

sPlot Letter No. 9



August 2020

By Francesco Maria Sabatini (sPlot coordinator), Helge Bruelheide, Milan Chytrý, Valério De Patta Pillar, Borja Jiménez-Alfaro and Florian Jansen (sPlot Steering Committee)

See all sPlot newsletters here:

https://www.idiv.de/sdiv/working_groups/wg_pool/splot/materials.html

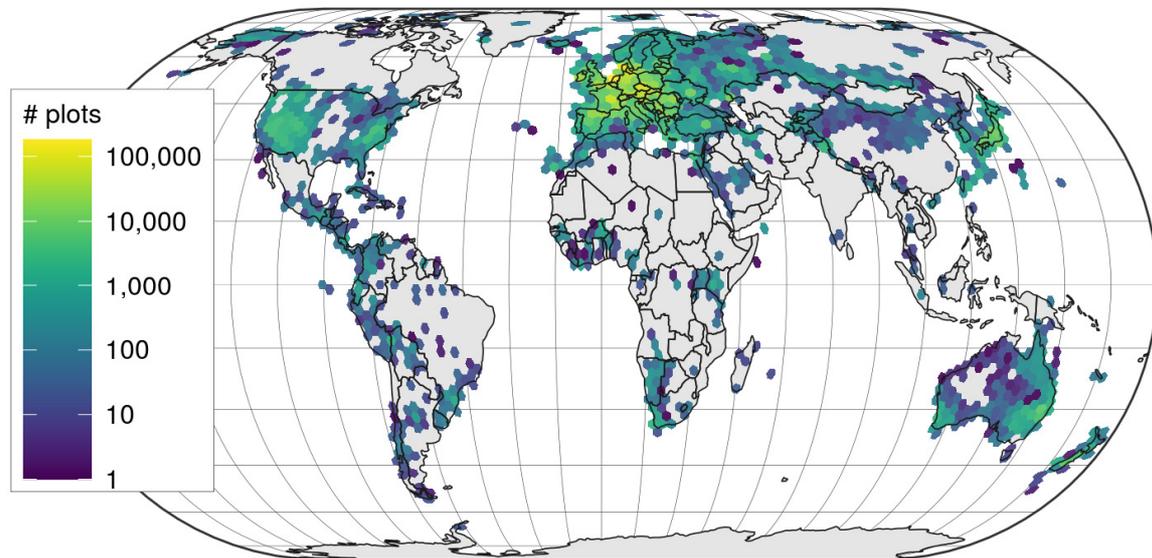
CONTENT

- 1. sPlot 3.0 released!**
- 2. Latest sPlot publications**
- 3. New projects, old projects**
- 4. Perspectives and road to sPlot v4.0**
- 5. Other news**

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. sPlot 3.0 released!

We are happy to announce that sPlot 3.0 is officially out. Compared to v2.1, it substantially enlarges the geographic coverage of sPlot, especially towards South America and Asia.



New databases that joined the sPlot consortium

A long list of new database joined our initiative. A big welcome to all the new custodians and deputy custodians!

GIVD Code	Db Name	Num. Plots	Custodian	Deputy Custodian
00-RU-XXX	Russia_Demina	946	Olga Demina	
AF-00-010	Afroalpine vegetation	421	Petr Sklenar	
AF-00-011	West African Secondary Forests	105	Bruno Herault	Justin Kassi
AF-CM-001	Cameroon Forest Database	173	Jiri Dolezal	
AF-EG-XXX	Egypt Nile delta	3242	Mohamed Abd El-Rouf Mousa El-Sheikh	
AF-NA-001	National Phytosociological Database of Namibia	1308	Ben Strohbach	Salomé Kruger
AF-KE-001 [†]	Kenya Coastal Forests Vegetation Plot Database	158	Maria Fungomeli	Alessandro Chiarucci
AS-CN-007	Northern China Shrubland vegetation database	1424	Zhiyao Tang	Hongtu Zhang
AS-CN-008	100 plots from Ma'anling volcano park in Haikou, China	475	Hua-Feng Wang	Zhi-Xin Zhu
AS-CN-XXX	Vegetation of Yunnan Province	76	Cindy Q. Tang	
AS-ID-002	EFForTS-CRC990 Sumatra vegetation plots	160	Holger Kreft	Fabian Brambach
AS-ID-XXX	Vegetation of Ladakh (India)	4062	Jiri Dolezal	
AS-IR-006	Hyrcanian Forest Vegetation Database	1597	Hamid Gholizadeh	Alireza Naqinezhad

