SOEUT, Director-SFE and Director –SME are the members of the Cell and the Director, Planning is assigned as the Nodal officer charge at University Level. A web page with the information to the students about Grievance Redressal Cell is also created in university official web portal under the Student corner section. The notice boards for ensuring publicity/awareness of the establishment of GRC is fixed near the office of the Vice Chancellor and in all schools

FROM THE DESK OF THE VICE CHANCELLOR



Prof (Dr) A. Ramachandran
Vice Chancellor

Fisheries sector in the country is now preparing for a cheerful leap with the Central Government's decision to constitute a separate ministry for animal husbandry, dairy and fisheries. India is the second-largest fish producing country, with total fish production of 12.60 million tonnes, and earned foreign exchange of Rs. 45,106.89 crore in 2017-18. This accounts for around 10 per cent of the total exports of the country and nearly 20 per cent of the agricultural exports. But till date, stakeholders of fisheries sector in the country, which contributes 1.1 per cent to GDP and 5.15 per cent to agricultural GDP felt difficulty in getting things done in the bigger Ministry of Agriculture where fisheries is of least priority. Currently, the sector is interlinked with various ministries such as environment, commerce etc as far as various project proposals are concerned. The setting up of a separate fisheries department is like a dream coming true for over 14.5 million fishermen and several thousand people engaged in the supply chain of fish products. After all, a Fisheries Mantralaya is a long pending demand of fishermen too as they face a host of issues, right from CRZ rules in the backwaters to selling of their catches.

An independent department for fisheries with a separate secretary at the helm of affairs is expected to rejuvenate the sector with more and more development projects getting cleared at faster rate. Hereafter one would also expect better budget allocation for new investments and establishment of infrastructure like cold chain facility in the supply chain of seafood products, etc.

The decision may usher in a blue revolution that will stimulate growth in the sector and improve the lives of the coastal and inland fishermen community. With marine, brackish water and freshwater resources, among others, and more than 10 per cent of the global biodiversity in terms of fish and shellfish species, the country has shown a continuous and sustained increment in fish production. The focus on inland fishing and blue economy will have a multiplier effect on the national economy and contribution to GDP. There should be participatory decision-making, especially with regard to implementation of policies and enforcement of rules by involving the various stakeholders of the sector including academic community. With the formation of the new ministry, we can foresee the commitment of the Government in unveiling a 2030 master plan to overtake China, enabling India to become World No.1 in aquaculture and fish production and in exports of seafood products.

India has huge potential to increase fish production from 2.02 million sq km of Exclusive Economic Zones, 1.91 lakh km of rivers and canals, 3.15 million hectares of reservoirs, and 1.24 million hectares of brackish water. This will enhance employment and the revenue of the country. I hope the setting up of a separate fisheries department at Centre will enhance the chances of achieving our target in fish production very soon. It also boost the efforts of implementing conservation protocols related to sea and seashores.

➤ KUFOS Budget

aims comprehensive development of fisheries sector, marked 71.99 crore for 2019-20



Vice Chancellor Dr A Ramachandran presenting the budget of the Kerala University of Fisheries and Ocean Studies (KUFOS) at the governing council meeting held at the main campus.

The general council meeting of the Kerala University of Fisheries and Ocean Studies (KUFOS) held on March 06, 2019 has approved a budget of Rs.71.99 crores for the fiscal year 2019-20.

Out of this, Rs.41 crores have been earmarked for project implementation and Rs.25.68 crores is meant for meeting other expenses. The University expects a financial aid of Rs.5.32 crores to come from other agencies, as part of implementation of schemes. Developments activities worth Rs.27.83 crores, which include Rs.15 crores as Rural Infrastructure Fund from NABARD, will be implemented next year. The University Vice Chancellor Dr A Ramachandran presented the budget at the council meeting held at the University campus.

The projects proposed are founded on the overall development of the fisheries sector. This include the Multi-Species Fish Hatchery at the Puduveypu campus of KUFOS and the Mangrove Information Centre aimed at the propagation of its ecological importance and conservation of the environmentally vibrant ecosystem.

An allocation of Rs.1.75 crores has been given for the KUFOS Directorate of Extension for disseminating the various activities, research findings and information to farmers. A budget that has focused its attention to the Fisheries Station campus in Puduveypu has earmarked an outlay of Rs.8 crores for the upgradation and overall development of the station. The

budgetary allocation for the sub centres of KUFOS in Kollam and Kannur is one crore rupees each.

An allocation of Rs.2 crores has been made for constructing a new academic block in the Western Campus in KUFOS and Rs.70 lakhs is earmarked for office automation. The total outlay for improvisation of facilities at the four Centres of Excellence functioning at the University is 5.72 crores. The budget allocation for setting up laboratories and purchasing equipment is 5 crores.

Aimed at disseminating the various achievements of KUFOS in fisheries research and the academic excellence of KUFOS and its various sub centres to the international scientific community and academicians, the University is organising an international aqua cultural conference at Kochi from November 28 to 30. An outlay of Rs. 25 Lakhs has been made for this in the budget.

KUFOS will host next years national conference of vice chancellors. KUFOS governing council members, Advocate Manu C Pulikkal, Dr M R Bhoodendranath, K K Raghuraj, Abraham John Tharakan, Dr Anu Gopinath, Dr K V Thomas, Dr A Gopalakrishnan, Dr P Indukala, Dr S M Rafi, Dr S Sureshkumar, Dr C D Sooryakala and Registrar Dr V M Victor George participated in the meeting.



➤ KUFOS researchers discover new Snakehead fish from Kerala : The fish that lies beneath

Probably one of the most amazing recent discoveries from the fish world, a research team consisting of Dr. Rajeev Raghavan, Assistant Professor at the Department of Fisheries Resource Management, Kerala University of Fisheries and Ocean Studies (KUFOS), and V.K. Anoop, Ph.D student under Dr. Rajeev Raghavan along with British scientists have found a mysterious new species of 'snakehead fish' lurking in the subterranean waters of Kerala. The scientific paper reporting this unusual finding was published in the leading international animal taxonomy journal *Zootaxa* published from Auckland. The bizarre fish has been scientifically named *Aenigmachanna gollum* (Gollum Snakehead- common name). The new fish is not only a new species, but also a remarkable new genus of the snakehead family channidae (which is currently represented by two other genera, *Channa* in Asia, and *Parachanna* in Africa). *Aenigmachanna gollum* also represents the first species of snakehead to be recorded from subterranean waters.

The Gollum Snakehead was discovered by pure chance in a rice-field not long after the catastrophic floods in Kerala in August 2018, and almost certainly not collected from its natural habitat. When local youngster and fish hobbyist, Ajeer, stumbled upon this interesting fish from his rice field near Vengara in Malappuram District of Kerala, little did he realize that the fish will become one of the most unusual species to be described from India in recent times.

Snakehead fishes (Varaal – in Malayalam) of the family Channidae are predatory freshwater fishes comprising 50 valid species, many of which are important food fishes. Some are also popular in the aquarium fish trade, and others have been introduced around the world with several species becoming highly invasive (especially in North

America). Although readily recognized as a member of the family Channidae, the new species, shows several morphological features that are highly unusual or even unique in comparison to its closest relatives. *Aenigmachanna gollum* also represents the first species of snakehead to be recorded from subterranean waters.

Normally, subterranean fishes show many unique characters which are interestingly absent in *Aenigmachanna*. This suggests two possibilities – either it represents a lineage that only recently began a subterranean lifestyle and still has maintained its surface-life features, or that it lives in a habitat in which regular excursions to the surface-water still occur. *“As the Gollum Snakehead was discovered by pure chance in a rice-field not long after the catastrophic floods in Kerala in August 2018, and almost certainly not collected from its natural habitat, we are unable to choose between these two options”*, said Dr Rajeev Raghavan, who led the study and wrote the paper describing this mystery fish.

“The fish had a strikingly distinct morphology from any other species found in India, and the fact that it represented a new species was evident from the moment I saw the specimens” said V.K. Anoop, a co-author on the paper.

Snakehead fishes are obligatory air-breathers and have a specialized, well vascularized suprabranchial organ and a highly modified vascular system which together makes these fishes less dependent on water. They live in oxygen-poor waters and can also survive out of water for several

hours. *“The Gollum snakehead is unable to remain in the water column and has either reduced or even lost its swim bladder, whereas all other snakehead fishes have a well-developed swim bladder, and as highly efficient predators easily maintain buoyancy in open water”* said Dr Ralf Britz, Scientist at the Natural History Museum, London, a global authority on snakehead fishes, and the lead author of the paper.

The subterranean aquifers and wells of Kerala are a global hotspot for unique species that are often anatomically so derived that their systematic relationships among higher level taxa is difficult to establish. This is the case with fishes of the endemic genera *Horaglanis* and *Kryptoglanis*. *“These organisms are no doubt very ancient lineages, separated from their putative closest relatives usually by tens of millions of years. Using advanced molecular tools, we are now almost close to solving their phylogenetic and biogeographic puzzles”*, said Neelesh Dahanukar of the Indian Institute of Science Education and Research (IISER), Pune, a collaborator on the study and a co-author of the paper.

