

2nd Working Group Meeting – Report

“sCaleGrassDiv – 2nd working group meeting”

6 November – 10 November 2023

<https://www.idiv.de/en/scalegrassdiv>

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). By plant diversity we mean different facets of biodiversity, including taxonomic, phylogenetic and functional diversity. 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 from 2010 to 2022 and grassland habitat types located across the territory of Ukraine. Our dataset includes 191 plot series, where 7 subplots of smaller scales are subsequently nested within each other.

The aim of our 2nd working group meeting was to test how different biodiversity facets, i.e. taxonomic, functional, and phylogenetic, differ across spatial scales and different grassland types.

For this, **before the WG 2**, we conducted the following preparatory activities (Fig.1):

- Compiled datasets of traits (extracted from TRY, GRooT, RSIP) according to the list of traits agreed during the 1st WG meeting (led by Selina).
- 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 the knowledge gaps.
- Prepared first draft of Paper 1 “Drivers of plant diversity across small spatial scales in grasslands” (led by Oksana).
- Prepared dataset with native/non-native species attributes (led by Svitlana).
- Created a database of species Ecological Indicator Values (EIV) using the EIVE-1.0 Database (led by Olha).
- We have presented the preliminary results of the 1st WG meeting on the two conferences:
 - The 65th Annual Symposium of the International Association for Vegetation Science in Australia (Anna).
 - The 52nd GfÖ Annual Meeting in Leipzig (Oksana).

These preparatory steps provided us with a solid foundation for further work during the workshop and for making informed decisions about the design and analysis for the next paper (will be led by Denys).

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

- (1) Discussed the first draft of the Paper 1 (led by Oksana), refined the analysis and made the planning for next steps up to the submission.
- (2) Discussed the possible follow-up paper which would compare the responses of the vascular and non-vascular plants across scales.
- (3) Revised hypotheses regarding the selection of the traits for the Paper 2 so that our traits cover as much variation in ecosystem functioning as possible and so that we have the traits meaningful for ecosystem functioning instead of just taking all traits that we have. Thus, we used the recognized overlapping approaches to select the traits, i.e. related to Leaf/Root Economic Spectrum; CSR strategy, GSPFF, and LHS strategy.
- (4) Revised and agreed on the imputation strategies that we will use for the trait-gap filling for our data.
- (5) Worked on the conceptual framework and data analysis for the paper using traits - Paper 2 (will be led by Denys Vynokurov), which will compare taxonomic, phylogenetic & functional diversity across spatial scales and grassland habitat types. Developed the pipeline for the analysis for paper 2 (data handling, R codes and visual outputs).
- (6) Worked on the conceptual framework for Paper 3 (will be led by Svitlana Iemeljanova) on the patterns of native vs. alien diversity, their drivers across scales.
- (7) Discussed the conceptual view for Paper 4 (will be led by Olha Chusova) – on the species niche breadth using EIV and their drivers across spatial scales.

Following the WG meeting 2, the sub-teams will meet several times to make progress in the following areas (Fig. 1):

- Finalize and submit Paper 1 (led by Oksana), preliminary titled “Drivers of fine-grain plant diversity in grasslands across spatial scales”.
- For Paper 2 (led by Denys):
 - Joining all available trait data from different sources for our selected traits.
 - Finishing the selection of traits depending on the threshold (trait representation in our dataset).

- Making imputation for our trait data, to fill the gaps.
 - Checking the nomenclature to refine the phylogenetic tree.
 - Refining the R code to make it more efficient.
 - Preparing figures for the manuscript.
- For paper 3 (led by Svitlana) on native/non-native species and their relation to spatial scale: to keep working on the literature in order to develop the solid conceptual framework for the paper.
 - For paper 4 (led by Olha) on EIV: also, to work on the literature in order to develop the solid conceptual framework for the paper.

These post-meeting activities were designed to propel our research forward, enabling us to finalize the already written manuscript (Paper 1), to finalize the data analysis for second paper developed during the 2nd WG meeting (Paper 2), and to develop the conceptual frameworks for the two other papers that we have started to discuss during the 2nd WG meeting (Paper 3 and Paper 4), thus to be well prepared for the 3rd WG meeting 27-31.05.2024).

