# – GrassPlot Newsletter No. 10 –

17 March 2023

Dear members of the GrassPlot Consortium,

You received the last Newsletter nearly two years ago, just after the election of the current Governing Board. In April 2021, we presented many plans for the forthcoming two years. Now our term of duty is coming to an end, and we are glad to report below of numerous advancements that we achieved during this period. Finally, we would like to thank you for the good cooperation and contribution of valuable datasets and at the same time open the call for candidates for the next Governing Board.

Enjoy reading,

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

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## Elections to the Governing Board 2023–2025

The new Governing Board will consist of seven members, elected by you, the GrassPlot Consortium. You find details of the election procedure in our Bylaws (https://edgg.org/sites/default/files/page/Bylaws_2021-01.pdf). The first step is the nomination. Here each member of the Consortium can nominate one or several members

(including him-/herself) as candidates. Self-nominations are welcome. Please send your nominations to the Chair of the Governing Board, Jürgen Dengler (dr.juergen.dengler@gmail.com) **until 2 April 2023**. We will then ask all nominees whether they wish to stand for the election and, if so, to provide a short biosketch. The list of all candidates together with their biosketches then will be provided to all Consortium members to conduct an electronic voting over a duration of at least two weeks.

# Current state of the GrassPlot database

Currently, GrassPlot contains **204,004 plots**, including **32,913 independent plots** and **6,714 nested-plot series**, 5,481 of them with at least four grain sizes. They stem from **228 datasets** and **49 countries**. Moreover, we have received 12 additional datasets, which are currently "in the queue" and wait for preparation for inclusion. Please accept that due to the exclusively volunteer work of the GrassPlot Governing Board members, this data preparation sometimes takes longer than desirable. The GrassPlot Consortium consisting of the data owners and some additional people active in data management currently comprises **318 members** from **40 countries**.

Initially, GrassPlot was developed to contain only environmental and species richness data, but no species composition data. This approach allowed us to set up the database in high quality fast and to provide data for a series of impactful papers. Later, we realised that the composition data would be a very valuable addition that would allow many exciting additional studies beyond what is possible with our current dataset. Thus, we decided to harmonize and merge also the composition data (i.e., individual species records) of the contributed datasets in a unified database, and we could secure financial support from IAVS via EDGG to implement this project. The COVID-19 pandemic and the motherhood of one main protagonist slowed down these activities considerably, but now we are in the full process of preparing the composition data for direct use. Already many datasets are ready for direct use in projects, but their number is growing steadily. Many thanks to Salza Palpurina (Bulgaria) and Francesca Napoleone (Italy) who make this possible!

Our data handling and data structure is quite different from the two largest vegetation databases on Earth, EVA (Chytrý et al. 2016) and sPlot (Bruelheide et al. 2019), which both store their data in a TURBOVEG 3 database. In GrassPlot, we prepare our composition data just as a single, gigantic "long table", which can directly be used in analyses with R. Currently, we are just taking the taxon names as they are provided by the individual datasets. But we are planning to implement a workflow to assign all these names to valid names of a uniform "taxonomic backbone", based on Euro+Med Plantbase and other major reference works for bryophytes and lichens as well as for vascular plants not contained in Euro+Med. We will do this with the help of Florian Jansen and Jürgen Dengler from the Ecological Indicator Values for Europe (EIVE) (Dengler et al. 2023; see https://vegsciblog.org/2023/01/21/eive-1-0/), who developed such a backbone and fully transparent and repeatable workflow in R. This means that while from now on composition data can be requested for GrassPlot projects, their amount and consistency will further increase during the coming months.

Bruelheide, H., Dengler, J., Jiménez-Alfaro, B., Purschke, O., Hennekens, S.M., Chytrý M., Pillar, V.D., Jansen, F., Kattge, J., (…) & Zverev, A. 2019. sPlot – a new tool for global vegetation analyses. *Journal of Vegetation Science* 30: 161–186.

Chytrý, M., Hennekens, S.M., Jiménez-Alfaro, B., Knollová, I., Dengler, J., Jansen, F., Landucci, F., Schaminée, J.H.J., Aćić, S., (…) & Yamalov, S. 2016. European Vegetation Archive (EVA): an integrated database of European vegetation plots. *Applied Vegetation Science* 19: 173–180.