Though Kerala is one of the best explored regions in India with regard to freshwater biodiversity, research on subterranean animals is still at its infancy, as several weird genera and species of fish and shrimps have been discovered from this State in the recent past, throwing more questions than answers on their evolution and biogeographic relationships. Ongoing research at the Kerala University of Fisheries and Ocean Studies, in collaboration with the Natural History Museum in London, and IISER Pune, is hopeful of solving some of these mysteries.

➤ AICTE recognition for KUFOS



The All India Council for Technical Education (AICTE) has recently given its recognition for the under graduate engineering course conducted by the Kerala University of Fisheries and Ocean Studies (KUFOS)

The AICTE approval has been given for the four-year B Tech (Food Technology) conducted by the School of Engineering and Underwater Technology of KUFOS. The AICTE has given permission to admit 60 students to the course, that was introduced in the academic year 2017-18.

KUFOS has been already given recognition by the Indian Council of Agriculture Research (ICAR) for its undergraduate course in Fisheries Science (BFSc)

The AICTE recognition to the B Tech - Food Technology course of KUFOS would be a shot in the arm for the marine fisheries and export industry of Kerala, KUFOS Vice Chancellor, Dr A Ramachandran said.

➤ International Centre for Mangroves coming up at Puduveypu in Kochi

The Fisheries Station of the Kerala University of Fisheries and Ocean Studies (KUFOS) at Puduveypu Kochi will be upgraded and made an International Study Centre for Mangroves. This was decided at the national conference of the fisheries and environment scientists and researchers held at the Fisheries Station on June 29, 2019.

The University Vice Chancellor Dr A Ramachandran inaugurated the conference attended by veterans in the field and scientists from KUFOS, the Central Ocean Study Centre, the Central Institute of Brackish Water Aquaculture and the Kerala Remote Sensing and Environment Centre, Thiruvananthapuram.

The Puduveypu station under KUFOS is a rare zone with virgin mangroves spread in about 50 acres and thickly populated with flora and fauna. The School of Fishery Environment of KUFOS is functioning at the Puduveypu station.

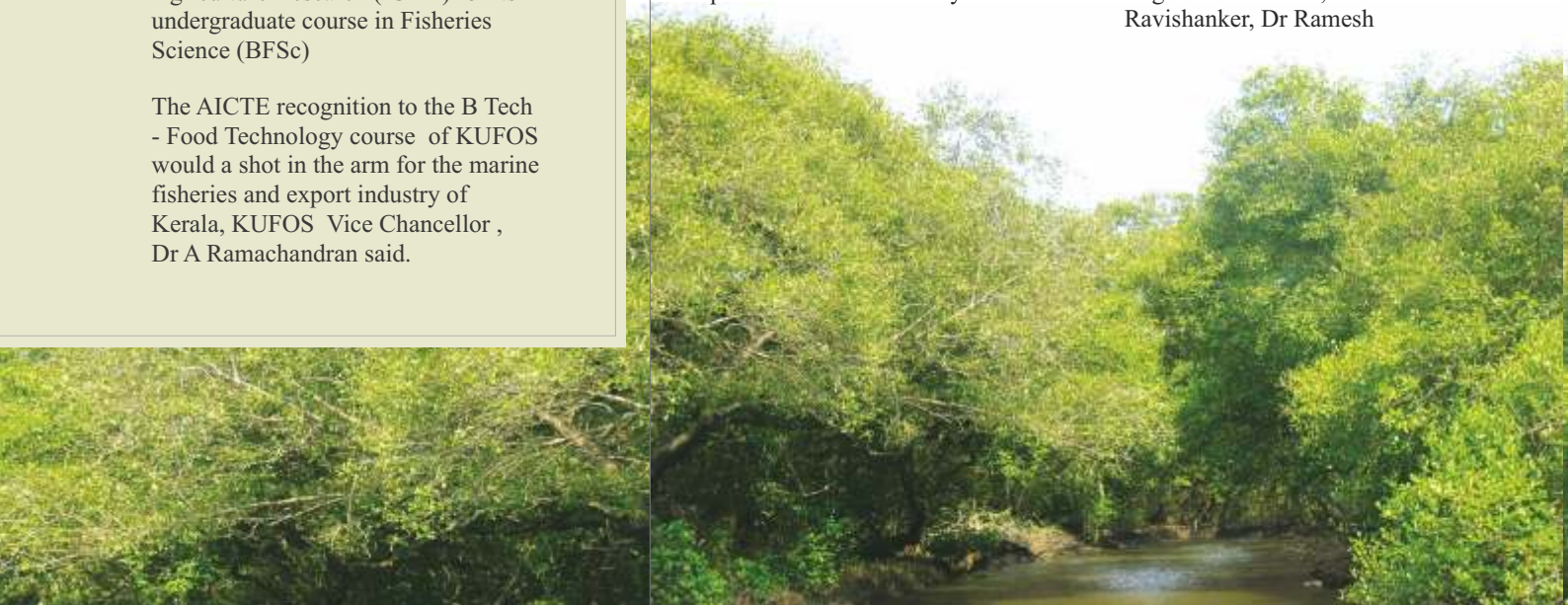
The zone is abundant with various species of virgin mangroves and is home for a diverse group of aquatic flora and fauna like fishes and crabs, birds, including migratory water birds from far off places. The natural ecosystem also

provides natural habitat of hundreds of species. Scientists from all over the world make it to Puduveypu to study and research on the various ecological aspects of this pristine and natural biological treasure.

It is based on these facts that the national conference of environment and fisheries scientists had moved a proposal to upgrade the place into an international study and research centre for mangroves. The proposal would be translated into a reality post the Governing Council of KUFOS approving it, the University Vice Chancellor Dr A Ramachandran said.

The project would be implemented without disturbing the existing ecological balance of the virgin mangrove forests or affecting the life and living environment of the people of the island, the Vice Chancellor assured. Apart from elevating the station as an education hub of mangroves and organic aquaculture, the proposal also moots to give thrust to environmental studies and reform the station into a tourism centre.

Noted Environmental Scientists Dr V N Naik, Dr Diva Ostin Stanley, Dr Reghunanda Menon, Dr C N Ravishanker, Dr Ramesh



➤ KUFOS tie-up with KSREC



The KUFOS Vice Chancellor Dr A Ramachandran inaugurating the national seminar of scientists and scholars at Puthuvyppe, which adopted a resolution to upgrade the area into an international hub of education on mangroves and aquaculture. The School of Fisheries Environment Director Dr Subash Chandran, Registrar-in-Charge Dr B Manoj Kumar, Governing Council member Prof K V Thomas, Finance Officer Joby George and Aquaculture wing head Dr K Dinesh looks on.

Ramachandran, Dr K Kathiresan and Dr AmbaShanker submitted expert opinions in the conference. The KUFOS Registrar-in-Charge Dr B Manoj Kumar, Finance Officer Joby George, Governing council members Prof K V Thomas and K Reghuraj, Fisheries Dean Dr Riji John, School of Fishery Environment Director Dr SubhashChandran, Director of School of Ocean Science and Technology Dr.S.Sureshkumar and Aquaculture department head Dr K Dinesh were also participated in the conference.



The KSREC Director Dr K P Reghunanda Menon and KUFOS Registrar Dr V M Victor George exchanging the MoU signed on cooperation in research and education between the two institutions, in the presence of the University Vice Chancellor Dr A Ramachandran. KUFOS Finance Officer Joby George, Director of Research Dr T V Sankar, Dean Dr K V Thomas, the KSREC Senior Scientists Dr Suresh Francis and Dr N C Anil Kumar, KUFOS Engineer Jayakrishnan P S, University Professors Dr V N Sanjeevan, Dr M S Raju and Dr Sreenivasa Gopal looks on.

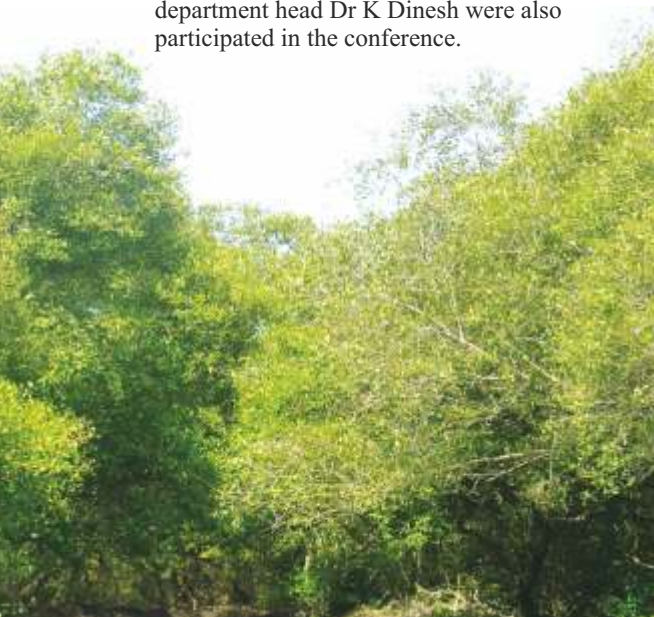
The Kerala University of Fisheries and Ocean Studies (KUFOS) has tied up with Kerala State Remote Sensing and Environment Centre (KSREC), Thiruvananthapuram for cooperating in educational research, skill training and knowledge dissemination between the two institutions.

