German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig
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sDiv working group meeting report

"sCaleGrassDiv"

30 January - 03 February 2023

Our working group is focused on studying the factors that influence plant diversity in grasslands and the underlying mechanisms at different spatial scales (grain sizes). In order to achieve this objective, we have gathered data from eleven datasets originating from various sampling campaigns. These datasets were collected using the same methodology (available at https://edgg.org/databases/GrassPlot) across different years and grassland habitat types located across the territory of Ukraine.

With this data we aim to determine:

(1) What are the relative contributions of different drivers, such as land-use, habitat type, and environmental conditions (e.g., biogeographic gradients and soil properties), to the species and functional diversity and composition of plant communities across various spatial scales?

(2) How do the effects of land-use and other environmental factors on plant diversity and composition vary based on the type of land use, the plant community group under consideration (vascular plants, bryophytes, lichens, and overall plant community), and the specific facet of diversity being investigated (e.g., species number, beta diversity, or different measures of functional diversity)?

In the 1st working group meeting we aimed to establish a theoretical framework that would enable us to empirically examine how land use and other environmental drivers shape the diversity of plant communities across different spatial scales. Additionally, we intend to investigate whether the impact of these drivers on biodiversity is influenced by changes in the abundance of rare species.

Before the workshop, we conducted the following preparatory activities (Fig.1):

- Compiled datasets from different data owners and sampling campaigns, ensuring a comprehensive coverage of relevant information.
- Summarized our own datasets that contain measured traits for the plant species included in our study.
- Conducted a literature review to identify existing evidence related to our research hypotheses and determine any knowledge gaps.
- Conducted an initial exploration of the TRY and GRooT databases, summarizing the available traits that could be relevant to our study.

These preparatory steps have provided us with a solid foundation to further delve into our research during the workshop and make informed decisions regarding our study design and analysis.

During the meeting, our team accomplished the following tasks (Fig. 1):

(1) Extracted climate data by utilizing the coordinates of our study plots and employing GIS tools.

(2) Cleaned and merged all datasets and GIS data into a final working dataset, referred to as "Delivery one" (Fig. 1).

(3) Collaboratively worked on defining the research questions, refining the methods, and planning the data analyses for Paper 1.

(4) Developed hypotheses regarding the selection of traits for future analyses, which are intended to be the focus of our 2nd WG meeting (06-10.11.2023).

(5) Presented our project during the seminar series held at iDiv (Presenter: A. Kuzemko).

Following the meeting, we divided into sub-teams and meet few times after the WD meeting 1 to make progress in the following areas (Fig. 1):

- Conduct data analysis for Paper 1, agree on the final approach for data analysis, and initiate the writing process for the draft of Paper 1.
- Prepare and deliver presentations on the results of our 1st WG meeting at the following conferences:
    (1) The 65th Annual Symposium of the International Association for Vegetation Science (IAVS 2023), Australia, 3-8.09.2023, https://iavsaustralia2023.com (Presenter: A. Kuzemko)
    (2) GfÖ Annual Meeting 2023 September 12-16, 2023 Leipzig https://www.gfoe-conference.de (Presenter: O. Buzhdygan)
- Harmonize the nomenclature of our species list with the nomenclatures used in trait databases and for future phylogenetic analysis (intended to be the focus of our 2nd WG meeting).
- Assemble traits for our species using different databases, identify gaps in the available trait data, address uncertainties and methodological challenges associated with the collected traits.

These post-meeting activities were designed to propel our research forward, enabling us to analyze the data, disseminate our findings at conferences, refine species nomenclature, and assemble comprehensive trait datasets for our species of interest, thus, to be well prepared for the 2nd WG meeting (06-10.11.2023).

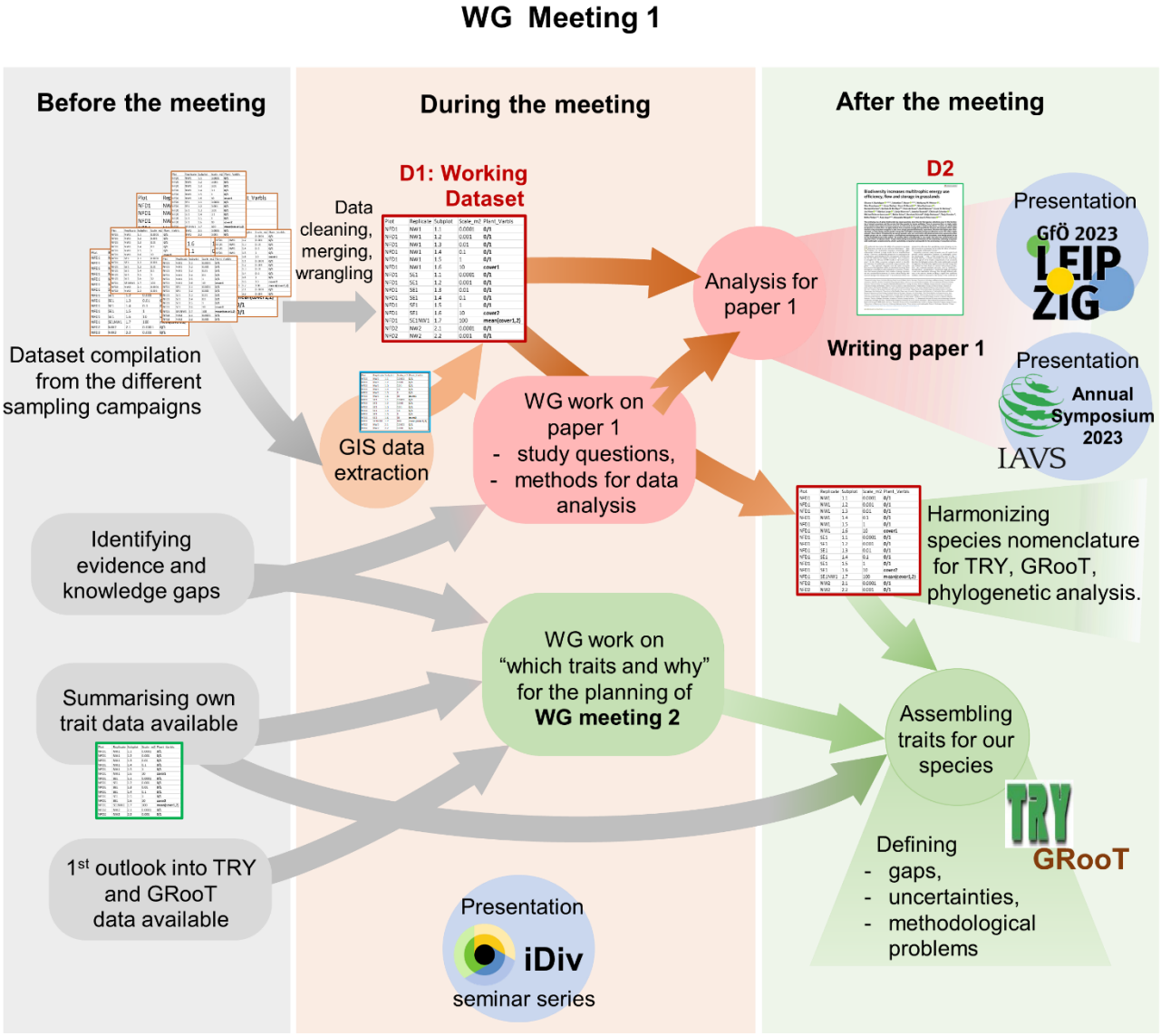

Fig. 1. Infographic highlighting the key activities before, during and after the 1st working group meeting.
D – deliveries; WG – working group.