

# UÉVORA Summer School'21

## Methods and Techniques for Sampling, Monitoring and Analyse Freshwater Fish

### PROGRAMME

#### Day 1 19th of July

##### Theoretical Component

14:00-14:30 Meeting and presentations

14:30-15:45 Module 1. Introduction to freshwater fish from Portuguese rivers:

- Factors influencing fish distribution;
- River continuum;
- Native and non-indigenous fish species;
- Migratory fish species.

15:45-16:00 Pause

16:00-17:00 Module 2. Catch to study and monitor: using electric fishing and experimental nets for standardized sampling of freshwater fish:

- Theoretical and practical fundamentals for electric fishing application;
- Theoretical and practical fundamentals for the use of nets;
- Other fish sampling methods;
- Security and licencing rules.

17:00-18:00 Module 3. Monitoring fish movements and behaviour with biotelemetry:

- Introduction to aquatic biotelemetry;
- Biotelemetry systems used in freshwater;
- Case studies presentation

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## Day 2 20th of July

### Theoretical Component

14:00-15:00 Module 3. Use of molecular biology techniques to monitor fish communities:

- Sample collection – Type, quantity and storage;
- Processing samples in the laboratory – DNA and RNA extraction, choice of molecular markers, bioinformatics;
- Examples and case studies.

15:00-16:00 Module 4. Assessment and monitoring of contaminants in fish species:

- Contamination, pollution and toxicity;
- Monitoring contaminants in the environment: surface waters, sediments and biological material – Sampling, types of material, storage;
- Processing at the laboratory;
- Examples and case studies.

16:00-16:30 Pause

16:30-18:00 Module 5. Methods to analyse and model species distribution in freshwater environments:

- Introduction to ecological modelling;
- Species distribution models - Concepts, methods, applications and challenges;
- Case studies.

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## Day 3 21st of July

### Practical Component

14:00-14:30 Leaving from University of Évora to local watercourse

14:30-17:30 Practical demonstration of the main fish sampling methods (e.g., electric fishing), the use of biotelemetry equipment for fish tagging and monitoring, and the collection of samples for molecular biology analyses.

18h00 Arrival at the University of Évora