Studying metacommunity dynamics within a managed forest using environmental DNA surveys

Postdoctoral position in ecology - 18 months
Funding: ANR BloBiForM (#BloBiForM)
Starting date: Between September and November 2021

The postdoctoral position is available in the DYNAFOR lab located in Toulouse, France. It takes place in the context of the ANR funded project BloBiForM (Block neutral models to predict the response of Biodiversity in tree-related microhabitats to Forest Management).

The central goal of this project is to develop a mechanistic understanding of metacommunity processes (dispersal, ecological niches, competition/colonization dynamics) that shape the composition of communities found in a specific type of tree-related microhabitat: the basal cavities of trees within managed forest stands. It proposes to use extensions of neutral metacommunity models to interpret the composition of fungi and insects communities across a network of cavities sampled through environmental DNA (eDNA) in the Gresigne forest (Tarn, France). These models will then contribute to predict biodiversity trajectories of managed forest under various sylvicultural regimes using simulations.

The successful candidate should develop his/her own creative research ideas while fulfilling the above objectives. Possible areas include: (i) developing mechanistic models of the spatial distribution of fungi and insect species across cavities and insect-fungi co-occurrence networks to infer metacommunity processes; (ii) modelling the spatial dynamics of basal cavities within a managed forest, coupling this dynamics with biodiversity models calibrated thanks to eDNA metacommunity surveys; (iii) assessing the detectability of species and the repeatability of community composition when using eDNA.

The postdoctoral researcher will also contribute to the general implementation of the ANR project by:

• participating to field surveys to describe cavities and acquire mould samples;
• performing the post-sequencing bioinformatics analysis of metabarcoding outputs.

In addition, candidates should meet the following criteria:

• have a PhD in ecology, computer science or a related field;
• have a previous experience in working with meta-barcoding data, illustrated by one or several publications.

The position is available for a period of 18 months starting between September and November 2021. Gross monthly salary is in the range €2,500–2,900 depending on experience. Review of applications will begin on the 1st of June 2020 and continue until the position is filled.

To apply, e-mail a letter of application, a CV and the names and email addresses of two references to Fabien Laroche: fabien.laroche@inrae.fr