– GrassPlot Newsletter No. 9 –

10 April 2021

Dear members of the GrassPlot Consortium,

The election to the new GrassPlot Governing Board went unexpectedly fast. There were nine nominees, but only seven of them agreed to stand for the election. Our Bylaws, however, state that if there are as many or fewer candidates than the seven seats, these persons are elected without formal election. Therefore, the new Governing Board started its term of duty on 1 March 2021. The composition is very similar to the previous period. We welcome Denys Vynokurov from Ukraine as a new member and say goodbye to Jutta Kapfer. We would like to thank Jutta for her service in the past two years, but particularly for the setting up of our wonderful website. In this newsletter we mainly introduce the Governing Board members and their responsibilities. Moreover, we propose a new paper project and inform you on several other relevant issues.

Enjoy reading,

The GrassPlot Governing Board
(*Jürgen Dengler*, *Idoia Biurrun*, *Sabina Burrascano*, *Iwona Dembicz*, *Riccardo Guarino*, *Remigiusz Pielech & Denys Vynokurov*)

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The new Governing Board

In the following, we present you the Governing Board (GB) 2021–2023 with their biosketches (which were planned for the election) and their special tasks (on which the GB has agreed upon in its first meeting). You find further details and contact data on our website (https://edgg.org/databases/GrassPlot):

Jürgen Dengler, CH/DE (Custodian)
Outreach, Newsletter, Opt-in procedure

I am Professor of Vegetation Ecology at the Zurich University of Applied Sciences (ZHAW). My many interests are vegetation ecology, vegetation classification, macroecology and conservation biology, with a special focus on semi-natural and natural grasslands of the Palaearctic. Many years ago, I "invented" what later became the EDGG standard multi-scale biodiversity sampling methodology and is now used in the annual EDGG Field Workshops (and becomes increasingly adopted by other researchers). I am very glad to see that these data are now pooled in the GrassPlot database, offering many exciting avenues for scientific analyses across multiple spatial scales. If elected, I would continue to explore the scientific virtue of our already existing database, while attracting new data contributors as well as data analysts with splendid ideas what else to do with them.

Idoia Biurrun, ES (Deputy Custodian)
Database manager

I am an Associate Professor at the University of the Basque Country in Bilbao, Spain. My interest as vegetation scientist is focused on the classification, ecology and diversity patterns of grasslands and other habitats. I have served as manager of GrassPlot since its foundation in 2017 during the Workshop Phytodiversity of Palaearctic grasslands in Bayreuth. I am currently member of its Governing Board, as Deputy Custodian. My responsibilities include managing data and contacting data providers. I have also contributed to GrassPlot several datasets from the Basque Country, and participated in several EDGG Field Workshops, where the core data in GrassPlot have been sampled. I am willing to continue my collaboration with GrassPlot, be it searching, asking and entering new datasets, especially from underrepresented regions, helping to coordinate harmonization of composition and header data, as well as preparing data for the new projects using GrassPlot data in coordination with project leaders.

Sabina Burrascano, IT
Handling of composition data

I am an Associate Professor at the Environmental Biology Department of Sapienza University of Rome. My research focuses on species diversity in response to environmental and human factors in semi-natural grasslands and forests. I mainly study vascular plants, but I also work on multi-taxonomic data. I was involved in the preparation of GrassPlot compositional data, and I am collecting data along the Apennines using the GrassPlot protocol. Being built by small size organisms while extending over wide areas, grassland key patterns and processes encompass strikingly different spatial scales. In this view, GrassPlot has a huge potential towards a proper assessment of multiple facets of grassland biodiversity in relation to drivers operating at different scales. I will put effort and promote the finalization of GrassPlot compositional data to allow research on beta-diversity across different spatial scales.