AS-JP-002	Japan Vegetation Plots Data (JVPD)	72325	Yasuhiro Kubota	
AS-RU-005	Nenets Tundra	1240	Igor Lavrinenko	
AU-AU-003	SPINFO	24000	John Thomas Hunter	
AU-AU-XXX	West Australia	6808	Paul David Macintyre	Ladislav Mucina
EU-00-004	Iberian and Macaronesian Vegetation Information System (SIVIM)	3506	Xavier Font	
EU-00-021	SE Europe forest database	4092	Andraž Carni	
EU-00-023	Iberian and Macaronesian Vegetation Information System (SIVIM) – Deciduous Forests	6642	Juan Antonio Campos	Xavier Font
EU-00-024	Iberian and Macaronesian Vegetation Information System (SIVIM) – Floodplain Forests	4681	Idoia Biurrun	Xavier Font
EU-00-026	CircumMed Pine Forest database	6317	Gianmaria Bonari	Milan Chytrý
EU-00-027	European Boreal Forest Vegetation Database	13037	Anni Jašková	
EU-00-028	European Weed Vegetation Database	24734	Filip Kůzmič	Urban Šilc
EU-CH-011	Monitoring Effectiveness of Habitat Conservation in Switzerland	6648	Ariel Bergamini	Steffen Boch
EU-DE-020	German Grassland Vegetation Database (GrassVeg.DE)	10045	Jürgen Dengler	Ricarda Pätsch
EU-DE-035	Coastal Vegetation Germany Database Schleswig-Holstein (Northern Germany)	10772	Maike Isermann	Florian Jansen
EU-DE-040		4000	Joachim Schrautzer	
EU-FR-005	EcoPlant	6432	Jean-Claude Gégout	Ingrid Seynave
EU-GB-004	UK_Floodplain meadows	25097	Irina Tatarenko	
EU-IE-001	Irish Vegetation Database	26412	Úna FitzPatrick	
EU-IT-019	VIOLA	1726	Angela Stanisci	Alberto Evangelista
EU-PL-003	Forest Database of Southern Poland	3924	Remigiusz Pielech	
EU-RS-003	Database of Forest Vegetation in Republic of Serbia	2588	Mirjana Ćuk	
EU-RS-004	Vegetation Database of Northern Part of Serbia (AP Vojvodina)	2752	Mirjana Ćuk	
EU-RU-014	Temperate Forests of European Russia	5073	Larisa Khanina	Maxim Bobrovsky
EU-UA-005	Halophytic and coastal vegetation database of Ukraine	4606	Tetiana Dziuba	Dmytro Dubyna
NA-CU-XXX	Cuba - Borhidi	613	Ute Jandt	Borja Jiménez-Alfaro
NA-US-008	Plant Community Survey and Resurvey Data from the Wisconsin Plant Ecology Laboratory	495	Donald Waller	Kathryn L. Amatangelo
NA-US-016	OpenNahele	530	Dylan Craven	

SA-00-003	EpiG plot-based	545	Glenda Mendieta-Leiva	Borja Jiménez-Alfaro
SA-AR-003	Argentina	147	Karina Speziale	Ana Cingolani
SA-CO-003	Colombian Forest Plot Network (Col-Tree)	150	Esteban Alvarez-Davila	
SA-EC-002	Galapagos veg	108	Gonzalo Rivas-Torres	
SA-PE-001	Vegetation plots from Peru	152	Antonio Galán-de-Mera	
SA-UY-001	Grassland relevés of Uruguay	308	Felipe Lezama	