The KUFOS Registrar Dr V M Victor George and the KSREC Director Dr K P Reghunanda Menon signed a Memorandum of Understanding (MoU) on March 23, 2019 in this regard at a function presided over by the University Vice Chancellor Dr A Ramachandran.

As per the MoU, the KSREC will make available data and research inputs related to remote sensing and Geographical Information System (GIS) for the students and research fellows of KUFOS and the University will recognise KSREC as an approved research centre. This will enable the scientists of KSREC to work as research guides and visiting faculty in KUFOS.

Speaking at the MoU signing ceremony, the Vice Chancellor Dr Ramachandran hoped that the cooperation between the two will ease the investigation of encroachment of the water bodies and water resources in the State. The remote sensing facilities will enable scrutiny of the extend of illegal encroachments and report to authorities concerned, he said. The tie-up will give a boost to the ongoing efforts by KUFOS in finding out the encroachments in Vembanadlake, the Vice Chancellor added.

The KSREC Senior Scientists Dr Suresh Francis and Dr N C Anil Kumar, KUFOS Finance Officer Joby George, Director of Research Dr T V Sankar, Dean Dr K V Thomas and Eminence Professor Dr K Gopakumar were among those who were present at the MoU signing function.





The Indian Sea Food Export Association Kerala Region President Mr.AlexNinan, the COOP CEO Mr. Philip Wyss and KUFOS Registrar in-charge Mr.Jobey George P are exchanging draft joint agreement for large scale prawn production in Kerala waters, in the presence of Vice Chancellor Dr.A.Ramachandran at KUFOS head quarters. COOP Food Division Manger Mr.ThomasSommer and India Country Manager Ms.DeepaNewar and KUFOS Director of Research Dr.T.V.Sankar are also seen in the picture.

➤ KUFOS join hands with Swiss giant COOP for organic prawn production

Considering the soaring demand for Indian prawns in European food market, the Kerala University of Fisheries and Ocean Studies (KUFOS), Swiss based co-operative organic food giant COOP and the Indian Sea Food Exporters Association have reached a tri-party understanding for large scale farming of Black Tiger Prawns in Kerala waters. A three member COOP delegation team with CEO Mr. Philip Wyss, Food Division Manger Mr.Thomas Sommer and India Country Manager Ms. Deepa Newar have visited KUFOS head quarters on April 29,2019 and discussed and finalized the large scale prawn farming proposal. Vice Chancellor Dr.A.Ramachandran, Registrar In-charge Mr.Jobey George, Director of Research Dr.T.V.Sankar and Fisheries Dean Dr.K.Riji John

have attended the discussion from KUFOS which was represented by Mr.Alex Ninan on behalf of India Sea Food Exporters Association. “We have finalized the road map for large scale organic production of Black Tiger Prawns to export European market in the discussion and the Memorandum of Understanding (MoU) regarding this will be signed when the State Govt nod is received for the proposal” said the KUFOS Vice Chancellor.

The COOP Group is based in Switzerland and operates in the retail, wholesale and production sectors of food products across Europe. In total, the COOP has 2213 retail outlets in Switzerland alone and 124 cash and carry markets in other European countries. The cooperative giant has a

work force of around 80,000 with approximately 54,000 employees in Switzerland alone.

The Indian Sea Food Export Association, the third partner of joint venture, will identify the fish farmers to grow the Black Tiger Prawns in Kerala waters for the export, while KUFOS will extend technical knowhow to the selected farmers for scientific organic prawn farming and the COOP will financially support them by buying their product at a premium price. Post harvest, member companies of Indian Sea Food Export Association will procure the prawns and process it for export to COOP stores across Europe- is the gist of the tri-party understanding to be submitted to the State Govt for approval, said Dr.Ramachandran,

➤ Talk by Prof. Peter KL Ng of the National University of Singapore



Prof Peter K L Ng, Director of the Lee Kong Chian Museum of Biodiversity at the National University of Singapore delivered a talk on the 'importance of publications and citations in academia' for students and faculty of KUFOS, on March 11, 2019. Prof. Peter Ng is one of the world's eminent freshwater field biologist, and an

internationally recognized scientific authority on freshwater crab taxonomy and conservation. Prof. Ng's research interests encompass the systematics and ecology of crabs (Indo-West Pacific), larval development and ecology of crabs and crustaceans, and freshwater fish taxonomy and ecology (Southeast Asia). During his visit to KUFOS, Prof. Peter visited the laboratories at the School of Ocean Science and Technology and interacted with PhD students and researchers.



Visit by Erudite Scholar from National Museum, Wales

Internationally renowned malacologist Dr. Graham Oliver from the National Museum, Wales visited KUFOS and delivered a talk on 'planning and executing taxonomic research' on February 28, 2019 for the benefit of postgraduate and doctoral students of marine science and fisheries. His visit was part of his Erudite Scholar-in residence program with the School of Marine Sciences, Cochin University of Science and Technology. Around 150 students from KUFOS and neighbouring institutes participated. Dr. Olivier is an expert on taxonomy and functional morphology of bivalves of the British Isles, Red Sea, Arabian Sea and Western Indian Ocean.

“Antibiotic resistance is a major threat in India”



ReAct Asia Pacific Consultant Dr Philip Mathew speaking at a seminar on “antibiotic resistance - challenges faced by economically weaker countries” organised by the Kerala University of Fisheries and Ocean Studies (KUFOS) Students Union at the University campus.

The resistance by bacteria against the common antibiotic drugs is one of the major challenges that is being faced by developing countries like India, cautioned Dr Philip Mathew, Public Health Consultant of ReAct Asia Pacific. He was speaking at a seminar on “antibiotic resistance - challenges faced by economically weaker countries” held at Kerala University of Fisheries and Ocean Studies (KUFOS).

The unscientific use of the antibiotics has helped bacteria gain resistance against these antibiotic drugs and thus resulting in instances of diseases attaining chronic stages often ending up in deaths. This is a major challenge that is being faced by the health

professionals worldwide. Not only that this increases mortality rates but also escalate the cost of treatment multi-fold. A similar kind of a situation arises in animal husbandry as well as fisheries sectors also resulting in the depletion of production. This will reflect in the economy of that country. The evil effects of unscientific treatment of the nature would hamper the environment as in the case of humans and animals, Dr Philip Mathew pointed out.

ReAct is a global organization which propagate restrictive use of antibiotic and strict adherence of scientific use of the drug. Prof Devika Pillai and Emeritus Professor Dr K Gopakumar were present at the seminar organised by the KUFOS Students Union.



The KUFOS Vice Chancellor Dr A Ramachandran inaugurating the sapling planting drive alongside the National Highway by the University NSS unit, as part of the observance of the World Environment Day. Prof Dr M S Raju, Dr T V Sankar and Dr B Manoj Kumar also seen.

World Environment Day observed

The students of the Kerala University of Fisheries and Ocean Studies (KUFOS) celebrated the World Environment Day on June 5 by planting hundreds of tree saplings alongside the National Highway.

Organised by the National Service Scheme (NSS) volunteers of the University, the programme was inaugurated by the KUFOS Vice Chancellor Dr A Ramachandran by planting the first tree. While speaking on the occasion, Dr Ramachandran said that as per the latest survey, the average tree count is 25 per person in India. But this

is as much as 330 in Brazil. Dr Ramachandran pointed out “We need to plant crores of trees a day to match with our population and to achieve the target”,

The University Registrar-in-Charge Dr B Manoj Kumar presided over the inaugural function. Prof Dr M S Raju, Director of Research Dr T V Sankar were among those who participated.

Later, the students planted trees on both sides of the national highway from Madavana to Kumbalam under the leadership of the NSS Co-Ordinators Dr Binu Varghese and Dr Rajeesh Kumar.

▶ Workshop on Entrepreneurship Development (WED)



As a part of community development, Centre for Advanced Studies & Research in Entrepreneurship Development (CASRED), a center of Excellence started recently in KUFOS, organised a three day workshop on Entrepreneurship Development from 29th to 31st May 2019. This was basically an awareness programme to create and kindle entrepreneurial spirit in the community members and motivate and guide them to start their own business units.

Dr. Gopakumar, Professor of Eminence, inaugurated the workshop, who in his inaugural address highlighted the importance of entrepreneurs in our society, and the importance of marketing and the like. In his introductory address, Dr. L. Suresh Mallya, Professor Chair, briefed the various activities of CASRED such as setting up production lines for skill development, incubation centres and start-ups, organising awareness programmes and skill development programmes and the support offered for the development of entrepreneurs within our community.

