Impacts of earthworm invasion on belowground decomposer communities and decomposition in North American forest ecosystems

We offer a Bachelor or Master thesis in the framework of the **EcoWorm** project ("Ecosystem responses to exotic earthworm invasion in Northern American forests") investigating the impacts of invasive European earthworms in North American forest ecosystems.

Background:
While global biodiversity is decreasing, local biodiversity is subject to gains and losses with consequences for ecosystem functioning. Biological invasions can have severe impacts on local ecosystems (Simberloff et al. 2013), with invasions by ecosystem engineers known to dramatically alter local abiotic and biotic environments with subsequent consequences for animal and plant communities and ecosystem functioning (Craven et al. 2017, Ferlian et al. 2018). The EcoWorm project led by Prof. Dr. Nico Eisenhauer investigates earthworm effects on relationships between plant communities, soil food webs, and ecosystem processes in formerly earthworm-free North American forests. In 2018, EcoWorm researchers have set up an experiment to study the effects of earthworm invasions by experimentally introducing earthworms to non-invaded plots.

Thesis project:
In early summer 2019, a team of researchers will fly to North America to sample the experimental plots. The master student will join and sample **belowground decomposer communities** and assess **belowground organic matter decomposition** in the experimental plots with and without earthworms. The student will be introduced to **sampling techniques for soil fauna, measurement techniques for belowground decomposition** and will be able to gain insights into other sampling and research activities in the project. Samples will be taken back to Leipzig and processed there. Depending on the abilities and interests of the student, the exact topic can be further discussed.

What we offer and what we expect:
We offer research training and education in a diverse, welcoming and motivated team, supervision by experienced and highly motivated researchers at a unique research centre and the possibility to do ecological fieldwork in an amazing ecosystem.
We expect students to be interested in soil ecology, biodiversity and ecosystem functioning. The ability and willingness to work in a team are absolutely necessary. Basal skills in the statistical software R or the motivation to acquire them are also required.

Contact:
The ECOWORM project is run by **Prof. Dr. Nico Eisenhauer** (nico.eisenhauer@idiv.de) and the thesis project will be co-supervised by **Dr. Malte Jochum** (malte.jochum@idiv.de).
Please get in touch if you are interested to further discuss the options.

References:
Simberloff, D., Martin, J.-L., Genovesi, P., Maris, V., Wardle, D. A., Aronson, J., … Vilà, M. (2013). Impacts of biological invasions: What's what and the way forward. Trends in Ecology & Evolution, 28, 58–66.
Craven, D., Thakur, M. P., Cameron, E. K., Frelich, L. E., Beauséjour, R., Blair, R. B., … Eisenhauer, N. (2017). The unseen invaders: Introduced earth- worms as drivers of change in plant communities in North American forests (a meta- analysis). Global Change Biology, 23, 1065–1074.
Ferlian, O., Eisenhauer, N., Aguirrebengoa, M., Camara, M., Ramirez-Rojas, I., Santos, F., Tanalgo, K., Thakur, M. P. (2018). Invasive earthworms erode soil biodiversity: A meta-analysis. Journal of Animal Ecology 87(1), 162-72