† Not yet integrated into sPlot 3.0

sPlot 3.0 in a Nutshell

The new version 3.0 increases substantially the number of plots stored in sPlot. sPlot is now composed by **1,978,686 vegetation plots**, accounting for **43,102,875 species observations** for **76,912 taxa**. As in sPlot 2.1, we prepared some ancillary data both on functional traits and environmental conditions.

Specifically, thanks to the collaboration between sPlot and TRY (www.try-db.org), we generated a gap-filled version of TRY data (v5.0) to calculate mean values of **33 traits** for **57,859 taxa** (i.e., 75% of taxa present in sPlot). We used these traits to calculate community-weighted means and community-weighted variances for 1,707,734 vegetation plots. The median coverage per plot, i.e., the share of species for which functional traits was available, was 89.5% when considering species presence/absence, and 94.7% when weighting by species relative abundances.

Environmental conditions include elevation, climate, and soil. Elevation relies on the DEMs included in the R package *elevatr*. Climate is based on CHELSA dataset and includes all the 19 bioclimatic variables. Soil derives from ISRIC and includes 8 variables (Cation Exchange capacity, Clay, Silt, Sand and Coarse fragments fractions, pH, soil organic C content and bulk density). The novelty is that, rather than returning a single value for each plot, we now explicitly account for the location uncertainty of the plots, so that all environmental variables are reported as the mean and s.d. of the values in a circle centered on each plot, having a radius equivalent to the plot's location uncertainty.

Two more features and a warning. First, sPlot 3.0 comes with a new taxonomic backbone, i.e., a table cross-linking and resolving the taxa entries from sPlot 3.0 and TRY 5.0. Taxonomic resolution mostly relies on TNRS and TPL, which are complemented with quite a bit of manual cleaning. Second, the header file now fixes many of the issues in sPlot 2.1. For instance, all plots now come with the GIVD code of the source dataset, we rationalized the categories used to describe plot survey scheme (e.g., which vegetation strata were sampled? What abundance scale was used?), and better integrated the information on vegetation types. Now the warning. Please make note that, differently from sPlot 2.1, from version 3.0 we discontinued the maintenance of a phylogenetic tree for all species in sPlot. However, we might be able to help creating the phylogeny if future projects need to use it.

All procedures of data cleaning and extraction are transparently described in the **sPlot3_build** gitlab project at the link: https://git.idiv.de/fs40gaho/splot3_build.

Time to benchmark!

We really did our best to solve issues from sPlot 2.1, and spot and solve potential new issues when creating sPlot 3.0. Yet, your feedback will be crucial to find and resolve additional problems we may have overlooked. Two project leaders (Project #31 – Daniel Laughlin, and Project #32 - Keiichi Fukaya & Yasuhiro Kubota) accepted to help us benchmarking the data. A big thank to them and we look forward for their feedbacks!

2. Latest sPlot publications

sPlot is gaining momentum, after the publications of the first papers in 2018 and 2019, two new papers have recently been published:

Project #06 - van der Sande, MT, Bruelheide, H, Dawson, W, et al. Similar factors underlie tree abundance in forests in native and alien ranges. *Global Ecol Biogeogr.* 2020; 29: 281–294. <https://doi.org/10.1111/geb.13027>

Project #10 - Weigand, A, Abrahamczyk, S, Aubin, I, et al. Global fern and lycophyte richness explained: How regional and local factors shape plot richness. *J Biogeogr.* 2020; 47: 59– 71. <https://doi.org/10.1111/jbi.13782>

Also the impacts of the first papers kept reverberating well beyond the academic world

Project #03 - [Global trait–environment relationships of plant communities](#) – for instance, received quite a bit of coverage in the media, with a [video Interview \(in German\)](#) to the Project Leader Helge Bruelheide, possibly also thanks to the article's [plain language summary](#) in Nature Ecology and Evolution's blog.

