



SDG 14. Life Below water

14.2 SUPPORTING AQUATIC ECOSYSTEMS THROUGH EDUCATION

14.2.2. SUSTAINABLE FISHERIES (COMMUNITY OUTREACH)



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आजादी का
अमृत महोत्सव

G20
भारत 2023

ICES CIEM

DEPARTMENT OF FISHERIES

Food and Agriculture Organization of the United Nations

ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB23)

Symposium on
Innovations in Fishing Technologies for Sustainable and Resilient Fisheries

13-17 February 2023 | Taj Gateway Hotel, Kochi, India



R PROGRAMMING FOR MARINE & FISHERY DATA MANAGEMENT

Emerging Applications in AI Based Tools

Organised by
DEPT. OF MARINE BIOLOGY, MICROBIOLOGY & BIOCHEMISTRY
SCHOOL OF MARINE SCIENCES
CUSAT, COCHIN

In association with
RASHTRIYA UCHCHATAR SHIKSHA ABHIYAN-RUSA 2.0

13-17 November, 2023

ORGANISING COMMITTEE

Patrons:
Prof. (Dr.) P. G. Sankaran
Vice-Chancellor, CUSAT
Prof. (Dr.) Manira V.
Registrar, CUSAT

Chief Coordinator:
Senior Prof. (Dr.) S. Bijoy Nandan
Dean, Faculty of Marine Sciences

Coordinators:
Senior Prof. (Dr.) A. A. Mohamed Hatha
Head, DMHS, CUSAT
Dr. Sweepia P. Antony
Asst. Professor, DMHS, CUSAT
Dr. K. B. Padmakumar
Asst. Professor, DMHS, CUSAT
Dr. Priyanka R.
Asst. Professor, DMHS, CUSAT
Dr. Sreelekshmi S., PhD, DMHS, CUSAT
Mr. Hari Prasad P., SRM, DMHS, CUSAT
Mr. Harsha Antony, JRF, DMHS, CUSAT

Members:
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Professor, DMHS, CUSAT
Dr. Venu S.
Asst. Professor, DMHS, CUSAT
Dr. Preetam Elumalai
Asst. Professor, DMHS, CUSAT
Dr. Lathika Geetha Thomas
Asst. Professor, DMHS, CUSAT
Dr. Chaitanya E. S.
Asst. Professor, DMHS, CUSAT
Mr. Justin M. S.
Ms. Noorjahan K. K.
Ms. Shahana Kabeer S.
Ms. Greta P. Pillai
Mr. Aravind S. H.
Mr. Deepak Sankar M.
Ms. Neethu K. V.
Ms. Sruthi Sathyan

Course Director:
Dr. K. Sathesh Kumar
Professor, Dept. of Future Studies
University of Kerala

Course Details:

- Introduction to R & Data types
- Data Visualization
- Basic Statistical Analysis
- Reporting & Advanced Topics
- Data Analysis using Python

Course Fee*

- Scientist/Faculty: Rs. 2500/-
- Post Docs/Research Scholars: Rs. 1500/-
- PhD Students: Rs. 1000/-

Important Dates

Registration Opens: October 10, 2023
Registration Closes: October 30, 2023

How to Apply

Interested candidates may submit their application through Google Form link given below. Number of participants will be limited to 50.

Venue:
School of Marine Sciences, CUSAT

For Correspondence:
Senior Prof. (Dr.) S. Bijoy Nandan
Chief Coordinator
Mob: +91 9440228861, +91 1022102844
email: sbjnyndan@cusat.ac.in
sbjnyndan@fishs.cusat.ac.in

Google Form Link:
<https://forms.gle/7n7Egkxwz7T7777777777>

SCHOOL OF INDUSTRIAL FISHERIES
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
IN ASSOCIATION WITH JAIN DEEMED TO BE UNIVERSITY & SCHOOL OF LEGAL STUDIES, CUSAT

Sponsored Workshop to Disseminate the Findings of Short-Term Empirical Collaborative Research Project

INAUGURATION VALEDICTORY ADDRESS

Prof (Dr) P G Sankaran
Vice Chancellor
CUSAT

Prof (Dr) J Letha
Pro-Vice Chancellor
JAIN Deemed to be University

KEYNOTE ADDRESS

Ameersha R S
State Programme Officer
Suchhiva Mission
LSGD

Sooraj Abraham
Founder Director
Plan2earth
NGO

EXPERIENCING UPCYCLING

The effectiveness of Swachh Bharath Abhiyan Schemes in Containing Plastic Pollution in the Backwaters of Kerala and the scope of Extending these Schemes to Control the Infestation by Water Weeds

PROJECT DIRECTORS

23 FEB 2024
10:00 AM - 4:00 PM

MEET CONFERENCE HALL
SEMINAR COMPLEX
CUSAT

Proposal for virtual fisheries academy

TIMES NEWS NETWORK

Kochi: A virtual marine fisheries academy which will cater to promoting doctoral and post-doctoral programmes among the Bay of Bengal rim countries could help in the betterment of the fisheries sector in the region.

INT'L FISHERIES MEET

This was one of the suggestions that came forth when experts from India, Bangladesh, Indonesia, Maldives, Malaysia, Myanmar, Sri Lanka and Thailand presented their views at a dialogue organized by the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) and the Centre for Humanitarian Dialogue (HD) during the global fisheries conference held in Kochi on Tuesday.

The view was put forth by Tamil Nadu Fisheries University VC G. Sumar. He said that the varsity could be a multi-country research project, and increased student exchange programmes could help fisheries in the region.

The region contributes about 21% of global seafood production and is known as the largest employment of small-scale fisheries. But a range of issues such as climate change, marine pollution, overfishing and oil spill are plaguing the fisheries sector of the Bay of Bengal rim countries, the dialogue observed.

"Lack of adequate scientific knowledge on the region is a concern, and India's intention is to support networking of scientific institutions between the member countries," said additional secretary, ministry of external affairs, Rudrendra Tandon.

