

# sPlot Letter No. 8



**October 2018**

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See all sPlot newsletters here:

[https://www.idiv.de/sdiv/working\\_groups/wg\\_pool/splot/materials.html](https://www.idiv.de/sdiv/working_groups/wg_pool/splot/materials.html)

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**sPlot** is a research platform of the German Center for Integrative Biodiversity Research Halle-Jena-Leipzig (iDiv) funded by the German Science Foundation (DFG). The newsletter informs about sPlot activities to the consortium members (custodians of vegetation databases and other collaborators involved in sPlot research projects).

## 1. New sPlot projects

These are the new projects approved by the Steering Committee in the last year:

#16 – [Projecting tree diversity and distributions in a changing world](#) (lead author: Jose M Serra-Diaz, Aarhus University, Denmark)

#17 – [Spatial patterns of plant assemblages in mountains: A global analysis](#) (lead author: Gwendolin Peyre, University of the Andes, Colombia)

#18 – [Global patterns of taxonomical and functional diversity in alpine vegetation](#) (lead authors: Fabio Attorre, Fabio Attorre and Borja Jiménez-Alfaro)

#19 – [Toward a mechanistic description of land uses for ecological studies: Building a Vegetation <> Land-use converter for Europe](#) (lead authors: Anne Mimet, Julia Joswig)

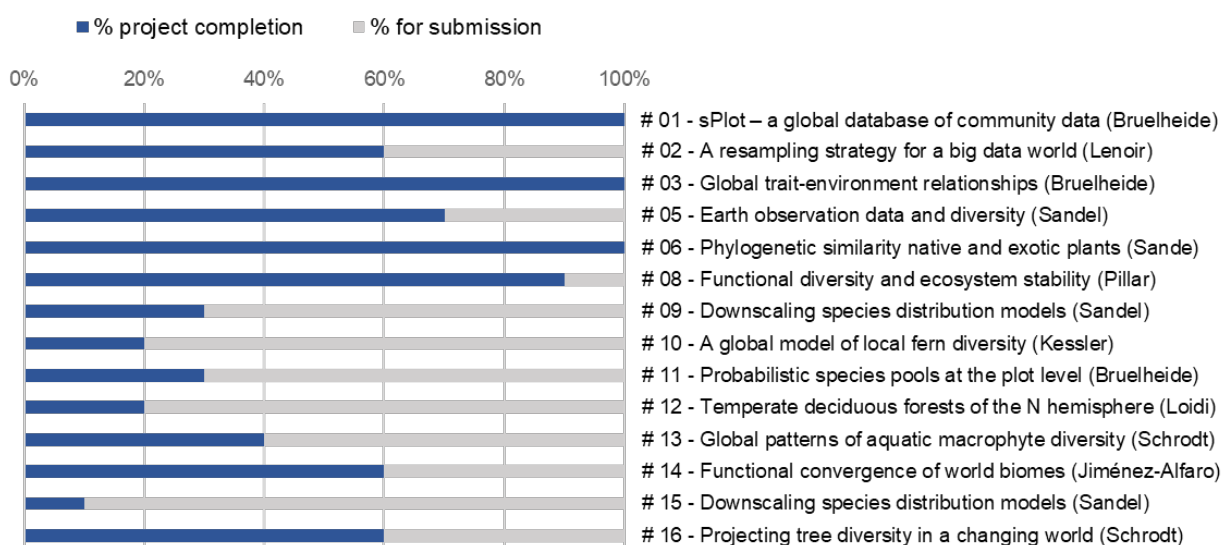
#20 – [Trait-dependent extinctions across flowering plants in biodiversity hotspots](#) (lead author: Renske E. Onstein)

Meanwhile, we regret that Project #4 – [The role of climate stability for trait variability across scales and biomes](#) and Project #7 – [Scaling taxonomical, functional and phylogenetic community diversity](#) were discontinued due to the change career of the lead author.

## 2. Progress of sPlot papers

We are glad to announce that the main results of sPlot project #3 has been accepted for publication in the next issue of **Nature Ecology & Evolution**. The paper is entitled “**Global trait environment relationships of plant communities**” and was led by Helge Bruelheide with the support of a core team of sPlot (Jürgen Dengler, Oliver Purschke, Jonathan Lenoir, Borja Jiménez-Alfaro, Stephan Hennekens, Zoltán Botta-Dukát & Francesco Maria Sabatini), the sPlot Steering Committee and a total of 105 sPlot members involved!

Further, the core team of sPlot has submitted the first data paper (sPlot project #1) for reporting the main characteristics of the global vegetation plot database, and another group led by Jonathan Lenoir is now preparing an additional data paper (sPlot project #2) exploring the possibility of releasing an resampled subset of sPlot data open-access. The progress of other sPlot projects is shown in the chart below.



