

Candidate prospect for a thesis in evolutionary ecology: Causes and consequences of variability of dispersal syndromes in minnows (*Phoxinus* sp.).

Dispersal is an essential mechanism shaping species interactions and nutrient fluxes, which can result in variable dynamics in communities and ecosystems in spatially structured landscapes. While dispersal was mostly considered as a rate in metacommunity and meta-ecosystem literature, it is now acknowledged to be a non-random process resulting from several environmental factors, phenotypic traits and their interactions. Especially, within species, dispersal decision of individuals can depend upon their phenotype, involving morphological, physiological or behavioural characteristics correlated with dispersal (i.e., *dispersal syndrome*). Dispersal syndromes can mediate metapopulation dynamics, species interactions, and phenotypic range distribution. They are moreover known to affect the spatial heterogeneity of functional traits and in turn mediate intra/interspecific interactions and community dynamics. However, whether this variability in the movements of organisms and their phenotypic traits in landscapes can in turn modify the flows of energy and materials and affect food web, metacommunity and meta-ecosystem functioning is rarely studied theoretically or empirically.

This thesis is part of the ANR project DISPECO, whose general objective is to assess the role of dispersal syndromes in connected metacommunities and meta-ecosystems. Specifically, this project will be structured around two sections. The first one will aim at quantifying the variability of dispersal syndromes among populations of minnows (*phoxinus* sp). This objective will involve both field observations and experimental works to disentangle the drivers of such variability. Then, the second section will aim at assessing the causal effects of dispersal syndromes on metacommunities and meta-ecosystems. To do so, an experiment in spatially explicit mesocosm will be performed.

The thesis will be based at UMR CARRETEL (INRAE- USMB), in Thonon-les-bains (France), under the supervision of Allan Raffard (CARRETEL), and will involve tight collaborations with Simon Blanchet and Staffan Jacob at SETE (CNRS, Moulis). This thesis requires a master's degree in biology, ecology or evolution (or similar). Strong knowledge in functional or evolutionary ecology is necessary. We are looking for a candidate with good communication, autonomy and statistical skills. Good physical condition, and driving license will be important to conduct sampling in mountain lakes. This project also includes several large experimentations based in Thonon and Moulis, requiring to be mobile. We expect the candidate to be highly organized and to work rigorously, ensuring robust data acquisition. Moreover, this project will involve interaction with other postdoctoral researchers and PhD students, therefore interpersonal skills and the ability to collaborate effectively are expected. Experience in animal experimentation, quantitative genetics or field work will be an advantage.

Application: Send a single document (named 'NAME_application.pdf') containing your CV (2 pages max), a cover letter (1 page max), average grades and rankings throughout your studies, and a reference contact to Allan Raffard (allan.raffard@inrae.fr) before November 1, 2026. A videoconference audition will then be scheduled to audition the selected candidates.

Related references

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Fronhofer, E. A. et al. Bottom-up and top-down control of dispersal across major organismal groups. *Nat. Ecol. Evol.* **2**, 1859–1863 (2018).

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