Union fisheries secretary Jatindra Nath Swain said collaboration among littoral countries is vital for managing marine wealth and protecting the income of small-scale fishermen.



14.2.2. SUSTAINABLE FISHERIES

1. ICES/FAO WORKING GROUP ON FISHING TECHNOLOGY AND FISH BEHAVIOUR (WGFTFB23) AND SYMPOSIUM ON INNOVATIONS IN FISHING TECHNOLOGIES FOR SUSTAINABLE AND RESILIENT FISHERIES

The School of Industrial Fisheries, a reputed academic and research institution under Cochin University of Science and Technology; through its relentless effort, brings technological advancements in various disciplines of fisheries sector in the country. The innovative academic programs in fisheries disciplines conducted at School delivers higher education in fisheries disciplines and fulfils the requirement for addressing the emerging problems in fisheries sector of the country. CUSAT were one of the collaborators for the Programme held at Taj Gateway Hotel, Kochi, India 13-17 February 2023 and School of Industrial Fisheries actively participated and collaborated with this global event (ICES-FAO conference 2023) as a member of the organizing team from India. Delegates from over 30 countries, Chancellor's, Vice chancellors, Secretary level officials etc from universities, research institutions and ministries in the Bay of Bengal Rim countries participated in the symposium and in the side events during 13 to 17 February 2023. Functioned as the co-ordinator of one of the side event "Greening the fisheries sector and industrial innovations for the harvest sector" and also functioned as the co-ordinator of the International expo as part of this great FAO event lead by Dr. Krishnan, Director BOBP-IGO. Thanks to Top FAO, ICES, BOBP, NFDB, Govt of India officials and CIFE, CMFRI, CIFT Directors for the opportunity. Honble VC of CUSAT, Prof. K. N. Madhusoodanan was the chief guest of the concluding ceremony.



Fig. 14.2.8. Dr. Sabu S., Director School of Industrial Fisheries, CUSAT delivering the special address



Fig. 14.2.9. Former Vice Chancellor, CUSAT and Dr. Sabu S., Director School of Industrial Fisheries, CUSAT in front of the CUSAT stall at ICES/FAO symposium

Proposal for virtual fisheries academy

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TOI

A dialogue was held on the sidelines of the ongoing symposium on innovations in fishing technologies for sustainable and resilient fisheries in Kochi on Tuesday

Fig. 14.2.10 Newspaper Report on the Proposal for virtual fisheries academy by CUSAT



Food and Agriculture
Organization of the
United Nations

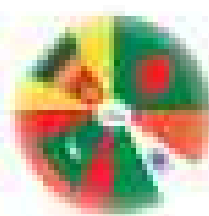
ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB23)

Symposium on
**Innovations in Fishing Technologies for
Sustainable and Resilient Fisheries**

13-17 February 2023 | Taj Gateway Hotel, Kochi, India



Organised by

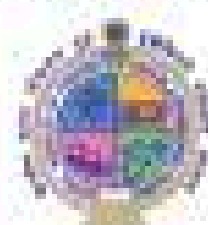


BIBP



National Fisheries
Development Board
Department of Fisheries
Government of India

In collaboration with



The world fisheries, as we know is facing various developmental and sustainability challenges. The issues in the marine fisheries sector range from depleted fish stocks, habitat destruction coupled with pollution and climate change, fish loss and wastage and other issues such as by-catch and ghost fishing. This calls for adopting sustainable practices including improved fishing and post-harvest techniques. The choice of technology that we make is very important as it may affect the ecological outcomes but also the social, economic outcomes and human well-being.

The small-scale fisheries in India in particular and the South and Southeast Asia in general, are mostly marginal and vulnerable. Their choice of technology or lack of it has led to the state of fisheries that we see today. The time to ponder and take action is NOW.

This International Symposium hopes to provide a platform for structuring actionable agenda, identifying research and capacity building needs and forging partnerships between and among researchers, academia, industry and the policy makers for a sustainable fisheries future.

Event Summary

	ICES / FAO WGTFB & International Symposium	Side Events Panel Discussions	Networking Opportunities	
	WATER FRONT HALL	ANCHOR HALL	MARINA HALL	BESIDES WATER FRONT HALL
13 Feb	Inauguration Plenum presentations: • Active gears Working Group Meeting		Bilateral Meetings	Waves of Art (BOBP Social Art Initiative) Participatory Sketching Event on Fishing Technology Industry Expo / Booths: Display of Products, Innovations and Programmes by Industry/ Institutes
14 Feb	Plenum Presentations: • Passive gears • Indicator • ALDFG	Development of a Marine Fisheries Research Network for BOB Region Artificial Reefs and Sea Ranching: Experience Sharing (Marina Hall)		
15 Feb	Plenum Presentations: • ALDFG • Behavior Topic Group Meetings 1-3 [1 - Water Front Main Hall, 2 Anchor Hall 1, 3 Anchor Hall 2]		Bilateral Meetings	
16 Feb	Plenum Presentations • Energy • General Field trip	Future Proofing the Small Scale Fisheries (SSF)	(For private network meetings among the participants)	
17 Feb	Plenum Presentation: • General • Gear Design Working Group Meeting Valedictory Session	Greening the Fisheries Sector in the Bay of Bengal Region Innovations and Solutions for Fish Harvest Sector		



ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB23)

and

Symposium on Innovations in Fishing Technologies for Sustainable and Resilient Fisheries

The 23rd meeting of the International Council for the Exploration of the Sea (ICES)-FAO Joint Working Group on Fishing Technology and Fish Behavior (ICES-FAO WGFTFB) is being organized alongside the International Symposium on Innovations in Fishing Technologies for Sustainable and Resilient Fisheries being hosted by Department of Fisheries, Government of India.