There were three technical sessions on food processing and preservation, fish processing, and aquaculture by Dr. Maya Raman, Dr. Abhilash Sasidharan and Dr. Dinesh K, respectively. In these technical sessions, the speakers elaborated at length the different programmes and activities presently undertaken by KUFOS in these fields. The resource people gave an overview of the scope of businesses which can be launched by the participants.

Mr. Biju P Abraham, GM, District Industry Centre, in his address elaborated the type of support and assistance offered by them for setting up units themselves.

In order to share their unique experience and motivate successful entrepreneurs in related industries were invited to interact with the participants on second day. Mr. Mathew Joseph (Fresh to Home), and Mr. Ananthanarayanan and Mr. Krishna Das (Foodastha), narrated their adventurous journey towards establishing their business units and enriched the knowledge of our participants. Foodastha is offering all kind of consultancy and support services to the aspiring entrepreneurs for setting up their units and managing them successfully.

Dr. Lizy Bahnan, Professor (Retd.), KUFOS, explained the criticality of fish feeding and nutrition for maintaining healthy fish farming. Mr. Hari Krishnan, Project Officer, Kerala State Women Development Corporation, highlighted the different schemes offered to women and the support they offer to women entrepreneurs.

Mr. Balagopal Menon, Asst. Director, MSME Training Institute, offered guidance and support to new entrepreneurs to develop their project report, training programmes etc.

On the last and third day, experts from SBI Institute for Learning and Development, Mr. K. Lijas, Sr. Manager & Senior faculty, and Lt.Cdr. Sajith Kumar E V (Rtd.), Senior Consultant, KITCO, explained their different schemes and support to the participants for setting up their units. The participants visited KUFOS labs, fish farms, aquarium and museum, and the production line for bread and biscuit set up for skill development and observed the physical infrastructure and activities of the University. In the valedictory function, KUFOS Vice Chancellor, Dr. A. Ramachandran addressed participants and distributed certificates of participation.



▶ Ocean Modeling Workshop - OSIMOD 19

Ocean Society of India (OSI) and Kerala University of Fisheries and Ocean Studies (KUFOS) jointly organised a workshop on Ocean Modeling (OSIMOD 19) for Students and Research Scholars at KUFOS, Panangad, Kochi during 11-14 June 2019. The sole objective of it was to provide hands-on experience with two important contemporary ocean models, namely, Simulating Waves Nearshore (SWAN; an ocean wave model) and Regional Ocean Modeling System (ROMS; ocean circulation model) which are used for operational ocean forecasting purposes at many places over the globe. Two of the senior life members of OSI, Prof. Prasad K Bhaskaran and Prof. Arun Chakraborty, both from IIT, Kharagpur have demonstrated the two models to the participants of OSIMOD19. 33 PG students as well as research scholars from academic and R&D institutions have participated in the workshop, covering, KUFOS, Pondicherry University (Port Blair), CUSAT (Cochin), Goa University, Andhra University, NIT (Calicut), CMFRI (Kochi), NIO (Goa), NIO (Mumbai), NIO (Kochi), NERCI (Kochi), NRSC (Hyderabad), IOM (Chennai), NCSCM (Chennai) and SRMIST (Chennai).



The programme was inaugurated by Prof (Dr) A. Ramachandran, Vice-Chancellor, KUFOS. Dr M. Sudhakar, President, OSI presided over the function. Dr C.V.K. Prasada Rao, Prof. S. Suresh Kumar, Prof. Prasad K Bhaskaran and Dr C. Revichandran were spoke on the occasion.

One of the senior members of OSI, Shri S Ananthanarayanan, DS & Former Director, NPOL graced the valedictory function on 14 June 2019 and distributed the certificates and mementoes to the course participants. Dr C V K Prasada Rao, convener OSIMOD 19, Prof. K V Jayachandran, Vice-President, OSI, Dr C Revichandran, General Secretary, OSI, Prof. Arun Chakraborty, IIT, Kharagpur and Prof. S Suresh Kumar were also present during the valedictory. The feedback received from participants was quite encouraging and they wish to have more workshops of this nature in future also.



➤ International Day of Yoga



Kerala University of Fisheries and Ocean Studies (KUFOS) observed International Day of Yoga on 21st June 2019. United Nations General Assembly declared June 21st as Yoga Day in 2015. National Service Scheme (NSS) of KUFOS facilitated the programme with the assistance of Isha Foundation, Kochi. The Upa-Yoga was the theme selected for this year's yoga day. Seventy five students and five staff members participated in the 90 minute programme which began at 8 am. The

venue of the yoga practice was seminal hall in the main campus.

Upa-yoga consists of simple yogic practices which are fundamental and very powerful in nature. The practices include directional movement of arms, neck, Yoga Namaskar, NadiShuddhi, Nada Yoga, Yoga mudra and Namaskar. Yogaveer Dipu from Isha foundation led the session with the audiovisual support system. A simple 10-15 minutes daily practice session was demonstrated for the benefit of participants. The programme concluded at 9.30 am.

➤ Quality Upgradation Workshop

One day quality upgradation workshop was held in KUFOS for Faculty Members, Non Teaching Staff and Research Fellows on 11th March 2019 under the auspicious of Internal Quality Assurance Cell (IQAC). The workshop was led by Prof. Thomas Abraham, a well known resource person on the subject and former HOD of Lifelong Learning Department of Mahatma Gandhi University. While inaugurating the

workshop the Vice Chancellor Dr A Ramachandran pointed out that IQAC is significant in any institution, which is responsible for quality check and improvement. It is the prime responsibility of IQAC to initiate, plan and supervise various activities that are necessary to increase the quality of the education imparted by an institution. Dr.V.M. Victor George, Registrar presided over the inaugural session. Dr.T.V.Sankar, Director of Research welcomed the gathering and Dr.Susamma A.P, Director of Planning and Development proposed a vote of thanks. A total number of 25 persons were participated in the workshop including four School Directors, two non Teaching Staff and Librarian of the University.

▶ 'Wetlands are not wastelands' Dr E J James



Noted environmental scientist and former CWRDM Director Dr E J James inaugurating a two-day national seminar on "rivers and wetlands" in KUFOS. Faculty Members Dr Anu Gopinath and Dr K Ranjith, University Registrar Dr V M Victor George, Dean Dr M S Raju and the Director of Research Dr T V Sankar are also seen

Despite the central government had classified wetlands as wastelands, the environmental importance of these natural ecosystem is very high, said noted environmental scientist and former Director of the Centre for Water Resources Development and Management (CWRDM) Dr E J James.

In fact, these wetlands function as a place of purification process of the natural environment as being done by toilets for human beings. These water bodies are rich catchment area of carbon emission in the ecosystem, he said.

The wetlands play a very important role in the present era of climate change, which is happening in an alarming way, Dr James said. He was inaugurating a two-day national seminar on "rivers and wetlands" held under the auspices of the Kerala University of Fisheries and Ocean Studies (KUFOS)

The University Vice Chancellor Dr A Ramachandran presided over the function. Delivering his presidential address Dr Ramachandran said the apprehensive depletion of these wetlands in Kerala is a serious concern for the environment of Kerala. The studies reveal that the area of Vembanad lake had lost one-third of its area during the past century.

The University Registrar Dr V M Victor George, Director of Research Dr T V Sankar and Dean Dr M S Raju spoke on the occasion. Dr K Ranjith welcomed the gathering and Dr Anu Gopinath proposed a vote of thanks. Over a hundred of researchers from various universities and research institutions participated in the national seminar.

▶ Fishers given awareness on satellite based life saving and fishing applications



Kerala University of Fisheries and Ocean Studies (KUFOS), State Fisheries Department and International Women Seafarers Federation (IWSF) were jointly organised two one day awareness programmes for Fishers on 'Life and Livelihood Safety at Sea' at Munambam (Ernakulam) and Puthiyappa (Kozhikkode) fishing harbours on 29 and 30 March 2019 respectively. The programmes were organised with funding support of Indian National Centre for Ocean Information Services (INCOIS), Hyderabad.

Scientists and experts enlighten the Fishers about the modern avenues of satellite and remote sensing applications on fishing and life saving applications at sea. Dr. Raffi S.M, Principal Investigator of KUFOS- INCOIS research project and the Coordinator of the awareness programme explained the Potential Fishing Zone (PFZ) mapping technique developed by INCOIS incorporating the satellite data and images pertain to sea surface temperature (SST), Ocean Colour Monitoring (OCM) and other ocean parameters is a milestone achievement and boon for fishers. The awareness programme emphasised that these advancements would ultimately reduce the time and fuel cost to a greater extent; as the Fishers can avoid the unwanted wandering in sea in search of fish schools and fishing grounds; thus ease the fishing activities. This would be a benefit for Fishers who are presently facing severe economic doldrums due to minimal catch and soaring fuel price.