Iwona Dembicz, PL
GrassPlot Diversity Benchmarks, connection to EDGG Field Workshops

I am a Postdoc at the University of Warsaw. My scientific interests include ecology of grassland ecosystems and nature conservation. I supported the idea of GrassPlot even before the database was officially started in 2017. I participated in eight EDGG Research Expeditions/Field Workshops. Moreover I am co-owner of several other datasets (e.g. from Ukraine, Poland, Tajikistan, and Belarus) that were contributed to GrassPlot. As a member of the former GrassPlot Governing Boards I helped with addition of new data, the database check, cleaning and improvement of its content. I think that GrassPlot gives exceptional opportunities to answer many still unresolved ecological questions and it should still grow. My plans for the future include gathering of new data (through organization of EDGG Field Workshops and in other projects) and encouraging other researchers to join the consortium. Besides, I would like to perform analyses and prepare publications based on GrassPlot.

Riccardo Guarino, IT
Harmonisation of syntaxonomic information

I live and work in the Mediterranean Region, dry grasslands and dwarf shrublands are my favourite vegetation types. I like to explore the effects of climate and land-use driven changes on the structure, dynamics, composition and functioning of vegetation. GrassPlot and the EDGG are a great ways to cultivate my scientific interests. I have organized the fourth EDGG field workshop in Sicily and attended four more of them. I hope I'll keep on giving my contribution to the growth of the GrassPlot database until forces and budgets allow. I have been a member of the outgoing GrassPlot Governing Board and I gratefully acknowledge my nomination for another round. I'll do my best to help in standardizing the taxonomic nomenclature (I co-authored the last edition of the Flora of Italy and related data-bases), classifying vegetation plots, participating in the discussion on the environmental drivers and related explanatory variables at different spatial scales.

Remigiusz Pielech, PL
GrassPlot Diversity Explorer, Harmonisation of header data

I am an independent researcher at the University of Agriculture in Kraków, Poland. My studies are focused on the ecology of riparian and mountain ecosystems as well as on the spatial patterns of biodiversity. Together with my collaborators, we contributed two GrassPlot datasets from the Karkonosze Mountains (SW Poland). We used EDGG sampling scheme to monitor changes in the vegetation of previously abandoned mountain meadows after grazing recovery. I had a pleasure to be GrassPlot Governing Board member in 2019-2021. My main responsibility was to develop the GrassPlot Diversity Explorer, an interactive online tool to explore the GrassPlot database. Besides, I was also involved in developing improved database structure and vegetation type assignments. My plans for the future includes further developments of the GrassPlot Diversity Explorer and improvements of database structure. I am also involved in joint GrassPlot-EVA project related to biases in species richness data in large phytosociological databases.

Denys Vynokurov, UA
GrassPlot website

I am a vegetation ecologist and geobotanist from Ukraine, working at the M.G. Kholodny Institute of Botany, National Academy of Sciences of Ukraine, Kyiv. My main interest is dry grasslands of Europe, their diversity, syntaxonomy, biogeography, conservation. I participated in five EDGG Field Workshops so far (in Spain, Italy, Poland, Switzerland, and Armenia). Also, I am one of the organizers of the forthcoming second Field Workshop in Ukraine. As a member of a Governing Board, I am willing to take part in a harmonization of the database and adding new data.

Current state of the GrassPlot database

As we were busy with various paper projects and the elections, apart from some cleaning and improvement of database structure, we did not make major additions to the database. Several datasets have been submitted meanwhile and will be added in the nearer future. We are ready to receive and integrate more submissions (see our call at the end of the Newsletter).

