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# **Proceeding of National Seminar on Advances in Environment Management for Sustainable Fisheries & Livestock Production**

**18-19 November, 2024**



**Editors**  
V. P. Saini  
Chandrabhas  
Tapas Paul  
Mamta Singh  
Pushpa Kumari  
Ashutosh K. Singh  
Abhishek Thakur  
Rupam Samanta

**Organized by**

**Department of Aquatic Environment Management  
College of Fisheries, Kishanganj  
Bihar Animal Sciences University, Patna**

**Sponsored by**



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of  
National Seminar  
on  
Advances in Environment Management for Sustainable  
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## **Preface**

It is with immense pleasure and gratitude that we present this Proceedings of National Seminar on “Advances in Environment Management for Sustainable Fisheries and Livestock Production (AEMS-2024)” was being organized by the Department of Aquatic Environment Management, College of Fisheries, Kishanganj, BASU from 18-19<sup>th</sup> November, 2024. This seminar served as a platform for discussing crucial issues related to the advancement fisheries and livestock sector, with a particular focus on themes such as eco-friendly sustainable food production, environmental biotechnology, one health, biodiversity conservation through technological innovations and climate change in fisheries and livestock sector. Based on deliberations of renowned experts in different topics, major recommendations in each theme of seminar is prepared. The recommendations will be send to policy making bodies such as Department of Fisheries, Govt. of India, NFDB, DST-SERB, NABARD and Ministry of Fisheries and Animal Sciences, Govt. of Bihar. Based on the recommendations, CoF, Kishnaganj under BASU will thrive towards development of eco-friendly integrated sustainable fish and livestock production in Bihar Kosi basin. We extend our heartfelt gratitude to all the participants, organizers, and sponsors who have contributed their valuable insights, suggestions, and unwavering support in organizing this remarkable event.

**Editors**



## **Background**

Fisheries and Livestock sector are principal sources of livelihood for a large section of the economically underprivileged population of the country. These sectors have grown up tremendously since last decade and are supporting economic growth & prosperity of the country. However, with the increase in urbanization and population these sectors are facing new challenges including environmental aspects in terms of pollution, climate change, antimicrobial resistance etc. It is the need of the hour to focus on environmentally sound aquaculture and animal production system and study emerging environmental issues. The main aim of this seminar is to provide common national platform and conduct interactive sessions among the researchers on topic “Advances in Environment Management for Sustainable Fisheries and Livestock Production (AEMS-2024)” with themes focusing on environmental biotechnology, eco-friendly sustainable food production, one health, biodiversity conservation through technological innovations and climate change in fisheries and livestock sector.

## **About the Organizers**

### **College of Fisheries, Kishanganj**

The College of Fisheries, Kishanganj was incorporated in the Bihar Animal Sciences University Act as one of its constituent college. The Hon'ble Chief Minister of Bihar, Shri Nitish Kumar formally inaugurated and announced the start of first academic session of this college on 29<sup>th</sup> August, 2018. This college offers a credible fisheries education that nurtures the next-generation professionals and entrepreneurs in the fisheries sector and contributes to the state and nation by pursuing innovations and research relevant to local needs and directed towards maximizing outcomes for economic, social and environmental wellbeing. The College of Fisheries is committed to become a centre of excellence in Fisheries education in the region. Currently college offers four year B.F.Sc. degree program and two year M.F.Sc. degree in nine disciplines.

### **Department of Aquatic Environment Management**

Aquatic Environment Management Department of College of Fisheries, Kishanganj is actively engaged in UG and PG teaching, research and extension on various aspects of fisheries including water and soil quality management, emerging pollutants, groundwater contamination and aquatic biodiversity. The lab is equipped with state-of-art instruments such as Atomic Absorption Spectrometry (AAS), High-performance liquid chromatography (HPLC), UV-VIS Spectrophotometer, Flame Photometer, Multi-parameter water analyzer, BOD incubator, Refrigerated Centrifuge etc. Department have two ongoing institutional research projects and conducts need based externally funded trainings and workshops for fish farmers.

## **Major Seminar Sessions**

During the two days National Seminar, several sessions and programs were held which are as follows:

- Inaugural Function
- Dr. V R P Sinha Memorial lecture
- Dr. V G Jhingran Memorial Lecture
- Dr. P. V. Dehadrai Memorial Lecture
- Technical Sessions
- Satellite Sessions

- Theme wise Oral & poster presentations
- Exhibition
- Cultural Night
- Valedictory Function

### **Technical Sessions**

- **Eco-friendly Sustainable Fish and Livestock Production:** It covers topics such as integrated fish farming, species diversification, use of degraded lands, animal production, animal nutrition and waste to wealth.
- **Environmental Biotechnology in Fisheries & Veterinary Science:** It includes omics technology, genome editing, bioinformatics, selective breeding, microbial genetics marker assisted selection etc.
- **One Health for Ecosystem Wealth:** The sub-themes such as fish Health, antimicrobial resistance, veterinary drugs, parasitology, animal health, emerging pathogens, vaccine & biosecurity, pharmacology & therapeutics were covered.
- **Technological Innovations for Biodiversity Conservation:** It covers resource management, ecotoxicology, aquatic pollution, bioremediation, remote sensing & GIS.
- **Climate Change in Fisheries and Livestock System:** It includes topics such as Climate resilient system, Multi-sectoral Mitigation, Adaptation strategies, Carbon sequestration etc.

### **Satellite Sessions**

- **Women Scientist Oration Award Competition:** It aims to provide young women researchers to present their research outcomes. The competition will be held in two categories (Students & Faculty) based on Masters Research work.
- **Masters' Research Consortium:** Dr. V R P Sinha Gold Medal for Best Master's Thesis (National Level) was awarded to recognize the best M.F.Sc. research work in the field of Aquatic Science/ Fisheries for the year 2022, 2023 and 2024.
- **Best Indian Scientist Award Presentations:** It is aimed to recognize Scientists/ Professors for their outstanding contributions in the field of Fisheries. The awards were given in two separate categories: 36 to 45 years age (3 awards) and above 45 years age (3 awards) for the year 2022, 2023 and 2024.
- **IDEATHON-2024:** It is a national level competition aimed to provide an avenue to students for showcasing their innovative projects and ideas. This competition is focused on Mission LiFE and innovation ideas should be centered to solve the problems related to aquatic environment. Three students each under UG, PG and Ph.D category were awarded with Prof. H P C Shetty Gold Medal and Certificate.

**Minute To Minute Program**

| <b>Time</b>               | <b>Events</b>                       | <b>Venue</b>              |
|---------------------------|-------------------------------------|---------------------------|
| <b>Day 1 (18.11.2025)</b> |                                     |                           |
| 09.00 -10.00              | <i>Breakfast &amp; Registration</i> | Auditorium                |
| 10.00 - 11:30             | Inaugural Function                  | -Do-                      |
| 11:30 – 12:00             | <i>Hi Tea</i>                       | -Do-                      |
| 12:00 – 12.30             | Dr. V R P Sinha Memorial Lecture    | -Do-                      |
| 12:30 - 13:00             | Dr. V. G. Jhingran Memorial Lecture | -Do-                      |
| 13:00 – 14.00             | <i>Lunch</i>                        | -Do-                      |
| 14:00 - 15:30             | Women Scientist Oration Competition | Mahananda Conference Hall |
| 15:30 – 18.00             | Technical Session I                 | -Do-                      |
| 14:00 - 16:00             | Technical Session II                | Auditorium                |
| 16:00 - 18:00             | Technical Session III               | -Do-                      |
| 14:00 – 16:00             | IDEATHON-2024                       | -Do-                      |
| 16:00 - 18:00             | Poster Session of TS-I, II & III    | -Do-                      |
| 18:30 – 20:30             | <i>Cultural Night &amp; Dinner</i>  | Auditorium                |
| <b>Day 2 (19.11.2025)</b> |                                     |                           |
| 08.00 - 09.00             | <i>Breakfast</i>                    | Auditorium                |
| 09.00 - 11:00             | Technical Session IV                | -Do-                      |
| 09.00 - 11:00             | Technical Session V                 | Mahananda Conference Hall |
| 11:00 – 13.00             | Masters' Research Consortium        | COVAS Conference Hall     |
| 11:30 – 13.00             | Best Scientist Award Presentations  | Mahananda Conference Hall |
| 13.00 – 14.30             | <i>Lunch</i>                        | Auditorium                |
| 15.00 – 16.00             | Valedictory Function                | Auditorium                |
| 16.00 – 16.30             | <i>Hi Tea</i>                       | -Do-                      |
| 18.30 – 21.00             | <i>Cultural Night &amp; Dinner</i>  | -Do-                      |



**National Organizing Committee**

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Assistant Professor, AEM  
College of Fisheries, Kishanganj

### **Inaugural & valedictory Session**

National Seminar on “Advances in Environment Management for Sustainable Fisheries and Livestock Production (AEMS-2024)” organised by Department of Aquatic Environment Management, College of Fisheries, Kishanganj, BASU during 18-19<sup>th</sup> Nov, 2024. The Seminar was sponsored by NFDB, DST-SERB, NABARD and different private companies with participation of 250 delegates including scientist, professor, research scholars and students in the field of fisheries and veterinary science. During two days’ seminar several distinguished invited delegates delivered their talks on topics covering the themes such as Eco-friendly sustainable fish and livestock production, biotechnology in aquatic environment, one health for ecosystem wealth, resource management and climate change in fisheries and livestock sector. There were five satellite sessions on Women Scientist Oration competitions, Best Indian Scientist Award presentations, Dr. V R P Sinha Best Master’s thesis Award presentations and IDEATHON-2024. The inaugural ceremony was graced by Dr. Dilip Kumar, Former Director & VC, ICAR-CIFE as Chief Guest, Dr. D. R. Singh, Hon’ble VC, BASU as president, Dr. B. K. Das, Director, ICAR-CIFRI as Guest of Honour and Dr. B. P. Mohanty, Former ADG (Inland Fisheries), ICAR as Special Guest. The conference featured Dr. V R P Sinha Memorial lecture by Dr. Dilip Kumar, Former Director & VC, ICAR-CIFE, Dr. V G Jhingran Memorial Lecture by Dr. B. K. Das, Director, ICAR-CIFRI and Dr. P. V. Dehadrai Memorial Lecture by Dr. Shubhadeep Ghosh, ADG (Marine Fisheries), ICAR. The valedictory program was graced by Smt. Renu Devi, Hon’ble Minister, Animal and Fisheries Resources Dept. Govt. of Bihar as Chief Guest along with Dr. Veer Singh, DRI and Dean, PGS, BASU as president, Dr. Shubhadeep Ghosh, ADG (Marine Fisheries), ICAR, New Delhi as Guest of Honour, Dr. P.K. Pandey, Director, ICAR-DCFR as Special Guest. Dr. V. P. Saini, Dean, CoF, Kishanganj & Chairperson, AEMS, Dr. Chandrahas, Dean, CoVAS, Kishanganj & Co-Chairperson, Mr. Tapas Paul, Asst. Prof. & Head, Dept. of AEM, CoF & Convener, AEMS, Mr. Ashutosh Kumar Singh, Asst. Prof, Dept. of AEM, CoF & Organizing Secretary and Dr. Abhishek Thakur, Asst. Prof. & Head, Dept. of FPT, CoF & Co-Convener, AEMS also graced the stage. During the valedictory function, several national awards were conferred to recognize best researchers and young innovators in the field of fisheries and livestock sector. Dr. V. R. P Sinha Best Master’s Thesis Award was conferred to Mr. Ganesh Kumar T, ICAR-CIFE (2022), Ms. Darshana Sharma, CoF, AAU (2023) and Ms. Supriya Rani, CoF, CAU (2024). Best Women Scientist Oration Award was conferred to Ms. Pushpa Kumari, CoF, BASU (Faculty category) and Ms. Rishika M S, CSIR-NIO (Student category). Dr. V.G. Jhingran Best Indian Scientist Awards were conferred to Dr. Kundan Kumar, ICAR-CIFE (2022), Dr. Sanjay Kumar Gupta, ICAR-IIAB (2023) and Dr. Tapas Chakraborty, Kyushu University (2024) in 36-45 years age category. Dr. Janmejaya Parhi, CoF, CAU (2022), Dr. Prem Kumar, ICAR-CIFE (2023), Dr. Lopamudra Sahoo, ICAR-RCNER (2024) were conferred Dr. V.G. Jhingran Best Indian Scientist Awards above 45 years age category. In IDEATHON-2024, Prof. H P C Shetty Gold Medal was conferred to Mr. Sourav Debnath & Mr. Bhautik Savaliya, ICAR-CIFE (Ph.D category), Mr. Manish Kumar, CoF, CAU (PG category) and Mr. Sudhanshu Kumar, CoF, RLBCAU (UG category).