The primary objective of the ICES-FAO WGFTFB is the incorporation of fishing technology issues and expertise into management advice including, *inter alia*, the impacts of fishing on the environment (e.g. by-catch, unaccounted fishing mortality, habitat impacts, energy use, greenhouse gas emission).

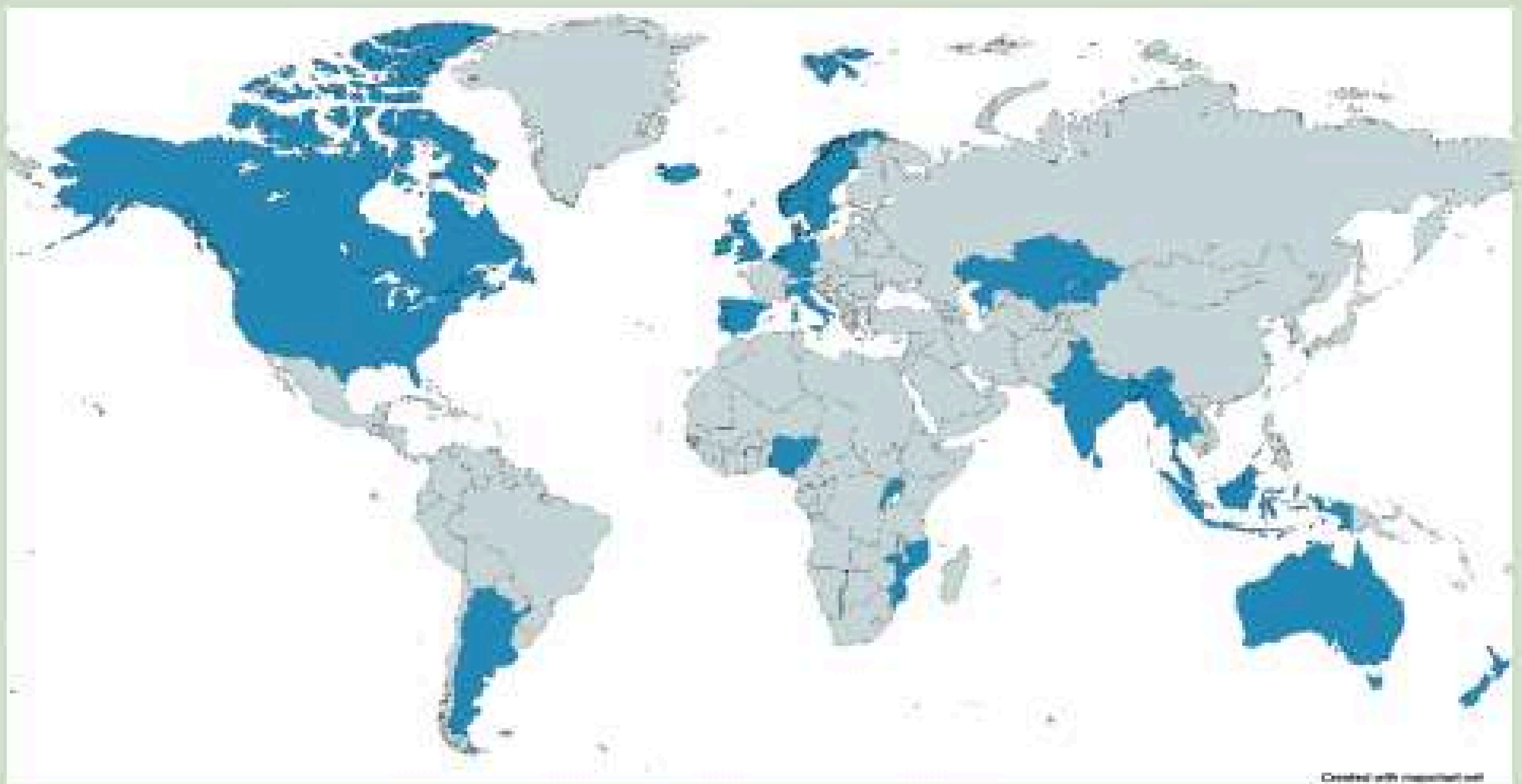
Objectives

The objectives of the International Symposium are to:

- Provide a forum for global synthesis of scientific knowledge;
- Identify appropriate technologies for a blue transformation of the SSF;
- Discuss and review innovations in various domains of fishing technologies; and
- Evaluate the options for optimizing energy use and reduce GHG emissions.

The participants include scientists, researchers, officials, policy makers, diplomats, industry, entrepreneurs, and students.

About 250 participants from about 30 countries are attending this event.



Geographical spread of the participants

Overall Programme for the WGFTFB / International Symposium

Date	Agenda*	Details
February 13, 2023	<p>Inauguration</p> <p>Plenum presentations: Active gears [12]</p> <p>WGFTFB Administration</p>	<p>Various aspects of trawl such as selectivity, gear modifications, by-catch and also on seine fisheries</p> <p>Working Group Meeting among the WGFTFB members</p>
February 14, 2023	<p>Plenum Presentations: Passive gear [18]</p> <p>Plenum presentations: Indicators [03]</p> <p>Plenum presentations: ALDFG (Ghost Gears) [07]</p>	<p>Catch efficiency, gear modifications, selectivity, and sustainability of fisheries by different passive gears.</p> <p>Trawl selectivity, predicting discard survival and addressing the by-catch issues in fisheries.</p> <p>Gear marking, Global and regional status of ALDFG, and gear modification to curb ghost fishing, etc.</p>
February 15, 2023	<p>Plenum presentations: ALDFG (Ghost Gears) (Continues)</p> <p>Plenum presentations: Behavior [02]</p> <p>Topic Group Meetings [16]</p>	<p>Gear marking, Global and regional status of ALDFG, and gear modification to curb ghost fishing, etc.</p> <p>Responses of fish during fishing.</p> <p>Discussion on PASSIVE GEARS; ALDFG; INDICATORS will be held in three breakout groups, with respective experts.</p>
February 16, 2023	<p>Plenum presentations: Energy [08]</p> <p>Plenum presentations: General [10]</p> <p>Field trips</p>	<p>Alternate technologies for energy conservation, reducing GHG emission, etc.</p> <p>Innovations and advancement in fishing technologies</p> <p>Options to visit Technology or Research Institutions, a processing plant, a city visit and a Backwater Boat trip.</p>
February 17, 2023	<p>Plenum Presentation: General (continues)</p> <p>Plenum Presentation: Gear Design [12]</p> <p>WGFTFB Administration</p> <p>Valedictory session</p>	<p>Innovations and advancement in fishing technologies</p> <p>Impact of fishing gears, experimental gear design, advancements in gear accessories, real time by-catch detection, etc.</p> <p>Working Group Meeting among the WGFTFB members</p>

