

JOB POSITION

Graduate or post-graduate position - Creating an international Pan-European spatial database of migratory fish habitats to support a holistic and transparent assessment.

The French National Research Institute for Agriculture, Food, and the Environment (INRAE) is a public research establishment. It is a community of 12,000 people with more than 200 research units and 42 experimental units located throughout France. The institute is among the world leaders in agricultural and food sciences, in plant and animal sciences, and is 11th in the world in ecology and environment. INRAE's main goal is to be a key player in the transitions necessary to address major global challenges. In the face of the increase in population, climate change, scarcity of resources and decline in biodiversity, the institute develops solutions for multiperformance agriculture, high quality food and sustainable management of resources and ecosystems.

WORKING ENVIRONMENT AND ACTIVITIES

- You will be welcomed in the unit U3E: within the INRAE research infrastructure dedicated to the study of life in continental aquatic environments (IR LIFE), the experimental aquatic ecology and ecotoxicology unit (U3E) is responsible for managing several observation, experimentation and collection facilities, including the environmental research observatory on diadromous fish in coastal rivers (ORE Dia PFC). Its main aim is to monitor, understand and predict the evolution of migratory fish populations in coastal rivers and the impact of global and local changes on this emblematic component of biodiversity. As well as carrying out a large part of the long-term data acquisition, the U3E is responsible for the operational management and national coordination of this ORE. The unit is part of the OFB, INRAE, Institut Agro and UPPA research and development centre on migratory fish in their environments (Pôle R&D MIAME). This centre is attached to the U3E.
- The MIAME cluster (INRAE and OFB) is, among other things, responsible at national level for monitoring fish populations (such as European eel, Atlantic salmon, and sea trout) as part of the Data Collection Framework (DCF), a European regulation that governs the collection, management and provision of data for the various scientific groups that provide an opinion on the state of fish stocks. Within this framework, data from scientific monitoring as well as data from fishing declarations by commercial (at sea and in rivers) and recreational fishers (in rivers) must be provided to the various national and international expert groups each year. The unit also contributes to the evaluation of the environmental indicators of the Marine Strategy Framework Directive (MSFD), in particular those linked to the environmental objective on amphihaline migratory species (D01PCOE03).
- You will be in charge of development of databases for migratory fishes : most diadromous species, including salmon and eel, are declining worldwide and within the European Union. The IUCN has classified the European eel as critically endangered since 2008 while the Atlantic salmon is classified as Near Threatened by the IUCN in 2022 at the global scale, and the species is threatened in many areas of its native range, especially at its southern edge. In this context, the DIASPORA (101155914 — EMFAF-2023-PIA-FisheriesScientificAdvice) projects aims at developing or ameliorating models accounting for spatial variations in stressors, and for nested spatial scales in population dynamics. It will re-enforce the use of stage-based population models that explicitly capture the effect of environmental pressures on key life history traits. This will provide a better understanding of past changes, and will improve our capacity to forecast population dynamics and productivity in a the changing environment. This will ultimately improve the quality of scientific advice to inform cross-boundary management of these species, while adapting it to the upcoming challenges such as climate change, and related changes in ecosystems.

Developing assessment tools to quantify the effects of multiple pressures on populations is particularly challenging for diadromous fishes as the life cycle of diadromous fishes is shaped by long-range migrations between freshwater and marine habitats. Large amounts of data are collected from the large distribution range of the species. Thus, databases are crucial for efficient storage and usage of the data.

The DIASPARA project is a collaboration between research institutions from Sweden, Finland, Germany, Spain, Ireland, and the Netherlands. The project consists of four work packages: a coordination module (WP1), a life history trait analysis module for eel and salmon (WP2), a spatial database creation module (WP3; for which this position is dedicated to), and a module dedicated to improving modelling, particularly for salmon (WP4).

Objectives

The aim of this position is to develop four database structures to store spatial and ecological data. The selected candidate will work in close collaboration with an international research team, including the ICES (International Council for the Exploration of the Sea) eel and salmon working groups (<https://www.ices.dk>). Working closely with the project leaders, the ICES team, and members of the DIASPARA steering committee, the selected candidate will be responsible for taking over existing PostgreSQL database structures (SUDOANG project, WGEEL, WGNAS and WGBAST group databases) and developing the data dictionaries and database templates that meet the needs of the project and are compatible with existing ICES databases. The first tests will be made to populate the databases with example data provided by the research team. As a part of the DIASPARA project, the hired candidate will participate in two international workshops. Most of the work will be done in PostgreSQL, postgres, and using R.

The four databases to be developed are:

1. A database of eel and salmon habitats in Europe. This database will correspond to the GIS layers of two different available sources: the CCM and hydro Atlas. The database will have a structure that makes it possible to also substitute finer data collected at national level for the international scales.
2. A database of dams. This database will be populated by river obstacle data that is available in a different resolution from different areas.
3. A database of electrofishing. Currently, there are large amounts of data available from different areas and a harmonised structure is crucial. This database will be developed based on the needs of the research team.
4. A database of model parameters and life history traits. This database will be developed in a close collaboration with the DIASPARA WP4 researchers, to support the models developed in that WP. It will try to merge structures coming from eel and salmon databases into a common scheme that could be used for both species.

INRAE'S LIFE QUALITY

By joining our teams, you benefit from (depending on the type of contract):

- until 30 days of annual leave + 15 days "Reduction of Working Time" (for a full time);
- [parenting support](#): CESU childcare, leisure services;
- skills development systems: [training](#), [career advise](#);
- [social support](#): advice and listening, social assistance and loans;
- [holiday and leisure services](#): holiday vouchers, accommodation at preferential rates;
- [sports and cultural activities](#);
- collective catering.

TRAINING AND SKILLS REQUIRED

- Graduate, post-graduate, or PhD. The position is planned for a postdoc, but a PhD degree is not mandatory if the candidate can demonstrate the required skills in other ways.
- Skills in database and data processing tools and systems (Postgresql, R, etc.); Skills in database design will be appreciated but are not necessary. Knowledge of SQL is required.
- General knowledge of the ecology of migratory fish species and/or ecological databases is preferred but not required
- Managing relations with the various parties involved in the project

↘ Reception modalities

- Unit: 1036 U3E Unité Expérimentale d'Ecologie et d'Ecotoxicologie Aquatique
- City: 35042 Rennes
- Type of contract: CDD (research Engineer IE or IR)
- Duration of the contract: 16 months
- Starting date: 01/09/2024
- Remuneration monthly gross remuneration: between 2 240 € to 3 180 € brut (net 1 800 € to 2 500 €) according to qualifications and experience

↘ How to apply

Send a motivation letter and a CV to :
Laurent Beaulaton and Cédric Briand

- By e-mail:
laurent.beaulaton@ofb.gouv.fr
cedric.briand@eaux-et-vilaine.bzh

✘ Deadline for applications: 30/06/2024

Job interviews will take place 2nd week of July