Abstract

Soils in mountains are quite unique ecosystems as they host a biodiversity we can’t find elsewhere. Plus, many environmental filters are influencing biodiversity patterns in multi-scales. Understanding how communities are distributed across spatial scale, identify environmental factors and species reactions is a long standing question in ecology. Here, multiples elevation gradients were targeted in French Alps and French Pyrenees, in order to respond to this interrogations. Four trophic guilds have been chosen to mimic ecological role in ecosystem : herbivores, predators, detritivores and parasitoids. Dissimilarity between samples, plots and gradients have been under focus for the following analysis. First of all, the relative contribution of three spatial scales to diversity. have been determined, with a diversity partitioning. Then, a global dissimilarity model were performed in order to identify the main predictors in every trophic guild, for each spatial scales. Finally, a correlation between observed dissimilarity and a sum of predicors have been done, to observe the potential difference in guilds responses, for each spatial scales.
Elevation gradient explains detritivores and predators diversity. Plot gradient explain herbivores and parasitoids diversity. Herbivores, predators, and parasitoids dissimilarity are mainly under vegetation and climatic variables influences, at lower spatial scales and climatic only between gradients. Detritivores dissimilarity is explained by both climatic and nutrient content.
The four trophic guilds respond differently to ecological factors, but we can observe a difference between above-ground organisms (herbivores, predators and parasitoids) and below-ground organisms (detritivores). Between gradients, species suffer more from endemism than between sample and between plot. Stochastic even could have occur, especially for predators, because of the high dissimilarity between elements, when ecological distance is low.
In conclusion, we can see, thanks to the three analysis, a light difference between guilds, but the most important difference concerns detritivores which are below-ground organisms.