New functionality in the GrassPlot Diversity Explorer

Thanks to Remek, it is now possible to display richness benchmarks (median, inter-quartile range, min, max) also in comparison for the 65 vegetation classes that have currently data in our database (Fig. 1). You find it under https://edgg.org/databases/GrasslandDiversityExplorer if you go to Richness in vegetation types > Phytosociological classes. As usual you can select one of the eight standard grain sizes and one of the four taxonomic groups and you can do subsetting on many other criteria.
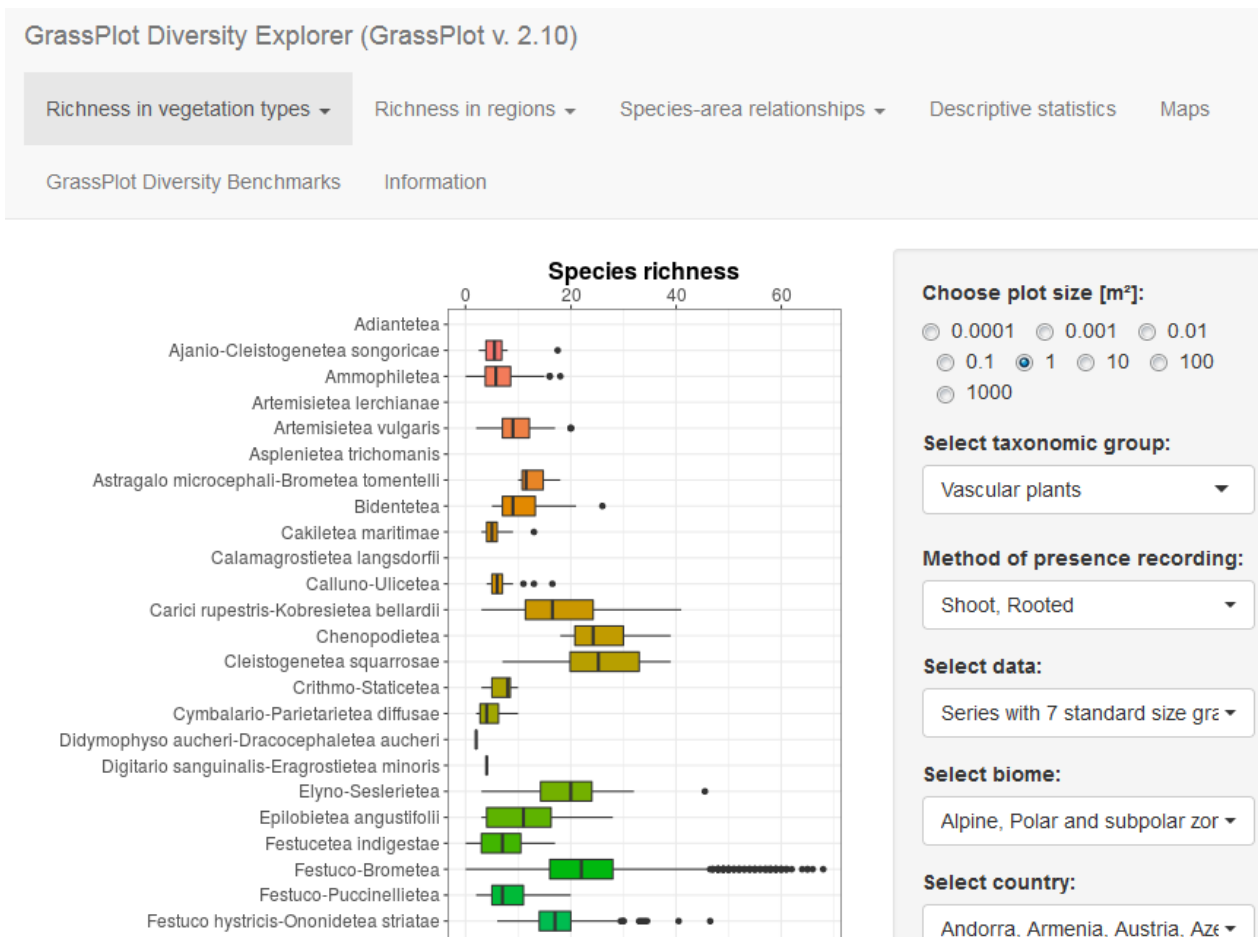
Fig. 1. Screen shot from the GrassPlot Diversity Explorer showing the new tool.