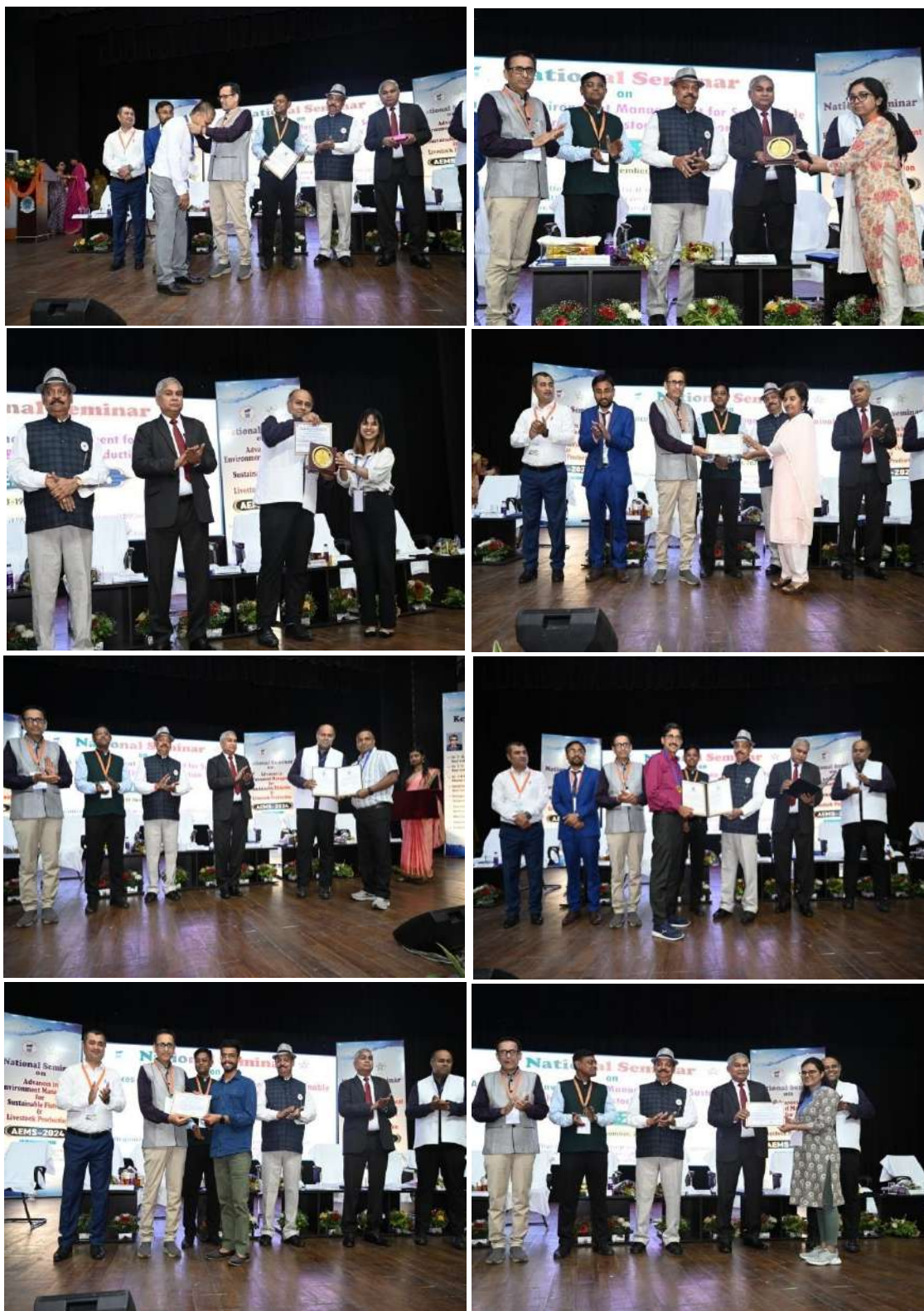
**Glimpses of Inaugural function of AEMS-2024**





**Glimpses of Valedictory function of AEMS-2024**





**Glimpses of Award function of AEMS-2024**

**Dr. V. R. P. Sinha Memorial Lecture on “Aquaculture for Sustainable Development: Tribute to Dr. V. R. P. Sinha”**

**Speaker: Dr. Dilip Kumar**, Former VC, ICAR-CIFE, Mumbai and Fisheries and Aquaculture Sector Planning and Policy Advisor, International Civil Service, FAO, UN

**Rapporteur:** Dr. Abhed Pandey and Dr. Sarvendra Kumar

**Highlights of the lecture:** His lecture started with sharing his thoughts about Dr. V.R.P. Sinha. He mentioned that Dr. Sinha was not just a scientist but a visionary, a pioneer, and a legend whose contributions to fisheries science have left an indelible mark on our nation and the world. He has given an overview of aquaculture and its unique features; diverse species cultivation, wide-ranging adaptability and scalability, efficient use of resources, and discussed how aquaculture contributes to poverty reduction viz. income generation, employment opportunities, and low capital requirement. He also discussed world fisheries and aquaculture production, rise of global consumption of aquatic foods, main producers of aquatic animals by country and percentage of jobs by region (globally). Furthermore, he elaborated rank of India in fisheries and aquaculture production and potential of fisheries in Bihar. In addition, he also discussed in detail about things to learn from other countries like technology and innovation, biosecurity and disease management, environmental and regulatory standards, value-added processing and branding, training and certification programs. He concluded his lecture with highlighting ways to enhance productivity (RAS, IMTA and precision aquaculture techniques), sustainable feed development, breeding and promoting climate-resilient fish species, enhancing water use efficiency, ecosystem health monitoring, policy and regulation, capacity building and training, market access and trade and post-harvest processing and quality assurance.



**Dr. V.G. Jhingran Memorial Lecture on “Inland Open Water Fisheries Management: An Ecosystem Approach**

**Speaker: Dr. B. K. Das**, Director, ICAR-CIFRI, Barrackpore, West Bengal

**Rapporteur:** Dr. Sachin O. Khairnar and Ms. Saba Nabi

**Highlights of the Lecture:** Dr. B.K. Das highlighted the immense potential of inland open-water fisheries management through an ecosystem-based approach. He celebrated Dr. Jhingran's contributions, which continue to inspire advancements in the fisheries sector. Dr. Das emphasized India's position as a global leader in inland fisheries, underscoring the vast scope of development, particularly in regions like Bihar, endowed with a plethora of inland water resources, including oxbow lakes and chauras. He projected that the rising food demand driven by population explosion will place significant pressure on food systems, positioning inland fisheries as a crucial sector in ensuring nutritional security.

The looming challenges of climate change, coupled with pervasive poverty, demand innovative solutions to sustain and enhance fisheries productivity. Dr. Das advocated for adopting cutting-edge technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and precision aquaculture techniques to drive future growth. He also acknowledged CIFRI's pivotal role in developing both mitigation and adaptation strategies to address these challenges. One of CIFRI's hallmark initiatives—the Integrated Regional Water Management Plan was presented as a comprehensive, one-stop solution to holistically manage inland water resources, ensuring ecological balance, socio-economic benefits, and sustainable fisheries development.





**Dr. P. V. Dehadrai Memorial Lecture on “Expanding Indian Mariculture: Striving for Harnessing the Potential”**

**Speaker:** Dr. Shubhadeep Ghosh, ADG (Marine Fisheries), ICAR, New Delhi

**Rapporteurs:** Dr. Diksha P. Gourkhede and Mr. Rajesh Kumar

**Highlights of the Lecture:** Dr. Ghosh highlighted the Indian marine fisheries sector by discussing its production potential, the status of marine fish seed production and coastal farming, seaweed farming, and different culture systems. He presented the way forward for the marine sector that includes pilot farming trials in potential areas identified suitable for seaweed culture, establishment of seed stock/seed bank for commercially important seaweed species in controlled onshore facilities at strategic locations, genetic improvement of native species for faster growth and better yield of phycocolloids, offshore farming & Scientific interventions to minimize grazing, fouling and disease incidences in a collaborative mode and need to create public-private partnerships between the research institutions and the industry to set up seed production centers leveraging the micropropagation .





## Technical Session I: Eco-friendly Sustainable Fish and Livestock Production

**Chair: Dr. M. Krishnan**, Adviser (Fisheries) Infinite Sum Modelling Inc., Seattle, USA

**Co-Chair: Dr. A. K. Tewari**, Prof. Vet. Parasitology, COVAS (BASU), Kishanganj

**Keynote Lecture:** *Inland Open-Water Fisheries and Aquaculture in India- in the context of Cage Aquaculture* by **Dr. Armaan Muzaddadi**, Pr. Scientist & Head, OWAPMD, ICAR-CIFRI

**Lead Lecture I:** *Species Diversification in Mid hill Aquaculture* by **Dr. S. K. Das**, Principal Scientist, ICAR-RCNEH, Meghalaya

**Lead Lecture II:** *Sustainable Livelihood through Fish Farming with Institutional Credit Support in Bihar* by **Shri Dayanand Kumar**, DDM, NABARD, Kishanganj

**Rapporteurs:** Dr. Naresh Raj Keer and Dr. Shiv Varan Singh

### Paper Presentations:

| Name                        | Title                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|
| Dr. Anuj Singh              | Comprehensive Economic Assessment of Oil and Bypass Fat Supplementation in Goat Kid Nutrition                    |
| Dr. MD Aklakur              | P-lined Biofloc system: An advanced aquaculture system for quality seed rearing in Bihar                         |
| Dr. Radhakrishnan K.V.      | Do Fisheries of Rudrasagar Lake in North-Eastern India Boom or Bust? A fish Stock Assessment-Based Introspection |
| Dr. Hanjabam Mandakini Devi | Transforming Fish Processing Waste into Functional Food Ingredients and Nutraceuticals                           |
| Mr. Udipta Roy              | Algal oil: A sustainable alternative of fish oil in aquafeed                                                     |

### Key Highlights & Recommendations

- Doubling of fish Production through diversification of species and New Age Entrepreneurship development.
- Adoption of Integrated Aquaculture Systems
- Aquaculture-Species Diversification in mid-hill aquaculture
- Move Towards Plant-Based Animal Feed
- Enhance Sustainable Farming Practices in Livestock Production
- Use of Fish processing waste into food ingredients and nutraceuticals.
- Integration of fish in country's nutrition program – Mid day meal scheme.
- Promote Sustainable Aquaculture Practices (Cage and Pen culture)
- Strengthen Policy Frameworks and Regulations
- Make aware to farmers about equity grants, KCC and the Govt Scheme for credit support



**Glimpses of Technical Session on Eco-friendly Sustainable Fish and Livestock Production**

## Technical Session II: Environmental Biotechnology in Fisheries & Veterinary Science

**Chair: Dr. B.P. Mohanty**, Former ADG (IF), ICAR, New Delhi

**Co-Chair: Dr. J. K. Sundaray**, Pr. Scientist & Head, FGBD, ICAR-CIFA, Odisha

**Keynote lecture:** *Applications of Omics Technologies in Fisheries and Veterinary Science* by **Dr. B. P. Mohanty**, Former ADG (IF), ICAR, New Delhi

**Lead Lecture:** *Harnessing Genetics and Genomics Potentials of Indian Major Carps* by **Dr. J. K. Sundaray**, Pr. Scientist & Head, FGBD, ICAR-CIFA, Odisha.

**Lead Lecture:** *Application of advance tools in fisheries research with reference to bioactive compounds and nutraceuticals* by **Dr. Kajal Chakraborty**, Principal Scientist & Head, MBFNHD, ICAR-CMFRI, Kochin.

**Rapporteurs:** Dr. Mamta Singh and Dr. Aman Divakar

### Paper Presentations:

| Name                  | Title                                                                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Raju K Dewry      | Relative Abundance of Fertility-Related Transcripts is Affected by FMD Vaccination in Differentially Fertile Sahiwal Bulls                              |
| Dr. Tapas Chakraborty | Gonadal Stem Cell: A Possible Solution of Continuous Seed Production and Futuristic Aquaculture                                                         |
| Dr. Sanjay K Gupta    | Decoding the gut microbiome profile in <i>Oreochromis niloticus</i> raised in cage culture of a heavy metal-polluted coal mining reservoir of Jharkhand |
| Dr. Janmejay Parhi    | Effect of Resveratrol on Reproductive Genes in <i>Systomus sarana</i>                                                                                   |
| Dr. Mamta Singh       | Acute Heat Stress Weakens Immune System in Catfish <i>Clarias magur</i> Revealed by Comparative Gill transcriptome Analysis                             |
| Ms. Sabiha Kaifi      | A standardized protocol for invitro propagation of endangered plant <i>Byrophyllum pinnatum</i>                                                         |
| Dr. Manjari Pandey    | Expression & Association Studies of Egg Production Related Candidate Genes In Aseel                                                                     |
| Dr. Prasanna Pal      | Standardization of Blood Anti-Mullerian Hormone (AMH) Levels as a Fertility Biomarker in Indigenous Cows                                                |
| Dr. Poornima Gumasta  | Isolation and Molecular Characterization of <i>Mycoplasma gallisepticum</i> from field Isolates of chickens                                             |

### Key Highlights and Recommendations:

- Future lines of research in the area of fish biotechnology and molecular biology to address the challenges of climate change should be focused on the development of prognostic & diagnostic biomarkers, vaccine development, nutrigenomics for



enhancing fish flesh quality and effective feed utilization, development of medicated-feed against abiotic stressors, designer feed against high-temperature stress.