*Numbers of presentations in parentheses

In addition, 50 posters will be displayed in two batches of 25 each in the Symposium Venue.

SIDE EVENTS

Parallel to the main presentations being held in **Marina Hall** during 13-17 Feb 2023, thematic discussions will be held in ANCHOR HALL on selected themes on the 14th, 16th & 17th Feb 2023.

HD-BOBP Dialogue on
**DEVELOPMENT OF A REGIONAL MARINE FISHERIES
RESEARCH PLATFORM FOR THE BAY OF BENGAL REGION**

14 February 2023
0900 - 1700

Brainstorming Session on
**STRATEGIES FOR DEPLOYING ARTIFICIAL REEFS AND
SEA RANCHING IN SOUTH ASIA: LEARNING FROM THE EXPERIENCES**

14 February 2023
1400 - 1700

Panel Discussion on
**FUTURE PROOFING SMALL SCALE FISHERIES (SSF):
INNOVATIONS IN FISHING TO ENHANCE
CONTRIBUTION OF SSF TO FOOD SECURITY**

16 February 2023
0900 - 1300

Panel Discussion on
**GREENING THE FISHERIES SECTOR IN
BAY OF BENGAL OPPORTUNITIES AND STRATEGIES**

17 February 2023
0900 - 1300

Industry - Stakeholder Interaction on
INNOVATIONS AND SOLUTIONS FOR FISH HARVEST SECTOR

17 February 2023
0900 - 1300

HD-BOBP Dialogue on Development of a Regional Marine Fisheries Research Platform for the Bay of Bengal Region

14 February 2023 | 0900 - 1700

Context

The key challenges of Bay of Bengal region include changing climate, marine pollution, overfishing and habitat degradation. The transboundary nature of these issues require countries in the region to come together and plan collaborative actions. Fisheries is a key sector in the national Blue Economy strategy of the rim countries. These issues and opportunities are gaining attention from the R&D institutions in the region, but a regional platform for marine scientific research is not in place.

The Event

The event will have coordinated country presentations from delegates from India, Bangladesh, Indonesia, Maldives, Malaysia, Myanmar, Sri Lanka, and Thailand.

The participants will deliberate on the following points: Need for collaboration, potential areas, potential institutes, and existing framework for facilitating collaboration and expected outcome and application.

There shall be a moderated group activity to elucidate opinions on the following points:

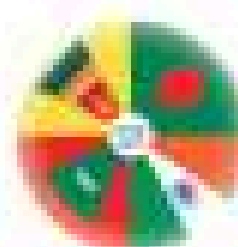
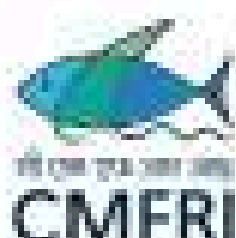
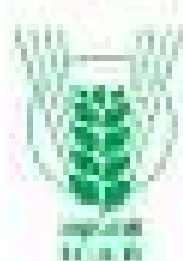
- Functional arrangement of networking platform - Potential organisational set-up for creating the platform (is it necessary to have a central coordinating body or can be a bilateral/multilateral arrangement between countries addressing common themes)
- Seeking government support-Likelihood of governments accepting and extending support to the platform and strategies thereof.
- Financial arrangements: Innovative models for operation.

Participants

The participants include academicians and scientists from more than 20 organizations from the BOB rim countries, apart from the mission heads and senior policy makers from the Governments of countries in South Asia.



2 SIDE EVENT



Brainstorming Session on Strategies for Deploying Artificial Reefs and Sea Ranching in South Asia: Learning from the Experiences

14 February 2023 | 1400 - 1700

Context

The increasing global concern over the threats to sustainable marine fisheries, actions towards mitigating the negative effects of natural and anthropogenic impacts on the coastal and marine ecosystems, are gaining momentum.

Artificial reefs (AR) are effective area-based conservation measures (OECMs) for in situ conservation of biodiversity, to promote habitat recovery and to enhance reef-dependent resources. Sea ranching involves introducing juveniles into the natural water body, where they are allowed to grow and harvested later possibly after maturity. It is a widely adopted practice in many countries, especially for conserving species such as salmon, sea cucumber, pearl oyster, blue crab and shrimps, many grouper species, flat fishes, sea bream, etc.

The Event

This side event is intended to discuss various dimensions and past experiences related to artificial reefs and their impact in the Indian context, emerging challenges and enabling policies that are necessary for further development in artificial reefs.

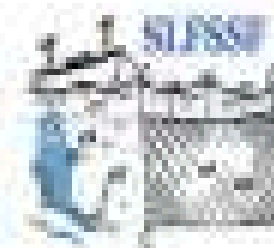
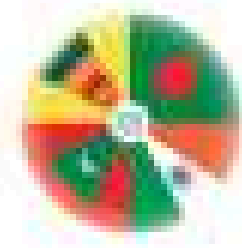
It will also deliberate upon suitable size of release, area specifications, species-specific favorable seasons, ranching techniques and economics of sea ranching so as to enable successful ranching programs in future.

