

– GrassPlot Newsletter No. 7 –

13 January 2020

Dear members of the GrassPlot Consortium,

This time you had to wait quite long for a new Newsletter – but the reason was not laziness of the new Governing Board, which you elected last spring. On the contrary, GrassPlot showed quite a dynamic development during the past 10 months, including a considerable growth in content and two major publications involving many of you as co-authors. Now it is time to present you the new Governing Board and its responsibilities, to sum up highlights and work done in 2019, and to introduce you to the tasks to be addressed in 2020.

We wish you a successful 2020 and look forward to collaborate with you!

The GrassPlot Governing Board

(Jürgen Dengler, Idoia Biurrun, Sabina Burrascano, Iwona Dembicz, Riccardo Guarino, Jutta Kapfer & Remigiusz Pielech)

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New GrassPlot Governing Board elected

As we informed you via e-mail, on 26 February 2019 the new GrassPlot Governing Board (GB) for the period 2019–2021 has been elected (Fig. 1). On 22 March 2019 the new GB had its inaugural Skype conference and agreed on the distribution of tasks among its members. We

would like to thank Timo Conradi, Alireza Naqinezhad and Viktoria Wagner from the last Governing Board for their important contributions during the initial phase of GrassPlot. We also would like to thank Behlül Güler, Alireza Naqinezhad and Manuela Winkler for their willingness to stand for the election and we hope to count on them even though they have not become members of the new Governing Board this time.



Fig. 1. The new Governing Board. From left to right: first row: Jürgen Dengler, Idoia Biurrun, Sabina Burrascano, second row: Iwona Dembicz, Riccardo Guarino, Jutta Kapfer, last row: Remigiusz Pielech.

Jürgen Dengler (CH/DE; juergen.dengler@uni-bayreuth.de) – Custodian: Responsible for outreach (including EVA and sPlot), Newsletter & coordination of opt-in authorships

Idoia Biurrun (ES; idoia.biurrun@ehu.es) – Deputy Custodian: Database manager, specifically for meta-, header and richness data, contact to potential data providers

Sabina Burrascano (IT; sabina.burrascano@uniroma1.it): Responsible for preparation and harmonization of compositional data

Iwona Dembicz (PL/CH; i.dembicz@gmail.com): Responsible for handling of EDGG Field Workshop data

Riccardo Guarino (IT; guarimoto@hotmail.com): Responsible for syntaxonomic assignment of plots

Jutta Kapfer (NO; jutta.kapfer@nibio.no): Responsible for website

Remigiusz Pielech (PL; remekpielech@gmail.com): Responsible for online platform of GrassPlot data

From outside the Governing Board, **Salza Palpurina (BG)** provides major support to us, particularly to the management of compositional data coordinated by Sabina. If YOU are also willing to support us in our voluntary work, please contact the responsible Governing Board member.

Status of the GrassPlot database

The recently released GrassPlot v. 2.00 contains a total of **190,673 plots** of different grain sizes across **28,171 independent plots** (Fig. 2), with **4,654 nested-plot series** including at least four grain sizes (Fig. 3). The plots stem from **184 contributing datasets** and **47 countries**, which is a substantial gain compared to GrassPlot v. 1.00. In the new version, major efforts have been made to harmonize land-use data. Moreover, we developed a two-level hierarchy of vegetation types to allow effective selection and analysis of plots. Now the compositional data have been prepared in a format ready-to-analyze for a significant part of the provided datasets, but we continue to work on this task for the remaining datasets.

Many more datasets have already been provided to our database manager Idoia Biurrun, and will be included in the next update. Please understand that, since all work in GrassPlot is done by volunteers, we cannot guarantee that provided data are included within a certain deadline. However, we will do our best to make all valuable data available for GrassPlot papers as soon as possible.