- Comprehensive studies with the help of omics technology to address the challenges of climate change should be done as global warming triggers a complex series of changes in aquatic ecosystems.
- Ensuring Global Food Security through advanced selection program using genomics and CRISPR-Cas9 gene editing techniques
- Research focuses on the isolation and functional characterization of biomaterials derived from organisms living in stressful conditions with useful characteristics like better stress tolerance and adaptivity to extremes of heat and cold are needed to mitigate the effect of climate change.



**Glimpses of Technical Session on Environmental Biotechnology in Fisheries & Veterinary Science**

### Technical Session III: One Health for Ecosystem Wealth

**Chair: Dr. Manish Kumar**, Distinguished Professor, Tecnologico de Monterrey (Tec), Mexico, and Institute Professor, Chuo University Japan & UPES, India

**Co-Chair: Dr. Megha K. Bedekar**, Principal Scientist & Head, AEHMD, ICAR-CIFE

**Keynote Lecture:** *Synergistic Impacts of PFAS and Microplastics in Environmental Matrices: Implications for One Health and Sustainable Development Goals* by **Dr. Manish Kumar**.

**Lead Lecture:** *Advances in Fish Disease Diagnosis: Aiming for High Specificity and Sensitivity* by **Dr. Megha K. Bedekar**.

**Lead Lecture:** *Shape-shifting Fish Erythrocytes: An Emerging Biomarker for Fish Health Assessment* by **Dr. Jawahar Abraham T**, Professor, WBUAFS, Kolkata.

**Rapporteurs:** Dr. Anuj Singh and Mr. Bhartendu Vimal

#### Paper Presentations:

| Name                        | Title                                                                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Leesa Priyadarsani      | Effect of <i>Aeromonas hydrophila</i> Challenge on the Serum Biochemical Parameters of <i>Labeo rohita</i>                                |
| Dr. Shiv Varan Singh        | Phenotypic and Molecular Characterization of Biofilm Producing MRSA resistant <i>S. aureus</i> from Apparently Healthy and Mastitic Cows  |
| Mr. Rajeev Kumar Brahmchari | Phytotherapeutic Use of Papaya Leaf Extract against <i>Aeromonas veronii</i> Infection in Indian Major Carp, Rohu ( <i>Labeo rohita</i> ) |

#### Key Highlights and Recommendations:

- Coordinated global efforts to reduce microplastic release in aquatic ecosystems are desperately needed which can be achieved by effective monitoring and remediation strategies, and implementation of stronger regulations to protect both environmental and human health in the long term.
- Research should be focused development of early detection and precision diagnostics for preventing fish diseases. By integrating advanced technologies, the future of fish health management looks promising, with the potential for more resilient and sustainable aquaculture systems to tackle the challenges of a rapidly changing environment.
- Erythrocyte shape changes in fishes can be used in real-time monitoring of stress and disease.





Glimpses of Technical Session on One Health for ecosystem Wealth

**Technical Session IV: Technological Innovations for Biodiversity Conservation**

**Chair:** Dr. P. K. Pandey, Director, ICAR-DCFR

**Co-chair:** Dr. Jawahar Abraham, Professor, WBUAFS, kolkata

**Keynote lecture:** *Fish Genetic Resources of North-East India* by **Dr. P K. Pandey**

**Lead Lecture:** *Technological Innovations for Biodiversity Conservation* by **Dr. S. K. Rout**, Professor, WBUAFS.

**Lead Lecture:** *Plastic litters and marine microplastic: Impact and governance to the Indian Ocean Ecosystem* by **Dr. Mahua Saha**, Principal Scientist, NIO, Goa

**Rapporteur:** Dr. Rupam Samanta and Dr. Uday Kumar

**Paper presentations:**

| Name                   | Title                                                                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Kundan Kumar       | Occurrence of Triclosan in the Aquatic Environment and its Impact on Biotic Communities                                                                                           |
| Ms. Saba N. Reshi      | Plastic and Microplastic Pollution in the Fisheries Supply Chain: A Gender-Based Preliminary Study of Awareness, Perceptions and Attitude at Ferry Wharf, Mumbai                  |
| Mr. Mukesh Kumar Singh | Morphological, Distributional, and Molecular Characteristics of <i>Puntius terio</i> (Hamilton, 1822) in Eastern India: Insights from Genetic Variation and Phylogenetic Analysis |

**Key Highlights and Recommendations:**

- There is an urgent need for awareness among people to reduce the use of plastics for day-to-day life.
- Fundamental and comprehensive research on the status evaluation of fish species.
- Use of advanced tools and techniques for biodiversity conservation.

## Technical Session V: Climate Change in Fisheries and Livestock System

**Chair: Dr. R. K. Trivedi**, DSW, Rajendra Prasad Central Agricultural University, Pusa

**Co-Chair: Dr. S. C. Rai**, Former Dean, COF, Dr. RPCAU, Pusa

**Keynote Lecture:** *Impacts of climate change on fisheries and aquaculture, and livestock* by **Dr. B. K. Chakraborty**, Former Director, Department of Fisheries, Dhaka, Bangladesh

**Lead Lecture:** *Influence of Livestock Waste on Climate Change and Animal Welfare* by **Dr. Chandrahas**, Dean COVAS, Kishanganj, BASU

**Lead Lecture:** *Climate Change in Fisheries and Livestock System* by **Dr. Kamal Sharma**, Principal Scientist, ICAR-RCER, Patna

**Lead Lecture:** *Climate Change Impacts on Fisheries: Pathways to Sustainable Resource Management and Policies* by **Dr. Kishore Dhavala**, Associate Professor, SEES, Nalanda University

**Rapporteurs:** Dr. Showkat Ahmad Dar and Ms. Tenji Pem Bhutia

### Paper Presentations:

| Name                 | Title                                                                                                                                                                                     |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Kamal Sharma     | Microplastics in Indian Major Rivers: Occurrence, Effects and Potential Solutions                                                                                                         |
| Mr. Ganesh Kumar T   | Impact of Climate Change on the Persistence, Environmental Partitioning and Toxic Effect of an Emerging Pollutant, Triclosan, in the Oceanic Compartments of the Southwest Coast of India |
| Dr. Shagufta Perveen | Age and season related changes in the white blood cells of black Bengal goat during prepubertal growth period                                                                             |
| Mr. Pritam Das       | Climate-Driven Eutrophication and Cyanobacteria Proliferation in Deepor Beel: A Seasonal Perspective                                                                                      |
| Dr. Anuj Singh       | To Assess the Comparative Feeding Practices in Cotton - Wheat Growing Zone of Haryana                                                                                                     |

### Key Highlights & Recommendations

- Needs effective adaptation to strengthen and maintain productive aquatic ecosystems.
- Livestock & Societal well-being vis-à-vis Welfare
- Optimum Waste Management, Quality product & Economic gain
- Integrated approach and support with technical, financial, and extension services to enhance productivity
- Community-based fisheries management for equitable distribution
- Implementation of a quota system for harvesting of fisheries resources
- Creating awareness among fishermen about by-catch
- Recycle fish waste into bio-fertilizer

### Satellite Session I: Women Scientist Oration Award Competition

**Chair: Dr. Megha K. Bedekar**, PS & Head, AEHMD, ICAR-CIFE, Mumbai

**Co-chair: Dr. Mahua Saha**, Principal Scientist, CSIR-NIO, Goa

**Rapporteur: Dr. Sadhana Ojha and Dr. Sudeshna Sarker**

#### Paper Presentation (Faculty):

| Name                 | Title                                                                                                                                                                                                                              |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Loopamudra Sahoo | Improving the nutritional and livelihood security of tribal women through backyard farming system                                                                                                                                  |
| Ms. Pushpa Kumari    | Efficacy of neem ( <i>Azadirachta Indica</i> ) extract against Argulus infection in Goldfish ( <i>Carassius auratus</i> )                                                                                                          |
| Dr. Nancy Jasrotia   | Supplementation of olive and almond oil in extenders for preservation of semen in NARI Suwarna strain of sheep                                                                                                                     |
| Dr. Manjari pandey   | Genetic Variations in Important Egg-Production Linked Candidate Genes, Their Association with Economic Egg Production Traits and Development of Model for Improvement of Productivity in Kadaknath and Aseel Native Chicken Breeds |

#### Paper presentation (Students):

| Name                | Title                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ms. Sabiha Kaifi    | The effect of BAP NAA Bx, the micro propagation response of endangered plant <i>Bryophyllum Pinnatum</i>                                                   |
| Ms. Rishika MS      | Study on performance of biochar bed column device for removal of triclosan from aqueous solution containing humic acid                                     |
| Ms. Supriya rani    | Effect of Probiotic Isolated from Carp Gut on Reproductive Performance of <i>Ompok bimaculatus</i> (Bloch, 1794)                                           |
| Ms. Darshana Sharma | In vivo study of sub-lethal effects of a pyrethroid insecticide 'Lambda-Cyhalothrin' on freshwater model fish <i>Danio rerio</i> (Hamilton-Buchanan, 1822) |

#### Key Highlights and Recommendations

- Promote training on sustainable farming practices, provide access to quality seeds and tools, enhance women's participation in agricultural decision-making, and support local markets to improve nutritional and livelihood security.
- Conduct controlled trials to determine the optimal concentration of neem extract for effective treatment, assess its safety on goldfish health, and explore its potential as a sustainable alternative to chemical treatments for Argulus infection.



- Evaluate optimal concentrations of olive and almond oils in semen extenders, assess their effects on semen quality during storage, and ensure long-term viability for improving reproductive efficiency in NARI Suwarna sheep.
- Analyze genetic variations in egg-production genes, link them to economic traits, and develop predictive models to enhance productivity in Kadaknath and Aseel chickens.
- Optimize biochar bed column conditions for triclosan removal, evaluate its efficiency in the presence of humic acid, and assess long-term stability and regeneration potential for sustainable water treatment
- Isolate effective probiotics from carp gut, determine optimal dosage and administration for *Ompok bimaculatus*, and assess long-term effects on reproductive performance, health, and growth.



**Glimpses of Satellite Session on Women Scientist Oration Award Competition**

**Satellite Session II: Masters' Research Consortium**

**Chair: Dr. P. K. Pandey**, Director, ICAR-DCFR, Bhimtal, Uttarakhand.

**Co-Chair: Dr. Kajal Chakraborty**, Principal Scientist & Head, MBFNHD, ICAR-CMFRI, Kochi.

**Invited Lecture:** *Technological Innovations in Aquaculture Research: Challenges and Future Opportunities* by **Dr. Shivendra Kumar**, Professor, Aquaculture, COF, RPCAU, Dholi.

**Rapporteurs:** Mr. Abhishek Kumar, Dr. Manjari Pandey and Dr. Nancy Jasrotia

**Dr. V.R.P. Sinha Gold Medal for Best Master's Thesis Award Presentation (2022)**

| Name           | Title                                                                                                                    |
|----------------|--------------------------------------------------------------------------------------------------------------------------|
| Ganesh Kumar T | A Study on Occurrence and Environmental Risk of Triclosan in Selected Water Bodies of Mumbai                             |
| Ratnapriya Das | Effect of Dietary Supplement of Emamectin Benzoate on Haematology and Serum Biochemistry of <i>Oreochromis Niloticus</i> |
| Sagar V Shinde | Improved Farmed Tilapia in Freshwater Integrated Multi Trophic Aquaculture System/                                       |

**Dr. V.R.P. Sinha Gold Medal for Best Master's Thesis Award Presentation (2023)**

| Name            | Title                                                                                                                             |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Darshana Sharma | In Vivo Study of Sub Lethal Effects of a Pyrethroid Insecticide 'Lambda-Cyhalothrin' On Fresh Water Model Fish <i>Danio rerio</i> |
| Rishika M.S.    | Study on Performance of Biochar Bed Column Device for Removal of Triclosan from Aqueous Solution Containing Humic Acid            |
| G Murgan        | Development of Fish Gelatine Based Green Packaging Material                                                                       |

**Dr. V.R.P. Sinha Gold Medal for Best Master's Thesis Award Presentation (2023)**

| Name               | Title                                                                                                                        |
|--------------------|------------------------------------------------------------------------------------------------------------------------------|
| Mayuri Nag         | A Study on Amelioration of Triclosan Induced Toxicity in <i>Labeo rohita</i> Using Micro Algae <i>Spirulina Platensis</i>    |
| Tanuja Kulshrestha | Refrigerated Storage Stability of Dehydrated Fish Surimi Based Burger Patty Premix Fortified with Carrot and Beetroot Powder |

|               |                                                                                                                                                           |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Supriya Rani  | Effect of Probiotics Isolated from Carp Gut on Reproductive Performance of <i>Ompok Bimaculatus</i> Will Help in Conservation and Eco-Friendly Programme. |
| Ashiq Ahmad S | Study on Biomagnification of Heavy Metal, Lead Along The Aquatic Food Chain                                                                               |

### Key Highlights and Recommendations:

- Species diversification in aquaculture is the need of the hour for sustainability and climate change resilience.
- Research efforts on utilization of unconventional feed ingredients i.e. litchi seed and peel, banana inflorescence, black gram leaf, rice DDGs should be strengthened.



