PhD student: Ecological restoration of Small Shallow Lakes (M/F)

Application Deadline : 18 February 2022

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More details and application : https://bit.ly/3Hbv5Kq

General information

Reference : UMR7362-ISACOM-001
Workplace : STRASBOURG
Date of publication : Friday, January 28, 2022
Scientific Responsible name : Isabelle Combroux
Type of Contract : PhD Student contract / Thesis offer
Contract Period : 36 months
Start date of the thesis : 15 March 2022
Proportion of work : Full time
Remuneration : 2 135,00 € gross monthly

Description of the thesis topic

The PhD Project will be part of the Biodiversa transnational project EMYS-R: 'A socio-ecological evaluation of wetlands restoration and reintroduction programs in favor of the emblematic European pond turtle, Emys orbicularis, and associated biodiversity: a pan-European approach'. This interdisciplinary project focuses the key question of the most (cost-)effective wetland restoration methods suitable for sustainable maintenance of the European pond turtle and associated local wildlife throughout Europe and will tackle this question by 1) investigating the biological and biophysical processes taking place in wetlands restoration and species reintroduction, 2) assessing the trade-offs and synergies between targets, benefits and policies for wetland restoration and species reintroduction, and 3) identifying ecological, economic and social levers for improving the effectiveness of wetland restoration and protected species reintroduction in order to upscale our results to current and forthcoming similar projects throughout Europe. As such, the EMYS-R project is a participatory action-oriented research project focusing on restoration of degraded aquatic ecosystems and associated terrestrial ecosystems and their biodiversity.

The Ph-D studies will focus on aquatic macrophytes and macroinvertebrates communities which are common research topics in UMR CNRS LIVE. Study sites will be located in North East of France, South West of Germany and Latvia.
PhD research topics include:
1. Test of general theory and concept of ecological restoration, which predict that the success of wetland restoration depends on the past ecological context and subsequent natural

ecological successions that directly depends on the used management strategy. The PhD student will focus on the multiscale environmental filters (abiotic/biotic, local/regional) applied on the restored sites compared with those occurring in natural sites. He/she will adapt existing bioindication methods (based on macrophytes and invertebrates) to small shallow lakes (SSL) in order to characterize the restored ecosystem dynamics over time and classify the degree of recovery of SSL.
2. Test of experimental adaptive management in collaboration with land managers. Alternative ecological engineering designs will be tested by creating experimental ponds and/or managing bank substrates for testing adaptive management to prevent settlement of invasive exotic species such as crayfish.
3. Collaboration with the LOEWE Center for Translational Biodiversity Genomics, , Senckenberg Biodiversity and Climate Research Institute, Frankfurt (Germany), on environmental DNA metabarcoding to determine the overall biodiversity of the same sites. The PhD candidate could also conduct single specimen genetic barcoding in order to permit the determination of species that cannot be detected by surveys. The combination of traditional and molecular taxonomy will provide accurate inventories of biodiversity on every site and thus provide a solid knowledge of the restored site global functioning.

Expected qualifications:
- Completed MSc studies in the field of environmental sciences or similar.
- Good knowledge of at least one of the two studied taxonomic groups (aquatic macrophytes or macroinvertebrates).
- Experience in field and laboratory works.
- Experience in the molecular genetics lab or skills in metabarcoding analyses would be a plus
- Interest in interdisciplinary approaches
- Able to team up within a large international consortium
- Professional communication skills within the scientific consortium, but also with local stakeholders
- Skills in environmental data analysis and related software including statistics and spatial analyses (e.g. R, GIS software).
- Proficiency in English read, written, spoken level B2 according to the Common European Framework of Reference for Languages
- Personal skills : Personal commitment, independent work, independent work, Interest for solution-oriented action, driving license B,and able to swim.

Work Context

The position is located at the UMR 7362 - Laboratoire Image Ville et Environnement which is under the joint supervision of the CNRS and the University of Strasbourg.
The general theme of the research team is the interdisciplinary study of hydrosystems including flowing and stagnant waters (gravel pits, wetlands) for the perspective of sustainable environmental management of aquatic and riparian environments, in a context of global changes. One of the common objectives is to explore the means of evaluating the consequences of restoration work using diagnostic tools and innovative geomorphological and ecological monitoring indicators, in particular through their interdisciplinary nature, and to provide feedback for optimize the management of restored environments and the development of new restoration projects
This position is part of a Biodiversa transnational project and will include field and laboratory in France, Germany and Latvia. A co-supervision of the PhD between the french and german team will be set-up.

The contract should start as soon as possible – but no later than April 1st, 2022 - and will initially be limited for 3 years

Constraints and risks

risks associated with laboratory work and field experiments in aquatic ecosystems in remote areas. Travels in Germany and Latvia (several weeks per year for field sessions).