

Fully-funded PhD position:

Biotic interactions between alien plants and threatened trees endemic to the Mascarene islands

Regional species assemblages have been shaped by colonization, speciation and extinction over millions of years. During the last centuries, humans have dissolved natural biogeographic barriers. The introduction of invasive species and subsequent loss of native (often endemic) species is causing the breakdown of regional distinctiveness of the Earth's biota, a process called 'biotic homogenization'. How alien species replace native biota has fueled several well-established hypotheses (e.g., mutualism disruption, invasional meltdown, novel weapons). Most of these hypotheses have however seldom been evaluated *in natura* or using native species at risk of extinction. This makes it difficult to identify which process prevails in causing biotic homogenization and should be addressed to mitigate locally the rampant biodiversity crisis.

We are looking for a PhD student to work on the ANR-funded research program EDENE (see <https://sites.google.com/view/edene>), which investigates the ecological mechanisms behind biotic homogenization with a particular focus on islands as global epicenters of both biological invasions and species extinctions. Specifically, the PhD project aims at (i) collecting a large amount of field data on the state of threatened tree populations, on co-occurring native and alien plants, and on a variety of functional traits in the high-elevation volcanic island of Réunion (western Indian Ocean), (ii) analyzing this dataset so as to disentangle biotic interactions using state-of-the-art community models (joint species distribution models), and (iii) testing experimentally a range of native–alien species interactions under controlled conditions.

The doctoral contract will be with the French National Research Institute for Sustainable Development (IRD; <https://en.ird.fr/>). The welcoming laboratory is the joint research unit AMAP (<https://amap.cirad.fr/en/index.php>). The project will be supervised by Robin Pouteau (IRD, AMAP lab, main supervisor), Raphaël Pélissier (IRD, AMAP lab), Mark van Kleunen (Ecology lab at University of Konstanz) and Ghislain Vieilledent (CIRAD, AMAP lab). The student will also work in close partnership with colleagues from the Mascarin national botanical conservatory (<https://www.cbnm.org/>) and the joint research unit PVBMT (<https://umr-pvbmt.cirad.fr/>). He/she will be based in the Plant protection platform, Saint-Pierre, Réunion. The gross salary is 1,975€/month.

Candidates should hold a Master's degree or equivalent in Biological Sciences (e.g., ecology, botany, bioinformatics) and must be strongly motivated to undertake extensive fieldwork, develop statistical ecology research and conduct a large pot experiment. Applicants should have a demonstrated interest in invasion ecology, some experience in species distribution or community modeling, a well-developed skill set in R, some knowledge in GIS and a taste for botany and tropical forest ecology. Previous experience working with Bayesian hierarchical models is not required but would be a plus. English proficiency, a strong work ethic, excellent organizational skills and capacity to conduct field work in challenging and remote environments are also desired.

Candidates should apply before 4 June 2023 by sending a single pdf file containing a CV, a cover letter (describing their research interests, relevant past experiences, and fit for the position) and contact information for potential referees to Robin Pouteau (robin.pouteau@ird.fr). The successful candidate is expected to start no later than 31 July 2023 for a duration of three years.