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Shifts in insect trait composition along land-use intensity gradients

Background

Land-use intensification has been shown to be a major driver of global biodiversity loss and biotic homogenization of communities. By changing the trait composition of insect communities, land-use might have far-reaching consequences for arthropod-mediated ecosystem processes. Insect herbivores are an important group in terrestrial ecosystems, providing the link between plants (producers) and higher trophic levels. Human land-use and especially land-use intensification potentially act as filters for herbivore community assembly; at the landscape scale by imposing dispersal filters and on the local scale by imposing habitat filters. First studies in temperate grasslands have shown that with increasing land-use intensity, insect herbivore communities contain smaller, less specialized species with higher dispersal ability. Those changes in the functional trait composition can have consequences for a variety of ecosystem functions influenced by herbivore insects. However, we still know very little about the effects of forest management on forest herbivore communities. This project aims at filling this knowledge gap.

Project

In this project, we use state-of-the-art techniques for morphometric measurements of insect functional traits of major herbivorous insect groups in forests (mainly beetles). Combined with a long-term and large-scale monitoring data set on insect communities along forest management intensity gradients, we want to get a better understanding of how land-use in its different aspects affects insect herbivore communities in temperate forests. The project is part of the Biodiversity Exploratories research project (www.biodiversity-exploratories.de).

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