Dengler, J., Jansen, F., Chusova, O., Hüllbusch, E., Nobis, M.P., Van Meerbeek, K., Axmanová, I., Bruun, H.H., Chytrý, M. (…) & Gillet, F. 2023. Ecological Indicator Values for Europe (EIVE) 1.0. *Vegetation Classification and Survey* 4: 7–29.

# GrassPlot joined EVA and sPlot 4.0

It took longer than anticipated, but on 31 January 2023, GrassPlot contributed data to the EVA (Chytrý et al. 2016) and sPlot databases (Bruelheide et al. 2019). Currently, there are 6,366 European plots from 14 datasets in EVA, which will also be included in sPlot 4.0. Moreover, we have directly contributed 2,326 extra-European plots from 11 datasets to sPlot 4.0. From now on the owners of the contributed datasets will regularly receive opt-in offers to the new paper projects of the EVA and sPlot Consortia. Within the short time after the contribution, we have already received four such offers from EVA. Normally, we then can nominate one interested member from our side. We are actively working towards successively contributing all those GrassPlot datasets to these two databases that are not yet included and whose owners agreed.

Bruelheide, H., Dengler, J., Jiménez-Alfaro, B., Purschke, O., Hennekens, S.M., Chytrý M., Pillar, V.D., Jansen, F., Kattge, J., (…) & Zverev, A. 2019. sPlot – a new tool for global vegetation analyses. *Journal of Vegetation Science* 30: 161–186.

Chytrý, M., Hennekens, S.M., Jiménez-Alfaro, B., Knollová, I., Dengler, J., Jansen, F., Landucci, F., Schaminée, J.H.J., Aćić, S., (…) & Yamalov, S. 2016. European Vegetation Archive (EVA): an integrated database of European vegetation plots. *Applied Vegetation Science* 19: 173–180.

# Completed GrassPlot projects

We are very happy to report that since the last Newsletter a whole bunch of papers from GrassPlot have been published, some of them already highly cited. Please have a look at them (all are open access):

Biurrun, I., Pielech, R., Dembicz, I., Gillet, F., Kozub, L., Marcenò, C., Reitalu, T., Van Meerbeek, K., Guarino, R., (…) & Dengler, J. 2021. Benchmarking plant diversity of Palaearctic grasslands and other open habitats. *Journal of Vegetation Science* 32: e13050. **[Paper project #02]**

Dembicz, I., Dengler, J., Steinbauer, M.J., Matthews, T.J., Bartha, S., Burrascano, S., Chiarucci, A., Filibeck, G., Gillet, F., (…) & Biurrun, I. 2021. Fine-grain beta diversity of Palaearctic grassland vegetation. *Journal of Vegetation Science* 32: e13045. **[Paper project #04B]**

Dembicz, I., Dengler, J., Gillet, F., Matthews, T.J., Steinbauer, M.J., Bartha, S., Campos, J.A., De Frenne, P., Dolezal, J., (…) & Biurrun, I. 2021. Fine-grain beta diversity in Palaearctic open vegetation: variability within and between biomes and vegetation types. *Vegetation Classification and Survey* 2: 293–304. **[Paper project #04B.2]**

Graco-Roza, C., Aarnio, S., Abrego, N., Acosta, A.T., Alahuhta, J., Altman, J., Angiolini, C., Akroviita, J., Attorre, F., (…) & Soininen, J. 2022. Distance decay 2.0 – a global synthesis of taxonomic and functional turnover in ecological communities. *Global Ecology and Biogeography* 7: 1399–1421. **[Paper project #18]**

Ulrich, W., Matthews, T.J., Biurrun, I., Campos, J.A., Czortek, P., Dembicz, I., Essl, F., Filibeck, G., Giusso del Galdo, G.-P., (…) & Dengler, J. 2022. Environmental drivers and spatial scaling of species abundance distributions in Palaearctic grassland vegetation. *Ecology* 103: e3725. **[Paper project #15]**

Zhang, J., Gillet, F., Bartha, S., Alatalo, J.M., Biurrun, I., Dembicz, I., Grytnes, J.-A., Jaunatre, R., Pielech, R., (…) & Dengler, J. 2021. Scale dependence of species-area relationships is widespread but generally weak in Palaearctic grasslands. *Journal of Vegetation Science* 32: e13044. **[Paper project #04C]**

# Ongoing GrassPlot projects

Currently, there are five ongoing paper projects:

**Paper project #02B (Dengler et al.), entitled "Differences in alpha diversity between vegetation classes of the Palaearctic non-forest vegetation":** This paper is currently on hold. We will restart it, requesting an updated dataset from GrassPlot, once the major datasets that are in the "queue for inclusion" are integrated into GrassPlot. Then the writing up of the MS could go rather fast, as this paper will follow the "template" of paper #04B.2 (see above).

