sPlot Newsletter #10

May 2021

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See all sPlot newsletters here:
https://www.idiv.de/sdiv/working_groups/wg_pool/splot/materials.html

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1. Road to sPlot 4.0 – Call for new data

We have started preparing a new version of sPlot, version 4.0.

The main novelty is that we will expand **sPlot to include time-series**, i.e., plots or relevés repeatedly resampled, both including resurveys repeated only once and longitudinal data with periodic repeated observations. This means that from now on sPlot will allow data from repeated surveys of the same vegetation plot to be stored. As we have done previously, we are teaming up with our EVA – the European Vegetation Archive - partners on this initiative. EVA's **ReSurvey Europe** initiative (http://euroveg.org/eva-database-re-survey-europe) is already showing the way. While ReSurvey Europe will collect time series data from across Europe, sPlot will also cover the other parts of the world. Our vision is that these data might form the basis for more nuanced and robust assessments of the temporal trends of fine-grain biodiversity globally. As with our current agreement with EVA, we will ask for consent of the EVA data providers to share the European data with sPlot 4.0 as well.

In addition, we will **continue expanding the sPlot network** so to further reduce the imbalance between well-represented areas and underrepresented regions (tropical and subtropical regions, Indian subcontinent, south-east Asia). As such, any help to reach out to researchers active in these key regions is more than welcome.

If you or your colleagues:

1) **Have expanded, updated or corrected the dataset you represent**
2) **Have established a new dataset of vegetation plots**
3) **Have data on vegetation-plot time-series**
4) **Are aware of colleagues holding such data**

Please get in touch with sPlot's coordinator

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to discuss the best way to include these new data sources into sPlot 4.0. For technical information on data and metadata provision format, please check the ReSurveyEurope webpage. For compatibility reasons, we will stick to the same standards.

This call is explicitly aimed at **mobilizing vegetation-plot data from outside Europe**. For data already in EVA, we will establish a simplified procedure, so that all the custodians of European datasets can have their data automatically transferred to sPlot, if they so wish.

Indicative timeline

May – October 2021 – Mobilization of new datasets and update of existing ones.

November 2021 – January 2022 – Harmonization of all new datasets to sPlot standards.

February 2022 – May 2022 – Construction of sPlot 4.0 (new taxonomic backbone, harmonization with TRY trait data, preparation of ancillary environmental data, curation of metadata).

June 2022 – Release of sPlot 4.0

2. sPlotOpen

Thanks to the enthusiastic support of all data custodians who accepted to have part of their data open-access, we are proud to announce that **sPlotOpen – An environmentally-balanced, open-access, global dataset of vegetation plots** – has finally been released. This represents a substantial step down the **FAIR** path, i.e., progressively making sPlot data: **F**indable, **A**ccessible, **I**nteroperable and **R**e-usable.

sPlotOpen is a fully-open access, environmentally-balanced subset of sPlot. It is composed of 95,104 vegetation plots from 105 databases and 114 countries. Vegetation plots were selected using a replicated environmental stratification, in order to represent the entire environmental space covered by the sPlot database. Data in sPlotOpen derive from three partially overlapping resampling iterations (~50,000 plots each), which can be used as replicates in global analyses. sPlotOpen is specifically designed for global macroecological studies, but we expect it will likewise prove useful to answer a range of different research questions in other science domains.

The construction of sPlotOpen is described in a data paper published in *Global Ecology and Biogeography*. The preparation of the manuscript was, in itself, an exercise of collaborative science. All authors contributed to the writing process using GitHub, and all discussions and individual contributions are documented and public on the project GitHub page, together with the manuscript pre-print - https://github.com/fmsabatini/sPlotOpen_Manuscript. As is true for many innovations, this alternative workflow proved challenging at first, but the response from the coauthors was on average positive.

sPlotOpen is stored in iDiv's Data Portal, and can be downloaded with no restrictions at this link: https://idata.idiv.de/ddm/Data/ShowData/3474?version=0

All code for producing sPlotOpen is also available on GitHub - https://github.com/fmsabatini/sPlotOpen_Code/

Reference to the paper:

Project #02 – Sabatini FM, Lenoir J, Hattab T, Arnst EA, Chytrý M, Dengler J, De Ruffray P, Hennekens SM, Jandt U, Jansen F, Jiménez-Alfaro B, Kattge J, Levesley A, Pillar VD, Purschke O, Sandel B, Sultana F, Aavik T, Aćić S, Acosta ATR, Agrillo E, Alvarez M, Apostolova I, Arfin Khan MAS, Arroyo L, Attorre F, Aubin I, Banerjee A, Bauters M, Bergmeier E, Biurrun I, Bjorkman AD, Bonari G, Bondareva V, Brunet J, Čarni A, Casella L, Cayuela L, Černý T, Chepinoga V, Csiky J, Ćušterevska R, De Bie E, de Gasper AL, De Sanctis M, Dimopoulos P, Dolezal J, Dziuba T, El-Sheikh MAE-RM, Enquist B, Ewald J, Fazayeli F, Field R, Finckh M, Gachet S, Galán-de-Mera A, Garbolino E, Gholizadeh H, Giorgis M, Golub V, Greve Alsos I, Grytnes J-A, Guerin GR, Gutiérrez AG, Haider S, Hatim MZ, Hérault B, Hinojos Mendoza G, Hölzel N, Homeier J, Hubau W, Indreica A, Janssen JAM, Jedrzejek B, Jentsch A, Jürgens N, Kącki Z, Kapfer J, Karger DN, Kavgacı A, Kearsley E, Kessler M, Khanina L, Killeen T, Korolyuk A, Kreft H, Kühl HS, Kuzemko A, Landucci F, Lengyel A, Lens F, Lingner DV, Liu H, Lysenko T, Mahecha MD, Marcenò C, Marchand P, Martynenko V, Moeslund JE, Mendoza AM, Mucina L, Müller JV, Munzinger J, Naqinezhad A, Noroozi J, Nowak A, Onyshchenko V, Overbeck GE, Pärtel M, Pauchard A, Peet RK, Peñuelas J, Pérez-Haase A, Peterka T, Petřík P, Peyre G, Phillips OL, Prokhorov V, Rašomavičius V, Revermann R, Rivas-Torres G, Rodwell JS, Ruprecht E, Rūsiṇa S, Samimi C, Schmidt M, Schrodt F, Shan H, Shirokikh P, Šibík J, Šilc U, Sklenář P, Škvorc Ž, Sparrow B, Sperandii MG, Stančić Z, Svenning J-C, Tang Z, Tang CQ, Tsiripidis I, Vanselow KA, Vásquez Martínez R, Vassilev K, Vélez-Martin E, Venanzoni R, Vibrans AC, Violle C, Virtanen R, von Wehrden H, Wagner V, Walker DA, Waller D, Wang H-F, Wesche K, Whitfeld TJS, Willner W, Wiser SK, Wohlgemuth T, Yamalov S, Zobel M, Bruelheide H. (Accepted). sPlotOpen – An environmentally-balanced, open-access, global dataset of vegetation plots. Global Ecology and Biogeography. (PrePrint - https://fmsabatini.github.io/sPlotOpen_Manuscript/)

3. Fresh off the press

The news on the publication side are not over, though. **Five new sPlot papers** have been published, which increases the total number of sPlot papers to nine. A big thank to the project leaders for pushing them forward, and to all participants for their contributions.

Project #18a - Testolin R, Attorre F, Borchardt P, Brand RF, Bruelheide H, Chytrý M, De Sanctis M, Dolezal J, Finckh M, Haider S, Hemp A, Jandt U, Kessler M, Korolyuk AY, Lenoir J, Makunina N, Malanson GP, Montesinos-Tubée DB, Noroozi J, Nowak A, Peet RK, Peyre G, SabatiniFM, Šibík J, Sklenář P, Sylvester SP, Vassilev K, Virtanen R, Willner W, Wiser SK, Zibzeev EG, Jiménez-Alfaro B (2021) Global patterns and drivers of alpine plant species richness. *Global Ecology and Biogeography*, n/a. https://doi.org/10.1111/ecog.05012

Project #18b -Testolin R, Carmona CP, Attorre F, Borchardt P, Bruelheide H, Dolezal J, Finckh M, Haider S, Hemp A, Jandt U, Korolyuk AY, Lenoir J, Makunina N, Malanson GP, Mucina L, Noroozi J, Nowak A, Peet RK, Peyre G, Sabatini FM, Šibík J, Sklenář P, Vassilev K, Virtanen R, Wiser SK, Zibzeev EG, & Jiménez-Alfaro B (2021) Global functional variation in alpine vegetation. *Journal of Vegetation Science*, 32, e13000. https://doi.org/10.1111/jvs.13000

Project #24 - Cai Q, Welk E, Ji C, Fang W, Sabatini FM, Zhu J, Zhu J, Tang Z, Attorre F, Campos JA, Čarni A, Chytrý M, Çoban S, Dengler J, Dolezal J, Field R, Frink JP, Gholizadeh H, Indreica A, Jandt U, Karger DN, Lenoir J, Peet RK, Pielech R, De Sanctis M, Schrodt F, Svenning JC, Tang CQ, Tsiripidis I, Willner W, Yasuhiro K, Fang J, Bruelheide H (2021) The relationship between niche breadth and range size of beech (*Fagus*) species worldwide. *Journal of Biogeography,* 48, 1250-1253. https://doi.org/10.1111/jbi.14074