**Glimpses of Satellite Session on Masters' Research Consortium**



**Satellite Session III: Best Indian Scientist Award Presentations**

**Chair: Dr. Shubhadeep Ghosh**, AGD (Marine Fisheries), ICAR, New Delhi

**Co-chair: Dr. Kamal Sarma**, Principal Scientist & Head, ICAR-RCER, Patna

**Rapporteur-** Dr. Narendra Kumar Verma, Mr. Pankaj Kumar and Mr. Vivek Kumar

**Participants for Dr. V.G. Jhingran Gold Medal presentations (36-45 years Category)**

| Name                   | Designation                                                                                            |
|------------------------|--------------------------------------------------------------------------------------------------------|
| Dr. Kundan Kumar       | Senior Scientist, AEHM Division ICAR- CIFE, MUMBAI                                                     |
| Dr. Sanjay Kumar Gupta | Senior Scientist, ICAR-Indian Institute of Agricultural Biotechnology, Garhkhatnaga, Ranchi, Jharkhand |
| Dr. Tapas Chakraborty  | Assistant Professor, Kyushu University, Japan                                                          |
| Dr. Sikendra Kumar     | Senior Scientist, FNBP Division ICAR- CIFE, MUMBAI                                                     |

**Participants for Dr. V.G. Jhingran Gold Medal presentations (>45 years Category)**

| Name                    | Designation                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------|
| Dr. Radhakrishnan K. V. | Associate Professor & HOD FRM, COF ANDUAT                                                                    |
| Dr. Janmejaya Parhi     | Assistant Professor (SG), Fish Genetics and Reproduction Department, COF, CAU (Imphal), Lembucherra, Tripura |
| Dr. Prem Kumar          | Senior Scientist, ICAR- CIFE, MUMBAI                                                                         |
| Dr. Loopamudra Sahoo    | Principal Scientist, ICAR Research Complex for NEH Region, Tripura Center, Lembucherra, Tripura              |



**Glimpses of Satellite Session on Best Indian Scientist Award Presentations**



**Satellite Session IV: Ideathon-2024**

**Jury:** Dr. Janamejay Parhi, Assistant Professor, CAU, Tripura

**Dr. Sanjay Kumar Gupta**, Senior Scientist, ICAR-IIAB, Ranchi

**Dr. Tapas Chakarborty**, Assistant Professor, Kyushu University, Japan

**Rapporteurs:** Dr. Sangeeta Kumari and Ms. Pushpa Kumari

**List of Presenters:**

| Name of Presenters                                                                   | Title of Idea                                                                                               |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Category: UG</b>                                                                  |                                                                                                             |
| Bishal Mandal<br><i>College of Fisheries, RLBCAU, Jhansi</i>                         | Nanobubble Technology: A Breakthrough Solution for Remediating Persistent Pollutants                        |
| Shweta Suman and Vachas Vadini Mani<br><i>College of Fisheries, BASU, Kishanganj</i> | Revolutionizing Microplastic Filtration in Aquatic Systems with Nanomembrane Technology                     |
| Harsh Kumar<br><i>College of Fisheries, RLBCAU, Jhansi</i>                           | Solar-Powered Mobile Freshwater Filtration: A Sustainable Solution for Clean Water Access                   |
| Mudit Agrawal<br><i>College of Fisheries Science &amp; Research Centre, Etawah</i>   | Standard operating procedures (SOP): climate change in Fisheries and livestock system                       |
| Alisha Raj & Juhi Bharti<br><i>College of Fisheries, BASU, Kishanganj</i>            | Fish vet “Fish Disease Diagnosis with AI”                                                                   |
| Sudhanshu Kumar & Ganesh Kumar<br><i>College of Fisheries, RLBCAU, Jhansi</i>        | AI based Eco-Smart Floating Treatment Wetlands: A Sustainable Innovation for Urban Water Quality Management |
| Priya Kumari & Pooja Kumari<br><i>College of Fisheries, BASU, Kishanganj</i>         | PLASTOFUEL: Way towards Waste to Wealth                                                                     |
| Venkatesh Kalaskar & Ravi Shekhar<br><i>College of Fisheries Science, Udgir</i>      | Aquarist Connect: Transforming the Ornamental fish Industry                                                 |
| Kumari Priya and Anisha Rani<br><i>College of Fisheries, BASU, Kishanganj</i>        | Green Wave Hatcheries “Reimagining Fish Farms: Harnessing Nanotech for Cleaner, Greener Fish”               |
| <b>Category: PG</b>                                                                  |                                                                                                             |
| Aditi Kumari<br><i>College of Fisheries, BASU, Kishanganj</i>                        | Potential use of plant-based antifoulant paints to minimize biofouling in aquatic systems                   |
| Hridam Saha and Surya Kanta Sau                                                      | Use of dehydrated water hyacinth powder for                                                                 |

|                                                                                           |                                                                                                                       |
|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Faculty of Fishery Sciences, WBUAFS                                                       | the removal of arsenic in waterbody                                                                                   |
| Anand Kumar, Ravishekhar Kumar<br>College of Fisheries, BASU, Kishanganj                  | Aquatic Weeds Derived Biochar Filter for Microplastic Control                                                         |
| Manish Kumar and T. G. Choudhury<br>College of Fisheries, CAU, Tripura                    | Fish ROUV (Remotely Operated underwater Vehicles)                                                                     |
| Mayuri Nag<br>ICAR-Central Institute of Fisheries Education, Mumbai                       | Versatile Intelligent System for Integrated Optimization of Networks (VISION): Unlocking the potentials               |
| Jayan Barik, Hridam Saha, Surya Kanta Sau<br>Faculty of Fishery Sciences, WBUAFS, Kolkata | Study on Climate Resilient Aquaculture in Sundarbans of South 24 Parganas, West Bengal, India- A Sustainable approach |
| <b>Category: Ph.D.</b>                                                                    |                                                                                                                       |
| Bhautik Savaliya<br>ICAR-Central Institute of Fisheries Education, Mumbai                 | Jal Abhibhavak: An All-in-One AI Powerhouse for Water Quality Control                                                 |
| Sourav Debnath<br>ICAR-Central Institute of Fisheries Education, Mumbai                   | ToxiScan Fishguard AI: Intelligent Assurance for Safe Fish Food                                                       |

### Key Highlights and Recommendations:

The idea presented combine technology, sustainability, and innovation to tackle environmental and aquaculture challenges in following areas:

- **Nanotechnology & AI in Water Treatment:** Includes nanobubble technology for pollutant remediation, microplastic filtration with nanomembranes, and AI-powered solutions for fish disease diagnosis, water quality control, and sustainable aquaculture practices.
- **Sustainable Solutions for Aquaculture:** Concepts like solar-powered mobile water filtration, eco-smart floating wetlands, and intelligent systems for fish farm optimization enhance sustainability and resource management.
- **Waste-to-Wealth Innovations:** Projects like PLASTOFUEL convert plastic waste into fuel, while fish and pineapple waste is repurposed as organic fertilizer.
- **Environmental Monitoring & Remediation:** Using tools like GeoAquaWatch (satellite-based monitoring), biochar from aquatic weeds for microplastic control, and water hyacinth powder for arsenic removal to address environmental challenges.
- **Green Energy & Coastal Solutions:** Sustainable energy generation from coastal friction and pressure, alongside plant-based antifoulant paints to reduce pollution.



**Glimpses of Satellite Session on IDEATHON-2024**



## Poster Presentations

### Technical Session I: Eco-friendly Sustainable Fish and Livestock Production

| Speaker                | Title of the Paper                                                                                                                                                             |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Abhed Pandey       | Dietary supplementation of formulated fish specific mineral mixture improved growth, nutrient composition and haematological parameters of <i>Cyprinus carpio</i> fingerlings. |
| Dr. Naresh Raj Keer    | Wound Management in Catfishes and its Healing Mechanism.                                                                                                                       |
| Ms. Sneha Kumari       | Seasonal Dynamics of Reproductive Performance in <i>Amblypharyngodon mola</i> in Tripura.                                                                                      |
| Dr. Sachin O. Khairnar | Effect of organic manures on growth of ornamental aquatic plant water primrose, <i>Ludwigia repens</i> .                                                                       |
| Dr. Sarvendra Kumar    | Effects of De-oiled Rice Bran (DORB) on growth performance, Digestion and Oxidative Stress in <i>Labeo rohita</i> fingerlings.                                                 |
| Dr. Jag Pal            | Efficacy of Probiotics in Reducing Waterborne Disease Incidence in Aquafarming.                                                                                                |
| Ms. Tanuja Kulshrestha | Development of Carrot Powder Fortified Burger Patty Premix Incorporated with Fish Surimi Powder.                                                                               |
| Dr. Showkat A. Dar     | Evaluating the effect of insulin supplementation on carbohydrate metabolism in <i>Labeo rohita</i> .                                                                           |
| Mr. Rajesh Kumar       | Nutritional efficiency through microencapsulation: Bosting IMC larval growth and survival.                                                                                     |
| Dr. Rajesh Kumar       | Sustainable Fish Farming: Opportunities and Challenges.                                                                                                                        |

### Technical Session II: Environmental Biotechnology in Fisheries & Veterinary Science

| Speaker              | Title of the Paper                                                                                                               |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Mr. Bhautik Savaliya | Caffeine as an Emerging Aquatic Contaminant: Degradation and Acute Toxicological Effects on <i>Oreochromis niloticus</i> .       |
| Mr. Suraj Saha       | Molecular insights into ISKNV prevalence in susceptible fishes: A case study from Maharashtra, India.                            |
| Ms. Aishwarya Sharma | Complete sequence and characterization of the <i>Cyprinion semplotum</i> mitochondrial genome and its phylogenetic implications. |
| Ms. Poonam           | Estimation of $\alpha$ -Melanocyte stimulating hormone ( $\alpha$ -MSH) and Melanin Concentrating Hormone (MCH) in the skin of   |



|                  |                                                                                                                                                                              |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <i>Cyprinus carpio</i> and <i>Ctenopharyngodon idella</i> after subjected to Pyrene                                                                                          |
| Mr. Rajiv Ranjan | Biofilm-based adsorbent for the removal of triclosan.                                                                                                                        |
| Ms. Neha Rani    | Genetic Diversity Analysis of Different Stocks of <i>Labeo rohita</i> (Rohu) of Mithila Region of Bihar and its Correlation with Sensory Attributes of Culinary Preparation. |

### Technical Session III: One Health for Ecosystem Wealth

| Speaker                 | Title of the Paper                                                                                                                                                            |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dr. Poornima Gumasta    | Pathology of Fatal Multiple Organ Failure in a Dog.                                                                                                                           |
| Mr. Sanayaima Singha    | Occurrence of Microplastics in Fish from Upper and Lower Stretches of River Brahmaputra- A Comparative Study.                                                                 |
| Ms. Ratnapriya Das      | Impact of <i>Aeromonas hydrophila</i> Infection and Enrofloxacin Therapy on the Haemato-biochemistry, Erythromorphology, and Histopathology of <i>Oreochromis niloticus</i> . |
| Mr. Manish Kumar        | Temperature-Dependent Growth Kinetics and Virulence Determinants in <i>Aeromonas salmonicida</i> subsp. <i>salmonicida</i> COFCAU_AS: Implications for Pathogenicity.         |
| Mr. Pankaj Kumar        | Role of Lactic Acid Bacteria ( <i>Lactobacillus plantarum</i> ) as an Immunomodulator in Koi Carp.                                                                            |
| Mr. Arya Sen            | In-feed Oxolinic Acid-Induced Histopathological Alterations in Nile Tilapia <i>Oreochromis niloticus</i> Juveniles.                                                           |
| Dr. Abhiman             | Enhancement of Mucosal Immune Response Employing Bacterial Biofilms.                                                                                                          |
| Dr. Parmanand Prabhakar | Antibiotic resistance <i>Salmonella</i> enteric associated with seafood.                                                                                                      |
| Ms. Rukhsaar Parveen    | Antimicrobial resistance (AMR) pathogen in fish and fishery products.                                                                                                         |
| Mr. Nayan Chouhan       | Identification, Environmental Adaptability, and Antifungal Susceptibility of Emerging Fungal Pathogens in Freshwater Aquaculture.                                             |
| Ms. Aditi Kumari        | Co-infection in Fish: An Overview.                                                                                                                                            |
| Ms. Sneha Mekala        | Effects of Nano Urea on Haemato-Physiological parameters of <i>L. rohita</i> .                                                                                                |

