

Postdoctoral Fellowship in species distribution and mechanistic modelling

Paris Institute of Ecology and Environmental Sciences, Sorbonne Université



A postdoctoral / research assistant position at Sorbonne Université, Paris is offered to perform **climate niche modelling to determine the realized spatial distribution of vipers across the Palearctic region and identify the most threatened areas** according to future climate change scenarios. **The research will involve correlative species distribution modelling of 12 species of vipers as well as mechanistic modelling of the fundamental niche with a biophysical model already designed for ectotherms.** The project is one component of the five-years long, collaborative research program DivClim funded by Agence Nationale de la Recherche to better understand thermal niche distribution and sensitivity to climate change of Palearctic vipers. The modelling work will focus on monophyletic group of snakes (genus *Vipera*) with 14 species and 27 lineages for which pre-existing knowledge constitutes the basis of model parameterization. The mechanistic approach will rely on data already acquired about biophysical traits of vipers such as their thermoregulation strategies, energy allocation rules and water balance mechanisms. It will also make use of microclimate data collected since 2026 across France and Spain.

More specifically, the post-doc project will explore the consequences of (i) species traits related to their thermal niche and (ii) the way species exploit the microclimatic heterogeneity on species distributions under different climate change scenarios. He/she will build a (iii) dynamic energy budget comparison for a subset of three species with contrasted physiological adaptations. For this purpose, the candidate is expected to perform classical climate niche modelling (SDM) to determine the realized spatial distribution of Palearctic vipers and identify the most threatened areas according to future climate change scenarios. The mechanistic approach will complement this correlative work to identify critical functional traits that can shape the realized niche in 12 viper species, and to parameterize a dynamic budget approach in order to constrain the range distribution in 3 species. Practically, we will use the freely available program NicheMapR (<https://mrke.github.io>) to build an ectotherm model parameterized with species-specific parameters about thermoregulation behaviour, energy budget and water balance of vipers and examine how these traits and their plasticity relate to current and future species distribution.



The successful candidate will be recruited by Sorbonne Université at Paris Institute of Ecology and Environmental Sciences (iEES Paris, <https://iees-paris.fr>), for a **1.5 years long period starting ideally from January 2027**. He/she will be supervised by CNRS Senior Researcher Jean-François Le Galliard. iEES Paris is one of the most prestigious environmental sciences laboratory from France with a range of ecological and biodiversity research from genes to ecosystems. It is hosted in a vibrant campus equipped with state-of-the art laboratory and computing facilities and located in a historic and cosmopolitan district of Paris. The project will involve close collaboration with Sylvain Pincebourde (CNRS, expert in thermal biology and microclimate ecology), Fernando Martinez Freira (Universidade de Santiago de Compostela, expert in biogeography and functional ecology) and Olivier Lourdaïs (CNRS, expert in ectotherm ecology and evolution). The post-doctoral fellow is thus expected to work in an interdisciplinary and lively research environment.

Candidates should meet the following requirements (1) have a PhD in ecology, biogeography or a related field of biology; (2) hold a passion for modelling species niche distribution; (3) have a good knowledge in ecophysiology and mechanistic modelling with demonstrated experience in the field; (4) a successful publication record and (5) be creative and independent. Candidates are welcome to come with their own ideas provided they are feasible during the time frame of the project.

Applications should be sent to galliard@biologie.ens.fr. Applications should include a single file with a detailed curriculum vitae including a full list of publications, a cover letter with a brief description of skills, research interests and motivation, and contact details or recommendation letters from 1 to 3 referees. Sorbonne University is an equal opportunity/affirmative action employer committed to excellence through diversity. Women and minorities are encouraged to apply.