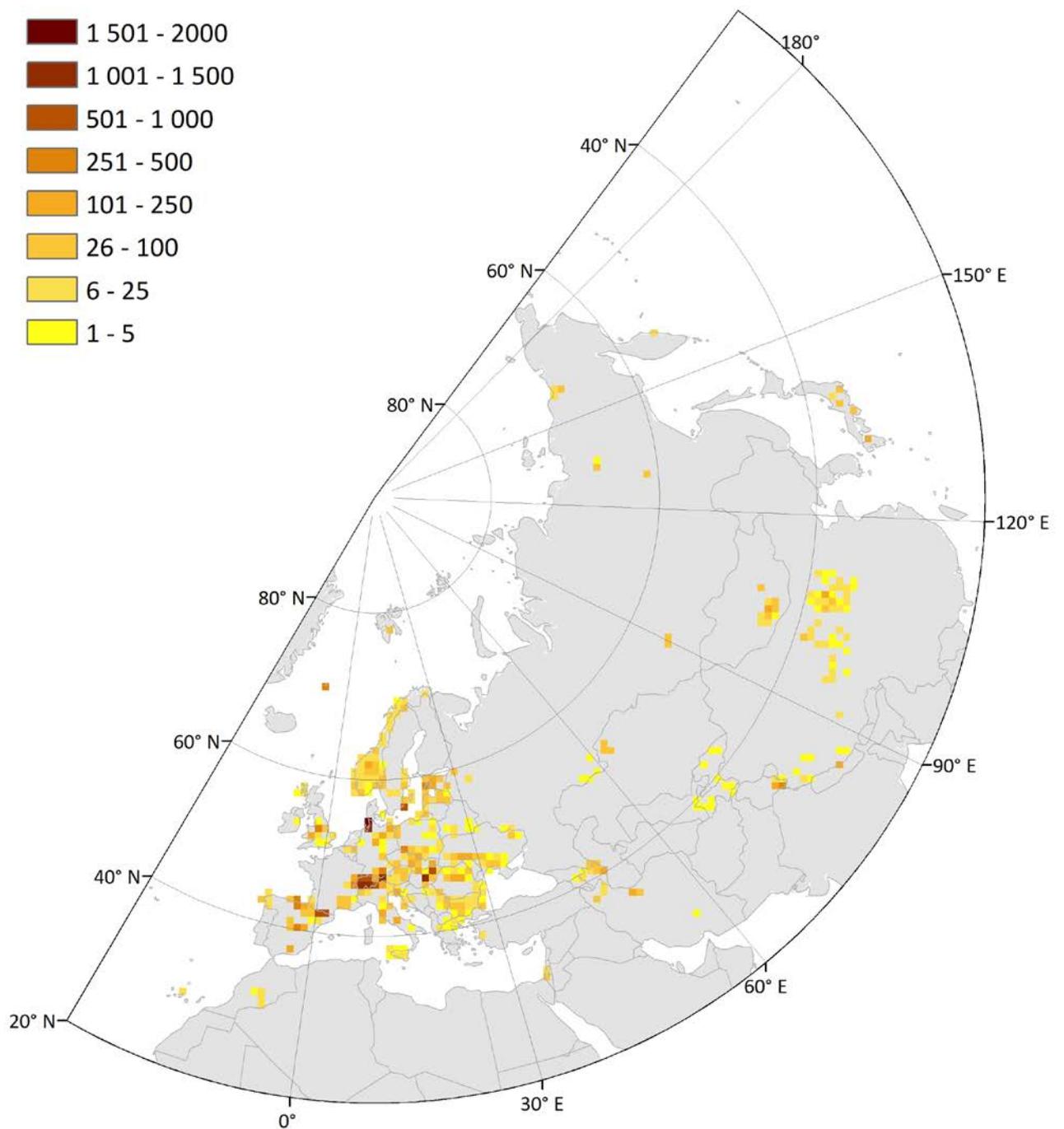


Fig. 2. Density of independent plots contained in GrassPlot v. 2.00, November 2019 (from Biurrun et al. 2019).