**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?":** This paper is currently on hold. We will restart it, requesting an updated dataset from GrassPlot, once the lead authors have found a time window and/or funding to work on it.

**Paper project #16 (Burrascano et al.), entitled "Components of beta-diversity across different sampling grains in Eurasian grasslands":** For multiple reasons this paper project was significantly delayed, mainly due to waiting for the final version of the composition data. Now we assume that the first MS could be sent to co-authors during the next half of a year.

**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. Due to private and professional reasons and the challenges of the task, the paper project was delayed significantly, but early this year the lead author informed us that he is again intensively working on it.

**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. The preparation of the EVA data was quite time-consuming but is now completed. The lead author is intensively working on the analyses and anticipates sharing some first results with the co-authors in the near future.

# Forthcoming GrassPlot projects

Several papers have not formally been started but are in the back of our minds and you can anticipate official announcements in the next few weeks or months:

- We plan a Long Database Report in the journal Vegetation Classification and Survey (https://vcs.pensoft.net/), once the currently queueing datasets are included.
- Karlien Moeys and Koenraad Van Meerbeek from the EIVE Consortium plan to request GrassPlot data for a study to validate the Ecological Indicator Values for Europe with measured environmental data, such as the pH data GrassPlot provides for many plots.
- Werner Ulrich plans a paper with our composition data on functional traits and scaling.

You will receive formal invitations for co-authorship when the projects are actually started. Beyond these papers using GrassPlot data, there are also two planned papers that do not use our data but have been inspired by GrassPlot activities and are closely associated with us:

- Francois Gillet and Sándor Bartha are leading a simulation paper that aims to explain the mechanisms behind the scale-dependence of z-values that we found (Zhang et al. 2021).
- Idoia Biurrun and Riccardo Guarino are leading a synthesis paper that aims at providing a typological overview of the open vegetation types across the Palaearctic biogeographic realm, both in terms of phytosociological classes and ecological-physiognomic vegetation units, plus a cross-link between both systems. The syntaxonomic checklists of Europe (Mucina et al. 2016) and Russia (Ermakov 2012) will be the main inputs. If you know further relevant sources from the extra-European parts of the Palaearctic, please get in contact with the lead authors.

Ermakov, N. 2012. Prodromus vysshikh edinits rastitelnosti Rossii [in Russian]. In: Mirkin, B.M. & Naumova, L.G. (eds.) *Sovremennoe sostoyanie osnovnikh kontseptsii nauki o rastitelnosti*: pp. 377–483. Gilem, Ufa, RU.

Mucina, L., Bültmann, H., Dierßen, K., Theurillat, J.-P., Raus, T., Čarni, A., Šumberová, K., Willner, W., Dengler, J., (…) & Tichý, L. 2016. Vegetation of Europe: Hierarchical floristic classification system of

vascular plant, bryophyte, lichen, and algal communities. *Applied Vegetation Science* 19, Supplement 1: 3−264.

Zhang, J., Gillet, F., Bartha, S., Alatalo, J.M., Biurrun, I., Dembicz, I., Grytnes, J.-A., Jaunatre, R., Pielech, R., (…) & Dengler, J. 2021. Scale dependence of species-area relationships is widespread but generally weak in Palaearctic grasslands. *Journal of Vegetation Science* 32: e13044.

# New papers using the EDGG multi-scale sampling

To highlight the potential of the standard EDGG multi-scale sampling (Dengler et al. 2016, 2021), we would like to point to four recent studies in different parts of the Palaearctic, whose underlying data are also part of GrassPlot (or in the pipeline to be included):

Magnes, M., Willner, W., Janišová, M., Mayrhofer, H., Khouri, E.A., Berg, C., Kuzemko, A., Kirschner, P., Guarino, R., (…) & Dembicz, I. 2021. Xeric grasslands of the inner-alpine dry valleys of Austria – new insights into syntaxonomy, diversity and ecology. *Vegetation Classification and Survey* 2: 133–157.