#### Technical Session IV: Technological Innovations for Biodiversity Conservation

| Speaker                       | Title of the Paper                                                                                                                                                                    |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mr. Maibam Malemngamba Meitei | Filtration Capacity of Selected Bivalve Species Potential for Integrated Multi-Trophic Aquaculture (IMTA) System.                                                                     |
| Ms. Bharti Sahu               | Biometric Characterization and Stock Status of <i>Lamellidens marginalis</i> from Kanwar Lake – The Ramsar Site, Begusarai, Bihar, India.                                             |
| Ms. M.Ponmani                 | Spatio-Temporal Variability of Marine Litter along the Thoothukudi Coast: Patterns and Implications.                                                                                  |
| Ms. Mayuri Nag                | Mitigating Triclosan Induced Toxicity in <i>Labeo rohita</i> Using Microalgae Spirulina.                                                                                              |
| Ms. PreetiMaurya              | Application of GIS and Remote Sensing for Biodiversity Conservation.                                                                                                                  |
| Ms. Puja Rani Basak           | Effects of Triclosan on Sediment Microbial Enzyme Activity in a Microcosm Investigation.                                                                                              |
| Ms. Sneha Kumari              | River Dolphin Management Using GIS.                                                                                                                                                   |
| Dr. Syed Shabih Hassan        | Assessment of the Zooplankton Community in Ranjit Sagar Reservoir in Punjab (India).                                                                                                  |
| Ms. Rishika M S               | Study on Performance of Biochar Bed Column Device for Removal of Triclosan from Aqueous Solution containing Humic Acid.                                                               |
| Mr. Shiwam Dubey              | Toxicological Effects of Textile Dyes on Aquatic Organisms.                                                                                                                           |
| Mr. Suraj Raj                 | Harnessing Constructed wetlands to minimize pollution risk and protect aquatic ecosystems.                                                                                            |
| Mr. Pritam Das                | First report on the occurrence of invasive exotic suckermouth catfish, <i>Pterygoplichthys disjunctivus</i> from Deeporbeel, a Ramsar site of international importance, Assam, India. |
| Ms. Susmita Rani              | Artificial Reefs, as a solution for restoration of marine ecosystem-A review.                                                                                                         |

#### TS V: Climate Change in Fisheries and Livestock System

| Speaker            | Title of the Paper                                                                           |
|--------------------|----------------------------------------------------------------------------------------------|
| Mr. Supratim Malla | Artificial Intelligence in Aquaculture & Fisheries: Current Breakthrough and Future Horizon. |
| Ms. Raushni Kumari | Sponge City: A sustainable Use of Water Resources in Aquaculture.                            |

|                      |                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ms. Aradhana Kumari  | The Potential of Coral Farming to Restore Degraded Reefs and Enhance Carbon Sequestration.                                                                  |
| Ms. Anamika Akarsh   | Impact of Climate Change on Plankton Diversity.                                                                                                             |
| Mr. Shivam Dubey     | Toxicological effect of textile dyes on aquatic organisms.                                                                                                  |
| Mr. HarGobind Singh  | Assessment of the phytoplankton community in Punjab Ranjit Sagar Reservoir, India.                                                                          |
| Mr. Bhautik Savaliya | Behavioural Changes, Genotoxicity and Cytotoxicity during Acute Ammonia exposure on <i>Oreochromis niloticus</i> under Controlled Environmental Conditions. |
| Ms. Anjali Pushp     | “Osteobrama” with integrated taxonomy-Evidences of species merging and divergence.                                                                          |



**Glimpses of Poster Presentations during AEEMS-2024**





**Glimpses of Cultural function during AEMS-2024**



# हिन्दुस्तान

## गाद का प्रबंधन कर मछली पालन पर करें चिंतन

**संमिन्तार** ■ दो शिवरात्रि संमिन्तार का हुआ समारोह, भैरवी ने कलत कि मरुतु पाकलन के ललत ऐसे संमिन्तार की जलतलत  
■ भैरवी रेनु देवी ने कलत कि संमिन्तार में आने पर मुझे कलसी सलतलनीय पीडलतैक मलतल

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# हिन्दुस्तान

सेमिनार में देश-विदेश के वैज्ञानिकों ने भाग लेकर जो चर्चा की उससे मत्स्यपालन के क्षेत्र में भी क्रांति आएगी

[illegible]

## राष्ट्रीय सेमिनार का ज्वलंत मुद्दा बना जलीय जीव

[illegible][illegible]

# हिन्दुस्तान

**सांस्कृतिक संध्या के साथ हुआ  
राष्ट्रीय सेमिनार का समापन**

## सैमिनार

■ जलवायु विभव  
माध्यम  
शास्त्रीयतया में  
विभव जलवा  
वायुमंडलीय  
(वा. जलवायु  
वा. जलवायु)

■ उपजाऊ-उत्पादक  
क्षेत्रों में जलवायु  
वायुमंडलीय  
क्षेत्रों में जलवायु  
वायुमंडलीय



जलवायु विभव माध्यम शास्त्रीयतया में विभव जलवा वायुमंडलीय (वा. जलवायु वा. जलवायु)

उपजाऊ-उत्पादक क्षेत्रों में जलवायु वायुमंडलीय क्षेत्रों में जलवायु वायुमंडलीय

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अराबाड़ी स्थित मात्स्यिकी महाविद्यालय में आयोजित 2 दिवसीय राष्ट्रीय सेमिनार की तैयारीयों हुई पूरी

**स्वास्तिक सहारा ब्यूरो**  
विज्ञानमंज/पेंटिया। पो  
के रावपुर पंचायत स्थित  
स्थित माहिपदो महर्षि  
सोमवार से आयोजित  
राष्ट्रीय सोमवार को लेकर  
ली गयी है। इस सोमवार  
जानकारी देते हुए बी

मिडिया प्रचुरी जारतुन हिम  
कि उक्त सीमनार का मु  
पक्षिय मे सतत मास्य  
विहार को मास्य उदयन  
बनाना है। उक्त सीमनार  
वर्षभन समय मे प्रकृत्य  
रखते हुए सतत मास्य कि  
को सफल बनाना है। त्रिती  
मासी पीछी भी मछली  
स्वस्थ रूप से जार  
जबजबरी देखे हुए मासा वि  
इस 2 दिवसीय राष्ट्रीय  
विज्ञानो को प्रकृत्य युक्त  
भी पर्यावरण को उन्नयन युक्त

कान लालन में अधिक उपजदार किन्ना  
 काँची जलवायवी है।  
 उपरि कान कि जल भी थपारा।  
 देह खुलामा हलारा हलारा हलारा  
 उपजदार मासने में अजु प्रदेरा अजु  
 राजु रा निरिरे है पली कलारे है  
 कि गुणवत्ता अजु अजु अजु अजु अजु  
 कान पलन में छोटे हलारा कि  
 उपजदार मासने में छोटे हलारा कि  
 कान पलन में छोटे हलारा कि  
 उपजदार मासने में छोटे हलारा कि

सत्य महाविद्यालय में सेमिनार का समापन

3,265 उच्च माध्यमिक शिक्षक को नियुक्ति पत्र

**List of Invited Speakers and Participants in AEMS-2024**

| Sl. No                           | Name                  | Affiliation                                       |
|----------------------------------|-----------------------|---------------------------------------------------|
| <b>List of Invited Delegates</b> |                       |                                                   |
| 1.                               | Dr. Dilip Kumar       | Former VC, ICAR-CIFE, Mumbai                      |
| 2.                               | Dr. B. K. Das         | Director, ICAR-CIFRI, Barrackpore                 |
| 3.                               | Dr. Shubhadeep Ghosh  | ADG (Marine Fisheries), ICAR, New Delhi           |
| 4.                               | Dr. P. K. Pandey      | Director, ICAR-DCFR, Bhimtal                      |
| 5.                               | Dr. B.P. Mohanty      | Former ADG (Inland Fisheries), ICAR, New Delhi    |
| 6.                               | Dr. Armaan Muzaddadi  | Pr. Scientist & Head, OWAPMD, ICAR-CIFRI          |
| 7.                               | Dr. J. K. Sundaray    | Pr. Scientist & Head, FGBD, ICAR-CIFA             |
| 8.                               | Dr. Kajal Chakraborty | Pr. Scientist & Head, MBFNHD, ICAR-CMFRI          |
| 9.                               | Dr. Manish Kumar      | Professor, Tecnologico de Monterrey (Tec), Mexico |
| 10.                              | Dr. R. K. Trivedi     | Director Student Welfare, Dr. RPCAU, Pusa         |
| 11.                              | Dr. S. K. Das         | Principal Scientist, ICAR-RCNEH, Meghalaya        |
| 12.                              | Dr. Megha K. Bedekar  | Pr. Scientist & Head, AEHMD, ICAR-CIFE            |
| 13.                              | Dr. Jawahar Abraham T | Professor, WBUAFS, Kolkata                        |
| 14.                              | Dr. M. Krishnan       | Adviser (Fisheries) Infinite Sum Modelling, USA   |
| 15.                              | Dr. S. C. Rai         | Former Dean, COF, Dr. RPCAU, Pusa                 |
| 16.                              | Dr. S. K. Rout        | Professor, WBUAFS, Kolkata                        |
| 17.                              | Dr. Mahua Saha        | Principal Scientist, NIO, Goa                     |
| 18.                              | Dr. B. K. Chakraborty | Former Director, DoF, Bangladesh                  |
| 19.                              | Dr. Kamal Sharma      | Principal Scientist, ICAR-RCER, Patna             |
| 20.                              | Dr. Shivendra Kumar   | Professor, Aquaculture, COF, RPCAU, Dholi         |
| 21.                              | Dr. Kishore Dhavala   | Associate Professor, SEES, Nalanda University     |
| 22.                              | Shri Dayanand Kumar   | DDM, NABARD, Kishanganj                           |
| <b>List of Participants</b>      |                       |                                                   |
| 23.                              | Dr. Hanjabam M Devi   | ICAR-CIFE, Kolkata Centre                         |
| 24.                              | Dr. Kundan Kumar      | ICAR-CIFE, Mumbai                                 |

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|-----|-------------------------|-----------------------------|
| 25. | Dr. Prem Kumar          | ICAR-CIFE, Mumbai           |
| 26. | Dr. Leesa Priyadarsani  | ICAR-CIFE, Kolkata Centre   |
| 27. | Mr. R. K Brahmachari    | CoF, Dr. RPCAU, Pusa        |
| 28. | Mr. Mukesh Kumar Singh  | CoF, Dr. RPCAU, Pusa        |
| 29. | Dr. Md. Aklakur         | ICAR-CIFE, Motipur Centre   |
| 30. | Dr. Janmejey Parhi      | CoF, CAU, Tripura           |
| 31. | Mr. Arya Sen            | WBUAFS, Kolkata             |
| 32. | Dr. Tapas Chakraborty   | Kyushu University, Japan    |
| 33. | Dr. Lopamudra Sahoo     | ICAR-RCNER, Tripura         |
| 34. | Mr. Ganesh Kumar        | RLBCAU, Jhansi              |
| 35. | Mr. Jaspreet Singh      | NBFGR, Lucknow              |
| 36. | Mr. Maibam M Meitei     | ICAR-CIFE, Mumbai           |
| 37. | Mr. Pritam Das          | ICAR-CIFE, Mumbai           |
| 38. | Mr. Rajiv Ranjan        | ICAR-CIFE, Mumbai           |
| 39. | Mr. Sanayaima Singha    | CoF, AAU, Assam             |
| 40. | Mr. Udipta Roy          | ICAR-CIFE, Motipur          |
| 41. | Mr. Vipul S Badguzar    | ICAR-CIFE, Mumbai           |
| 42. | Dr. Pampa Bhattacharjee | CoF, CAU, Tripura           |
| 43. | Ms. Anamika Akarsh      | F.F.Sc., WBUAFS, Kolkata    |
| 44. | Ms. Bharti Sahu         | CoF, Dr. RPCAU, Dholi       |
| 45. | Ms. Harshvathini M      | ICAR-CIFE, Mumbai           |
| 46. | Ms. Akshaya Suresh      | ICAR-CIFE                   |
| 47. | Ms. Mayuri Nag          | ICAR-CIFE, Mumbai           |
| 48. | Ms. Nandini Padhi       | ICAR-CIFA, Odisha           |
| 49. | Ms. Poonam              | BBA University, Lucknow     |
| 50. | Ms. Preeti Maurya       | WBUAFS, Kolkata             |
| 51. | Ms. Puja Rani Basak     | ICAR-CIFE, Mumbai           |
| 52. | Dr. Praveen Kumar       | Krishi Vigyan Kendra, Jamui |