Also Project #01 - [sPlot – A new tool for global vegetation analyses](#) – got quite a bit of coverage, see for instance the interview in [Scientia Halensis \(in German\)](#). The paper is the one most downloaded of JVS:

<https://onlinelibrary.wiley.com/journal/16541103?tabActivePane=>

3. New projects – Old projects

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

(#21) [Reaching for the sky: Unravelling global patterns and processes to explain convergent evolution of woodiness in angiosperms](#) (Lead author: Alexander Zizka, German Centre for Integrative Biodiversity Research (iDiv) Halle-Jena-Leipzig)

(#22) [A macroecological survey of intraspecific plant trait variation](#) (Lead author: Gabriel Walther, Max Planck Institute for Biogeochemistry Jena, Germany)

(#23) [Global patterns of plant beta diversity in tree assemblages](#) (Lead author: Zhiyao Tang, sPlot Consortium Member, Institute of Ecology, Peking University)

(#24) [Worldwide niche breadth estimates of beech \(Fagus\) species](#) (Lead author: Qiong Cai, Department of Ecology, College of Urban and Environmental Sciences, Peking University)

(#25) [Global variation in fine root traits along climate and soil gradients](#) (Lead authors: Daniel Laughlin, Alexandra Weigelt, Liesje Mommer, Helge Bruelheide)

(#26) [Global patterns of leaf carbon, nitrogen and phosphorus stoichiometry in plant communities](#) (Lead author: Zhiyao Tang, Yanpei Guo, Hongtu Zhang - Institute of Ecology, Peking University)

(#27) [Relationship between herbaceous plant species large-scale distribution, small-scale dominance and plant functional traits](#) (Lead author: Maria Sporbert - Martin-Luther University Halle-Wittenberg, Germany)

(#28) [Functional composition of a species' native vs invaded range: A global analysis using plant functional traits](#) (Lead author: Hamada E. Ali, Botany Department, Faculty of Science, Suez Canal University)

(#29) [Do dominant and non-dominant species follow the same assembly rules?](#) (Lead author: Carlos Alberto Arnillas. University of Toronto – Scarborough)

(#30) [Estimating dark diversity by using species co-occurrences: refining methods for large vegetation plot databases](#) (Lead author: Meelis Pärtel, University of Tartu, Estonia)