### 3. Looking at the data of sPlot V2.1

We would like to recap the main properties of the data we have stored so far, especially for the members that are planning to start new projects and analyses. This internal summary briefly presents how the database looks like after the work done by the sPlot team in the last years. These is also the data that have been used in the first three sPlot papers.

The data is managed through the core team of sPlot in the RStudio Server placed in iDiv. Please see paper #01 for the official presentation to the scientific community, or get in touch with the sPlot coordinator for more specific details.

#### Plot data

Community data recorded in vegetation plots is the essence of sPlot. From the original output in Turboveg 3, we stored an R object **DT2** using the `data.table` package. This file contains **22,195,966 species observations**, named by the original Turboveg names in the column name *Matched concept* and also by the resolved name of the sPlot-TRY taxonomical backbone in the column *Species* (see section 2.3).

Species names are grouped in **1,117,369 vegetation plots** identified by a unique *PlotObservationID*. Since the original sources provided different cover scales, the data was standardized to a unique percentage value for each species in each plot, stored in the column *Relative.cover* (ranging from 0 to 1).

#### Associated header data

The header data for each vegetation plot is stored in the **header** object containing **1,121,244 plots** (note that some plots contained no species). This file includes a selected number of descriptors from Turboveg3 (altitude, cover total, cover of tree layer, etc.) and also new information collected from the plot data (e.g. *vascular.plant.richness*).

To match all the data with spatial information, we assigned new coordinates (*POINT\_X* and *POINT\_Y*) to those plots located in the sea to relocate them in the nearest land within the region. With these coordinates, we extracted values for 19 climatic variables from <http://chelsa-climate.org/> and 7 soil variables from <http://worldgrids.org/>, which are now stored in the objects **climate** and **soil**. These data is available for **1,120,686 plots** for which geographical coordinates were available.

We also assigned additional information to the header data about biomes and realms. The complete list of attributes for each plot is shown in Supplementary Table 2 of paper #01.

#### Trait data from TRY

Thanks to the collaboration between sPlot and TRY ([www.try-db.org](http://www.try-db.org)), we generated a gap-filled version of TRY data to calculate mean values of 18 traits at the plot level, which are stored in the **TRY3.0** object. We produced new objects for trait information on **1,117,369 plots**, including community weighted means (*CWM*), community weighted variance (*variance2.abu*), and functional diversity based on the Rao's index (*FD.Rao*). After matching the plots with environmental data and trait information, the number of plots available for trait-based analyses is **1,114,304**.

#### Taxonomic backbone and phylogenetic tree

We are in debt with Oliver Purschke for preparing the taxonomical backbone and the phylogenetic tree of all the species included in sPlot.

The taxonomical backbone standardizes taxon names across the (i) global vegetation plot database sPlot version 2.1 and (ii) the global plant trait data base TRY version 3.0, as they are resolved in the R object **DT2** (*Species*). The detailed documentation is available on github: [https://github.com/oliverpurschke/Taxonomic\\_Backbone](https://github.com/oliverpurschke/Taxonomic_Backbone). This link also contains the proper citation via Zenodo, <https://zenodo.org/record/845445#.Wc1KvBdpFhE>.

The phylogeny for sPlot 2.1 (**phyto.phylo.splot2.1.50167.vasc.tre**) is presented as a phylogenetic tree that includes 92% of the taxa in sPlot. The full documentation of the workflow and the details about the coding are also available on github: [https://github.com/oliverpurschke/sPlot\\_Phylogeny](https://github.com/oliverpurschke/sPlot_Phylogeny). You can also find a brief synthesis of the process in sPlot paper #01.

## 4. Towards sPlot V3.0

We are working on the new version of sPlot, including new databases and improving the quality of the data, to release a new version (V3.0) in first quarter of 2019.

### New databases that joined the sPlot consortium

Already six new databases contributed data to be included in sPlot 3.0 for a total of ~110,000 new plots. When we will have added to these plots the new contributions from the datasets VegBank (USA), CVS (USA), and Aava (USA), sPlot 3.0 is expected to include ~200,000 new plots. This is not all. We are still negotiating with many other databases!

Country/region	Contact	Details
Japan	Kubota Yasuhiro	72,000 vegetation plots from Japan
Afro-Alpine	Petr Sklenar	800 plots from Africa and New Zealand
Australia	Laco Mucina	6,800 plots from Western Australia
Colombia	Esteban Alvarez	1000 plots from Colombia
India	Jiri Dolezal	4062 plots from Ladakh area
Australia	John Hunter	22,000 plots in New South Wales
Argentina	Melisa Giorgis	584 plots on the Mts of Cordoba

We would also like to warmly welcome the custodians of these new databases to the sPlot consortium. sPlot is continuously growing, now counting 116 member databases and 43 personal members.

