

sDiv working group meeting summary

“sREplot – Upscaling of individual species dynamics to community trends in biodiversity and composition using vegetation change data sets”

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The overall aim of the sREplot workshops is to quantify the temporal changes in individual species (winners and losers, colonization and extinction), link these changes to various human impacts, and scale up from individual species dynamics to community trends in biodiversity. Identifying the species that show consistent changes over time, the traits they share, and their evolutionary relationships, can advance our fundamental understanding of both the causes and consequences of biodiversity change.

In the first sREplot workshop, we focused on a large database of forest understorey resurvey studies across temperate forests (> 3200 vegetation plots). The database we used has been collected under the forestREplot initiative, mostly over the last ten years (www.forestreplot.ugent.be). It is an informal and unfunded network of forest ecologists sharing their data with the aim to do collaborative analyses. However, the research to date was mostly initiated haphazardly by individual members, without a clear research agenda. Therefore, as a first important objective of the meeting, we aimed at establishing a first working group around these data, initiate new synthesis analyses (see below), and discuss the future functioning of the network. Most of the 14 participants were data contributors of forestREplot (others will join in the second meeting), but they covered different expertise and interests: e.g., geobotanists, statistical ecologists, forest ecologists. Several of these participants gave short presentations about their typical approaches to studying resurvey data (*ca.* 10 % of our time), which was especially inspiring for the follow-up discussions.

Because several members (management committee and data contributors) of forestREplot participated in the workshop, this was a good opportunity to discuss about several important aspects of the future of the network (*ca.* 10% of our time). The discussion was organized around the following topics: technical aspects of the database, network governance, database use, authorship rules. The decisions that were taken were circulated to the entire network and finally approved as an updated basis for collaboration.

The core of the meeting was actually devoted to the initiation of new synthesis analyses. We started with an open brainstorming session to list priority open research questions, related to the general objective of the working group, but also relevant in the context of the available data (emerging threats in temperate forests). We spend *ca.* 15% of our time to have these discussions. All ideas for research questions were listed on the white boards and, finally,

ranked according to the scope of the working group and feasibility to answer the questions with the data at hand. Indeed, some ideas were classified as highly interesting 'wild' ideas that require further conceptual development and/or extra data(bases). All ideas were carefully recorded and circulated among all participants as a basis for future work.

The brainstorming initiated concrete projects for new synthesis analyses around questions that can be clustered around three main themes:

- Climate & Traits: using functional traits to explain/predict how understory species respond to climate change
- Meta-community dynamics: from neutral to trait-based effects
- Decadal changes in European forest types

After the plenary sessions, we split up into subgroups (with regular back reporting to the entire group) according to these themes to start drafting outlines, developing some first code and results, identifying lead authors, etc... for concrete paper projects (ca. 65% of the time). Each group also made an inventory of requirements for additional data, such as climate variables that need to be derived from external databases. We distributed tasks so that this additional data collection is a real group effort, which will benefit the different projects. In a wrap-up session towards the end of the meeting, the progress and expected time line of each project was summarized, the technical aspects of data sharing were explained, and a final decision of our 'model for collaboration' in the post-workshop months was taken.

Overall, we were very pleased with the very open and friendly atmosphere in which we could discuss ongoing and new ideas. Besides the scientific discussions during the various scientific sessions, the conversations we had during lunch and dinner were essential to create a group spirit of trust and enthusiasm. The fruitful discussions we had really boosted the forestREplot network, which now entered a new phase of research synthesis studies. In this context, we would like to highlight the spontaneous inclusion of an iDiv PhD-student (Ingmar Staude) to our group who brought in several new aspects to our discussion. Finally, the great support from the sDiv staff and stimulating environment at the iDiv center was certainly a big help in making this first meeting a success. Looking forward to the next meeting in May 2019.