Metaprogram
BIOSEFAIR

VERTYGE

PATHFINDER PROJECT

2025-2027

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Keywords
Epiphytes
Biodiversity
Dendromicrohabitats
Altitudinal gradient
Climate change

Thematics involved
Community ecology
Systematics in bryology
Environmental metabarcoding of fungal and faunal communities
Biomonitoring methods through the use of dendromicrohabitats as a bioindicator of biodiversity assessment
Scientific mediation

Departments involved
ACT
ECODIV

Units involved
UR EFNO
USC Ecodiv-Rouen
UR LESSEM

Partners
LECA - CNRS

Biodiversity linked to epiphytic dendromicrohabitats along altitudinal gradients

Backgrounds and challenges

Dendromicrohabitats (DMHs) are morphological singularities on trees that have multiple functional roles in the life cycle of many species: shelter, feeding, reproduction... However, few studies have examined the links between DMHs and the communities they host. Project VERTYGE focuses on these functions within mountain epiphytic DMHs (ivy, bryophyte, lichen) distributed along an altitudinal gradient and along the vertical position in the tree.

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Objectives

VERTYGE aims to increase knowledge of the role of epiphytes in forest biodiversity, along altitudinal (altitude) and vertical (tree height) gradients in the French Alps.

Two main objectives are targeted:

- To identify animal (micro- to macrofauna) and fungal taxa inhabiting epiphytic DMHs by environmental metabarcoding,
- To understand how functional and taxonomic variation in DMHs (morphology and composition) in relation to altitude and height along the main vertical axis filter assemblages of similar animal and fungal communities.

Beyond improving fundamental knowledge, VERTYGE will consolidate forest management tools in a context of climate change and biodiversity erosion, and will promote scientific communication and public mediation around forest biodiversity, dendromicrohabitats and VERTYGE results.

Approaches

To investigate the links between biodiversity and epiphytic DMHs, we propose to sample the plots of the ORCHAMP observation network already described and valorized. Sampling will be carried on approximately 30 trees.

Along the vertical axis of the tree, epiphytic DMHs will be described at several heights using conventional methods based on morphological criteria, and then sampled. In situ habitats will be accessed by tree-climbing. Second, bryophytes and ivy species will be identified on morphological criteria in the laboratory, and animal and fungal taxa collected from epiphytes will be identified by environmental metabarcoding.

The links between substrate (DMH), community, altitude, tree height and carrier species will then be analyzed jointly by the various project members.

To disseminate the results and other scientific advances about forest biodiversity, a seminar will be organized at the end of the project, in conjunction with a seminar aimed at relations between scientists and managers.

Knowledge, methods, results and issues relating to forest biodiversity will be disseminated to users through a halfday layman's workshop.