Enriching the GrassPlot metadata of your datasets

The GrassPlot Governing Board has decided to collect two types of metadata more systematically to support future collaborations and paper projects:

- We will record for each dataset whether it is already part of EVA/sPlot and, if not, whether the authors are interested in contributing it to these leading continental/global plot databases via GrassPlot in order to maximise the benefits from the data.

- we will from now on collect information on underlying sampling strategies (random/systematic/stratified/EDGG, geographic and syntaxonomic scope, prior knowledge of above or below average richness of the studied vegetation types) more systematically.

The second addition derives from the fact that we recently found out that, on average, mean species richness per grain size and vegetation type in GrassPlot is much higher than in conventional phytosociological databases. This prompted the assumption that GrassPlot has a bias towards species rich stands. We do not believe that this is the case, but would like to have more objective information on the causes of these differences.

We had partly collected information on both aspects before. However, to turn them operational, we need standardized information that may require some integration from data custodians. We will therefore approach some data custodians with additional questions, and kindly ask you to support us with your answers. Newly contributed datasets will have to provide these metadata in any case.

Opt-in call for GrassPlot paper project #02B

Paper project #02B (Dengler et al.), entitled "Differences in alpha diversity between vegetation classes of the Palaearctic non-forest vegetation" (description attached)

Following the GrassPlot Bylaws, becoming a co-author of #02B is a two-step process:

- If you should be **interested in becoming co-author** you need to contact Jürgen Dengler (GrassPlot Custodian) within 14 days, **i.e. until 25 April 2021**, expressing your interest, indicating which dataset(s) you are representing and which contributions you could make to the paper (the latter is particularly important if you are not nominated by a dataset that contributed at least 1% of the final data used in the paper). Please send mails subject lines "GrassPlot #02B opt-in" or "GrassPlot #19 opt-in" to dr.juergen.dengler@gmail.com.
- Please coordinate yourself with the other owners of your dataset. Normally one opt-in author per each dataset that contributes at least 1% of the final data will be considered. If you do not belong to this category of members, you can still apply to become co-author. Such applications will be decided by the lead authors on a case by case basis.
- Following the first step you will be considered **tentative co-author** and be included in the e-mail exchange and discussion of the analyses and the paper. If you make an intellectual contribution until the submission you will be **listed as co-author**.
- Please note that **25 April 2021** is also the deadline until which contact persons of semi-restricted datasets can require their exclusion from this study and contact persons of restricted datasets can allow their usage.

Status of submitted GrassPlot papers

During the course of 2020, four GrassPlot papers have been submitted, one has just been accepted, while three others are still in the peer-review process:

Paper project #02:
Biurrun, I., Pielech, R., Dembicz, I., Gillet, F., Kozub, L., Marcenò, C., Reitalu, T., Van Meerbeek, K., Guarino, R., (…) & Dengler, J. subm. Benchmarking plant diversity of Palaearctic grasslands and other open habitats.
► This manuscript got a "major revision" decision in the Special Issue "Macroecology of Vegetation" of *Journal of Vegetation Science* on 25 February 2021, and we are currently preparing a revised version.

Paper project #04B:
Dembicz, I., Dengler, J., Steinbauer, M.J., Matthews, T.J., Bartha, S., Burrascano, S., Chiarucci, A., Filibeck, G., Gillet, F., (…) & Biurrun, I. subm. Patterns and drivers of fine-grain beta diversity in vegetation.
► This manuscript got a "major revision" decision in the Special Issue "Macroecology of Vegetation" of *Journal of Vegetation Science* on 27 January 2021, and we submitted a revised version on 6 February 2021, which is now under review.

Paper project #04C:
Zhang, J., Gillet, F., Bartha, S., Alatalo, J.M., Biurrun, I., Dembicz, I., Grytnes, J.-A., Jaunatre, R., Pielech, R., (…) & Dengler, J. in press. Scale dependence of species-area relationships is widespread but generally weak in Palaearctic grasslands. *Journal of Vegetation Science.*

► This manuscript got a "major revision" decision in the Special Issue "Macroecology of Vegetation" of *Journal of Vegetation Science* on 6 January 2021, and we submitted a revised version on 10 March 2021. It was accepted on 8 April 2021. Congratulations to Jinghui!