The real time information dissemination through internet based mobile applications about PFZ and Ocean State Forecast (OSF) such as tsunami/ cyclone prediction, forecast and warning, wind, wave and current direction and speed etc. would be of immense use for saving the valuable life and property of fishers, seafarers and coastal populace. The participants of the awareness programme were also explained about the GEMINI (Gagan Enabled Mariners Instrument for Navigation and Information), a recent initiative which is about to launch; jointly developed by Airport Authority of India (AAI) and INCOIS under the GAGAN programme (GPS Aided Geo Augmented Navigation). The advancement of this technology is that fishers can avail information pertain to Cyclone/tsunami, wind and wave alert etc. from the satellite (GSAT-8)

► Seminar on Cage Culture



directly; anywhere in the sea where internet is not available..

Captain Radhika Menon, the main resource person of the awareness programme, who was the first Indian Women Captain of Indian Merchant Navy and the founder of International Women Seafarers Federation (IWSF) narrated her experience on rescuing fishers in times of emergency. She has also explained 'the do's and don'ts' to be practiced in sea, avoiding the collision of shipping cargo vessels with fishing boats, distress alerts etc. Ms. Haritha K.K., Fishing mate of MV Prashikshani of Central Institute of Fisheries Nautical and Engineering Training (CIFNET) demonstrated about various life saving devices and international protocols and the code of conduct for rescue and distress. Over hundred Fishers were participated in both awareness programme.

The Kannur Centre of the Kerala University of Fisheries and Ocean Studies (KUFOS) in association with the Aquaculture Development Society, Payyannur had conducted a one-day seminar on cage culture on March 01, 2019

C Krishnan, MLA inaugurated the seminar held at Payyannur bank auditorium. KUFOS senate member Mrs K Vanaja was the chief guest of the seminar in which hundred selected farmers from Kasaragod, Kannur and Wayanad participated.

The possibilities and potentials of cage culture besides the advantages in doing it collectively were elaborated by scientists who addressed the gathering. B Manoj Kumar, Special Officer of the KUFOS Kannur Centre, was the moderator.

KUFOS Aquaculture Department Head Dr K Dinesh, Bobby Ignatius and Dinesh Babu, Principals of Central Fisheries Research Institute and K Purushothaman, a noted fish farmer in Payyannur handled training sessions and answered the queries of participants.



C Krishnan, MLA, inaugurating a seminar on "cage culture", held under the joint auspices of the Kannur centre of the Kerala University of Fisheries and Ocean Studies (KUFOS) and the Aquaculture Development Society in Payyannur. B Manoj Kumar, Special Officer of the KUFOS Kannur centre, Bobby Ignatius and Dinesh Babu, Principals of Central Fisheries Research Institute, KUFOS Aquaculture Department Head Dr K Dinesh and KUFOS Senate member K Vanaja are also seen.

► Asian Pacific Aquaculture Trade Show- 2019



Kerala University of Fisheries and Ocean Studies (KUFOS) has participated in the Fisheries Sector Trade Show held in Chennai during 19-21 June, conducted as part of the International Conference on Asian Pacific Aquaculture (APA2019) organized by World Aquaculture society-Asian Pacific Chapter in association with Tamilnadu Dr.J.Jayalalitha Fisheries University. Over 230 booths representing Indian and international companies had participated in the event. Hon'ble Governor of Tamilnadu Thiru. Banwarilal Purohit, who is also the

Chancellor of Dr.J.Jayalalitha Fisheries University inaugurated the conference & trade show. The trade show was organized everyday from 10am to 6pm during the conference dates. A stall of size 3m x 3m was allotted to KUFOS and it was arranged in a befitting manner. Brochures and leaflets depicting the activities and achievements of KUFOS in the field of teaching, research and extension were distributed to the delegates and dignitaries from various countries. In addition to these a video film of the same was also displayed.

► Kole Fish Count- 2019 records 82 species



The Kole Fish Count- 2019, organized by Kerala University of Fisheries and Ocean Studies (KUFOS) and Kerala Agricultural University (KAU) on February 01 and 02 in connection with World Wetland Day across the Kole wetlands of central Kerala, recorded 82 aquatic species. These include 71 fish species (18 species of brackish water fish and 53 species of freshwater fish), five shrimp species, four crab and two mollusc species.

The participatory assessment, in which scientists, students from the KUFOS,

KAU'S College of Forestry and Academy of Climate Change Education and Research and Members of the Kole Birders Collective participated, covered the entire expanse of Kole habitats distributed across Thrissur and Malappuram districts. Among the major Kole regions, Ponnani had a higher diversity than Thrissur. The survey revealed Maranchery in Ponnani Kole had the highest diversity (45 species) followed by Uppungal (also in Ponnani Kole) and Enamavu (Thrissur Kole) with 34 species each. With just 18 species, Adat (Thrissur Kole) recorded the lowest diversity.

Some of the most common species encountered during the survey include the orange chromide (known as *pallathi* in Malayalam), the dwarf pufferfish, Malabar leaf fish, and pearl spot or *karimeen*. However, the teams also came across six non-native fish species, raising concerns on the sustainability of the fishery and aquaculture practices being followed in the Kole and vicinity. The presence

of six species of non-native fish in the Kole is of significant concern as these have the potential to compete with, and outnumber native species, according to Rajeev Raghavan, assistant professor at KUFOS and the South Asia Coordinator of the IUCN's Freshwater Fish Specialist Group. "Particularly alarming is the frequent catches of the Amazonian sucker catfish from various parts of the Kole," he added.

The government needs to take immediate action to prevent illegal fishing practices carried out during the annual harvest of auctioned waterbodies that are part of the Kole wetlands, noted M. K. Sajeevan, Head, Department of Fisheries Resource Management, KUFOS, who led the survey.

In addition to aquatic biodiversity, the teams also collected samples to assess the health of the ecosystem through evaluation of key water quality parameters, results of which will be released soon.

► KUFOS observes National Science day in a different way



School Children are being trained in water quality test at KUFOS.

Teachers and Students of Kerala University of Fisheries and Ocean Studies (KUFOS) has observed this year's National Science Day (February 28) in a different way. The Soil and Water Analysis Lab of KUFOS is a State of the Art facility, so as to serve the public especially the aquaculture farmers to analyze the water quality of the samples required for field culture. In addition to this, the lab also gives training to young researchers as well as students on the important water quality analytical techniques viz. measurement of dissolved oxygen, pH, hardness, nutrients, trace metals etc. The lab is equipped with sophisticated instruments like ICP-OES for metal analyses, Total Organic carbon Analyser, UV Visible Spectrophotometer, Fluorescence spectrophotometer etc.

Considering the importance of the theme of the National Science Day 2019 - "Science for the People and the People

for Science." KUFOS had planned to utilize the water and soil lab facility in a novel way. A training programme for school children on various aspects of water quality analyses was organized at KUFOS Water and Soil and it was great success. Around 100 students from different schools across Kochi participated in the training programme and they were given field training in water sampling and later on in the lab for the analysis of water quality parameters like PH, salinity, hardness, alkalinity and ammonia. Since KUFOS has done a major work related to the water quality analysis of wells across the state immediately after the 2018 floods, our intention was to train these students with respect to the analysis of certain water quality parameters very essential in the routine monitoring of their drinking water resources.

➤ Ornamental Fish Culture training programme



Participants attend Skill Development session – construction of aquarium tanks

A Training programme on “Ornamental Fish Culture” was organized at KUFOS during March 5-9, 2019. The programme was inaugurated by Prof.(Dr.)A Ramachandran, Vice Chancellor of KUFOS. Scientists from KUFOS, experts from Department of Fisheries, Govt of Kerala and successful entrepreneurs in the ornamental fish culture industry were the resource persons for the training programme. The participants were engaged with practical sessions on various topics related to the industry viz. Ornamental fish culture - prospects and problems, aquarium plants, Live bearing fishes, Egg laying fishes, fish diseases and remedial measures, Live feed culture, preparation of artificial feed, construction and maintenance of aquarium, etc. Altogether fifty farmers from across the State attended the training programme.

➤ ACHIEVEMENTS



KUFOS Faculty receives UK-MASTS Visiting Fellowship

Dr. E.P.Preetham, Assistant Professor (Biochemistry), Kerala University of Fisheries and Ocean Studies has been awarded the Marine Alliance for Science and Technology Scotland (MASTS) Visiting Fellowship (2019). Availing the Fellowship, Dr. Preetham has worked in collaboration with the Scottish Fish Immunology Research Centre at the International Centre for Aquaculture Research & Development, University of Aberdeen, Scotland, to carry out and implement the project entitled “How to improve gill health in aquaculture” during May-June 2019.



KUFOS Researcher in Indian Arctic Expedition team

The first Indian Arctic Expedition for the year 2019 was held during 18 May -23 June 2019. There were seven researchers in the first batch of the expedition and Ms. Aswathy S, a Research Scholar (Marine Chemistry) from the School of Ocean Science and Technology, Kerala University of Fisheries and Ocean Studies was one among them. Her major study was on the sediment chemistry of various marine environments in the Arctic Region. The rest of the team members were specialists from various other fields such as Physical Oceanography, Biological Oceanography and Marine Microbiology. The team together did studies in the fjord systems of the Svalbard Archipelago. The main fjord site under study was the Kongsfjorden fjord system. Apart from the fjord, the researchers also conducted studies in various lakes and glaciers in and around the region of Ny-Alesund, Svalbard. This is the second time that Ms. Aswathy S was included in Indian Arctic Expedition team. Her debut visit to Arctic was in June 2018.