Participants

The event hosted in hybrid mode will be attended by experts from reputed institutes in India, Greece, USA, Japan and France, apart from the researchers / policy makers from the BOB rim countries.



3 SIDE EVENT



Panel Discussion on **Future Proofing Small Scale Fisheries (SSF): Innovations in Fishing to Enhance Contribution of Ssf to Food Security**

16 February 2023 | 0900 - 1300



Context

Small-scale fisheries across the Bay of Bengal region are a major component of the region's food system.

A large part of the rural economy of the Bay depends on fisheries. However, the SSF in the Bay of Bengal is facing a number of issues of growing magnitude, including overfishing, climate change impacts, and a sluggish and scattered input and output market structure. Therefore, to retain fishers in the small scale fisheries and to sustain their contribution to the overall fishery, there is an urgent need to ensure enhanced organizational focus towards innovations with regard to craft and gear modifications; handling and post-harvest; safety of fishers and access to advanced communication and information technologies, with specific focus to the SSF.

The Event

The Event will bring together different organizations working on SSF to discuss and promote various innovations which can result in sustainable SSF.

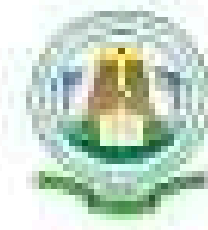
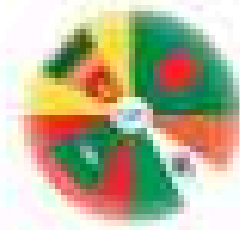
Speakers will share their experiences from the region on:

- Existing socio-economic and environmental challenges for the development of the SSF
- New innovations in the SSF sector (both marine and inland): Experiences from South Asia
- Developing and promoting strategies towards the application of innovative technologies
- Sea safety, social protection, onboard fish handling, engine optimization, etc.

Participants

The participants include ICES-FAO and regional experts, representatives from various industries, government, academia and research institutions.

4 SIDE EVENT



Panel Discussion on **Greening the Fisheries Sector in Bay of Bengal Opportunities and Strategies**

17 February 2023 | 0900 - 1300

Context

Carbon emission from the marine capture fisheries is increasing over time. With growing importance of value addition and better price realization, the environmental cost has increased following wider use of refrigeration and other freezing techniques. A holistic policy and management solution is required to address the problem, from a pure technology perspective and therefore the challenge is, what can be done to reduce carbon emission from the marine fisheries sector without adversely affecting the benefits.

The Event

The event aims to identify and promote opportunities to encourage green fishing in the Bay of Bengal Region. Expert speakers will share experiences on the research and development initiatives related to de-carbonization, innovations in engines, alternative energy, green fishing activities, and green infrastructure & technology.

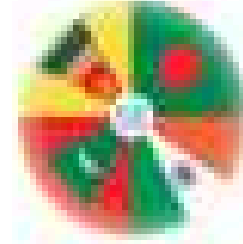
The deliberation will take stock of the energy efficient fishing practices in different countries and explore opportunities for collaboration among countries and stakeholders for development of green fishing technologies.

Participants

Senior officials from various countries, academia and research institutes from regional and international organizations will attend the event.



5 SIDE EVENT



Industry - Stakeholder Interaction on **Innovations and Solutions for Fish Harvest Sector**

17 February 2023 | 0900 - 1300

Context

The Industry Expo will showcase innovations and technologies in fish harvest sector. The booths in the expo will provide immense opportunity for industry stakeholders to display and exchange technological ideas to the prospective end users, industry stakeholders, experts in the field and senior officials from world over.

The Event

The broad objective of this session is to provide opportunities for showcasing emerging technologies from the global and Indian industry majors, exchanging ideas, and developing leads for academia-industry collaborations. It will include presentation on various topics such as:

- Innovations in fishing technologies
- Fisheries engineering
- Communication & Sea safety
- Digital Technologies

Participants

The participants would include ICES-FAO experts, representatives from various industries, government officials and research institutions.



Field trips

February 16, 2023 (2 pm – 6 pm)

Participants can select the package of their choice to visit

Option 1

ICAR-CIFT & Processing Plant



Central Institute of Fisheries technology (ICAR-CIFT) is the major national center in the country where research in all disciplines relating to fishing technology and fish processing is undertaken.

Kochi is one among the top five fish export centers in India. There are several state-of-the-art fish processing plants in Kochi. CIFT will coordinate a visit to one of the plants.

