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sDiv working group meeting report
”sDevTrait - streamlining development efforts in tools for ecological trait analyses”

In August 2022, members of the sDevTrait working group met for the third time. The first meeting in 2020 was fully virtual, the second one in September 2021 was hybrid, with roughly half the participants attending in person. This time finally, almost all participants met in-person at the iDiv. Still, some slots were declared as hybrid slots beforehand in order to give all members a chance to participate, including those who could not come to Leipzig.

The working atmosphere was very good and productive. iDiv provided all the tools needed for effective and efficient brainstorming, discussions and hands-on work. Most of the sessions took place with the full group in the seminar room. This setting was used for presentations and to plan and discuss the next steps for the Key Trait Synthesis and GAPS projects (see below). We kicked-off data collection during the workshop by splitting into smaller groups. Those sessions were limited in time to 1-2 hours each and followed by group sessions, where the results were presented.

Katja Seltmann joined remotely via Zoom and gave a presentation titled „Extending Anthophila research through image and trait digitization” outlining the ideas and goals of the Big Bee project. Daniel Mietchen and Jorrit Poelen jointly presented „Exploring Traits of the Open Traits Network (OTN)”, where they demonstrated a working prototype of data integration into Wikidata and Scholia. All presentations were followed by fruitful discussions.

Brian Maitner presented an idea for a joint research project he developed with Rachael Gallagher and Brian Enquist. The code name of the project is GAPS, as its goal is to reveal global gaps in trait knowledge. As trait data is becoming increasingly available across the tree of life, we still lack an understanding of what data we have and what data are missing. The proposed approach to fixing this is to first summarize openly-available trait data, and then assess the taxonomic and geographic completeness. During the workshop we kicked-off work on this project by creating a workflow that is built around a set of simple R scripts that summarize the number of records for each trait-taxon combination in each resource. This workflow aggregates these metadata across datasets, standardizes taxonomy, and assigns traits to a broad category (e.g. interaction, morphology, physiology). The output of the workflow can then be used to find data across datasets. Once this summary of open trait data is complete, it will be paired with taxonomic data (species lists, estimated numbers of species) and geographic data (range maps) to assess trait data completeness across the globe and across the tree of life. This work will thus both improve trait-based science by facilitating data discovery and targeted sampling and provide a proof-of-concept analysis to bring the OTN together to work across disciplinary and geographic boundaries.

Early in the meeting, two main projects were identified as the focus of the workshop: 1. The key trait synthesis, using body size (already outlined in the last working group meeting). 2. The GAPS project suggested by Brian Maitner et al. We realized that both projects can be built upon the same data basis derived from all the data sets in the Open Traits Registry. An

open call to trait data collectors is planned, so that everyone is able to contribute their data and ideas. In order to make data in the registry more easily findable, we decided to prototype a searchable web interface with aggregated information.

A revised version of the first working group manuscript ("Ten (mostly) simple rules to future-proof trait data in ecological and evolutionary sciences") was submitted to Methods in Ecology and Evolution a few days ago. The prototype of the web interface for the trait registry with aggregated data and search feature was presented at the 2nd Open Traits Meeting in September along with the idea of the GAPS project.

We thank iDiv staff for all the support and making this a pleasant, well-organized and safe meeting.