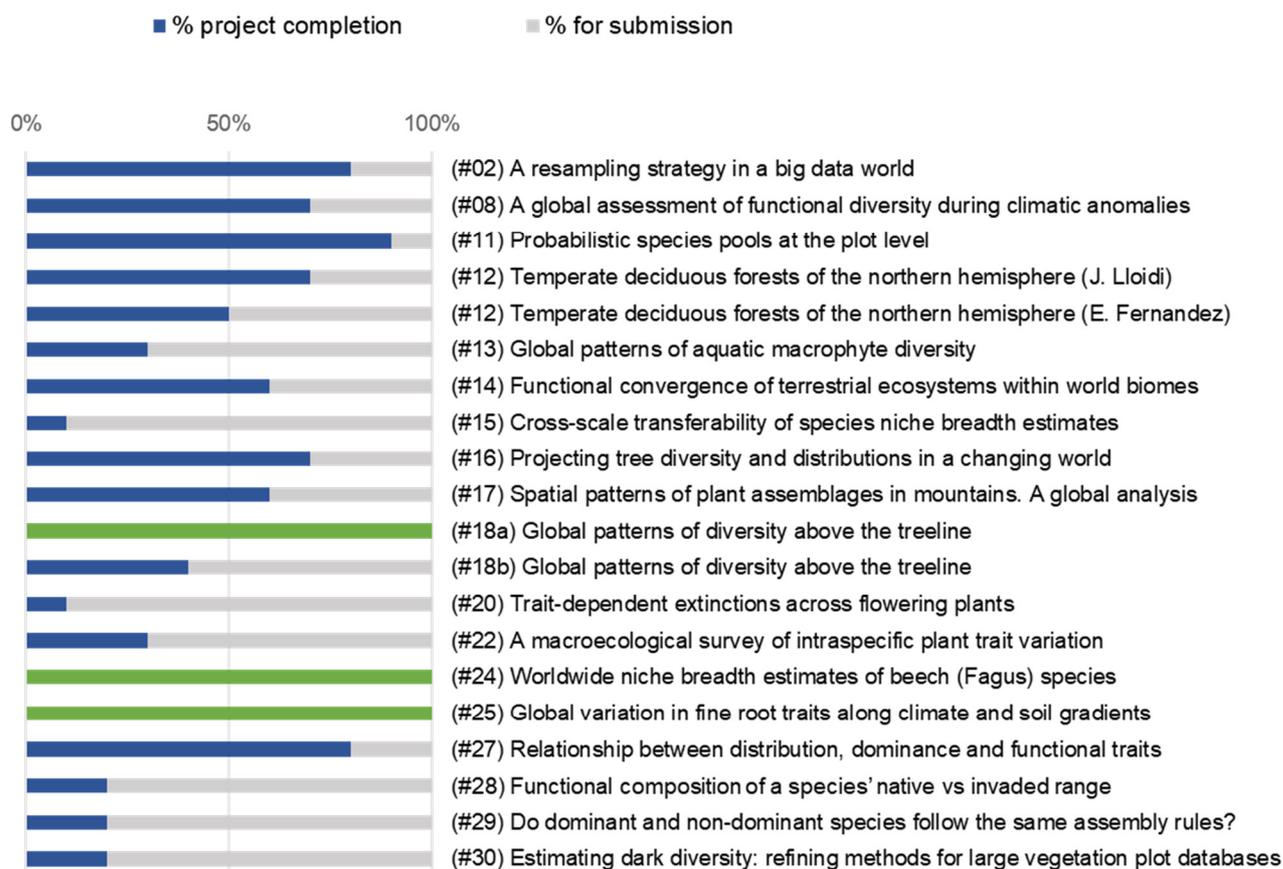
(#31) [The adaptive value of xylem physiology within and across global ecoregions](#) (Lead author: Daniel C. Laughlin, Department of Botany, University of Wyoming, Laramie, WY 82071 USA)

(#32) [A quest for biodiversity shortfalls: global-scale species abundance estimation of woody plants](#) (Lead authors: Keiichi Fukaya & Yasuhiro Kubota - Lab. Biodiversity & Conservation Biogeography, University of the Ryukyus, Nishihara, Okinawa 903-0213, Japan)

(#33) [Large-scale mapping of plant diversity patterns from satellite-borne hyperspectral imaging](#) (Lead author: Mike Harfoot, UNEP-WCMC and University of Cambridge)

(#34) [Life cycle assessment methodology for assessing land use impacts on functional plant diversity](#) (Lead authors: Francesca Rosa - ETH Zürich, Laura Scherer - Leiden University)

The ongoing projects haven't been idle either. Thanks to all project leaders who filled up the survey. We foresee quite a few new submission before the end of the year. Let's keep up the pace. In green, the papers that have already been submitted.



Project #09 (*Downscaling of species distribution models: towards fine-grain presence-absences for grasses*) was discontinued.

Projects #15 (*Cross-scale transferability of species niche breadth estimates*), #19 (*Toward a mechanistic description of land uses for ecological studies: Building a Vegetation <>*)

Land-use converter for Europe), and #20 (*Trait-dependent extinctions across flowering plants in biodiversity hotspots*) are on standby.

