

ICAR SPONSORED SHORT COURSE ON



Application of Environmental DNA for Aquatic Invasive Species Surveillance and Biodiversity Assessment



09-18

December 2026



Programme Director

Dr. N. P. Sahu

Director
ICAR-CIFE, Mumbai



Course Director

Dr. B. B. Nayak

Head & Principal Scientist
FRHPHM Division,
ICAR-CIFE, Mumbai



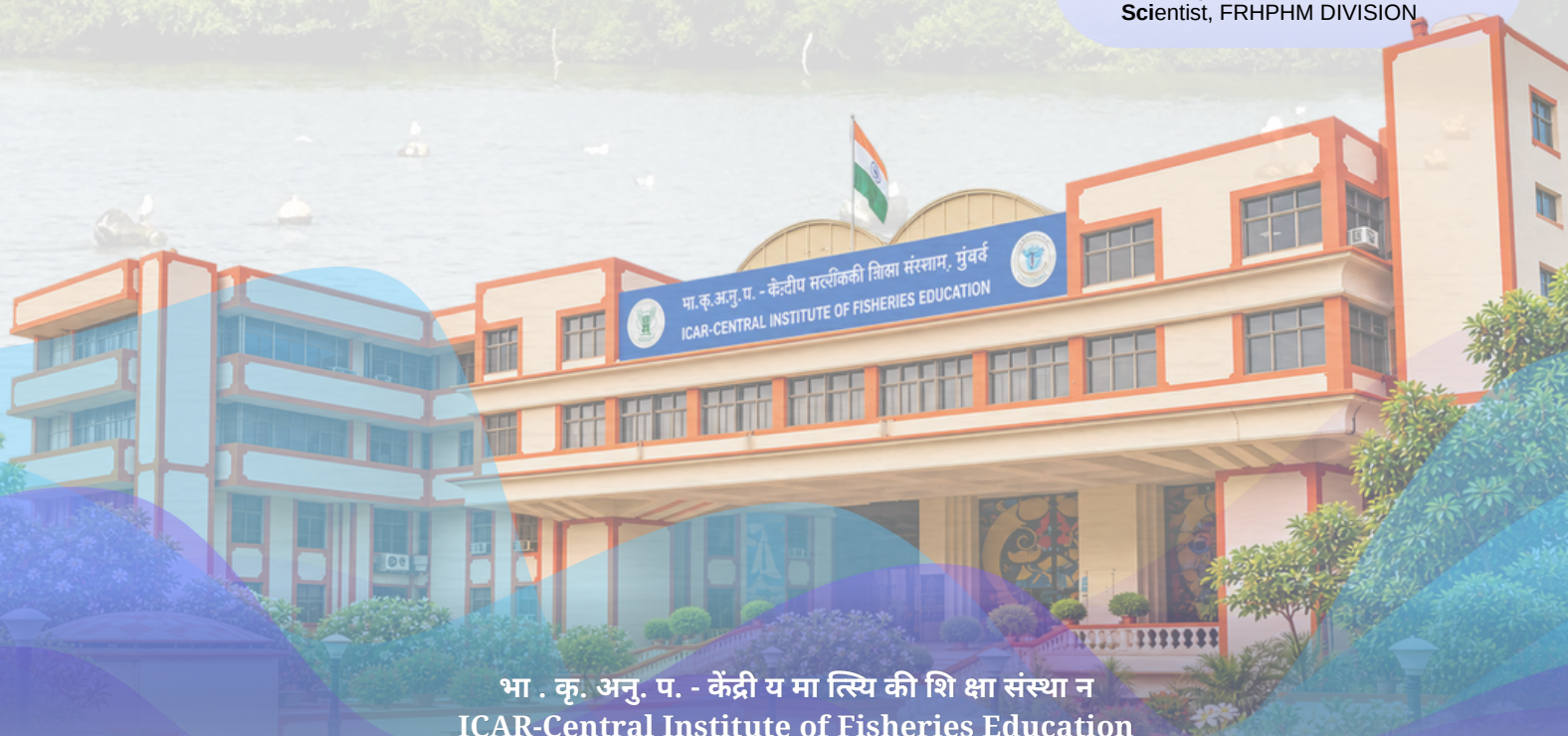
Course Coordinators

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Principal Scientist, FRHPHM Division

