

Exploring length-dry body mass regressions and the relationship between dry and fresh body mass for temperate arthropods

We offer a **Bachelor's or Master's project** assessing allometric regressions relating body length to dry body mass of temperate invertebrates and further relating dry to fresh body mass based on an existing dataset and a collection of temperate arthropods (Sohlström et al. 2018).

Background:

Ecological studies focusing on invertebrates commonly measure body length of involved animals rather than weighing them directly as length-measurements are easier to perform. The resulting length measurements are then used to predict body mass based on so-called length-mass regressions (Wardhaugh 2013). We have assembled a strong dataset of temperate and tropical length-fresh body mass regressions (Sohlström et al. 2018) but unfortunately were not able to assess dry body masses in this project. For the temperate arthropods, which are available as an ethanol collection, this aspect could be added now to complete the picture of how body length and body mass are related and to provide a more comprehensive toolbox for arthropod research.

Thesis project:

The project aims to a) relate body length, width and taxonomic group to dry body mass and b) relate dry to fresh body mass. Both will be very useful tools for researchers working with arthropod data. The project involves lab work in Leipzig (drying and weighing ~2700 arthropods) and the statistical analysis of the data – largely based on existing statistical code. Should there be interest to go to Indonesia and weigh the tropical part of the dataset, potential options of applying e.g. for DAAD funding could be discussed.

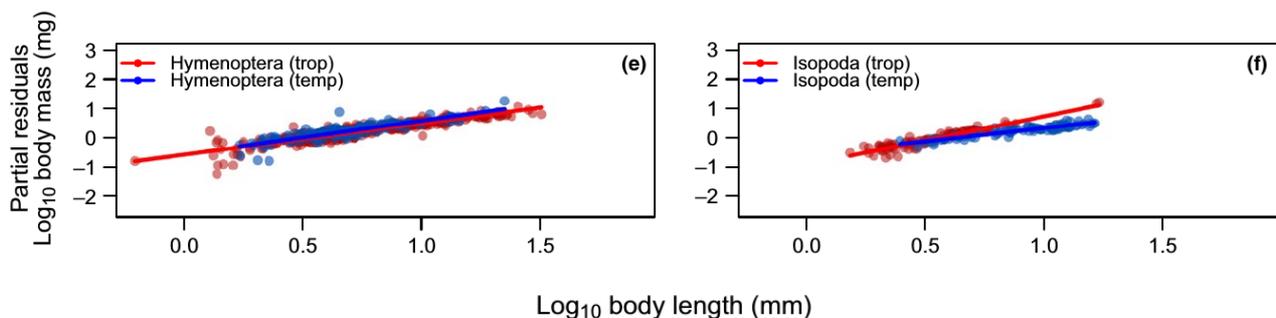
What we offer and what we expect:

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 work on exciting questions with state-of-the art ecological and statistical methods.

We expect students to be interested in working with temperate arthropods and ecological questions related to body mass. The ability and willingness to work in a team are absolutely necessary. For this project, skills in the statistical software R and the willingness to acquire some very basal GIT version control skills are required.

Contact:

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



References:

- Sohlström, E.H., Marian, L., Barnes, A.D., Haneda, N.F., Scheu, S., Rall, B.C., Brose, U. & Jochum, M. (2018) Applying generalized allometric regressions to predict live body mass of tropical and temperate arthropods. *Ecology and Evolution*, 8, 12737–12749.
- Wardhaugh, C.W. (2013) Estimation of biomass from body length and width for tropical rainforest canopy invertebrates. *Australian Journal of Entomology*, 52, 291–298.