Project #25 - Laughlin DC, Mommer L, Sabatini FM, Bruelheide H, Kuyper TW, McCormack ML, Bergmann J, Freschet GT, Guerrero-Ramirez N, Iversen CM, Kattge J, Meier IC, Poorter H, Roumet C, Semchenko M, Sweeney CJ, Valverde-Barrantes OJ, van der Plas F, van Ruijven J, York LM, Aubin I, Burge OR, Byun C, Ćušterevska R, Dengler J, Forey E, Guerin GR, Herault B, Jackson R, Karger DN, Lenoir J, Lysenko T, Meir P, Niinemets Ü, Ozinga WA, Penuelas J, Reich PB, Schmidt M, Schrodt F, Velazquez E, Weigelt A (*in press*) Root traits explain plant species distributions along climatic gradients yet challenge the nature of ecological trade-offs. *Nature Ecology & Evolution*, n.a.

Project #27 - Sporbert M, Welk E, Seidler G, Jandt U, Aćić S, Biurrun I, Campos JA, Čarni A, Cerabolini BEL, Chytrý M, Ćušterevska R, Dengler J, De Sanctis M, Dziuba T, Fagúndez J, Field R, Golub V, He T, Jansen F, Lenoir J, Marcenò C, Martín-Forés I, Moeslund JE, Moretti M, Niinemets Ü, Penuelas J, Pérez-Haase A, Vandvik V, Vassilev K, Vynokurov D, Bruelheide H (2021) Different sets of traits explain abundance and distribution patterns of European plants at different spatial scales. *Journal of Vegetation Science*, 32, e13016. https://doi.org/10.1111/jvs.13016

The complete list of sPlot's publications is available on sPlot's website - https://www.idiv.de/en/sdiv/working_groups/wg_pool/splot/publications.html

4. New projects – Old projects

These are the new sPlot projects that have been approved by the Steering Committee since last newsletter:

(#35) Does temporal climatic variability correlate with the environmental tolerance of plant communities? (Lead author: Dr Aldo Compagnoni, Martin-Luther Universität Halle-Wittenberg, German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig)

(#36) Diversity of the desert vegetation of Saharo-Arabian region (Lead author: Mohamed Zakaria Hatim - Wageningen University, Plant Ecology and Nature Conservation Group - Environmental Sciences Department; Tanta University, Botany and Microbiology Department - Faculty of Science)

(#37) Toward a Comprehensive Understanding of Global Nitrogen-fixer Abundance Patterns and their Ecological Drivers (Lead author: Benton Taylor, Assistant Professor, Harvard University)

(#38) Testing the Biotic Resistance Hypothesis in the Tropics from a functional perspective (Lead author: Matthias Grenié, German Centre for Integrative Biodversity Research (iDiv), Leipzig University)

(#39) How can trait-based ecology improve paleoclimate and paleoenvironement reconstructions? (Lead author: Eric Garnier, CNRS, Centre d'Ecologie Fonctionnelle et Evolutive (UMR 5175), Montpellier Cedex 5)

And here is an overview of the progress of the active projects. Thanks to all project leaders who filled up the survey. In green, the papers that have already been submitted.
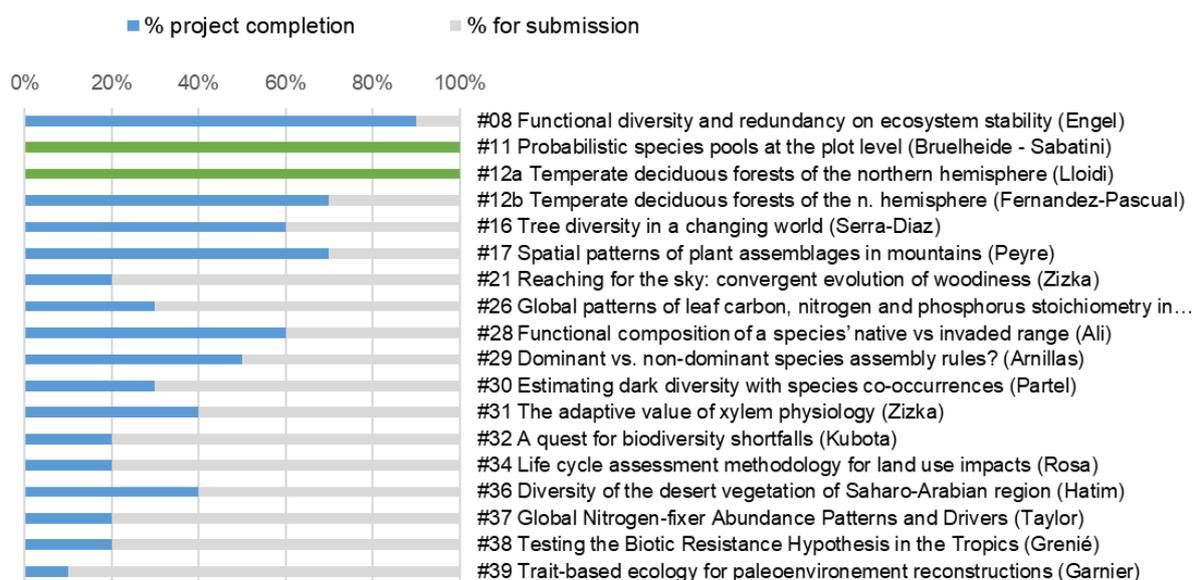
A few projects are in standby:

(#13) Global patterns of aquatic macrophyte diversity – environment relationships with focus on native versus invasive species

(#14) Functional convergence of terrestrial ecosystems within world biomes
(#15) Cross-scale transferability of species niche breadth estimates
(#20) Trait-dependent extinctions across flowering plants in biodiversity hotspots
(#22) A macroecological survey of intraspecific plant trait variation
(#23) Global patterns of plant beta diversity in tree assemblages
(#33) Large-scale mapping of plant diversity patterns from satellite-borne hyperspectral imaging (Securing funding)
(#35) Does temporal climatic variability correlate with the environmental tolerance of plant communities? (Securing funding)

The following projects have been discontinued:

(#04) The role of climate stability for trait variability across scales and biomes
(#05) Can Earth observation data be used to measure changes in taxonomic and functional diversity?
(#07) Scaling taxonomical, functional and phylogenetic community diversity
(#09) Downscaling of species distribution models: towards fine-grain presence-absences for grasses
(#19) Toward a mechanistic description of land uses for ecological studies: Building a Vegetation <> Land-use converter for Europe

5. Other news

New steering committee
Since January 7st, 2021, sPlot has a newly elected Steering Committee. The committee will remain in charge until December 2022. It is composed of five members (in order of votes): Helge Bruelheide, Milan Chytrý, Susan Wiser, Borja Jiménez-Alfaro and Idoia Biurrun. Helge Bruelheide was unanimously confirmed as chairperson by the other committee members. A big welcome to Susan Wiser and Idoia Biurrun for joining the steering committee. Finally having two women onboard is clearly a step in the right direction towards a more diverse and inclusive steering committee. Our warmest thanks go to Florian Jansen and Valério Pillar, for generously serving during the previous steering committee term (2018-2019).

Funding situation
iDiv successfully defended its renewal proposal for funding from 2021 to 2024 in front of the German Research Agency (DFG) in March 2021, and secured funding for additional three years (September 2021 to September 2024). This also allows us to extend the contract for sPlot's coordinator for another three years. We are very happy that Francesco Sabatini agreed to continue his contract.

The PlantHub
iDiv is working on establishing the PlantHub. This initiative will bring together and consolidate the various iDiv's initiatives on global vascular plant taxonomy (Leipzig Reference List), functional traits (TRY database), global environmental data (Data Cube), plant range information (Chorology Database Halle), digital herbaria (Halle, Jena and Leipzig) and plant community models (SimNet). sPlot will become a partner of the PlantHub initiative. Besides improving the integration of sPlot with other plant-based research platforms, the PlantHub will help us improve our visibility, accessibility and impact, both with regards to the scientific community and the general public. In a first contact with the PlantHub's staff, we brainstormed on how they could help sPlot create a visual interface to explore some of sPlot's data for a broader public.

The Restor project

We have come into contact with Tom Crowther at Zurich University and his global restoration project Restor (https://restor.eco/). We discussed the possibilities to use sPlot data to identify native species that might be used in local restoration projects. Given that most of the data in sPlot are from (semi-)natural vegetation types, they have the potential to inform decisions on which species to use for local restoration projects. To explore the possible ways to use our vegetation plot data, we will start with making use of the sPlotOpen dataset. By becoming a global partner of the *Restor* initiative we expect an increase in visibility for sPlot, both for the whole consortium as well as active individual members. We are aiming at establishing a sPlot task force to develop this cooperation and would be happy to have volunteers from the sPlot consortium, in particular from regions outside Europe. Please contact francesco.sabatini@botanik.uni-halle.de for further information.

Greetings from the sPlot team

(For further information contact francesco.sabatini@botanik.uni-halle.de)

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