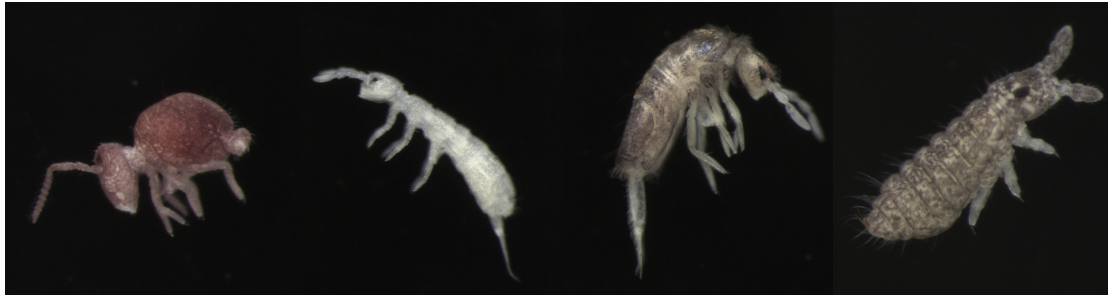


Master's thesis topic



Diversity and distribution of collembolans and/or mites in Swiss soils

Context: To face the lack of knowledge on soil biodiversity in Switzerland, a first national inventory of collembolans and mites has started in 2021. Soil microarthropods have been collected in more than 300 sites covering a wide range of protected habitats such as dry grasslands, raised bogs, fens, floodplains, natural forest reserves and managed habitats such as pasture, crops and managed forests.

Goals: Based on the student's interests and motivation, different topics are available:

- Morphological identification of specific groups and DNA barcoding
 - Learning how to prepare and identify a specimen
 - Learning how to extract DNA, run a PCR and exploit genomic data
- The use of eDNA metabarcoding for monitoring soil animals
 - Learning how to extract soil eDNA and to use next generation sequencing data
- The use of image analysis by deep learning for rapid soil biodiversity evaluation
 - Learning how to acquire high resolution images and how to train a deep learning algorithm to identify and classify soil animals

As the samples have already been collected, fieldwork will not be required. But depending on the student's motivation, additional samples could be collected, especially for sites that harbor a very specific diversity (e.g., endemic species).

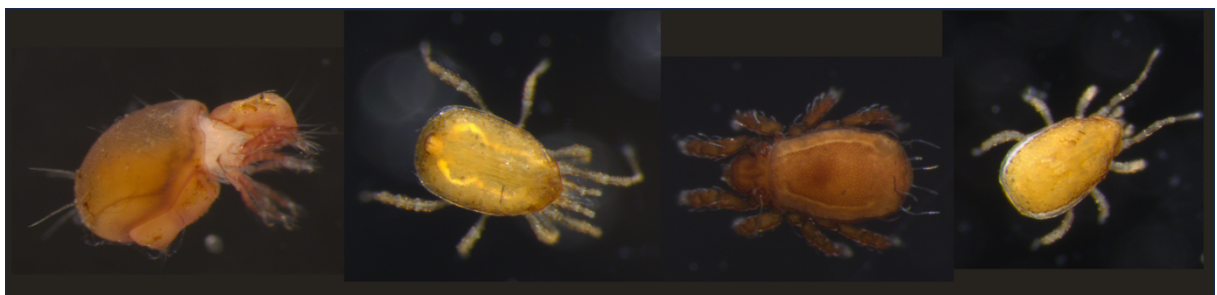
Requirements: Interest for taxonomy

Collaborations: InfoFauna, Clément Schneider (Senckenberg Museum für Naturkunde, Görlitz, Allemagne), Cyrille D'Haese (Museum national d'histoire naturelle, Paris)

Keywords: testate amoebae, peatland, greenhouse gases, seasonal variation

Workplace: University of Neuchâtel, Lab. of soil biodiversity.

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