# JOB OFFER

*Two year postdoctoral position in modeling the effects of ecological restoration and global change on freshwater macroinvertebrate communities on the Rhône River*

*The national research institute for the agriculture, food and the environment (INRAE) is a French public research institute bringing together a working community of 12,000 people, with more than 200 research units and 42 experimental units located throughout France. INRAE is one of the world's leading institutions in agricultural and food sciences, plant sciences and animal sciences. Its research aims to develop solutions for multi-performance agriculture, high-quality food and sustainable management of resources and ecosystems.*

## Work environment, missions and activities

You will be working in the EcoFlowS team (https://ecoflows.inrae.fr/) of the RiverLy research unit (INRAE, https://riverly.inrae.fr/), which is offering a postdoctoral research position as part of the RhônEco programme (https://www.rhoneco.org/). RhônEco is a long-term interdisciplinary research programme designed to monitor, assess and anticipate the effects of the ecological restoration of the Rhône. It constitutes an ecological observatory for the river, which adapts to the changing socio-environmental context, in order to take better account of new types of ecological restoration (e.g. sediment recharge of the main channel) and the effects of global change to help manage the river and its floodplains. This Franco-Swiss programme involves around thirty collaborators from a variety of scientific backgrounds and institutions: INRAE (RiverLy research unit, LESSEM and MRU Recover), CNRS (MRUs LEHNA and EVS), the University Claude Bernard Lyon 1 (MRU LEHNA), the University of Geneva, and HEPIA Geneva.

The alluvial plains of major rivers have been heavily anthropised over the last two centuries by numerous developments (dyking, dams, Gallardo et al., 2014). In response to a public demand for a « living and flowing river », major ecological restoration works have been carried out along the Rhône over the past twenty years. The RhônEco programme was set up in 1999 to provide scientific monitoring and evaluation of these actions and to guide management (Lamouroux et al., 2015). Within this framework, long-term physical (i.e. hydro-sedimentary) and biodiversity (fish and benthic macro-invertebrates) monitorings have been undertaken, to gain a better understanding of the quantitative responses of habitats and communities to restoration actions and to guide their nature and sizing. The reconnection of the floodplain channels to the main channel and the increase inflows has lead to a diversification of macroinvertebrate communities of the alluvial plain (Castella et al. 2015). While these two actions of restoration have shown predictable effects on communities in certain sectors of the Upper Rhône (Castella et al. 2015, Mérigoux et al. 2015, Marles et al. 2021, 2022), it remains to be tested whether they will be sustainable regarding new pressures linked to global change and whether they will be

widespread in other sectors, particularly those of the Lower Rhône (downstream of Lyon) showing different socio-environmental contexts.

In this context, we are opening a two-year postdoctoral research position (renewable for one year) focusing on community ecology, hydrobiology and modeling the responses of benthic macroinvertebrates to restoration actions and changes in environmental pressures, combined with extensive fieldwork.

One of the major objectives of this postdoctoral position will be to continue the analyses of historical monitoring (more than 20 years of data) of benthic macroinvertebrate communities undertaken on the numerous floodplain channels and on the main channel within the 6 sectors (zone between two dams) distributed from the upper reaches of the French Rhône (Chautagne) to Provence (Donzère Mondragon). These analyses, focusing mainly on communities, will complement existing knowledge (e.g. Castella et al. 2015, Mérigoux et al. 2015; Paillex et al. 2013, 2015; Marle et al. 2021, 2022). A wide range of questions and approaches can be developed, depending on the candidate's preferences and the direction taken by the RhônEco consortium. The work could be open to inter-group studies (fish, others, etc.) or international comparisons.

 More specifically, you will be responsible for :

- Analysing the long-term monitoring data of benthic macroinvertebrate communities sampled in the floodplain channels and the main channel of the Rhône to gain a better understanding of the spatio-temporal dynamics of the communities in relation to the restoration actions and the pressures exerted by global change.
- Coordinating the organisation of annual sampling campaigns for benthic macro-invertebrates in the flooplain channels in 6 main sectors, in close collaboration with HEPIA and LEHNA collaborators.
- Sampling macro-invertebrates in the flooplain channels and taking physico-chemical measurements.
- Publish knowledge (peer-review articles), contribute to project deliverables, and communicate the results of the programme to partners and at national and international conferences.
- Supervising students and working closely with the other members of the RhônEco project.

 Special working conditions: Possibility of working remotely 3 days a week (maximum), B driving licence required, ability to travel several days on mission to carry out field campaigns, and regular trips to Geneva to work closely with HEPIA collaborators.

## Training and skills

 Recommended training:  PhD in ecology/hydrobiology/biostatistics

 Knowledge required: Very good knowledge of community ecology (theoretical and applied), particularly the ecology of benthic macroinvertebrates, biostatistics with good modelling and programming skills (R), good knowledge of hydrobiology, knowledge of freshwater fish ecology or ecohydrology would be appreciated.

 Experience appreciated: Modeling of spatio-temporal community dynamics (an interest in studying the functional and/or phylogenetic diversity of communities would be appreciated), modelling the effects of environmental factors on biological diversity patterns, participation in sampling campaigns in aquatic environments, sorting and determining benthic macro-invertebrates.

 Desired skills : Good interpersonal skills, teamwork, autonomy, good organisational, writing and oral communication skills, curiosity, interest in fieldwork, a good command of written and spoken English. A good command of written and spoken French (report writing) will be appreciated.

### Life quality at INRAE

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

- up to 30 days of annual leave + 15 days of « reduction of working time » (for full-time employee)

- parenting support: CESU childcare, leisure benefits, etc;

- skills development systems: training, career advise, etc:

- social support: advice and listening, social assistance and loans, etc;

- holiday and leisure services: holiday vouchers, accommodation  at preferential-rate, etc;

- sports and cultural activities

- collective catering.

Modalities to apply:

This two year position (renewable for one year) will ideally start 02/05/2024. Depending on your experience the remuneration varies from 3135,53 € à 3 559,17 € gross monthly. Interested candidats must send a cover letter, a short research project related to this position (1 page maximum) and a CV including your publication list and the contact of two referees to David Eme, david.eme@inrae.fr, or Maxime Logez, maxime.logez@inrae.fr, or Nicolas Lamouroux, nicolas.lamouroux@inrae.fr or via mail to  David Eme, or Maxime Logez, RiverLy, INRAE centre Lyon Grenoble Auvergne Rhône-Alpes, 5 rue de la Doua, 69100 Villeurbanne, FRANCE

Deadline for application: 31/03/2024

## Reception arrangements

- Research unit: RiverLy
- Postal code and city: 69100 Villeurbanne
- Contract: Postdoctoral position
- Duration: 24 months + 12 months possible
- Beginning: 02/05/2024
- Remuneration : from 2 643,53 € to 3 342,57 € gross monthly (depending on your experience)

## Modalities to apply

Send a covering letter, a short research project you are considering (1 page maximum) and a CV including your publication list and a contact of two referees to:

E-mail :
David Eme, david.eme@inrae.fr
Maxime Logez, maxime.logez@inrae.fr
Nicolas Lamouroux, nicolas.lamouroux@inrae.fr

Mail: David Eme, or Maxime Logez, INRAE centre Lyon Grenoble Auvergne Rhône-Alpes, 5 rue de la Doua, 69100 Villeurbanne

Deadline for application: 31/03/2024

**References :**

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