

sDiv working group meeting report

“sUnderfoot”

Working group meeting report

The second workshop of the sUnderfoot working group took place from November 13th till 17th 2023 and finally brought us all to iDiv in person. Although the first hybrid workshop in January was already productive, we realized the special power of in person meetings very quickly. We could be much more active and interactive than the last time, resulting in vivid discussions, countless drawings on the wall and many collectively enjoyed sweets from Brazil, USA, South Africa, Czech Republic, The Netherlands and Germany. We also enjoyed a private tour through Leipzig Botanical Garden and long and board game-heavy dinners throughout Leipzig.

During the first day, we presented results and developments of the past months. It turned out that many participants were able to provide additional data to the sUnderfoot database - the base of all following scientific endeavors of the group. We revisited our code of ethics and set our goals for the week. We further got a glimpse of the first results regarding dimensions of belowground functional variation presented by Joseph Tumber-Dávila on the preliminary database that got us quite excited.

Coming from different belowground realms that we explained to each other and harmonized during the first workshop, we could now start to think about belowground plant trait variation as a whole. During the next days we changed between group discussions and breakout sessions focusing on database work and analysis, conceptual work and hypotheses formulation. This allowed us to focus on specific topics in smaller groups but also to pick experts from other groups whenever their specific expertise was needed to make progress.

We put a lot of thinking into the meaningful transformation of categorical information on clonality and bud-banks into numerical data. On the second afternoon, after some difficult discussions, we made a breakthrough and found an unexpected gold nugget that got us all quite excited. It turns out we'll write an additional paper on belowground plant growth forms - more to be announced soon.

Regarding the conceptual paper on holistic belowground plant functioning, we allowed ourselves to think outside the box of our normal analytical tools. We are still interested in the number of dimensions of functional variation that we would approach with a principal component analysis. But we realized that this tends to restrict our mindset to independent trade-offs, which doesn't capture all aspects of our holistic approach. We hence explored the possibilities of confirmatory factor analysis, which led to a completely new form of our concept. Respective analyses will be carried out on the final database before the next workshop.

On Wednesday, Alessandra Fidelis gave a very inspiring talk at iDiv seminar series about 'Why should we dig? The belowground world of tropical savannas' that reminded us - and all iDiv participants - on the importance of belowground plant organs but also on the context dependency of our ecological assumptions.

Daniel Laughlin and Helge Bruelheide further introduced sPlot to the working group, opening up the discussion about our second paper. This paper will focus on linking belowground functioning to global environmental gradients and drivers under global change. We developed hypotheses to be tested by visiting traits and functions of our concept and relating them to fire, drought or weather extremes. The resulting hypotheses will be tested before and during the next workshop.

To allow all planned analyses to run simultaneously we prioritized the finalization of the database until December and decided to publish it as a separate data paper.

Shortly before the workshop we got the positive information that a sDiv PostDoc position got funded for Karl Andrzejczak to study if 'belowground plant strategies predict ecosystem functioning under climate change'. Therefore, Karl could already join the workshop and introduce his plans to the group. This is an amazing opportunity to make use of our database and to start building upon our concept right away.

Altogether, the workshop was a great success, less exhausting and more fun than the previous hybrid version. We are looking forward to the incoming results over the next months and specifically to the next meeting in June!