Option 2

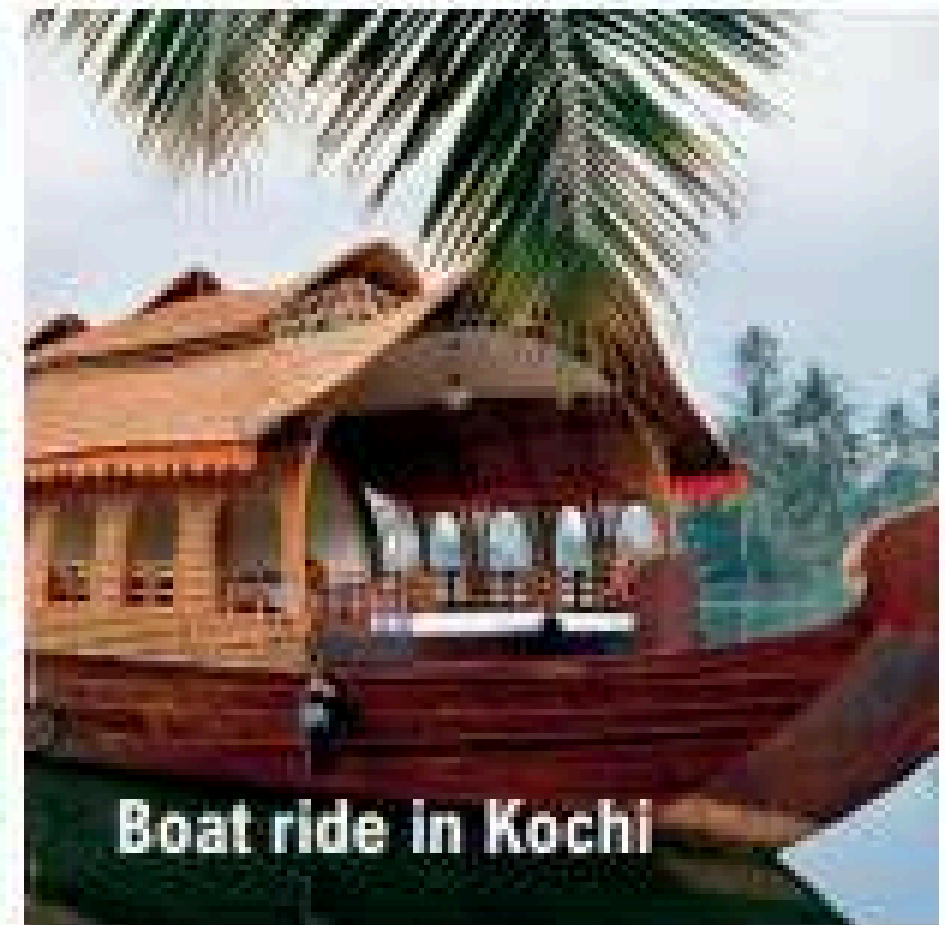
ICAR-CMFRI & City Ride



Central Institute of Marine Fisheries Institute (ICAR-CMFRI) is the leading tropical marine fisheries research institute in the region.

The Institute's multidisciplinary approach to research in marine capture and culture fisheries has won recognition as a premier institute comparable to any well-established marine laboratory in the world.

Option 3



Boat ride in Kochi

Kochi backwater tour will allow to enjoy unmatched beauty of nature, and enable one to get a glimpse of the busy city life.

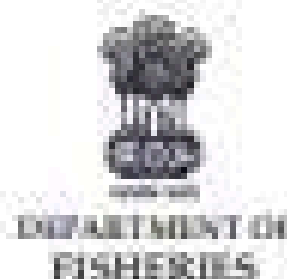
Kochi backwaters is blessed with rich aquatic life.

The point where Arabian Sea and Vembanad Lake meets is a splendid sight.



WAVES of Art...

As a part of the Social Art Initiative of BOBP-IGO, a special sketching event will be held during 13-14 Feb 2023 at the Venue, adjacent to the Marina Hall, wherein art enthusiasts and Symposium participants will get to sketch on the theme of fishing technology.



Food and Agriculture
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and

Symposium on Innovations in Fishing Technologies for Sustainable and Resilient Fisheries

13-17 February 2023 | Taj Gateway Hotel, Kochi, India

Symposium Organizing Committee

Chief Patron

Shri Jatindra Nath Swain, IAS

Secretary

Department of Fisheries, Govt. of India

Patrons

Dr. J. Balaji, IAS

Joint Secretary

Department of Fisheries, Govt. of India

Mr. Sagar Mehra

Joint Secretary

Department of Fisheries, Govt. of India

Dr. J.K. Jena

Deputy Director General (Fisheries)

Indian Council of Agricultural Research (ICAR)

Ministry of Agriculture and Farmers Welfare

Convener

Dr. A. Gopalakrishnan

Director, ICAR-CMFRI

Co-conveners

Dr. George Ninan

Director, ICAR-CIFT

Dr. Ravishankar C.N.

Vice-Chancellor, ICAR-CIFE

Dr. G. Sugumar

Vice-Chancellor, TNJFU

Dr. Rosalind George

Vice-Chancellor, KUFOS

Dr. R. Jeyabaskaran

Director General, FSI

Mr. A.K. Choudhury

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Dr. P. Krishnan

Director, BGSP-IGD, Chennai

Dr. L. Narasimha Murthy, ARS

Senior Executive Director, NFDB

Mr. Antony Xavier

Fisheries Development Commissioner

Department of Fisheries, Govt. of India

Working Group Chairs

Daniel Stepputtis

Scientist, Thünen Institute, Germany

Antonello Sala

Senior Fisheries Scientist

National Research Council, Italy

Jon Lansley

Fishery Industry Officer, FAO, Italy

Fig. 14.2.11. Brochure of ICES/FAO Working Group on Fishing Technology and Fish Behaviour (WGFTFB23) and Symposium on Innovations in Fishing Technologies for Sustainable and Resilient Fisheries

2. NATIONAL WORKSHOP ON “R PROGRAMMING FOR MARINE AND FISHERY DATA MANAGEMENT”

The Department of Marine Biology, Microbiology, and Biochemistry at CUSAT, in collaboration with RUSA, organized a five-day National Workshop on “R Programming for Marine and Fishery Data Management” from November 13-17, 2023. This workshop attracted 65 participants across India, including research scholars, students, postdoctoral fellows, scientists, and faculty members from various universities and colleges.

The workshop was led by two esteemed course directors: Dr. K. Satheesh Kumar, Professor, Department of Futures Studies, University of Kerala, and Dr. K. Asokan, Professor, Department of Mathematics, College of Engineering, Thiruvananthapuram. They guided the participants through the basics of R programming, focusing on applications relevant to marine and fisheries data management (Aquaculture). This hands-on training was well-received, equipping participants with essential skills in R software, valuable for data analysis in their research fields.