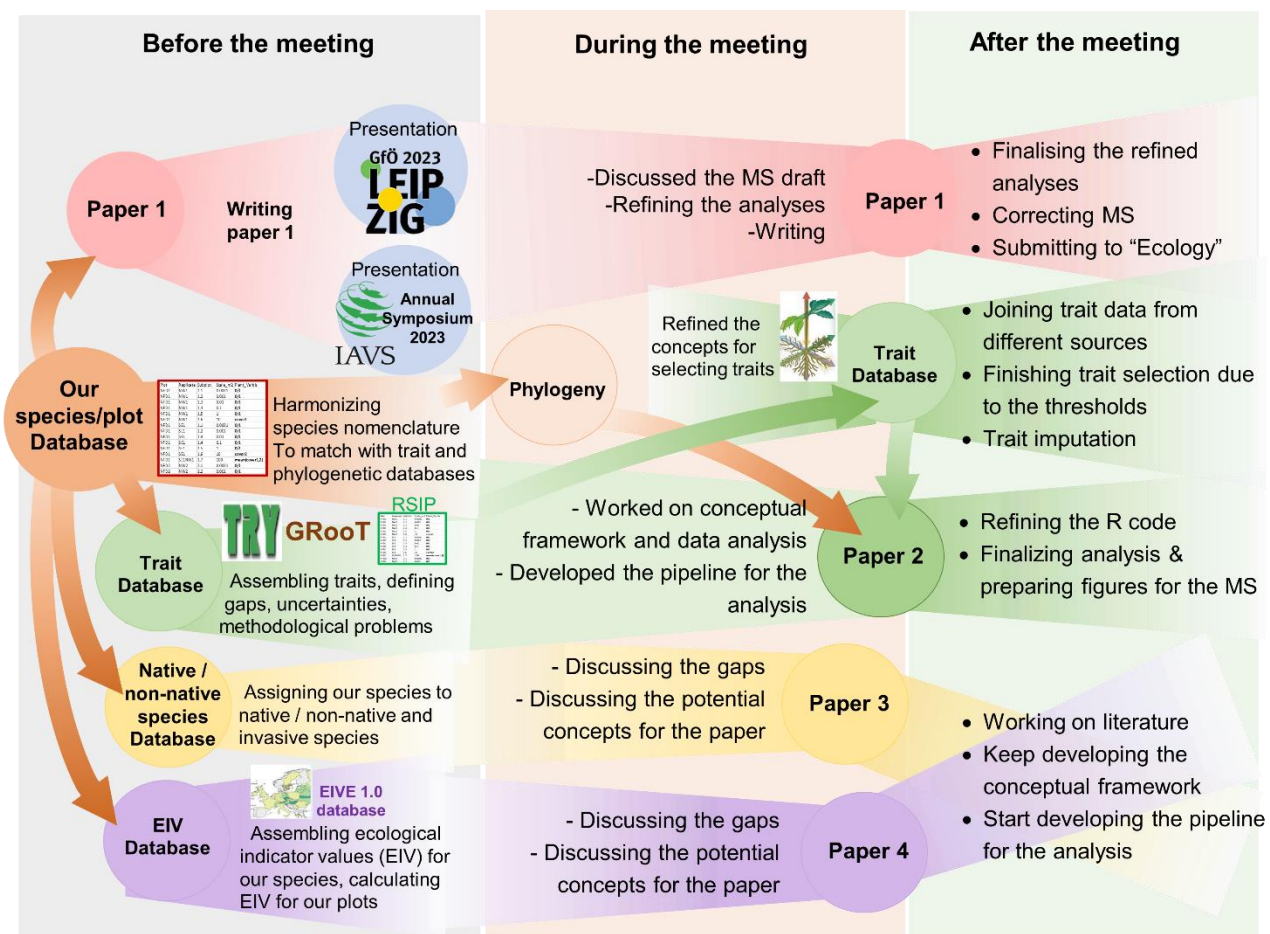


Fig. 1. Infographic highlighting the key activities before, during and after the 2nd working group meeting.