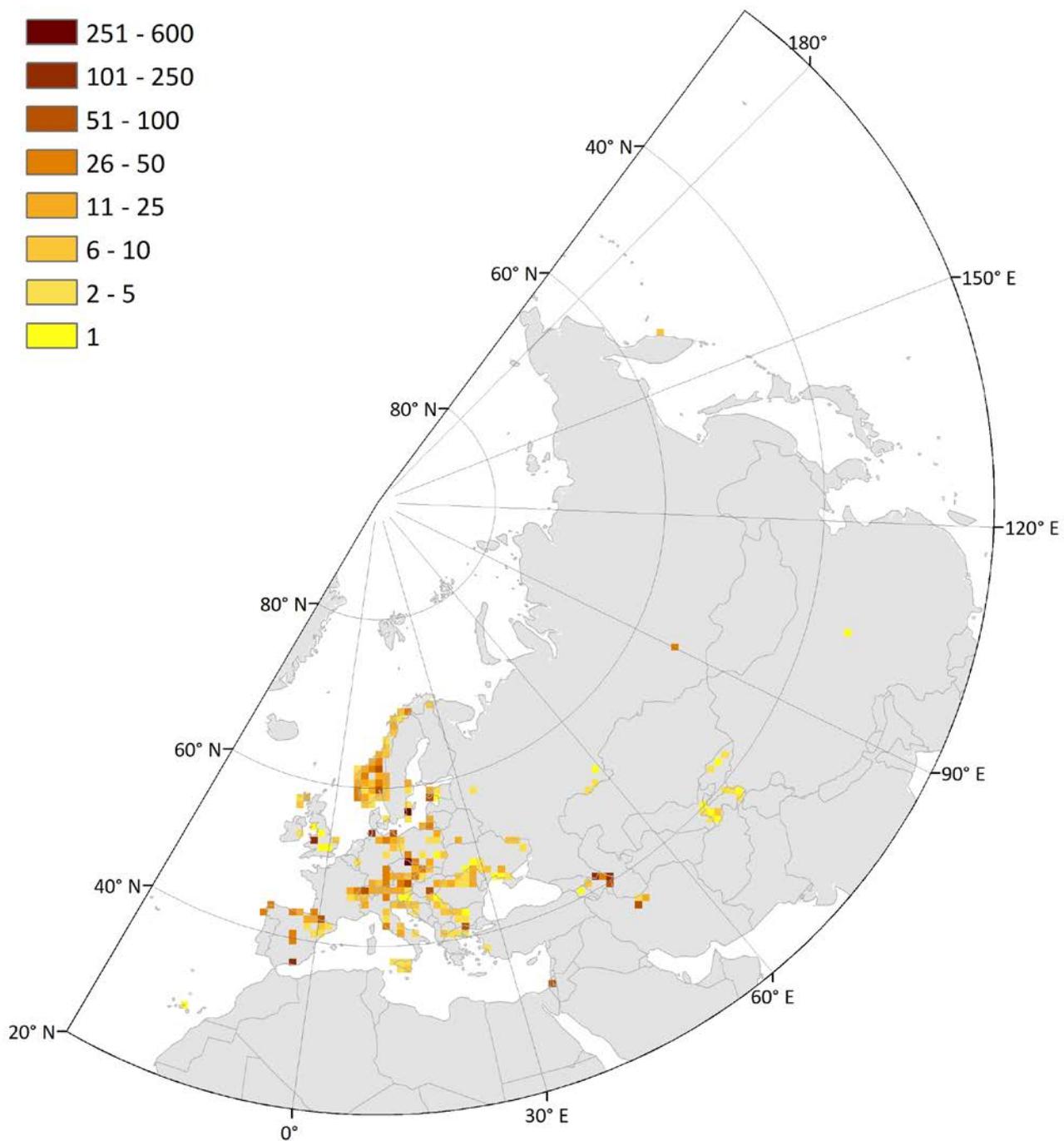


Fig. 3. Density of nested-plot series with at least four grain sizes contained in GrassPlot v. 2.00, November 2019 (from Biurrun et al. 2019).