Paper project #18:
Graco-Roza, C., (…), Biurrun, I., (…), Dembicz, I., Dengler, J., (…) & Soininen, J. subm. Distance decay 2.0 – a global synthesis of taxonomic and functional turnover in ecological communities.
► After unsuccessful trials with other journals, the manuscript is now under review in *Ecography*.

Status of ongoing GrassPlot paper projects

Paper project #03 (Dembicz et al.), entitled "How do environmental factors shape the diversity of vascular plants, bryophytes and lichens in Palaearctic grasslands at multiple scales?": We postponed the actual work on this paper to autumn 2021, after the field season, also hoping to integrate some important multi-grain datasets from underrepresented regions and vegetation types by then.

Paper project #04B.2 (NA et al.), entitled "Fine-grain beta diversity in Palaearctic open vegetation: variability within and between biomes and vegetation types": This opt-in paper has been split-off from paper #04B (Dembicz et al., see above) when we realised that the content is too much for a single paper. Paper #04B.2 is led by Iwona Dembicz, Jürgen Dengler, Idoia Biurrun and François Gillet. We will finalise it for the new IAVS journal *Vegetation Classification and Survey* once paper #04B is accepted.

Paper project #15 (Ulrich et al.), entitled "Environmental drivers and spatial scaling of species abundance distributions in Palaearctic grassland vegetation": Lead author Werner Ulrich has completed the calculations and drafted a manuscript. The tentative opt-in authors will be involved in the near future.

Paper project #16 (Burrascano et al.), entitled "Components of beta-diversity across different sampling grains in Eurasian grasslands": For multiple reasons this paper project has progressed more slowly than anticipated. Eventually, the first results are ready and will be shared by the lead author with the tentative co-authors within April. Preliminary results can already be shared upon request with those potential co-authors who are willing to help in the analytical part and in the framing of the discussion.

Paper project #17 (Ceulemans et al.), **entitled "RECALL – Revisiting CriticAL Loads of atmospheric nitrogen deposition"**: For this complex project, Tobias Ceulemans took community data of bryophytes and lichens from GrassPlot, vascular plant data from EVA, as well as data of mycorrhizae and butterflies from other sources. The data are now harmonized, but it turned out that the study is computationally demanding, even with a HPC (high performance cluster). However, now the computational issues seem to be under control and the project is progressing. In the near future Tobias will ask the opt-in authors from GrassPlot and EVA for further information on plant species (like habitat preferences and red list status). Therefore, if you are an opt-in author, be prepared that Jürgen and Idoia will approach you soon with a request to help with species categorisation.

Paper project #19 (Pielech et al.), **entitled "Biases in species richness data in large phytosociological databases":** For this project, we have received the requested data from GrassPlot and EVA, but we are waiting for two new emerging national databases (Turkey and Poland) to fill data gaps on EVA side that occurred due to the refusal of two existing databases to collaborate with us. Afterwards, we will harmonise the data and start the analyses.

Two new papers using EDGG multi-scale sampling

In order to highlight the potential of the standard EDGG multi-scale sampling (Dengler et al. 2016), we would like to point to two recent studies in different parts of the Palaearctic, whose underlying data are also part of GrassPlot:

Dembicz, I., Velev, N., Boch, S., Janišová, M., Palpurina, S., Pedashenko, H., Vassilev, K. & Dengler, J. 2021. Drivers of plant diversity in Bulgarian dry grasslands vary across spatial scales and functional-taxonomic groups. *Journal of Vegetation Science* 32: e12935.