KUFOS Students attend Conference on Conservation Science at University of Cambridge

PhD students Unmesh Katwate and Arya Sidharthan, working under the supervision of Dr. Rajeev Raghavan at the School of Ocean Science and Technology, received invitation and travel grant from the University of Cambridge to participate and deliver oral presentations at the 20th Student Conference on Conservation Science (SCCS) held at the Department of Zoology, University of Cambridge, United Kingdom from 26th to 28th March 2019.



Unmesh Katwate has also received the prize for the second-best talk of the conference for his presentation on 'cryptic freshwater fish diversity of the Western Ghats Biodiversity Hotspot'.

Unmesh Katwate and Arya Sidharthan were also participated in a two-day short course on R Programming at the University of Cambridge, United Kingdom on 23rd and 24th March 2019.



KUFOS student made Visiting Research at the Natural History Museum, London

Unmesh Katwate, PhD student working under the supervision of Dr. Rajeev Raghavan at the School of Ocean Science and Technology has received a research grant from the Natural History Museum, London to visit and carry out collaborative research with Dr. Ralf Britz, Senior Scientist at the Fish Section of the Museum from 29th March to 28th April 2019. During his visit, Unmesh worked on the fish specimens collected from India by British naturalists in the 19th century, and received advanced training in fish anatomy, and in the procedures of vertebrate radiography and CT scanning.



KUFOS student attended SERB Workshop on Evolutionary Biology

V K Anoop, PhD student working under the supervision of Dr. Rajeev Raghavan at the School of Ocean Science and Technology was one of the 25 participants selected from various universities and research institutes across India to attend the 'First SERB Sponsored School in Evolutionary Biology' held at the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore from 12th to 26th March 2019.

LIST OF PUBLICATIONS



Environmental studies (2019) Anu Gopinath and Chandradasan for Semester V of Core Course in Chemistry of M G University Kottayam (Book) ISBN: 978-93-87015-85-2

Anand Jain , Kottekkatu P. Krishnan , Archana Singh, Femi Anna Thomas, Nazira Begum, Manish Tiwari , Bhaskar Parli Venkateswaran & Anu Gopinath (2019). Biochemical composition of particles shape particle-attached bacterial community structure in a high Arctic fjord". Ecological indicators, Volume 102, 581-592, Impact factor: 3.98.

Anu Joy ,Anoop P P, Rajesh R, Jose Mathew , Angel Mathew & Anu Gopinath (2019). Spatial Variation of Trace Element Concentration and Contamination Assessment in the Coral Reef Sediments of Lakshadweep Archipelago Indian Ocean". Accepted in Marine Pollution Bulletin September Issue Impact factor 3.782

Jennees Mathew, Aswathy Shaji, Anu Gopinath, K P Krishnan, Sanil Vadakkan L & Anoop PP (2019) Advances in Polar Science . A characteristic study of humic acids isolated from Arctic fjord sediments . Vol. 30 No. 1: 16-26 ,Impact factor: 0.38.

Princy Kaithavelikkakath Francis, Sreeja Sivasadan, Anna Avarachan & Anu Gopinath (2019). A novel green synthesis of gold nanoparticles using Seaweed Lobophoravariegata and its potential application in the reduction of nitrophenols. Particulate Science and Technology <https://doi.org/10.1080/02726351.2018.1547340>, Impact Factor: 1.081.

K.F Princy & Anu Gopinath (2019). Spectroscopic Investigation on the Catalytic Efficacy of Biofabricated Gold Nanoparticles using Marine Macroalgae. Material Today Proceedings Vol.9 Part 1, 38-45, Impact Factor : 0.837.

Jose Mathew, Anu Gopinath & G.D. Martin (2019) Spatial and Temporal distribution in the biochemical composition of sedimentary organic matter in a tropical estuary along the west coast of India Springer Nature Applied Sciences <http://doi.org/10.1007/s42452-018-018-2>.

Anu Joy, P.P. Anoop, R. Rajesh, Angel Mathew & Anu Gopinath (2019) Spatial Variability of biochemical Composition in Coral reef Sediments of Kavaratti and Pitti Islands Lakshadweep Archipelago, Indian Journal of Geo Marine Sciences 48 (3). 369-378, Impact factor: 0.289.

Anu Joy, P.P. Anoop, R. Rajesh, Angel Mathew & Anu Gopinath (2019) Spatial Variation of Phosphorus Fractionation in the Coral Reef Sediments of Lakshadweep Archipelago Indian Ocean. Chemistry and Ecology, Impact Factor: 0.71 (Accepted)

Liya V. Benjamin and Ranjeet K. (2019). Sub-lethal effects of potassium dichromate on hematological and histological parameters in climbing perch, *Anabas testudineus* (Anabantidae). International Journal of Aquatic Biology. 7(3): 140-145. doi: 10.22034/ijab.v7i3.604

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Raymond, A.J., Vinay, T.N., Raghavan R., Thomas, D., Avunje, S., Aravind, R., Shekhar, M.S & Vijayan, K.K. (2019). First record of the Javanese ricefish, *Oryzias javanicus* (Bleeker, 1854) (Belontiiformes: Adrianichthyidae) in the natural waters of India. Journal of Applied Ichthyology <https://doi.org/10.1111/jai.13933>

Verma C., Kumkar, P., Raghavan R., Katwate, U., Paingankar, M & Dahanukar, N. (2019). Glass in the water: molecular phylogenetics and evolution of Indian glassy perchlets (Teleostei: Ambassidae). Journal of Zoological Systematics and Evolutionary Research <https://doi.org/10.1111/jzs.12273>

Chandhini, S., Arjunan, V. M., Ali, P.H.A., Raghavan R., Pillai, D & Kumar, R. (2019). Complete mitogenome analysis of endangered Malabar mahseer (*Tor malabaricus*). Conservation Genetics Resources 11(2): 185–189.

Bijukumar, A., Raj, S., Arjun, C.P., Katwate, U & Raghavan R. (2019). Jurassic invaders: flood associated occurrence of *Arapaima* and Alligator gar in the rivers of Kerala. Current Science 116: 1628–1630.

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Britz, R., Anoop, V.K., Dahanukar, N & Raghavan R. (2019). *Aenigmachannagollum*, a new genus and species of subterranean snakehead fish (Teleostei: Channidae) from Kerala, India. Zootaxa 4603(2): 377–388.

Anju, C.V., Dahanukar, N., Sidharthan, A., Ranjeet, K & Raghavan R. (2019). Demographics of *Lagocephalus inermis* in the Arabian Sea unveils complex conservation challenges. Journal of Fish Biology 94(1): 187–190.

Everard, M., Pinder, A., Raghavan R. & Kataria, G. (2019) Are well-intended Buddhist practices an underappreciated threat to global aquatic biodiversity? Aquatic Conservation: Marine and Freshwater Ecosystems 29(1): 136–141.

Bower, S.D., Mahesh, N., Raghavan R., Danylchuk, A.J. & Cooke, S.J. (2019) Sub-lethal responses of mahseer (*Tor khudree*) to catch-and-release recreational angling. Fisheries Research 231: 231–237

PARTICIPATION OF KUFOS OFFICERS AND STUDENTS IN VARIOUS PROGRAMMES

Vice Chancellor Prof (Dr) A.Ramachandran attended the 1st meeting of State Level Academic Committee of Kerala State Higher Education Council at CUSAT on 8th March 2019.

Vice Chancellor Prof (Dr) A.Ramachandran attended Consultative workshop organized by Directorate of Fisheries for developing 10 -15 year strategic Master Plan for boosting up the Fisheries Sector held on 22.03.2019 at Thiruvananthapuram.

Vice Chancellor Prof (Dr) A.Ramachandran attended the Asia Pacific Aquaculture International Conference (APA - 2019) held at Chennai from 19-21st June, 2019.

As part of the outreach programmes, Faculty members of Aquaculture Department of KUFOS have participated in the student and teachers interactive session organized in association with Vidyodaya School, Thevakkal.

Dr.Susamma A.P, Director(Planning & Development) participated in the State Consultative meeting on Assessment and Accreditation, organized by the Kerala State Higher Education Council on 7th June 2019 at Thiruvananthapuram

Dr.Susamma A.P, Director (Planning & Development) participated discussion with Fisheries Minister & Pro Chancellor of KUFOS Mrs J. Mercykuttyamma on 14th June 2019 regarding budget allocation at Minister's Chamber, Thiruvananthapuram.