R PROGRAMMING FOR MARINE & FISHERY DATA MANAGEMENT
Emerging Applications in AI Based Tools

Organized by
DEPT. OF MARINE BIOLOGY, MICROBIOLOGY & BIOCHEMISTRY
SCHOOL OF MARINE SCIENCES
CUSAT, COCHIN

in association with
RASHTRIYA UCHCHATAR SHIKSHA ABHIYAN-RUSA 2.0

13-17 November, 2023

ORGANISING COMMITTEE
Patrons:
Prof. (Dr.) P. G. Sankaran
Hon. Vice-Chancellor, CUSAT
Prof. (Dr.) Meera V.
Registrar, CUSAT
Chief Coordinator
Senior Prof. (Dr.) S. Bijoy Nandan
Dean, Faculty of Marine Sciences
Coordinators
Senior Prof. (Dr.) A. A. Mohamed Hatha
Head, DMHB, CUSAT
Dr. Swapna P. Antony
Asst. Professor, DMHB, CUSAT
Dr. K. B. Padmakumar
Asst. Professor, DMHB, CUSAT
Dr. Priyaja P.
Asst. Professor, DMHB, CUSAT
Dr. Sreelekshmi S., PhD, DMHB, CUSAT
Mr. Hari Prasad P., BSc, DMHB, CUSAT
Mr. Nimesh Antony, BSc, DMHB, CUSAT
Members
Dr. Sajeevan T. P.
Professor, DMHB, CUSAT
Dr. Venu S.
Asst. Professor, DMHB, CUSAT
Dr. Preetham Elumalai
Asst. Professor, DMHB, CUSAT
Dr. Lathika Cicily Thomas
Asst. Professor, DMHB, CUSAT
Dr. Chaitanya E. R.
Asst. Professor, DMHB, CUSAT
Mr. Justin M. S.
Ms. Noorjahan K. K.
Ms. Shabana Kabbar S.
Ms. Greya S. Pillai
Mr. Aravind E. H.
Mr. Deepak Sankar N.
Ms. Neethu K. V.
Ms. Sruthy Sebastian

Course Director
Dr. K. Satheesh Kumar
Professor, Dept. of Future Studies
University of Kerala
Course Details
• Introduction to R & Data types
• Data Visualization
• Basic Statistical Analysis
• Reporting & Advanced Topics
• Data Analysis using Python
Course Fee*
• Scientist/Faculty
Rs. 2500/-
• Post Docs/Research Scholars
Rs. 1500/-
• PG Students
Rs. 1000/-
Important Dates
Registration Open: October 18, 2023
Registration Closes: October 30, 2023
How to Apply
Interested candidates may submit their application through Google Form link given below. Number of participants will be limited to 50.
Venue
School of Marine Sciences, CUSAT
For Correspondence
Senior Prof. (Dr.) S. Bijoy Nandan
Chief Coordinator
Mob: +91 9448023880, +91 7022190844
email: sbijoyndan@cusat.ac.in
sbijoyndan@ysbsoo.co.in
Google Form Link
<https://forms.gle/4Wqpmcaat1718aw4>

Fig. 14.2.12. Brochure of National workshop on R Programming for Marine and Fishery Data Management

3. Community outreach studies on sustainable fisheries

Sustainable fisheries (community outreach studies) Scientists from Dept. Marine Biology, Microbiology, and Biochemistry have discovered several new immune genes in Lates calcarifer (barramundi), a valuable species for aquaculture. These genes play a crucial role in the fish's defense against viral infections. When the fish encounters viral signals or the Red-spotted grouper nervous necrosis virus (RGNNV), these genes become highly active, helping to strengthen the fish's immune response and protect it from infection. Genetic analysis reveals that these immune genes are similar to those in other fish, highlighting a shared and essential part of fish immunity. This discovery offers valuable insights into fish viral defences and could advance fish health research, support sustainable aquaculture, and enhance food security. The outcome of these studies were published in International Journals.

1. Krishna Priya R.S, Avinash Premraj, Sajeevan T.P (2023). Characterization of two tripartite motif-containing Genes from Asian Seabass Lates calcarifer and their expression in response to virus infection and microbial molecular motifs. Journal of Aquatic Animal Health. 2023;35:169–186.

2. Krishna Priya R.S, Avinash Premraj, Mansi Chaudhary, Rajesh Ramachandran Sajeevan T.P (2023). Alternative splicing variants of stimulator of interferon genes (STING) from Asian seabass (Lates calcarifer) and their immune response against red spotted grouper



Fig. 14.2.13. A glimpse of the National workshop on R Programming for Marine and Fishery Data Management

4. WORKSHOP ON EFFECTIVENESS OF SWACHH BHARATH ABHIYAN SCHEMES IN CONTAINING PLASTIC POLLUTION IN THE BACKWATERS OF KERALA AND THE SCOPE OF EXTENDING THESE SCHEMES TO CONTROL THE INFESTATION BY WATERWEEDS

On October 11, 2023, a workshop was conducted at the Marine Sciences Auditorium, Lake Side Campus, CUSAT, to assess the effectiveness of the Swachh Bharath Abhiyan schemes in containing plastic pollution in the backwaters of Kerala, particularly in the Vembanad Kol Wetland region. The workshop aimed to explore the potential of extending these schemes to control the infestation of waterweeds in the same region. The event brought together stakeholders, experts, and policymakers to discuss these issues and seek solutions for a cleaner and healthier environment. This workshop serves as a convergence of expertise from diverse professional domains, united by the shared commitment to comprehensively assess the impact and efficacy of Swachh Bharat Abhiyan schemes concerning plastic pollution in Kerala's backwaters. Additionally, it seeks to explore the potential applicability and scalability of these schemes in addressing water weed infestations within the same ecological context. Thorough assessment of Swachh Bharat Abhiyan's impact on plastic pollution management. Exploration of how lessons from plastic pollution can address water weed infestations. Sharing and learning of successful environmental conservation strategies.