Published GrassPlot papers

In 2019, we published two major papers involving many of you as co-authors. Both are open access, are attached to this Newsletter and will soon also become available via the new GrassPlot website:

Biurrun, I., Burrascano, S., Dembicz, I., Guarino, R., Kapfer, J., Pielech, R., Garcia-Mijangos, I., Wagner, V., Palpurina, S., (...) & Dengler, J. 2019. GrassPlot v. 2.00 – first update on the database of multi-scale plant diversity in Palaeartic grasslands. *Palaeartic Grasslands* 44: 26–47.

Dengler, J., Matthews, T.J., Steinbauer, M.J., Wolfrum, S., Boch, S., Chiarucci, A., Conradi, T., Dembicz, I., Marcenò, C., Garcia-Mijangos, I., Nowak, A., Storch, D., Ulrich, W., Campos, J.A., Cancellieri, L., Carboni, M., Ciaschetti, G., De Frenne, P., Dolezal, J., Dolnik, C., Essl, F., Fantinato, E., Filibeck, G., Grytnes, J.-A., Guarino, R., Güler, B., Janišová, M., Klichowska, E., Kozub, Ł., Kuzemko, A., Manthey, M., Mimet, A., Naqinezhad, A., Pedersen, C., Peet, R.K., Pellissier, V., Pielech, R., Potenza, G., Rosati, L., Terzi, M., Valkó, O., Vynokurov, D., White, H., Winkler, M. & Biurrun, I. 2019. Species-area relationships in continuous vegetation: Evidence from Palaeartic grasslands. *Journal of Biogeography*. DOI: 10.1111/jbi.13697 (online first 2019, print publication in January 2020).

Moreover, GrassPlot data were extensively used in two chapters of Palaeartic grasslands in the Encyclopedia of the world's biomes to characterize typical grassland diversity in different grassland types and regions:

Dengler, J., Biurrun, I., Boch, S., Dembicz, I. & Török, P. 2020. Grasslands of the Palaeartic biogeographic realm: introduction and synthesis. In: Goldstein, M.I. & DellaSala, D.A. (eds.) *Encyclopedia of the world's biomes*. Oxford: Elsevier (in press).

Boch, S., Biurrun, I. & Rodwell, J. 2020. Grasslands of Western Europe. In: Goldstein, M.I. & DellaSala, D.A. (eds.) *Encyclopedia of the world's biomes*. Oxford: Elsevier. DOI: 10.1016/B978-0-12-409548-9.12095-0.

Ongoing GrassPlot paper projects

The opt-out **paper project #02 (Benchmarking phytodiversity in Palaeartic grasslands)**, led by **Idoia Biurrun** was a bit delayed due to necessary improvements of the header data within the GrassPlot database, but we expect it to be finished and submitted during the next three months. You will hear from Idoia.

The opt-in **paper project #04B (z-values)** resulted from the fact that the original paper project #04 had to be split into three papers as we realized that it was far too much stuff for one paper. Paper #04A (see Dengler et al. 2020 under “Published GrassPlot papers”) tested which function describes species-area relationships in Palaeartic grasslands best and found that this is the case for the power function. Paper #04B led by **Jürgen Dengler and Iwona Dembicz** now explores how the exponent z of the power-law species-area relationship depends on ecological, taxonomic and methodological aspects. The analyses are largely completed and the big parts of the manuscript written and have undergone already two rounds of revision by the co-authors, so that we expect submission in the next few weeks.

Paper project #16 (Components of beta-diversity across different sampling grains in Eurasian grasslands): This project was subjected to a certain delay, since it is the first project based on compositional data, and these data are still in the process of being harmonized with a great effort by Salza Palpurina. At the moment we are running analyses on how sampling grain affects site-level beta-diversity, and we are working on pairwise plot-to-plot beta diversity. A first draft will be shared with co-authors by March 2020.

Moreover, there is an **external paper project (Distance decay 2.0 – a comparative study of taxonomic and functional turnover)** led by **Janne Soininen and Caio Graco-Roza** to

which GrassPlot contributed the data of the EDGG Field Workshops as far as they were available. Therefore, this paper project did not undergo the normal GrassPlot procedure, but representatives of each of the Field Workshops were invited for co-authorship. The study, which is now in the final stages before submission, compares the distance decay in compositional similarity of ecological communities along spatial and ecological distances and does so in a comprehensive manner over many taxonomic groups and for the marine, fresh water and terrestrial realms.