Dr. T.V.Sankar, Director of Research participated in the discussion along with Vice Chancellor, KUFOS for possible collaboration for student related project works and other scientific studies, with Superintending Engineer, Cochin Port Trust on 4th June 2019

Dr. T.V.Sankar, Director of Research invited to give a talk on "Safety aspects of fish and fishery products" as part of the NFDB sponsored 5-day training of trainers programme of the Microbiology, Fermentation and Biotechnology division of Central Institute of Fisheries Technology, Cochin on 14 June 2019.

Dr. T.V.Sankar, Director of Research, invited to Asian Pacific Aquaculture 2019, Chennai as Co-Chair for the thematic Session "Promotion and Consumption of Seafood" of the Major session Food Safety and Quality during 19-21 June 2019.

Dr. T.V.Sankar, Director of Research invited to participate in the workshop on the State Level Statistics on Kerala, organized by the Kerala State Planning Board during 2-3 July 2019.

Dr. Rajeev Raghavan, Assistant Professor, Department of FRM delivered a talk on 'How to publish your paper in top scientific journals' at the Workshop on Research Methods in Earth and Environmental Sciences at the Department of Environmental Sciences, University of Kerala, Thiruvananthapuram on 8th March 2019.

Dr. Rajeev Raghavan, Assistant Professor, Department of FRM delivered a talk on 'Challenges for freshwater biodiversity in a changing world' at the National Seminar on Biodiversity after the Deluge St. Thomas College, Thrissur on 22nd February 2019.

NEW APPOINTMENTS

Dr.K. Riji John

Dean, Fisheries



Dr. K.Riji John has completed his B F Sc from the College of Fisheries, Panangad and completed M.F.Sc from the University of Agricultural Sciences, Bangalore in 1988. He took his PhD from the Institute of Aquaculture, University of Stirling, UK in Fish Virology under Commonwealth Scholarship. He did a Postdoctoral assignment in Fish Biotechnology in the University of Maryland under FAO fellowship where he worked on reverse genetics. He has started his academic career in 1990 as Assistant Professor in the Fisheries College and Research Institute, Thoothukudi under the Tamil Nadu Veterinary and Animal Science University, which later on came under the Tamil Nadu Dr. J. Jayalalithaa Fisheries University (TNJFU). He has been actively involved in teaching, research and extension for the past 29 years and served as Professor in the Department of Aquaculture, Head, Department of Fish Pathology and Health Management and Chair, School of Aquaculture in the Tamil Nadu Dr J Jayalalithaa Fisheries University.

He has developed and established new fish cell lines from different tissues of freshwater and marine fishes and isolated and characterized new fish viruses such as *Latescalcarifer* nervous necrosis virus, koi ranavirus, similar damselfish virus and snakehead rhabdovirus. He has operated national and international collaborative research projects. Dr Riji John has served in different National and international bodies as Member of the Task Force of DBT, Govt. of India; President, Professional Fisheries Graduates Forum; Member of the Expert Group, Ministry of Agriculture, GOI; Observer, Executive Committee of the Fish Health Section, Asian Fisheries Society among others. He has also acted as Member of different University bodies such as Academic Council, Research Council, Extension Council, Board of Studies etc. He has research publications in national and international journals and has presented papers in national and international conferences. He has won awards such as Best Teacher, Best Researcher, Best Paper Awards and also travel grants. For academic and research purposes he has visited ten countries including France, The Philippines, Norway and China

Dr.Susamma A.P

Director, Planning & Development



Dr. Susamma A.P has over 33 years' experience in teaching Chemistry in various colleges under Collegiate Education, Government of Kerala. She had also functioned as an Administrator in education sector by serving as Principal of Government Colleges of Thrissur and Thrippunithura. Dr.Susamma had completed her M.Sc in Chemistry from S.B.College, Changanassery with Kerala University First Rank and Ph.D in Polymer Chemistry and Rubber Technology in 2003 from CUSAT. She further pursued six months post doctoral research in the Department of Chemical Engineering, Imperial College, London, UK in 2009 through the Commonwealth Academic Fellowship Programme. Dr.Susamma had ten international papers in her credit and is a recognized Research Guide in M.G.University, Kottayam. Presently three students are pursuing Ph.D under her guidance. She had also completed two major projects under KSCSTE and one minor project under UGC.

Dr. Radhika Rajashree S.R.

Professor, Department of Fish Processing Technology



Dr. Radhika Rajashree S.R. joined as Professor in Department of Fish Processing Technology of KUFOS in May 2019. She is a Masters in Industrial Fisheries and holds a PhD. in Marine Sciences both from the Cochin University of Science and Technology. Prior to joining with KUFOS, she headed the Centre for Ocean Research at Sathyabama Institute of Science and Technology, Chennai from 2006 to 2019. Her research interests focused on Marine biowaste utilization by nanotechnology approach

and isolation of marine bioactive compounds for therapeutic applications. She has completed 18 research projects funded by DBT, DST, MoES, ICAR, AERB, DAE, UGC and IFS. She has more than 63 peer reviewed articles in reputed international and national journals apart from several book chapters and conference proceedings. Dr Radhika has organized more than 25 sponsored workshops and symposiums, 26 in-house training programs and has filed 5 patents so far. Four students have completed PhD under her supervision. She has also mentored 3 UGC and DST-SERB Post Doctoral Fellows.

Dr Radhika designed, developed and implemented a course on Skill Development in Fishery Food Products Technology, under the sponsorship of DBT-HRD and the Food Industrial Capacity and Skill Initiative of the Ministry of Skill Development, Govt of India. She also served as Chief programme Coordinator of DST-Fund for Improvement of S&T Infrastructure, Technical Coordinator of Technology Business Incubator (Marine Bioresource Utilization) and Member Secretary - Institutional Biosafety Committee. She currently serves as Member, Planning Board, Tamil Nadu Dr J. Jayalalithaa Fisheries University and Member- Board of Studies (Marine Sciences) University of Madras. She is a recipient of DST Women Scientist Award and her other achievements include selection to Top 30 in the DST - Lockheed Martin Tata Innovation University Grant Challenge, 2017 and to DBT-ABLE India Top 20 Products, 2015



E.M.Afsal

Associate Professor
School of Management and Entrepreneurship

Dr.E.M.Afsal has obtained his MBA in Finance and Marketing with First Rank and PhD in Business Administration. He was the recipient of UGC JRF and SRF. Previously he was a Faculty at School of Management and Business Studies of Mahatma Gandhi University, Kottayam. He has got a total of fifteen years of experience in the industry, academic and research fields in India as well as abroad. His research interest includes derivatives, asset pricing modeling, economics, entrepreneurship and strategy. He is the recipient of awards for Best Doctoral Presentation (IIMB) and Best Empirical Paper (AIMS-NMIMS). He published in journals and presented in conferences of national and international stature. He organized various seminars, published book and edited a volume. He is on the editorial board of three major journals. His industry experience is in the domains of marketing, finance and ERP.



Dr. Maya Raman

Associate Professor (Meat and Fish Processing)
School of Ocean Science and Technology

Dr. Maya Raman earned her post-graduation and doctoral degree in Marine Science (Fish Biochemistry & Fish Processing Technology) from School of Industrial Fisheries, Cochin University of Science and Technology, Cochin. During this period, she also qualified NET for lectureship conducted by ASRB/ICAR. She was also awarded Young Student Speaker by IFCON2003. She began her career as faculty of Food Science and Technology at MACFAST. She also worked as Technologist and Research Officer at Koluthara Exports Ltd. And NGIL, Cochin, respectively. Soon after, she was awarded Erasmus Mundus Lot 15 Fellowship for her postdoctoral study at Applied Nutrition and Food Chemistry, Lund University, Sweden. Afterwards, she joined Department of Biotechnology, Indian Institute of Technology, Madras as Women Scientist with the project sanctioned under WOS-A scheme by DST. Following it, she continued her research career as Project Associate at IIT-M and as Project Scientist at Center of Excellence in Food Processing Technology, KUPOS.

She has several national and international publications, one book and few book chapters to her credit. Dr.Maya Raman is a life member of several recognized bodies including, SOFT(I), AFST(I), SASNET, etc. She is also recognized as research guide in Biochemistry (MG University) and have qualified HACCP certification programme. She has also filed a patent for the production of hydrogel for wound healing. Her research interests include understanding the marine bioactive molecules that may modulate cellular functions and gut metabolism, and improve health conditions including cancer, CVD, diabetes, inflammation, etc.



Dr. Girish Gopinath

Associate Professor (Remote and GIS)
School of Fishery Environment

After receiving M.Sc in Geology, M.Tech and Ph.D in Remote Sensing from CUSAT, Dr. Girish Gopinath had associated with CUSAT and Sultan Qaboos University, Sultanate of Oman as Faculty and Consultant. He has also gained good industrial exposure by working with Martin Middle East, Geotechnical Engineering and Marine Surveys Int. N.V (GEMS) and Geotechnical Survey Solutions (U.A.E). Post industrial stint, he has joined as a Scientist B with Centre for Water Resources and Development and Management (CWRDM), Kozikode, Kerala on September 2007 and relived on May 2019 as Senior Scientist to join with KUPOS. He is also serving as Reviewer/Editorial board member of many Journals and his current research interest is in Application of Geomatics for Natural Resource Management.



