

Transboundary project for a master thesis in Environmental Science

Invasion effects of the “three of haven” on soil and pedofauna

Context

The “three of haven”, alias *Ailanthus altissima*, was introduced in Europe in the XVIII century for ornamental purposes.



Nowadays is one of the most aggressive and dangerous species and it is listed in the black list of invasive species in the Friuli Venezia Giulia (north east of Italy).

A. altissima releases allelopathic substances to avoid competition with other species and the rate of growth is much larger compared to that of autochthonous species.

Plant invasion affects plant community diversity and vegetation dynamics. Monospecific populations quickly replace the natural plant community. Moreover, *A. altissima* changes soil properties, microbial communities and pedofauna biodiversity. Earthworms are a key component for soil development and plant sustainability and are highly sensitive to environmental changes. Earthworms represent a target group to study long-term effects on soil biodiversity and forecast ecosystem evolution upon plant invasion.

Main aims

The main objective of the work is to investigate the effect *Ailanthus altissima* invasion on soil biodiversity, focusing on earthworm community as target group.

The study will focus on plant communities, soil properties and earthworms and their relationships between ecological categories, biomass and abundance. We expect a larger biodiversity in natural environments compared to monospecific populations of *A. altissima*, even if the abundance of earthworms could be larger due to the larger plant biomass of the invader.



Skills: Field practice, plant community surveys, soil sampling, earthworm extraction, lab practice.

Keywords: earthworm communities, species richness, plant invasion, biodiversity, soil properties

Fieldwork: Sampling and field activities will take place in the north-east of Italy (FVG region) while laboratory work will take place at Udine University and at the University of Neuchâtel.

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