Talebi, A., Attar, F., Naqinezhad, A., Dembicz, I. & Dengler, J. 2021. Scale-dependent patterns and drivers of plant diversity in the steppe grasslands of the Central Alborz Mts., Iran. *Journal of Vegetation Science.* DOI: 10.1111/jvs.13005.

Description of the methodology:

Dengler, J., Boch, S., Filibeck, G., Chiarucci, A., Dembicz, I., Guarino, R., Henneberg, B., Janišová, M., Marcenò, C., (…) & Biurrun, I. 2016. Assessing plant diversity and composition in grasslands across spatial scales: the standardised EDGG sampling methodology. *Bulletin of the Eurasian Dry Grassland Group* 32: 13−30.

Call for new data

The field season in the Palaearctic is starting soon. Time to think what you could collect and contribute to GrassPlot in 2021! There are still major gaps in geographic data coverage, regarding regions (see the map in the Newsletter No. 8), basically **all of extra-tropical Asia** (except Tajikistan and the Caucasus countries), **all of North Africa, but also some countries in Europe (mainly Russia, France, Finland, Sweden, Iceland and Ireland)**. However, also vegetation types are still quite unevenly represented (Fig. 2). While we have already a quite good data coverage of alpine grasslands, meso-xeric grasslands, xeric grasslands, mesic grasslands and dunes, other types within the GrassPlot scope are still very sparsely populated, e.g. **mediterranean grasslands, wet grasslands, all types of wetlands (fens, bogs, reed beds, springs), all types of heathlands, rocky communities (outcrops, screes,…) ruderal and tall-herb communities as well as deserts**.
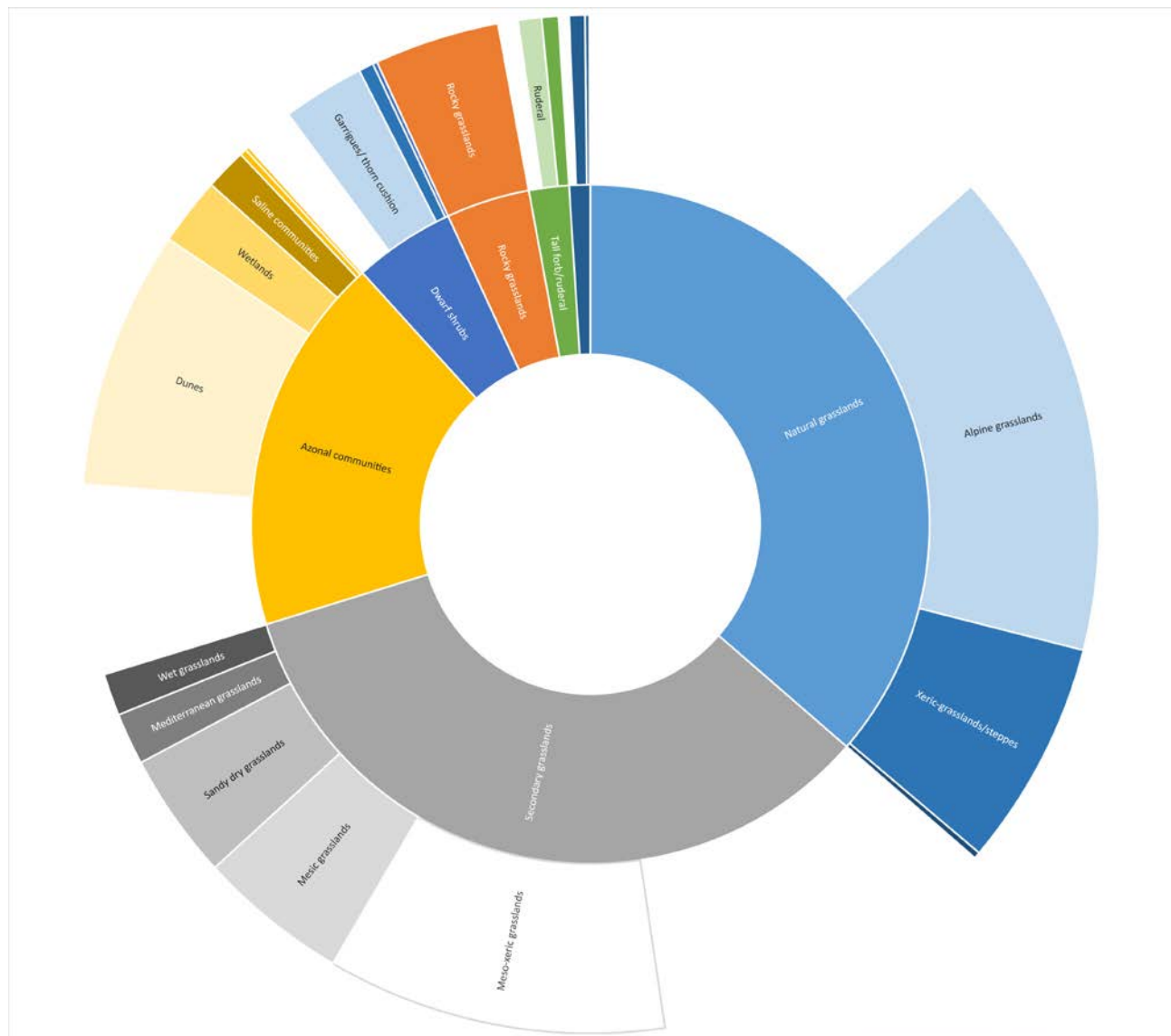
Fig. 2. Relative data coverage of nested-plot series of vascular plants with at least seven different grain sizes.