Nagelmüller, S., Bar-Gera, B., Stix, S., Schnyder, N., Schneller, J., Schneller, M., Scheidegger, C., Dengler, J., Blank-Pachlatko, J., (…) & Jean-Richard, P. 2022. Tag der Artenvielfalt 2021 im Naturpark Beverin. *Jahresbericht der Naturforschenden Gesellschaft Graubünden* 122: 135–156.

Moysiyenko, I., Vynokurov, D., Shyriaieva, D., Skobel, N., Babitskyi, A., Bednarska, I., Bezsmertna, O., Chusova, O., Dengler, J., (…) & Dembicz, I. 2022. Grasslands and coastal habitats of Southern Ukraine: First results from the 15th EDGG Field Workshop. *Palaearctic Grasslands* 52: 44–83.

Bergauer, M., Dembicz, I., Boch, S., Willner, W., Babbi, M., Blank-Pachlatko, J., Catalano, C., Cykowska-Marzencka, B., Gehler, J., (…) & Dengler, J. 2022. Scale-dependent patterns and drivers of vascular plant, bryophyte and lichen diversity in dry grasslands of the Swiss inneralpine valleys. *Alpine Botany* 132: 195–209.

### 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.

Dengler, J., Biurrun, I. & Dembicz, I. 2021. Standardised EDGG methodology for sampling grassland diversity: second amendment. *Palaearctic Grasslands* 49: 22–26.

# Call for new data

The field season in the Palaearctic realm is starting. Time to think about what you could collect and contribute to GrassPlot in 2023! There are still major gaps in geographic data coverage, regarding regions (see the map in 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 France, Finland, Sweden, Iceland, Ireland, Montenegro, Albania, Moldova, Georgia, Russia and the whole Mediterranean part of Europe)**. Also, vegetation types are still quite unevenly represented (see Newsletter No. 9). While we have already 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**.

If you want to contribute data, please download the data entry forms from the GrassPlot website (https://edgg.org/databases/GrassPlot). In "Materials" you find three files:

- *GrassPlot Data entry form:* here you have to fill data at plot and subplot level (in case of nested plot series). General instructions to fill this form are in the sheet «Instructions».
- *Entry form for datasets and Consortium members:* here you have to fill some information at the level of the dataset, as well as the affiliation and email of the data contributors.

One very important information piece in this file concerns the inclusion of your data in the EVA and sPlot datasets. If they are already included there, please indicate it, and also fill which is their GIVD code. If they are not included there, and you wish to include them via GrassPlot, please indicate it in the suitable column.

- *Explanation of variables:* each column of the Data entry form is explained in this file.

As regards composition data, you can deliver them in any format, but it is convenient you specify which is your nomenclatural source. Please pay attention that the plot number in the composition data and in the Data entry form are the same.

# Forthcoming events

There are several events highly relevant for GrassPlot'ers in 2023:

- **31st annual meeting of the IAVS Working Group European Vegetation Survey (EVS)**, Rome (Italy), **21–25 May 2023**. The thematic focus will be "Methods and approaches in a changing environment". Abstract submission deadline: **31 March 2023**. Further details: https://www.evs2023rome.it.
- **17th EDGG Field Workshop (Research Expedition) in the inneralpine valleys of the SE Alps** (Italy, Switzerland), **1–11 June 2023**. Topic: Sampling high-quality biodiversity data of vascular plants, bryophytes and lichens for GrassPlot together with an international team. Deadline for application: **10 April 2023**. Further details: https://edgg.org/sites/default/files/page/Palaearctic_Grasslands_56.pdf (pp. 7–10).
- **3rd meeting of the International Society for Island Biology**, Lipari (Aeolian Archipelago, Italy), **2–7 July 2023**. The thematic focus will be "Ecological and evolutionary processes on real and habitat islands". Further details: https://sib-2023.sciencesconf.org.
- **18th Eurasian Grassland Conference (EGC)** of the EDGG, Szarvas, Hungary, **25–28 September 2023**, with a subsequent 3-day post-symposium excursion. Further details: https://edgg.org/egc2023.