Dr. Manjusha L
Senior Scientist, FRHPHM Division

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Senior Scientist, FRHPHM Division

Mr. Dayal Devadas
Scientist, FRHPHM DIVISION



भा . कृ. अनु. प. - केंद्री य मा त्त्य की शि क्षा संस्था न
ICAR-Central Institute of Fisheries Education
(An University Established Under Sec. 3 of UGC Act 1956) Panch Marg
Off Yari Road, Versova, Andheri-West, Mumbai-400061 (India).



Background

Invasive species have devastating effects on aquatic biodiversity. Early detection of invasive species and regular monitoring of aquatic biodiversity are essential for developing effective conservation and management strategies. Environmental DNA (eDNA) has emerged as a powerful, non-invasive molecular tool for detecting and monitoring aquatic organisms through genetic material released into the surrounding environment. Advances in molecular techniques, including species-specific PCR, quantitative PCR and DNA metabarcoding, have enabled the identification of invasive species and the assessment of aquatic biodiversity using environmental samples such as water and sediment. These approaches offer opportunities for early detection, biodiversity assessment and long-term ecological monitoring, complementing conventional survey methods.

This training aims to strengthen the knowledge and practical skills of participants in eDNA-based monitoring approaches. The programme will provide insights into the principles, methodologies and applications of eDNA technology, with emphasis on its potential for invasive species surveillance, aquatic biodiversity assessment and management of aquatic ecosystems.

About FRHPHM Division

The Division of FRHPHM has been actively engaged in aquatic biodiversity assessment and conservation for over two decades, employing an integrated approach combining conventional taxonomic and molecular techniques. The Division has discovered several new species and documented new distribution records and first reports of several fish species. It also maintains an aquatic biodiversity museum with collections representing more than 400 species.

The Division has developed and standardized environmental DNA (eDNA)-based approaches for aquatic biodiversity assessment and has applied these techniques to characterize biodiversity in ballast water. Its research activities also include the characterization of genetic diversity in several commercially important fish species and ecologically important invasive species. In addition, the Division has developed quantitative PCR (qPCR)-based methods for the detection of emerging pathogens of public health importance.

Topics to be Covered

- Concepts and Applications of Environmental DNA (eDNA)
- Experimental Design and Sampling Strategies for eDNA Studies
- Selection of Molecular Markers for eDNA Analysis
- Design of Species-Specific Primers and Probes
- Quantitative PCR (qPCR) for Species Detection
- High-Throughput Sequencing and eDNA Metabarcoding
- Validation and Interpretation of eDNA Results
- Bioinformatics
- Analysis of eDNA Sequencing Data

Eligibility

Assistant Professor/Scientist working under the National Agricultural Research and Education System (NARES)

Maximum participants

20

Travel allowance

Participants will be reimbursed for to-and-fro travel expenses up to the cost of AC II-Tier railway fare by the shortest route. In case of travel by air, any additional expenditure exceeding the admissible AC II-Tier railway fare shall be borne by the participant.

Selection of Participants

A total of 20 participants will be selected for the training programme. Preference will be given to candidates with relevant experience in the subject areas covered under the programme. Selected candidates will be informed through an official confirmation letter issued by ICAR-CIFE, Mumbai.

How to Apply?

Eligible candidates are required to register and submit their applications online through the following Google Form/QR Code



<https://forms.gle/uRxsmV6Eu9K7kgry8>

Accommodation

Accommodation will be provided on sharing basis in Guest House

**Last Date for
Application
30 October 2026**

More details

<https://www.cife.edu.in>