Dr. RAJESH.K

Asst Professor, School of Management and Entrepreneurship

Dr.Rajesh K has almost eighteen years of teaching and research experiences with different organizations such as St Aloysius College, Thrissur (2010-11 and 2012-19), Rubber Board, Kottayam (2011-12), ICFAI National College (2004-2009) and School of Industrial Fisheries of CUSAT (2000-2004).

He hailed from Chervathur, Kasargod district of Kerala. He has done his PG in Economics from the Central University of Hyderabad. He has qualified UGC/NET and done his Ph D from Cochin University of Science and Technology. There are as many as 13 scientific articles in various national and international journals to his credit. He has also authored 20 popular economics/management articles in various publications in Malayalam and in English. He has participated and presented as many as 13 papers in various national and international seminars. He was also served as a resource person at many seminars and symposiums held at various colleges in Kerala State and delivered special lectures.



Dr. Anoop K.K

Assistant Professor (Marketing)
School of Management and Entrepreneurship

Dr.Anoop K.K has previously held a teaching position at Amrita School of Arts and Sciences, Amrita Vishwa Vidyapeetham, Kochi. He graduated with a doctoral title in management from the M.G. University, Kottayam, Kerala. He holds a Master degree in Business Administration from M.G. University, Kottayam, Kerala and graduation in Bachelor of Business Administration from Calicut University, Kerala. He cleared UGC NET/JRF in management during the year 2011-12. He had produced two M.Phil. in the area of management.

Prior to joining as a full-time research scholar at the School of Management and Business Studies, he worked as an Analyst at Envestnet Asset Management India Pvt. Ltd. His research interests span the fields of marketing. His current research focuses on service quality, customer satisfaction, customer loyalty, adoption theories, technology adoption, and purchase intentions. He has published papers in different journals and books and some of them are listed in Scopus and UGC and also presented papers in various national and international conferences including IIM- Bangalore, IIM- Indore, IIM- Kozhikode, etc.



Dr. Shyni K

Assistant Professor
Dept of Fish Processing Technology

Dr. Shyni K has completed her B.F.Sc. from College of Fisheries, Kerala Agricultural University, Panangad; M.F.Sc in Fish Processing Technology from College of Fisheries, Junagadh Agricultural University, Veraval and Ph.D under the Faculty of Marine Sciences, School of Industrial Fisheries, Cochin University of Science and Technology. She has worked as a Senior Research Fellow at Central Institute of Fisheries Technology (CIFT), Cochin for 5 years and 5 months in three projects named "Isolation and characterization of collagen and gelatin from aquatic sources and development to pharmaceutical and food grade products of commercial importance" funded by DBT, "Extraction and purification of marine biomolecules and their derivatives for nutritional and industrial applications" funded by CMLRE and "Green Fishing Systems For Tropical Seas" funded by NASF-ICAR. She has published several publications in peer reviewed international journals and has got two awards for international paper presentations.



Dr. Jenny Ann John

Assistant Professor (Food Safety), School of Ocean Science and Technology

Dr. Jenny graduated with Masters in Food Technology from G.B. Pant Agricultural University, Pantnagar, Uttarakhand with ICAR-JRF scholarship. She has a P.G. Diploma in Food Analysis and Quality Assurance from Defence Food Research Laboratory (DFRL), Mysore. She completed her Ph.D. (Dairy Technology) from National Dairy Research Institute (NDRI), Karnal and thereafter worked for five years as a postdoctoral researcher at the Food Science section, Department of Biochemistry, Memorial University, Canada. During her postdoctoral research tenure in Canada, she has also supervised MSc and BSc (Hons) students in their research work. She has also worked as Assistant Professor (on contract) in the Department of Food Science and Technology, KUFOS, Panangad, for a period of two years. Her research interest includes extraction and analyses of bioactive compounds from different agricultural and food products. She has also worked on decontamination of pesticides from fruits and vegetables. Her research focus includes nutraceutical and functional foods.



Dr. Abish B:

Assistant Professor (Atmospheric Science)
School of Fishery Environment.

Abish B has a Doctorate in Atmospheric Science from Cochin University of Science and Technology (2011), with CSIR fellowship. The outcome of his research advances knowledge on the aerosol-cloud interactions and its influence on the atmospheric circulations, which is a

least explored facet over the location. During his M Tech dissertation at Space Physics Laboratory, (VSSC, Trivandrum), he was entrusted to associate with the ISRO-GBP land campaign, which was a major campaign conducted at the Indo-Gangetic Plain. After gaining experience in working in several projects at Centre for Earth Science Studies (CESS, Trivandrum) and National Aerospace Laboratories (NAL, Bangalore), he joined NERCI.

At NERCI, he was involved in the European commission funded INDO-MARECLIM project. His collaborative work with NERSC (Norway) and CMCC (Italy), highlighted the important role of recent warming of the Indian Ocean in weakening the Indian summer monsoon circulation. The major findings emanated from these research are published in reputed international journals. He is also the Principal Investigator of Dept. of Science and Technology (DST, Govt. of India) funded project that focuses on the recent changes in the Indian summer monsoon circulation due to the combined effect of Indian Ocean warming and atmospheric aerosols. His research interests include Aerosol-Cloud interactions, Indian summer monsoon, Indian Ocean warming



Dr. Shijo Joseph

Assistant Professor, (Remote Sensing and GIS)
School of Fishery Environment

Dr. Shijo Joseph has more than a decade experience in remote sensing, GIS, climate change, and tropical land cover dynamics. He worked as a Senior Scientist in Kerala Forest Research Institute prior to joining KUFOS. He authored more than 50 research articles in international and national journals, and holds editorial positions in PlosOne, and Climate Change and Environmental Sustainability. He is an Expert Member of the Technical Task Force on National Green House Gas Accounting of the Inter-governmental Panel on Climate Change (IPCC), and participated several meetings of the United Nations Framework Convention on Climate Change (UNFCCC).

Dr. Shijo Joseph has completed his academic education from Mahatma Gandhi University at Kottayam and trained in reputed national institutes like National Center for Earth Science Studies at Trivandrum; Wildlife Institute of India, Dehradun; National Remote Sensing Center, Hyderabad; ATREE, Bangalore; and international institutes in Indonesia, UK, Sweden, Poland and the Netherlands. He had received prestigious scholarships from European Union as well as from Cambridge University. He had traveled more than 30 countries and conducted carbon monitoring and climate change studies in Latin America, Africa, and Southeast Asia.



Dr. Nevin K G

Assistant Professor (Biochemistry)
School of Ocean Sciences and Technology

Dr. Nevin K.G has completed his M.Sc, M.Phil and Ph.D in Biochemistry from Department of Biochemistry, University of Kerala. He has worked as a post Doctoral fellow on the structural and functional properties of chondroitin sulphate proteoglycans and development of small molecules at the Graduate School of Life Sciences, Hokkaido University, Sapporo, Japan. After finishing his post doctoral studies, he joined as an Assistant Professor and Course co-ordinator at the Department of Biosciences, Sree Narayana Guru Institute of Science and Technology, North Paravur, Ernakulam and later moved to School of Biosciences, Mahatma Gandhi University, Kottayam as Assistant professor in DBT-BUILDER programme. He has completed several major research projects from KSCSTE, Kerala Biotechnology Commission and Coconut Development Board, Government of India. He has published several publications in peer reviewed international journals and is presently guiding 3 students for their Ph.D degree.



INTERNATIONAL CONFERENCE ON AQUATIC RESOURCES & BLUE ECONOMY 2019



Organised by
Kerala University of Fisheries & Ocean Studies

In association with
Major National and International Organizations

28th – 30th November 2019, Kochi, India

Theme of Conference: Aquatic resource Management/ Aquatic production systems/ Climate change impact on blue economy/ Ocean health and Global warming/ Ocean processes and environmental assessment / Aquatic Products and Technologies/ Marketing and trade / Legal regimes, Policies and Governance/ Education and Capacity building/ Nonliving resources

International Conference includes different sessions on topics of BE/ Special International Training Programme/ Expo in relevant theme/ Farmer's conclave and many more programmes

For General Information Contact: Organizing Secretary: +91 9446467185/ For Exhibition booking: +91 9446353013;

Conference website: **www.aquabe.in**

REGISTRATION FEE :

Important dates	National Students	National Participants (Scientists/Faculties/ Post-Doc/RA)	Overseas Students	Overseas Participants
Early bird (Till 15 th October 2019)	4000	8,000	US\$200	US\$300
Regular (After 15 th October 2019)	6000	10,000	US\$250	US\$350

DATES TO REMEMBER

Last date for registration and submission of abstracts :
15th September, 2019

Acceptance of abstracts : **30th September, 2019**

Last date for registration of participants : **15th October, 2019**

Last date for communication of acceptance of papers :
1st November, 2019

Conference dates : **28th – 30th November 2019**