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|-----|------------------------|--------------------------|
| 53. | Ms. Rishika MS         | CSIR-NIO, Goa            |
| 54. | Ms. Sneha Kumari       | CoF, CAU, Tripura        |
| 55. | Ms. Mekala Sneha       | ICAR-CIFE, Mumbai        |
| 56. | Ms. Tanuja Kulshrestha | CoF, CAU, Tripura        |
| 57. | Dr. Sanjay Kumar Gupta | ICAR-IIAB, Ranchi        |
| 58. | Ms. Sabiha Kaifi       | Dr. C V Raman University |
| 59. | Dr. Jag Pal            | Dr. RPCAU, Pusa          |
| 60. | Mr. Nayan Chouhan      | CoF, CAU, Tripura        |
| 61. | Mr. Hargobind Singh    | GADVASU, Ludhiana        |
| 62. | Mr. Sudhanshu Kumar    | RLBCAU, Jhansi           |
| 63. | Mr. Harsh K Sharma     | RLBCAU, Jhansi           |
| 64. | Mr. Mudit Agrawal      | CSAUAT, Kanpur           |
| 65. | Mr. Bishal Mandal      | RLBCAU, Jhansi           |
| 66. | Mr. Hridam Saha        | WBUAFS, Kolkata          |
| 67. | Ms. Darshana Sharma    | CoF, AAU, Assam          |
| 68. | Ms. Shruti Kumari      | CoF, AAU, Assam          |
| 69. | Ms. Supriya Rani       | CoF, CAU, Tripura        |
| 70. | Mr. Jayan Barik        | FFSC., WBUAFS, Kolkata   |
| 71. | Mr. Kalaskar Venkatesh | CoF, MAFSU, Udgir        |
| 72. | Ms. Nidhi Pandit       | Dr. RPCAU, Pusa          |
| 73. | Ms. Deepali Raj        | COF, AAU, Assam          |
| 74. | Ms. Darshana Sharma    | CoF, AAU, Assam          |
| 75. | Ms. Shruti Kumari      | CoF, AAU, Assam          |
| 76. | Ms. Shalini Singh      | CoF, BASU, Kishanganj    |
| 77. | Dr. Manjari Pandey     | COVAS, BASU, Bihar       |
| 78. | Dr. Shivbaran Singh    | COVAS, BASU, Bihar       |
| 79. | Dr. Narendra Kumar     | COVAS, BASU, Bihar       |
| 80. | Dr. Kiran Kumari       | COVAS, BASU, Bihar       |



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| 81.  | Dr. Rajesh Kumar        | COVAS, BASU, Bihar |
| 82.  | Dr. Neelam Kushwaha     | COVAS, BASU, Bihar |
| 83.  | Dr. Dhirendra Kumar     | COVAS, BASU, Bihar |
| 84.  | Dr. Ajay Kumar Rai      | COVAS, BASU, Bihar |
| 85.  | Dr. T. K. S. Rao        | COVAS, BASU, Bihar |
| 86.  | Dr. Vineet Kumar        | COVAS, BASU, Bihar |
| 87.  | Dr. Neeraj Kumar Singh  | COVAS, BASU, Bihar |
| 88.  | Dr. Diksha P Gourkherde | COVAS, BASU, Bihar |
| 89.  | Dr. Akriti Anna         | COVAS, BASU, Bihar |
| 90.  | Dr. Archana             | COVAS, BASU, Bihar |
| 91.  | Dr. Rakhi Bharti        | COVAS, BASU, Bihar |
| 92.  | Dr. Raju Kumar Dewry    | COVAS, BASU, Bihar |
| 93.  | Dr. Sadhana Ojha        | COVAS, BASU, Bihar |
| 94.  | Dr. Chayna S. Mahapatra | COVAS, BASU, Bihar |
| 95.  | Dr. Shiv Varan Singh    | COVAS, BASU, Bihar |
| 96.  | Dr. Safeeda S Begam     | COVAS, BASU, Bihar |
| 97.  | Dr. Mahmuda Malik       | COVAS, BASU, Bihar |
| 98.  | Dr. Anand Mohan         | COVAS, BASU, Bihar |
| 99.  | Dr. Kumari Chandrakala  | COVAS, BASU, Bihar |
| 100. | Dr. Abhishek Kumar      | COVAS, BASU, Bihar |
| 101. | Dr. Tripti Kumari       | COVAS, BASU, Bihar |
| 102. | Dr. Richa Arora         | COVAS, BASU, Bihar |
| 103. | Dr. Suchita Kumari      | COVAS, BASU, Bihar |
| 104. | Dr. Anuj Singh          | COVAS, BASU, Bihar |
| 105. | Dr. Mukesh Gangwar      | COVAS, BASU, Bihar |
| 106. | Dr. Prachurya Biswal    | COVAS, BASU, Bihar |
| 107. | Dr. Shagufta Praveen    | COVAS, BASU, Bihar |
| 108. | Dr. Prasanna Pal        | COVAS, BASU, Bihar |

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| 109. | Dr. Purnima Gumasta     | COVAS, BASU, Bihar |
| 110. | Dr. Diptimayee Sahoo    | COVAS, BASU, Bihar |
| 111. | Dr. Nancy Jasrotia      | COVAS, BASU, Bihar |
| 112. | Dr. Komal               | COVAS, BASU, Bihar |
| 113. | Dr. Kaushlendra Singh   | COVAS, BASU, Bihar |
| 114. | Dr. Manjari Pandey      | COVAS, BASU, Bihar |
| 115. | Dr. Manish Arya         | COVAS, BASU, Bihar |
| 116. | Dr. A K Tiwari          | COVAS, BASU, Bihar |
| 117. | Dr. Y Rojita Devi       | COVAS, BASU, Bihar |
| 118. | Dr. Shashi Pal          | COVAS, BASU, Bihar |
| 119. | Dr. Binod Kumar         | COVAS, BASU, Bihar |
| 120. | Dr. Mamta Singh         | CoF, BASU, Bihar   |
| 121. | Dr. Abhishek Thakur     | CoF, BASU, Bihar   |
| 122. | Dr. Sarvendra Kumar     | CoF, BASU, Bihar   |
| 123. | Mr. Bhartendu Vimal     | CoF, BASU, Bihar   |
| 124. | Dr. Naresh Raj Keer     | CoF, BASU, Bihar   |
| 125. | Dr. Sangeeta Kumari     | CoF, BASU, Bihar   |
| 126. | Dr. RupamSamanta        | CoF, BASU, Bihar   |
| 127. | Mr. Ashutosh K Singh    | CoF, BASU, Bihar   |
| 128. | Mr. Ravi Shankar Kumar  | CoF, BASU, Bihar   |
| 129. | Mrs. Madhu Kumari       | CoF, BASU, Bihar   |
| 130. | Ms. Pooja Saklani       | CoF, BASU, Bihar   |
| 131. | Dr. Parmanand Prabhakar | CoF, BASU, Bihar   |
| 132. | Ms. Pushpa Kumari       | CoF, BASU, Bihar   |
| 133. | Ms. Tenji Pem Bhutia    | CoF, BASU, Bihar   |
| 134. | Ms. Susmita Rani        | CoF, BASU, Bihar   |
| 135. | Mrs. Anjali Pushp       | CoF, BASU, Bihar   |
| 136. | Mr. Tapas Paul          | CoF, BASU, Bihar   |

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| 137. | Dr. Abhiman           | CoF, BASU, Bihar |
| 138. | Mr. Aman Divakar      | CoF, BASU, Bihar |
| 139. | Mr. Gyan Chandra      | CoF, BASU, Bihar |
| 140. | Mr. Rajesh Kumar      | CoF, BASU, Bihar |
| 141. | Dr. Abhed Pandey      | CoF, BASU, Bihar |
| 142. | Dr. Sachin O Khairnar | CoF, BASU, Bihar |
| 143. | Mr. Vivek Kumar       | CoF, BASU, Bihar |
| 144. | Mr. Pankaj Kumar      | CoF, BASU, Bihar |
| 145. | Dr. Md. Aman Hassan   | CoF, BASU, Bihar |
| 146. | Mr. Abhishek Kumar    | CoF, BASU, Bihar |
| 147. | Dr. Uday Kumar        | CoF, BASU, Bihar |
| 148. | Dr. Sudeshna Sarker   | CoF, BASU, Bihar |
| 149. | Ms. Aayushi Sharma    | CoF, BASU, Bihar |
| 150. | Mr. Anand Kumar       | CoF, BASU, Bihar |
| 151. | Mr. Ayush Raj         | CoF, BASU, Bihar |
| 152. | Mr. Bablu Kumar       | CoF, BASU, Bihar |
| 153. | Mr. Bharti Chanchal   | CoF, BASU, Bihar |
| 154. | Ms. Jyoti Kumari      | CoF, BASU, Bihar |
| 155. | Md. Rustam            | CoF, BASU, Bihar |
| 156. | Mr. Prashant Kumar    | CoF, BASU, Bihar |
| 157. | Mr. Sakshi Kumari     | CoF, BASU, Bihar |
| 158. | Mr. Sameer            | CoF, BASU, Bihar |
| 159. | Mr. Shivam Mishra     | CoF, BASU, Bihar |
| 160. | Mr. Shivam Raj        | CoF, BASU, Bihar |
| 161. | Mr. Shobhakant Sharma | CoF, BASU, Bihar |
| 162. | Mr. Vikash Kumar      | CoF, BASU, Bihar |
| 163. | Mr. Vikki Raj         | CoF, BASU, Bihar |
| 164. | Mr. Abhishek Kumar    | CoF, BASU, Bihar |

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| 165. | Mr. Pankaj Kumar      | CoF, BASU, Bihar |
| 166. | Ms. Mehak Ara         | CoF, BASU, Bihar |
| 167. | Mr. Siddharth Singh   | CoF, BASU, Bihar |
| 168. | Mr. Vishnu Kumar      | CoF, BASU, Bihar |
| 169. | Ms. Nidhi Nigam       | CoF, BASU, Bihar |
| 170. | Mr. Nadim Aktar       | CoF, BASU, Bihar |
| 171. | Ms. Riya Kumari       | CoF, BASU, Bihar |
| 172. | Mr. Manikant Patel    | CoF, BASU, Bihar |
| 173. | Ms. Arushi Verma      | CoF, BASU, Bihar |
| 174. | Mr. Aditya Kumar      | CoF, BASU, Bihar |
| 175. | Ms. Madhu Kumari      | CoF, BASU, Bihar |
| 176. | Mr. Ajeet Kumar       | CoF, BASU, Bihar |
| 177. | Ms. Gayatri Kumari    | CoF, BASU, Bihar |
| 178. | Ms. Suman Rai         | CoF, BASU, Bihar |
| 179. | Ms. Preeti Gupta      | CoF, BASU, Bihar |
| 180. | Ms. Khushi Kumari     | CoF, BASU, Bihar |
| 181. | Mr. Bhawana Shandilya | CoF, BASU, Bihar |
| 182. | Mr. Nikesh Kumar      | CoF, BASU, Bihar |
| 183. | Ms. Manisha Kumari    | CoF, BASU, Bihar |
| 184. | Ms. Rita Kumari       | CoF, BASU, Bihar |
| 185. | Ms. Manisha Bharti    | CoF, BASU, Bihar |
| 186. | Ms. Nisha Kumari      | CoF, BASU, Bihar |
| 187. | Ms. Priyadarshini     | CoF, BASU, Bihar |
| 188. | Ms. Pragya Sawan      | CoF, BASU, Bihar |
| 189. | Ms. Alisha Raj        | CoF, BASU, Bihar |
| 190. | Ms. Aradhana Kumari   | CoF, BASU, Bihar |
| 191. | Ms. Juhi Bharti       | CoF, BASU, Bihar |
| 192. | Mr. Mohammad Akhlaque | CoF, BASU, Bihar |