Fig. 14.2.14. Flyer of workshop on Effectiveness of Swachh Bharath Abhiyan Schemes in Containing Plastic Pollution in the Backwaters of Kerala and the Scope of Extending These Schemes to Control the Infestation by Waterweeds

PANELISTS		WORKSHOP SCHEDULE	
Ms. Ramani Ajayan President, Pallippuram Grama Panchayath	Ms. Indu C Nair Senior Health Inspector, Department of Health Services, GoK	TIME	
Mr. K.K. Manoj District Coordinator, Suchithwa Mission	Mr. Sooraj Abraham Founder Director, Plan @ Earth	10:00 AM - 10:05 AM	Prayer
Mr. A.R. Sivaji Chairman, Vembanadu Kayal Samrakshana Samithi		10:05 AM - 10:15 AM	Welcome Speech Dr. Ancy V.P Associate Professor, SIF, CUSAT
PATRONS		10:15 AM - 10:30 AM	Inaugural Speech Dr. Sabu S Director & Associate Professor, SIF, CUSAT
Prof. (Dr.) P.G. Sankaran Vice-chancellor, CUSAT	Dr. V. Meera Registrar, CUSAT	10:30 AM - 12: 30 PM	Round Table Discussion (Tea Break: 11:30 AM - 11: 40 AM) Moderator
Dr. Bijoy Nandan S Dean, Marine Sciences, CUSAT	Dr. S. Sabu Director, SIF, CUSAT	12: 30 PM - 12:45 PM	Q&A Session
COORDINATORS		12:45 PM - 12: 50 PM	Summary of the Discussion Dr. Sreejith S Asst. Professor, SLS, CUSAT
Dr. Ancy V.P. Associate Professor School of Industrial Fisheries, CUSAT	Dr. Hareesh N Ramanathan Associate Professor School of Industrial Fisheries, CUSAT	12:50 PM - 01:00 PM	Vote of Thanks Dr. Simmy Kurian Asso. Professor Jain Deemed-to-be University
Dr. Simmy Kurian Associate Professor Jain Deemed-to-be University	Dr. Sreejith S Assistant Professor School of Legal Studies, CUSAT	01:00 PM	Lunch
ADVISORY BOARD Dr. S. Sabu			
RESEARCH ASSOCIATE Mr. Muhammed Sajid Mob: +91 9645060757			

Fig. 14.2.15. Programme schedule of workshop on Effectiveness of Swachh Bharath Abhiyan Schemes in Containing Plastic Pollution in the Backwaters of Kerala and the Scope of Extending These Schemes to Control the Infestation by Waterweeds

5. WORKSHOP ON THE EFFECTIVENESS OF SWACHH BHARATH ABHIYAN SCHEMES IN CONTAINING PLASTIC POLLUTION IN THE BACKWATERS OF KERALA AND SCOPE OF EXTENDING THESE SCHEMES TO CONTROL THE INFESTATION BY WATERWEEDS

The workshop was funded by the Indian Council for Social Science Research (ICSSR) on “The effectiveness of Swachh Bharath Abhiyan Schemes in containing plastic pollution in the backwaters of Kerala and scope of extending these schemes to control the infestation by waterweeds” organized by School of Industrial Fisheries, CUSAT in association with Jain deemed to be University and School of Legal Studies, CUSAT commenced at 10:00 on 23rd of February 2024 with its inaugural ceremony. The workshop Presided with the presence of Professor Dr. P. G. Sankaran, Vice Chancellor of CUSAT, who served as the chief guest and inaugurated the ceremony. Among the distinguished attendees were Dr. S. Sabu, Director of the School of Industrial Fisheries CUSAT, Ameersha R. S., State Programme Officer of Suchithwa Mission, Dr. Sathikumar Professor at Jain Deemed-to-be University, The project directors Dr.Ancy V P Associate Professor SIF CUSAT, Dr.Hareesh Ramanathan Associate Professor SIF CUSAT and Director ,Office of International relations CUSAT, Dr Simmy Kurien Associate Professor Jain deemed to be University and Dr.Sreejith .S Associate Professor SLS CUSAT along with other esteemed participants from Suchithwa Mission, Harithakarma Sena, representatives of Planat earth, Presidents of several panchayats, researchers, students, and more. Tokens of appreciation were presented to the dignitaries in recognition of their presence and valuable contributions to the workshop. The workshop officially concluded with the rendition of the national anthem.



Fig. 14.2.16. Inauguration of the workshop

**SCHOOL OF INDUSTRIAL FISHERIES
COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY
IN ASSOCIATION WITH JAIN DEEMED TO BE UNIVERSITY & SCHOOL OF
LEGAL STUDIES, CUSAT**



Indian Council of
Social Science Research

**SPONSORED WORKSHOP TO DISSEMINATE
THE FINDINGS OF SHORT-TERM EMPIRICAL
COLLABORATIVE RESEARCH PROJECT**

INAUGURATION

**VALEDICTORY
ADDRESS**

Prof (Dr) P G Sankaran
Vice Chancellor
CUSAT



Prof (Dr) J Letha
Pro-Vice Chancellor
JAIN deemed to be
University

KEYNOTE ADDRESS

**EXPERIENCING
UPCYCLING**



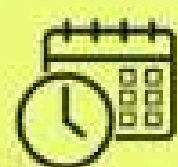
Ameersha R S
State Programme
Officer
Suchitwa Mission
LSGD

Sooraj Abraham
Founder Director
Plan@earth
NGO



**The effectiveness of Swachh Bharath Abhiyan Schemes in
Containing Plastic Pollution in the Backwaters of Kerala
and the scope of Extending these Schemes to Control the
Infestation by Water Weeds**

PROJECT DIRECTORS



23 FEB 2024
10:00 AM - 4:00 PM



Dr. Ancy V.P
Project Director
Associate Professor
School of Industrial
Fisheries, CUSAT



Dr. Harish N
Waterwallah
Co-Project Director
Associate Professor
School of Industrial
Fisheries, CUSAT



Dr. Sibmy Karian
Co-Project Director
Associate Professor
CET, Jain Deemed to
be University, BDCU



Dr. Sreejith S
Co-Project Director
Associate Professor
School of Legal
Studies, CUSAT



**MINI CONFERENCE HALL
SEMINAR COMPLEX
CUSAT**

Fig. 14.2.17. Brochure of the workshop