New and forthcoming GrassPlot opt-in papers

After some complaints from GrassPlot members who missed the deadline for one of the last opt-in papers, we would like to emphasize that according to the GrassPlot Bylaws there is no automatism from contributing data to becoming co-author of opt-in papers. **To become co-author you instead need to fulfill two conditions: (1) respond positively to the opt-in offer within the given deadline and (2) make an intellectual contribution to the paper.** According to the GrassPlot Bylaws it is solely your responsibility to ensure that GrassPlot mails reach you in time, e.g. by taking care that Idoia Biurrun always has your latest contact data in our database, possibly also an alternative e-mail address.

Based on the increasing number of new GrassPlot opt-in papers being started and some external requests on the availability of GrassPlot data for research projects, we have prepared a **form for such requests**. You find it in the attachment, and in the future, it will be placed on our new GrassPlot homepage on the EDGG website. You are most welcome to propose own paper projects using this form.

Today, you find attached the proposal for a new **opt-in paper project (#17, Ceulemans et al.)**, entitled **“RECALL – Revisiting Critical Loads of atmospheric nitrogen deposition”**. If you are interested in becoming active co-author of this paper nominated, following our Bylaws, you need to indicate this via e-mail to Jürgen Dengler (juergen.dengler@uni-bayreuth.de) within two weeks, i.e. **until 27 January 2020**. Your e-mail should contain a specification why you are interested in this paper project and what you could contribute. If your dataset(s) account for 2% or more of the data finally used, you will be added to the preliminary author list (but still need to “validate” your authorship via active contribution). If you have fewer or no data in GrassPlot to be used in this project, you can still express your interest in co-authorship. In this case, it is upon the discretion of the lead authors whether to invite you; therefore, it makes particular sense in such cases to write some sentences which kind of expertise you could contribute.

In the near future, you will receive opt-in requests from two international Postdocs who are currently staying with excellence scholarships in the lab of Jürgen Dengler, Iwona Dembicz (also GrassPlot Governing Board and EDGG Executive Committee) from Poland and Jinghui Zhang from Inner Mongolia, China. They elaborate two of the paper ideas that had already been formulated during the GrassPlot workshop in Bayreuth. We provide a brief outline of their ideas to give you the chance to anticipate whether you might wish to contribute additional data specifically useful for these studies:

Paper project #03 (Dembicz et al.) will study alpha diversity across scales and taxa, thus aiming at generalization of the hitherto six regional studies with EDGG Field Workshop or similar data to the whole Palaearctic, also involving additional predictors, such as landscape configuration, landscape history and distance from glacial refugia. The study needs plot data from GrassPlot standard grain sizes together with soil and other environmental variables determined in the plot.

Paper project #04C (Zhang et al.) is the third part of the originally planned paper #04, after #04A (Dengler et al. 2020, *Journal of Biogeography*: species-area functions) and #04B (Dengler, Dembicz et al., in prep.: z-values in general). It will test whether there is a systematic scale-dependence in the z-values, dependent on ecological context, taxonomy or methodological aspects. It would strongly benefit from additional multi-scale datasets from the Asian part of the Palaearctic, particularly from Kazakhstan, Mongolia, China and Japan.

Activities and events in 2019

In early 2019 we had submitted a full proposal for a Working Group to the Synthesis Centre of iDiv, the German Centre for Integrative Biodiversity Research Halle-Jena-Leipzig. The proposal led by Jürgen Dengler and Werner Ulrich (Toruń, Poland) had the title "**sCALE – Towards multidimensionality in community assembly: linking multiple ecological distributions across spatial scales**" and involved several GrassPlot people but also theoreticians and analysts from outside our Consortium. Unfortunately, in May 2019 we were informed that despite two excellent reviews our proposal was not selected for funding.