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| 193. | Ms. Nidhi Kumari      | CoF, BASU, Bihar |
| 194. | Ms. Pooja Kumari      | CoF, BASU, Bihar |
| 195. | Ms. Priya Kumari      | CoF, BASU, Bihar |
| 196. | Ms. Puja Kumari       | CoF, BASU, Bihar |
| 197. | Ms. Rashmi Anand      | CoF, BASU, Bihar |
| 198. | Mr. Raushan Kumar     | CoF, BASU, Bihar |
| 199. | Ms. Reshma Praween    | CoF, BASU, Bihar |
| 200. | Mr. Shubham Kr. Verma | CoF, BASU, Bihar |
| 201. | Ms. Shweta Suman      | CoF, BASU, Bihar |
| 202. | Mr. Suraj Raj         | CoF, BASU, Bihar |
| 203. | Ms.Vachas Vadini Mani | CoF, BASU, Bihar |
| 204. | Ms. Raushani Kumari   | CoF, BASU, Bihar |
| 205. | Mr. Shashi Bhushan    | CoF, BASU, Bihar |
| 206. | Mr. Abhishek Kumar    | CoF, BASU, Bihar |
| 207. | Ms. Ankita Suman      | CoF, BASU, Bihar |
| 208. | Ms. Catrina           | CoF, BASU, Bihar |
| 209. | Mr. Deepak Kumar      | CoF, BASU, Bihar |
| 210. | Mr. Gaurav Kumar      | CoF, BASU, Bihar |
| 211. | Ms. Hrishita Sakshi   | CoF, BASU, Bihar |
| 212. | Mr. Neeraj Kumar      | CoF, BASU, Bihar |
| 213. | Mr. Priyanshu Kumar   | CoF, BASU, Bihar |
| 214. | Mr. Ravi Prakash      | CoF, BASU, Bihar |
| 215. | Mr. Vishal Kr. Pandey | CoF, BASU, Bihar |
| 216. | Mr. Abhinav Sudhanshu | CoF, BASU, Bihar |
| 217. | Mr. Abu Talib Alam    | CoF, BASU, Bihar |
| 218. | Ms. Akriti Chandra    | CoF, BASU, Bihar |
| 219. | Mr. Aman Kumar        | CoF, BASU, Bihar |
| 220. | Ms. Anisha Rani       | CoF, BASU, Bihar |

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| 221. | Mr. Brijesh Kumar      | CoF, BASU, Bihar |
| 222. | Ms. Kumari Priya       | CoF, BASU, Bihar |
| 223. | Mr. Manish Kumar       | CoF, BASU, Bihar |
| 224. | Mr. Ravi Ranjan Kumar  | CoF, BASU, Bihar |
| 225. | Ms. Sakshi Gupta       | CoF, BASU, Bihar |
| 226. | Ms. Shikha Bharti      | CoF, BASU, Bihar |
| 227. | Mr. Tauqeer Samar      | CoF, BASU, Bihar |
| 228. | Ms Soumya Rani         | CoF, BASU, Bihar |
| 229. | Ms. Awantika Raj       | CoF, BASU, Bihar |
| 230. | Ms. Nisha Rajak        | CoF, BASU, Bihar |
| 231. | Ms. Aditi Kumari       | CoF, BASU, Bihar |
| 232. | Mr. Anand Kumar        | CoF, BASU, Bihar |
| 233. | Ms. Neha Rani          | CoF, BASU, Bihar |
| 234. | Mr. Ankit Raj          | CoF, BASU, Bihar |
| 235. | Ms. Shilpee Kumari     | CoF, BASU, Bihar |
| 236. | Mr. Mani Bhaskar Kumar | CoF, BASU, Bihar |
| 237. | Ms. Rukhsaar Praveen   | CoF, BASU, Bihar |
| 238. | Mr. Prince Raj         | CoF, BASU, Bihar |
| 239. | Ms. Pooja Kumari       | CoF, BASU, Bihar |
| 240. | Ms. Sumati Kumari      | CoF, BASU, Bihar |
| 241. | Mr. Amartya Raj        | CoF, BASU, Bihar |
| 242. | Ms. Khushbu Kumari     | CoF, BASU, Bihar |
| 243. | Mr. Ravishekar Kumar   | CoF, BASU, Bihar |

### **About our Invited Speakers**



**Dr. Dilip Kumar** is a renowned academician, researcher, and administrator in fisheries science, with over 45 years of distinguished service in India, South and Southeast Asia, and East Africa. He has held key positions in national (ICAR-CIFRI, CIFA, CIFE, NITI Aayog, Planning Commission, BASU) and international organizations (FAO, UNDP, IFAD, UNOPS, NACA, World Bank) as Scientist, Project Leader, Chief Technical Advisor, Director/VC, and Chairman of high-level committees. Dr. Kumar made significant contributions to integrated fish culture, fish health (developed a fish cell line), transboundary disease control, and aquaculture extension. He pioneered the Trickle Down System (TDS) in Bangladesh and led regional programs such as the NACA-FAO-OIE initiative on aquatic animal disease management. As Director & VC of ICAR-CIFE, he reformed fisheries education by modernizing curricula and introducing new academic streams. Post-retirement, he chaired national committees for the 12<sup>th</sup> Five Year Plan, aquaculture policy formulation, and technology-based livestock/fisheries insurance under NITI Aayog. Currently, he is Adviser to BASU, guiding the establishment of a new College of Fisheries. He has authored several influential books (including FAO and ICAR publications) and received numerous national and international accolades, notably the FAO Eduard Souma Award for the globally acclaimed Pond Aquaculture Extension Services project. Dr. Kumar's visionary leadership has advanced research, education, and policy in the fisheries sector, earning him global respect and recognition.



**Dr. B. K. Das** is a renowned fisheries scientist and Director of ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore. With expertise in fisheries immunology, aquatic health, and inland fisheries management, he has significantly contributed to sustainable fisheries development in India. Under his leadership, ICAR-CIFRI has addressed critical issues like climate change, habitat degradation, and livelihood security, while advancing research and policy for enhanced inland fish production and equitable resource sharing. Dr. Das has received numerous prestigious honours, including the Jawaharlal Nehru Award, Lal Bahadur Shastri Young Scientist Award, Dr. Rafi Ahmed Kidwai Award, Dr. Hiralal Chaudhuri Award, DBT Overseas Associateship (2005), and the Dr. M.S. Swaminathan Award by PFGF. ICAR-CIFRI, under his stewardship, won the Sardar Patel Outstanding ICAR Institution Award 2020 and other accolades. Elected as a Fellow of the National Academy of Agricultural Sciences (NAAS) in 2019, he also holds fellowships from several national and international scientific bodies. A prolific author and project leader, Dr. Das has been ranked among the Top 50 ICAR Scientists by the Stanford University Global Ranking. His dedication to innovation, education, and sustainability continues to shape the future of India's fisheries sector.



**Dr. Shubhadeep Ghosh** is the Assistant Director General (ADG), Marine Fisheries at the Indian Council of Agricultural Research (ICAR), New Delhi. A leading expert in marine fisheries science, he plays a key role in shaping India's marine fisheries research, policy, and management strategies. Prior to this role, Dr. Ghosh held senior research positions at ICAR- CMFRI, where he contributed extensively to finfish fisheries, stock assessment, marine biodiversity, and sustainable ecosystem management. His research has been instrumental in developing science-based strategies for the sustainable utilization and conservation of marine fishery resources. As ADG, Dr. Ghosh has led numerous national initiatives focused on fish stock assessment, sustainable fishing practices, and innovative aquaculture systems. He has also guided research on marine biodiversity conservation, contributing to a stronger and more resilient fisheries management framework in India. With numerous scientific publications and active involvement in national policy development, Dr. Ghosh has significantly influenced India's marine resource governance. He also represents India in international fisheries forums, promoting sustainable marine practices on a global platform.



**Dr. Pramod Kumar Pandey** has been serving as the Director of the ICAR–Directorate of Coldwater Fisheries Research (DCFR), Bhimtal, since May 2021. With over 33 years of experience in fisheries and aquaculture, he has held several key positions within ICAR, including roles at the Central Institute of Fisheries Education (CIFE), Mumbai, and as Dean of the College of Fisheries at Central Agricultural University, Imphal. Dr. Pandey has made notable contributions to fisheries science, particularly in aquatic environment management, resource mapping, and coldwater aquaculture development. He has authored over 150 publications, including seven books and numerous peer-reviewed research papers, and has mentored more than 30 postgraduate and doctoral students, fostering the next generation of fisheries professionals. Under his leadership, DCFR has achieved significant milestones, including the development of patented innovations such as a diagnostic kit for *Lactococcus garvieae* and advanced breeding systems for Golden Mahseer. His work in coldwater fish breeding, species conservation, and sustainable aquaculture technologies has earned him multiple prestigious awards and recognitions. Dr. Pandey's vision and dedication continue to shape the growth of coldwater fisheries research in India, enhancing both its scientific impact and societal relevance.





**Dr. B. P. Mohanty** is a distinguished fisheries scientist and former Assistant Director General (Inland Fisheries) at ICAR, New Delhi. With a career dedicated to advancing inland fisheries and aquaculture, his research spans animal biochemistry, proteomics, biomarker discovery, environmental stress indicators (such as arsenicosis and heat shock proteins), nutrigenomics, food chemistry, and inland fisheries development. Renowned for his pioneering work in fish nutrition and health, Dr. Mohanty's efforts have enhanced aquaculture productivity and food security through the nutritional profiling of food fishes and the development of improved feeding strategies. At ICAR, Dr. Mohanty provided visionary leadership, driving research, innovation, and capacity building while fostering collaborations with national and international agencies to tackle pressing issues in fisheries governance and sustainability. He is a Fellow of several esteemed scientific societies, including the NAARM, FIFSI, ZSK, FZSI, FISEC, and MNASI. Dr. Mohanty has contributed extensively through research publications, technical reports, and policy documents, continuing to shape the future of fisheries science and sustainable aquaculture.



**Dr. R. K. Trivedi** is currently serving as the Dean Student Welfare (DSW) at Rajendra Prasad Central Agricultural University, Pusa. He completed his B.F.Sc. and M.F.Sc. degrees from the University of Agricultural Sciences, Bangalore, and earned his Ph.D. from Rajasthan Agricultural University. Dr. Trivedi previously held the position of Professor (Full) at the West Bengal University of Animal and Fishery Sciences, where he served with great dedication and enthusiasm. He has been invited as a lead speaker and chairperson at numerous prestigious national and international conferences, reflecting his recognition in the academic and scientific community. With extensive knowledge and expertise across various domains of fisheries science—including climate change, water quality management, and climate change adaptation—Dr. Trivedi has made significant contributions to the field. He is an active life member of the Indian Science Congress, the Inland Fisheries Society of India, and a member of the Asian Fisheries Society. His work continues to inspire and impact the field of fisheries science both nationally and internationally.



**Dr. M. Krishnan** is currently serving as Adviser (Fisheries) at Infinite Sum Modelling Inc., Seattle, USA. Earlier he was state Level Project Advisory for Marine Resources, Andhra Pradesh, India. He was also Head, Fisheries Economics, Extension and Statistics Division at the ICAR-CIFE, Mumbai and he retired as Principal Scientist & Head, Education Systems Mgt., ICAR-NAARM, Hyderabad. He has worked for NITIAYOG, FAO, NACA and SAARC on consultancy projects. A seasoned fisheries expert with vast experience in research, policy, and academic

leadership, Dr. Krishnan has held several key positions in national and international organizations. He has made significant contributions to fisheries resource management, aquaculture development, and marine policy planning. Known for his strategic insights and scientific rigor, Dr. Krishnan continues to play a pivotal role in advancing sustainable fisheries through research-based consultancy and global collaborations. He has published 150 + papers in high impact factor journals.



**Dr. S. K. Das** is working as Principal Scientist at ICAR-RC for NEH, Meghalaya. He holds B.F.Sc., M.F.Sc., and Ph.D. degrees, with post-doctoral research at Auburn University, USA, supported by the Department of Biotechnology, Government of India. He has previously served as Professor at Assam Agricultural University and Central Agricultural University, Imphal. With over 33 years of experience in teaching, research, extension, and development in freshwater fisheries and aquaculture, he has contributed to state and central

agricultural universities, ICAR institutes, and international development organizations, including work in Cambodia. He has led numerous research projects funded by ICAR, ARIASP (World Bank), DARE, NATP, NAIP, NABARD, NICRA, and others. A two-time recipient of the Swami Sahajanand Saraswati Outstanding Extension Scientist Award (2001-02 and 2018), he has also served as a consultant to JICA, Lea Associates South Asia, and has been recognized by the FAO. He was conferred the CFSI Fellowship and became a Fellow of the Coldwater Fisheries Society of India in 2018. In recognition of his significant contributions to aquaculture in Northeast India, he received the NESFA Fellowship at RASHI-22 in Tripura and a Certificate of Appreciation from the Government of Nagaland for his dedicated service to the state's fisheries sector.



**Dr. Kajal Chakraborty** is a Principal Scientist and Head of the Marine Biotechnology, Fish Nutrition and Health Division at ICAR-CMFRI. A globally recognized expert in marine bioprospecting, he has authored over 270 peer-reviewed papers with 6,000+ citations, secured 16 patents, and developed 12 commercialized technologies. Listed among the world's top 2% scientists by Stanford, Dr. Chakraborty has led major inter-institutional projects to advance marine biotechnology in fisheries and mariculture. His innovations focused on development of bioactive compounds and marine nutraceuticals from marine organisms targeting lifestyle diseases managing dyslipidemia, diabetes, hypertension, and other metabolic disorders, simultaneously boosting coastal livelihoods through increased demand for seaweeds and molluscs. His accolades include the ICAR-Norman Borlaug Award, DBT Biotechnology Product and Process Development Award, ICAR-Rafi Ahmed Kidwai Award, FNAAS and VASVIK Industrial Award.



