

## The role of earthworms in soil carbon sequestration in the face of climate change – Bachelor or Master thesis

### Background

The ability of soils to store carbon may help reduce atmospheric CO<sub>2</sub> concentrations and mitigate climate change. However, although abundant in ecosystems worldwide, earthworms as ecosystem engineers have been neglected in efforts to sequester soil carbon. Particularly, their role in soil carbon sequestration in a changing climate and differences between land uses remain unclear.

### Objectives

In this thesis, you will aim at answering the following questions: (1) do earthworms increase carbon sequestration and stability in soil? (2) How is the effect of earthworms altered by future climates and different land uses? (3) Does the interaction of earthworms with other soil fauna increase or decrease soil carbon sequestration? To address these questions, you will conduct field experiments under different land uses at the Global Change Experimental Facility (GCEF) in Bad Lauchstädt, in which future climates can be simulated. You will physically fractionate soil samples taken at the end of the incubation and extract biomarkers to evaluate the stability of carbon in these samples.

### Where?

The work will be conducted in the Experimental Interaction Ecology (EIE) group at the German Centre for Integrative Biodiversity Research (iDiv) within then DFG-funded project “Interactive effects of earthworms and climate change on soil organic carbon dynamics and sequestration”. There will be the possibility to perform a part of the analyses at the Soil and Water Research Infrastructure of the Biology Center of the Czech Academy of Sciences in Budweis.

### We offer...

...research training and education in a diverse, welcoming and motivated team, supervision by experienced scientists, and the opportunity to work on a globally important research topic. You will gain insights into state-of-the-art analytical techniques and be able to work at two renowned research centers and perform research in a unique, long-term field experiment.

### We expect...

...that you are interested in soil science and ecology and ecosystem functioning. The willingness and ability to work in an international team is mandatory and you should be eager to learn new methods. You should further have a basic understanding of statistics and soil organic matter dynamics.

**If interested**, please contact Dr. Gerrit Angst ([gerrit.angst@idiv.de](mailto:gerrit.angst@idiv.de)) or Prof. Dr. Nico Eisenhauer ([nico.eisenhauer@idiv.de](mailto:nico.eisenhauer@idiv.de)), who will co-supervise the thesis. The field work for the thesis is anticipated to start in spring 2022.