GrassPlot was presented on **two international conferences** in 2019. Three GrassPlot talks were presented in the session on "scale-dependency in plant ecology" at the 62nd annual symposium of the International Association for Vegetation Science (IAVS) in July 2019 in Bremen. (1) Idoia Biurrun: *Benchmarking plant diversity of Palaearctic grasslands*; (2) Iwona Dembicz: *Patterns and drivers of fine-scale beta-diversity in Palaearctic grasslands*; (3) Jürgen Dengler: *Species-area relationships in continuous vegetation: evidence from Palaearctic grasslands*. Idoia Biurrun also presented her talk on Benchmarking plant diversity at the 28th Workshop of the European Vegetation Survey (EVS) in Madrid, in September 2019.

Plans for 2020

In the near future, we plan to transfer our **website** from the Ecoinformatics Portal Bayreuth (https://www.bayceer.uni-bayreuth.de/ecoinformatics/en/grassplot/gru/html.php?id_obj=139267) to the new website of the Eurasian Dry Grassland Group (<https://edgg.org/>), together with the websites of the regional EDGG-related grassland databases. Jutta and Jürgen are currently working on this together with the EDGG Website responsables, Alla Alexanyan and Didem Ambarli.

As the GrassPlot database contains a large amount of data, one of the most challenging goals is to develop a flexible and effective way to present this dataset. One might be interested in descriptive statistics of the whole database or of its subsets. In addition, we would like to present the distribution of the plots gathered in GrassPlot. For all these reasons, we decided to develop an online tool that will enable flexible filtering of the data according to multiple criteria, including plot size, group of organisms (vascular plants, bryophytes or lichens), vegetation types, biomes, geographic regions and countries. Species richness of the filtered subsets can be graphically presented by graphs and described by basic statistics. In addition, all plots that meet the selection criteria can be displayed on a map. The first version of the online tool is presented in Fig. 4. It was developed in R as a Shiny app and distribution maps use 'leaflet library'. The final version will be released along with the GrassPlot paper #02 (Benchmarking phytodiversity in Palaearctic grasslands) and will be available on the new GrassPlot webpage.

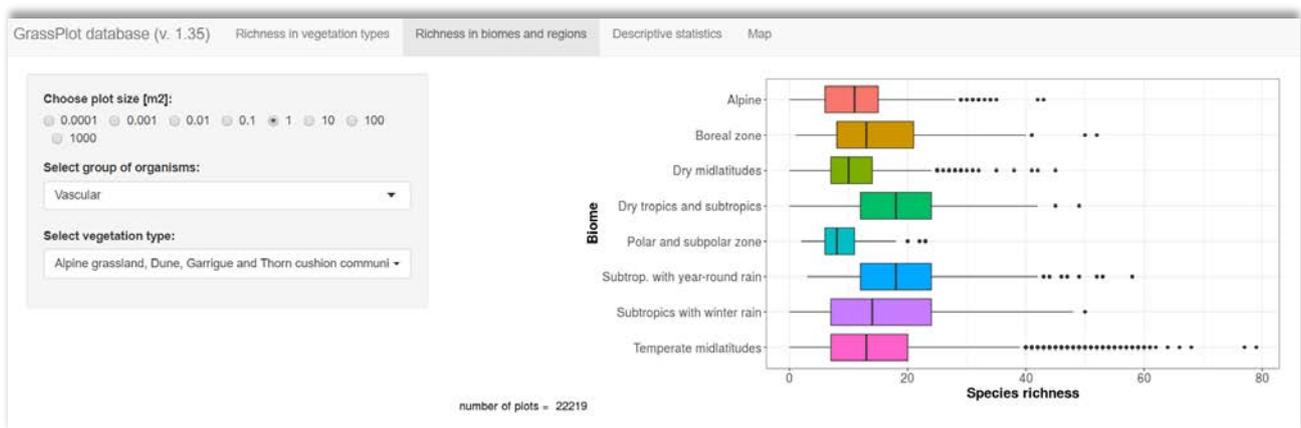


Fig. 4. Screenshot of the online tool showing box-plots of richness of vascular plants across biomes using all 1 m² plots in GrassPlot.