**Dr. Manish Kumar** is a Distinguished Professor at Tecnológico de Monterrey, Mexico, and an Institute Professor at Chuo University, Japan, and UPES, India. An internationally acclaimed environmental scientist, he holds a Ph.D. from the University of Tokyo and specializes in water sustainability, emerging contaminant remediation, wastewater surveillance, and climate-resilient water management. Featured among the world's top 2% scientists by Stanford University, Dr. Kumar has published over 150 research articles in leading journals. He has led major projects on arsenic and fluoride removal, wastewater treatment, and sustainable water solutions. He serves on editorial boards of esteemed journals including NPJ Clean Water and actively contributes to international collaborative research. A Fellow of the Royal Society of Chemistry, Dr. Kumar has received several prestigious honors, such as the Faculty Research Award and the Water Advanced Research and Innovation Fellowship. His work bridges cutting-edge research with practical applications, addressing global water challenges and public health concerns. His commitment to interdisciplinary research and capacity building continues to drive innovation in environmental science.



**Dr. Megha K. Bedekar**, Principal Scientist and Head of the Aquatic Environment and Health Management Division at ICAR-CIFE, Mumbai, is a recognized expert in aquatic animal health. Her work focuses on developing fish vaccines, diagnostic tools, and applying advanced technologies such as RNA interference and CRISPR. She has led several key research projects, including the development of two commercial fish vaccines for *Flavobacterium columnare* and *Edwardsiella tarda*, transferred to Indian Immunologicals Ltd. With over a decade at ICAR-CIFE, Dr. Bedekar has significantly contributed to sustainable aquaculture practices, mentored numerous young scientists, and engaged in national and international scientific outreach. She has authored numerous high-impact publications, book chapters, and review articles, earning 445 citations, an h-index of 12, and a Research Interest Score of 780.6. Her accolades include the Ayurvet Research Award (2004) and the Prof. J. P. Trivedi Award, recognizing her contributions to veterinary and fisheries science.



**Dr Jawahar Abraham, T.**, is currently serving as a Professor (Fishery Microbiology) in the Faculty of Fishery Sciences, West Bengal University of Animal and Fishery Sciences, Chakgaria, Kolkata, West Bengal. He has over 32 years' experience in teaching, research and extension programme related to fisheries science, fish microbiology, aquatic microbiology, fish disease diagnosis and surveillance, aquatic animal health management and risk assessment in various academic institutions. Dr Abraham has published over 195 scientific research articles in the field of fish post-harvest microbiology, aquatic microbiology, fish diseases, disease diagnosis and surveillance, antimicrobial resistance and aquatic animal health management in various peer-reviewed, indexed international and national journals. He has also presented various research papers in national and international conferences. He is one of the distinguished faculties on the editorial/reviewer board of various international and national journals. He is a recipient of several fellowships and awards including Young scientist award, Best teacher award, Best researcher award, Best research paper awards and Best University teacher award. He has over 140 Genbank submissions. He has been involved in the implementation of 18 external funded projects as Principal Investigator (9) and Co-Investigator (9), and received grants over Rs. 650 Lakhs. His collaborative efforts across national and international research projects have been instrumental in shaping effective fish and shrimp health management practices, contributing to the resilience and sustainability of India's aquaculture sector.





**Dr. Jitendra Kumar Sundaray** is Principal Scientist and Head of the Division of Fish Genetics and Biotechnology at ICAR-CIFA, Bhubaneswar. He holds a Ph.D. in Animal and Marine Bioresources Science from Kyushu University, Japan, and has over 20 years of experience in fish genetics, molecular endocrinology, and bioinformatics. A key contributor to India's first Seabass breeding program, he also discovered the sex change mechanism in coral reef fish. He has authored more than 115 peer-reviewed publications with 2,186 citations and an H-index of 22. Dr. Sundaray has led 10 research projects as PI, including a DBT Center of Excellence on *Labeo catla* improvement, and currently oversees two externally funded projects. His research now includes microbial endocrinology and halogenomics. He is a Fellow of several scientific societies and has received multiple honors, including Young Scientist Awards from AZRA, ZSI, ICAR-CIFE, and the Hiralal Choudhary Foundation. Dr. Sundaray leads national programs on selective breeding and genetic improvement of carp species. His work in marker-assisted selection, transgenic, and computational biology has significantly advanced sustainable aquaculture and biodiversity conservation in India.



**Dr. Binay Kumar Chakraborty** is a distinguished Fisheries Scientist, Visiting Professor, and Consultant with vast expertise in aquaculture, fisheries management, and wetland biodiversity. Formerly Director of the Department of Fisheries, Dhaka, he holds a Ph.D. in Fisheries Management from BAU, Mymensingh, and has received advanced training from Swansea University, UK. With over three decades of experience, Dr. Chakraborty has significantly contributed to coastal aquaculture in Bangladesh, particularly in the breeding and culture of mud crab, mud eel, shrimp, and seabass. He developed key technologies for crab and eel farming, established Bangladesh's first crab hatchery in Cox's Bazar, and led initiatives on stock assessment and climate-resilient fisheries. He has served as a visiting professor at Swami Vivekanand Subharti University, India, and mentored numerous postgraduate and doctoral students. A frequent keynote speaker and session chair, he has been honored globally for his contributions. Dr. Chakraborty has received numerous prestigious awards and recognitions in various fields of fisheries sciences including Biswamoy Biswas Memorial Award 2024 – Zoological Society of Kolkata, Fellow, Society for Biotic and Environmental Research – 2024, Tripura, Global Outstanding Fisheries Scientist Award – 2024, Nepal, Lifetime Achievement Award – 2023, Udayana University, Indonesia, Distinguished Ichthyologist Award, Eminent Environmentalist Award, and Best Scientist Award (2022–2023) and many more. Dr. Chakraborty is widely recognized for his pioneering work in sustainable aquaculture and global leadership in fisheries science.



**Dr. Ravi Kumar Gandham** is Principal Scientist and Head of the Animal Biotechnology Division at ICAR–NBAGR. A leading expert in animal genetics, his work focuses on bioinformatics, genomics, and host-pathogen interactions. He has led several landmark projects, including the development of the IndiGau SNP chip—the world's largest for cattle—and the platinum genome assembly of indigenous breeds like Sahiwal and Tharparkar. Dr. Gandham's research bridges computational and experimental approaches, employing advanced tools such as high-throughput genomics, proteomics, RNA sequencing, and CRISPR/Cas9, contributing significantly to livestock genomics and disease resistance. He is also a key figure in capacity building, having organized numerous national-level training programs in bioinformatics and genome analysis. His contributions to research and education have earned him several honors, including the Best Teacher Award (ICAR-IVRI) and the Hari Om Ashram Trust Award. Dr. Gandham's work has played a vital role in the genetic characterization, conservation, and sustainable use of India's animal genetic resources, positioning ICAR-NBAGR as a global leader in livestock genomics.



**Dr. Mahua Saha** is a Principal Scientist in the Chemical Oceanography Division at CSIR–National Institute of Oceanography. She holds a Ph.D. in Environmental Science (Organic Geochemistry) from the United Graduate School of Agricultural Science, Tokyo University of Agriculture and Technology (TUAT), Japan (2008). She is a recipient of the prestigious MEXT Japanese Government Scholarship. Dr. Saha earned her Master of Science in Marine Science with a specialization in Marine Chemistry from the University of Calcutta in 2001, and her Bachelor of Science in Chemistry from Bidhannagar College, University of Calcutta, in 1999. She pursued postdoctoral research at the Laboratory of Organic Geochemistry (LOG), TUAT, Tokyo, Japan, from April 2009 to 2014. Prior to this, she served as a Research Associate at the Department of Marine Science, University of Calcutta, from 2002 to June 2005. Dr. Saha has developed extensive expertise across diverse areas of environmental and marine science, including instrumental analysis, chromatography, geochemistry, analytical chemistry, persistent organic pollutants (POPs), waste management, environmental chemistry, and pollutants such as PCBs, microplastics, plastic pellets, and other emerging contaminants. Her strong scientific writing skills further complement her research accomplishments. Currently, Dr. Saha is actively involved in microplastics research projects. Her primary research interests focus on the occurrence, distribution, and impact of microplastics in the Indian Ocean region—including coastal, estuarine, and open ocean environments—across various matrices such as water, sediment, and biota. She also investigates the presence of organic micropollutants (e.g., POPs and plasticizers) associated with microplastics. Dr. Saha has an impressive publication record in reputed peer-reviewed journals, with over 8,236 citations, reflecting the significant impact of her work on the global scientific community.



**Dr. Kamal Sharma** currently serves as a Principal Investigator at the ICAR Research Complex for Eastern Region, India, where he leads research initiatives at the intersection of aquaculture, environmental science, and fish physiology. With a strong foundation in water quality assessment, enzymology, and environmental toxicology, Dr. Sharma has developed an interdisciplinary profile that addresses both fundamental and applied aspects of aquatic science. His expertise spans enzyme activity analysis, biochemical profiling, and acute and chronic toxicity studies,

complemented by extensive work on natural bioactive compounds and probiotics such as *Bacillus subtilis*. These efforts reflect his commitment to advancing sustainable aquaculture practices, improving fish health, and enhancing the resilience of aquatic systems. Dr. Sharma's research also explores the impacts of climate change on aquaculture environments and focuses on innovative strategies for water quality management under varying ecological pressures. His integrative approach—blending physiological, biochemical, and ecological perspectives—positions him as a key contributor to addressing contemporary challenges in fisheries and environmental sustainability. He has published over 129 research papers in reputed peer-reviewed journals and has achieved more than 924 citations and an h-index of 17, underscoring the academic significance and real-world impact of his scientific contributions.



**Dr. Armaan Ullah Muzaddadi** is Principal Scientist and Head of the Division of Open Water Aquaculture Production and Management (OWAPM) at ICAR-Central Inland Fisheries Research Institute (CIFRI), Barrackpore, West Bengal. He leads research, development, and extension initiatives to improve aquaculture practices in open water bodies like reservoirs, rivers, and wetlands. Previously, he served as Senior Scientist at ICAR-Central Institute of Post-Harvest Engineering and Technology (CIPHET), Ludhiana, where he focused on post-harvest processing and value addition in fisheries and agriculture. He also worked as an Assistant Professor at the College of Fisheries, Central Agricultural University (CAU), Tripura, engaging in teaching and research. Dr. Muzaddadi has published extensively in reputed journals and developed several innovative technologies and best practices in fisheries and aquaculture. His expertise spans aquaculture production, post-harvest technology, and academic mentorship, making him a key contributor to the advancement of fisheries science in India.



**Dr. Shivendra Kumar** is a Professor and Head of the Department of Aquaculture at the College of Fisheries, Dholi, Dr. Rajendra Prasad Central Agricultural University, Pusa. He holds an M.F.Sc. and Ph.D. in Fish Nutrition, Biochemistry, and Physiology from ICAR-CIFE, Mumbai, and has completed post-doctoral research in Fish Nutrition at HAKI, Hungary. Dr. Kumar possesses extensive knowledge and experience in various domains of fisheries science, with specialization in aquaculture, biochemistry, and physiology. He demonstrates broad and

in-depth expertise in biochemistry, enzymology, and aquaculture, with advanced skills in enzyme activity, protein purification, and expression analysis. His multidisciplinary research encompasses key areas such as metabolism, human and aquatic nutrition, and environmental science. He is proficient in molecular biology techniques, including PCR, cloning, SDS-PAGE, and gel electrophoresis, underscoring his strong laboratory capabilities. His focused research on fish larvae and fisheries reflects practical applications in aquaculture and developmental biology. Dr. Kumar is a prolific author with more than 125 publications, including research articles, review papers, books, and book chapters. He has achieved over 2,084 citations, and an h-index of 21, reflecting his significant contributions to the field.



**Dr. Kishore Dhavala** is an Associate Professor at the School of Ecology and Environment Studies, Nalanda University. His research primarily focuses on low-carbon energy policies, climate insurance, valuation of ecosystem services, and the blue economy. He holds a Master's and Ph.D. in Economics from Florida International University, Miami, USA. Before joining Nalanda University, Dr. Dhavala served as a Postdoctoral Researcher at the Basque Centre for Climate Change (BC3), Bilbao, Spain (2013–2016), an Instructor at Florida International

University (2009–2012), and a Consultant at the Institute of Economic Growth, New Delhi (2004–2006). Dr. Dhavala's research has significantly influenced policy decisions. Notably, his cost-benefit analysis of the Delhi Metro Rail project provided critical insights into the economic viability and broader benefits of urban transportation infrastructure in India. His work on the conservation of endangered bird species and the management of aquifer recharge and recovery systems has also informed environmental and resource management policies. He has published extensively in the field of ecological and environmental economics, with his research addressing key issues at the intersection of sustainability, economic development, and public policy.





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