4. Perspectives and road to sPlot v4.0

Yes. We've just released sPlot 3.0 but we're already planning our future steps. We envision sPlot to become **a hub of and knowledge generator in global plant community data** within the next five years. To achieve this aim, we will continue expanding sPlot's network and thereby reducing the imbalance between well-represented areas (Europe, North America, Australia), and underrepresented regions (tropical regions, Indian subcontinent, China and sub-east Asia).

Still, simply accumulating vegetation plot data will not be sufficient to catalyze a transformative impact on biodiversity science and policy. We are therefore getting ready to some operational changes.

Including temporal data

First, we will restructure sPlot's architecture to **include also time-series**. sPlot v4.0 will therefore include also data on repeated surveys of the same plot. Adding a temporal dimension is necessary for the transition from research on global patterns, to research on global trends of biodiversity and its threats. Obviously, we will seek for synergies with existing initiatives (e.g. sMon, ITEX, BioTIME, sReplot, LTER). In parallel, a similar effort will be taken in EVA, which will allow us to integrate European time series in the same way as previous European data through EVA. Therefore, please stay tuned. We will reach out to our members as soon as we are ready to host temporal data.

Increase Transparency and transition to FAIR open-access

Second, to improve transparency of the data governance and decisional processes, and improve data accessibility, we are committed to **progressively transition adopt FAIR (Findable, Accessible, Interoperable and Re-usable) data principles**, and open-access data. All agreements will stay in place, so there will be no unilateral initiative from our side. Thanks to the widespread support of our members, we are now working on preparing a first, regionally-balanced subset of sPlot data **completely open-access** and available to the research community without limitations (Project #02). It will contain approximately 90k plots, and the first draft is about to be finalized.

Seek for synergies

Third, we will work on **strengthening existing synergies with other biodiversity infrastructures** on plant community data (ForestPlots.NET, GIVD, EVA) and on creating new ones (e.g. with GIFT, GBIF, Map of Life). The main goal is to ensure interoperability and data integration across platforms.

Funding situation

As everybody, we are also suffering disruptions caused by the COVID-19 pandemics. sPlot is dependent on iDiv for funding. Yet, due to the COVID-19 crisis, iDiv could not defend its application for a new 4-year batch of funding in front of the German Research Foundation (DFG). As an interim solution, DFG is now providing iDiv with 1-year of funding, while the defense for the remaining three years' worth of funding has been rescheduled to spring 2021. This means the contract of sPlot's coordinator will be extended until September 2021. An extension for additional three years will then be evaluated.

5. Other news

Election of the Steering Committee

In December 2020, the natural mandate of our Steering Committee will expire. This means we will approach you in fall first to ask for candidates or nominations, and then for the actual poll. As a consortium, **we should strive towards a more balanced Steering Committee** in terms of gender-ratio, geographic origin and career stage. This means that nominations from under-represented groups are warmly welcome.

New database member

We would like to welcome our new member database. Maria Fungomeli and Alessandro Chiarucci, representing the database "Kenya Coastal Forests Vegetation Plot Database". This database is not yet integrated into sPlot 3.0. We are therefore thinking of a minor update (v3.1) to include this and possibly other new member database into sPlot. This will likely happen in spring 2021. If you know of other databases willing to join sPlot, please let us know!

Call to members – Double check your contact info in GIVD

Please, make sure to keep the information concerning your database (including your contact and affiliation information) in the Global Index of Vegetation Databases GIVD - <https://www.givd.info/>. As you know, we rely on GIVD to manage the contact list of the members in sPlot, which is crucial for internal communication. It is therefore extremely important to have up-to-date information. Also, please let us know if you spot any mistake in the information listed in the 'Contributing Database' page of our website: (https://www.idiv.de/en/sdiv/working_groups/wg_pool/splot/consortium_and_contributing_databases.html)

Greetings from the sPlot team

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



Follow us on Twitter: sPlot_iDiv