While we appreciate any type of high-quality data contribution within the methodological requirements of GrassPlot (see https://edgg.org/databases/GrassPlot), nested-plot series sampled with the EDGG standard methodology (Dengler et al. 2016) are particularly beneficial . Additionally to the grain sizes of 0.0001 to 100 m², we would also appreciate to receive more **high-quality data of 1000-m² plots**, which are still rare in GrassPlot (and biased towards species poor types). **A handful of such plots from an underrepresented vegetation type or region can make a big difference!** Often you can achieve valuable data for GrassPlot simply by adjusting your anyway planned sampling a bit.

There are also two calls of large **international networks** the sampling for which you could efficiently combine with sampling for GrassPlot and thus have double benefit:

- Martin Wassen is leading an international cooperation on **nutrient limitation in Palaearctic grasslands** (Wassen 2021). To contribute to this project you would have to conduct normal GrassPlot relevés on 10 m² and additionally collect biomass (living herbs, without woody species, bryophytes, lichens and necromass) from representative subplot(s) of 0.08 to 0.16 m² within that plot. To participate in Martin's project, you would have to send him the plot data and the air-dried biomass; he would then conduct

the analyses of nutrient contents. If interested, it is important that you contact Martin prior to the sampling (m.j.wassen@uu.nl).

- While the global **DarkDivNet project** (Pärtel et al. 2019) has almost completed data sampling, they are still open to additional data from underrepresented regions (see https://shiny.botany.ut.ee/DarkDivNet/). For DarkDivNet you need to sample at least 32 100-m² plots representative for natural and semi-natural vegetation within a circle of 10 km radius, including some simple and fast field traits of the species. All the non-forest plots from DarkDivNet (as far as they are from the Palaearctic ream) are also valuable for GrassPlot! If you wish to join the DarkDivNet with sampling in the season 2021, we recommend that you first contact darkdivnet@ut.ee to ask about deadlines.

References:

Pärtel, M., Carmona, C.P., Zobel, M., Moora, M., Riibak, K. & Tamme, R. 2019. DarkDivNet – A global research collaboration to explore the dark diversity of plant communities. *Journal of Vegetation Science* 30: 1039–1043.

Wassen, M. 2021. Invitation for joint research on the nutrient status and species composition of Palaearctic grasslands. *Palaearctic Grasslands* 48: 29–30.