### Classifying the data into World vegetation formations

For a better management of sPlot version 3.0, we would like to classify all vegetation plots according to the World vegetation formations defined by Faber-Langendoen et al. (2016), which is available here: [https://www.fs.fed.us/rm/pubs/rmrs\\_gtr346.pdf](https://www.fs.fed.us/rm/pubs/rmrs_gtr346.pdf). This broad classification will allow future sPlot projects to query the database consistently, and to detect major gaps in formations across biomes and continents.

For the data contributed by EVA, we will perform a preliminary automatic match between existing EVA classification and the World vegetation formations, and then will ask data contributors for support. For the non-European data sets, we will perform a preliminary classification by using other information (e.g. assignment to forests and grasslands), but we will need more help from the data providers to check carefully the classification of their datasets. The sPlot coordinator will contact with data providers with more details.

From now on, all the new databases contributing to sPlot will be required to classify the contributing data with this classification during the process of joining the network. In this way, we expect to reach a simple but consistent classification of plant formations represented in sPlot v 3.0 and further updates.

## 5. Other news

### New sPlot coordinator

In March 2018, **Francesco María Sabatini** was appointed as the new sPlot coordinator. Francesco will continue the work done by **Borja Jiménez-Alfaro** (who transferred to the Research Unit of Biodiversity - CSIC in Spain) and previously by **Jürgen Dengler** (currently a professor at the Institute of Natural Resource Management (IUNR), Zurich University of Applied Sciences (ZHAW) in Switzerland).

Francesco received his PhD in Ecology at Sapienza, University of Rome in 2014, with a focus on forest ecology. He was awarded a Marie Skłodowska-Curie fellowship at the Dept. of Geography of Humboldt-Universität zu Berlin, where he worked on biogeography and land-use. He is proficient in ecoinformatics, has already worked with large vegetation databases and is experienced in coordinating scientific networks. As the previous sPlot coordinators, he holds the position funded by iDiv and is affiliated to the geobotany group of Helge Bruehlheide at Martin Luther University Halle-Wittenberg.

### Agreement with the European Vegetation Database

The Steering Committee of sPlot and the Governing Board of the European Vegetation Archive (EVA) have agreed on the procedure for conducting research projects at the European scale using EVA data and functional or phylogenetic information from sPlot. This procedure is explained in a Supplement of the sPlot rules available among the sPlot documents here: [https://www.idiv.de/sdiv/working\\_groups/wg\\_pool/splot/materials.html](https://www.idiv.de/sdiv/working_groups/wg_pool/splot/materials.html). Please have a look to this document if you are interested in analyzing the vegetation plot data of Europe using the community trait information or the phylogenetic tree developed by the sPlot team.

### Amendments to the sPlot rules

The Steering Committee of sPlot has developed a new version of sPlot Data Governance Rules that will soon be submitted for approval to the sPlot community. The core of the rules remains the same, while minor inconsistencies have been corrected. The main modifications are:

- Updates of sPlot objectives and membership mechanisms.
- Clarifies the connection to the TRY initiative and the European Vegetation Archive (EVA) (see above).
- Clarifies the procedure for proposing and approving changes to sPlot rules.
- Expiry of data usage of project proposals after two years.
- Regulates the use of derived data
- Statement of consent to comply with the changed European Regulation on the protection of personal data (GDPR directive, see below).
- Introduction of an electronic votes on future changes of the sPlot rules.

The drafted version of these new sPlot rules is available here:

[https://www.idiv.de/fileadmin/content/Files\\_sPlot/Documents/sPlot\\_rules\\_V2.1\\_20181001\\_draft.pdf](https://www.idiv.de/fileadmin/content/Files_sPlot/Documents/sPlot_rules_V2.1_20181001_draft.pdf). An electronic ballot will be organized within the next two weeks for approving these updated rules.

### Management of Personal Data in sPlot

We are now required to comply with the enforcement of the new GDPR Directive (EU) 2016/680. In sPlot we store a minimum amount of personal information in our database, which includes name, affiliation and contact information. These data are only used for sPlot internal management, and are stored for the whole duration of the membership. Members' names are also published in our member list published in sPlot website. For current members we adopt a silent consent approach on these terms, while new members will be required to approve these conditions explicitly. With regards to sPlot's newsletter, all members have the right to be cancelled from receiving it on request.

### **New Elections of Steering Committee and Chair**

The 2-year renewable term of our Steering Committee is getting to its natural end. Our rules require to have new elections in the last quarter of even years by means of an electronic ballot extending over one month. Starting on November 15<sup>th</sup> we will call for nominations while the ballot will start on December 15<sup>th</sup>.

Greetings from the sPlot team.

We are looking forward to meet you on one of the many conferences in our field in 2019!

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