Another technical challenge to be solved in the near future regards to database efficiency. In its current form, GrassPlot database constitutes one huge table with thousands of rows. The size of the file is quite big and it becomes more and more difficult to work with such a big and still growing dataset. We are considering the conversion of this table into a relational database which will definitely increase the efficiency of data processing. The first step towards this conversion is planned for 2020.

We plan to provide data from GrassPlot to the two biggest vegetation-plot databases worldwide, the **European Vegetation Archive (EVA)** and the **global database "sPlot"**. While both mega-databases prefer to receive data from comprehensive national databases, they recognize that GrassPlot has additional data that can fill important data gaps and thus in 2019 agreed with us that we can contribute such data if it is a substantial amount and thus can become members of the EVA and sPlot Consortia. In 2020 we plan to provide the suitable European data to EVA (and EVA will provide them to sPlot) and the extra-European ones to sPlot. Suitable are those data with plot sizes of 1 m² or larger, provided they are not yet included in another member database of EVA or sPlot. We will (a) continue with preparing the compositional data (see "Status of the GrassPlot database") and (b) check with the owners of suitable datasets whether they should be provided also to EVA/sPlot (i.e. they are not there yet and the owners agree). Contribution to EVA and sPlot would mean that you would have the possibility to participate in the numerous emerging EVA/sPlot papers, too.

As a follow-up to the two current Postdoc scholars in Jürgen Dengler's lab, another candidate has just submitted his project proposal (based on GrassPlot data) in December to gain one of the Swiss Excellence Scholarships. If successful, this would start in September 2020. Of course, other members from the GrassPlot Consortium likewise can try to obtain **Postdoc and PhD positions based on GrassPlot data**. Just contact the Governing Board before your write an application.

Moreover, after the unsuccessful sCALE application for three GrassPlot related workshops in Leipzig, we are now considering other options for **follow-up workshops** to the inaugural workshop in Bayreuth 2017. Since sDiv has signaled that also an improved version of the sCALE proposal likely would not be funded in the next round, we are now considering funding options in Bayreuth (Manuel Steinbauer) and Toruń (Werner Ulrich). If you have additional ideas, please let the Governing Board know.

Possible adjustment of Bylaws

More and more journals, particularly the higher-ranked macroecological journals, which are typical publication venues for GrassPlot papers, request the data used to be published open access before a paper is accepted. We faced this problem already with the attached paper in *Journal of Biogeography* where this request “hit” us after the paper was accepted content-wise. At that point we needed to seek the agreement of all individual data contributors that we are allowed to publish the used data on Dryad – otherwise our paper would have been rejected. To avoid similar problems in the future, the Governing Board has decided to propose a slight modification of the Bylaws that would allow in such cases to meet the journal requirements. All header data as well as derived community data (diversity indices, z-values, community-weighted means) that are used in a GrassPlot paper could then be published without specific approval of the contributors, while complete relevés would remain restricted. You will soon receive the wording of the proposed Bylaw changes in a separate mail for voting.

Call for data contributions

We are always eager to add new datasets that meet our requirements, particularly datasets with extensive environmental data and multi-scale data, both of which set GrassPlot apart from other vegetation-plot databases such as EVA and sPlot. While independent plots are already quite nicely distributed across the Palaearctic biogeogeographic realm (Fig. 2), we are still largely **lacking multi-scale data from big parts of the realm, most urgently Russia, Kazakhstan, Mongolia, China, Japan and Korea as well as North Africa** (Fig. 3).

If you have suitable data or know colleagues who have, please contact Idoia Biurrun (idoia.biurrun@ehu.es). As the preparation of data from many different idiosyncratic formats to the standards of GrassPlot is a time-consuming process and all the work is done voluntarily, please understand that data addition can take some time. Priority will be given to datasets that are particularly useful for forthcoming paper projects (see “Forthcoming GrassPlot opt-in papers”) and/or those which are already well-prepared by the owners following the template provided by us.