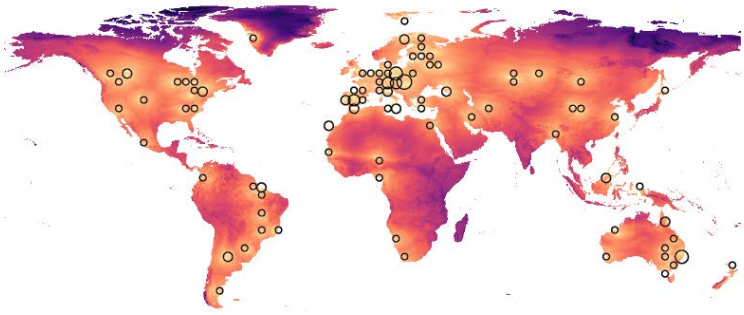
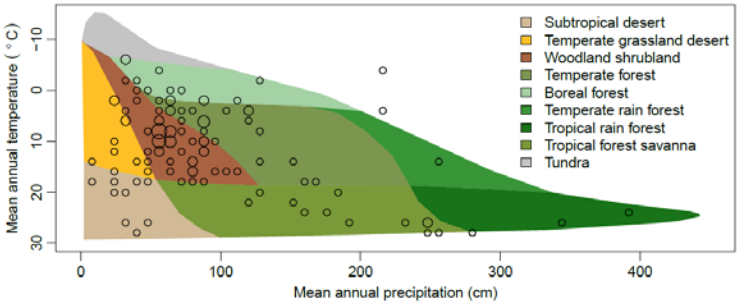
DarkDivNet NEWSLETTER January 2019

Progress of *DarkDivNet*

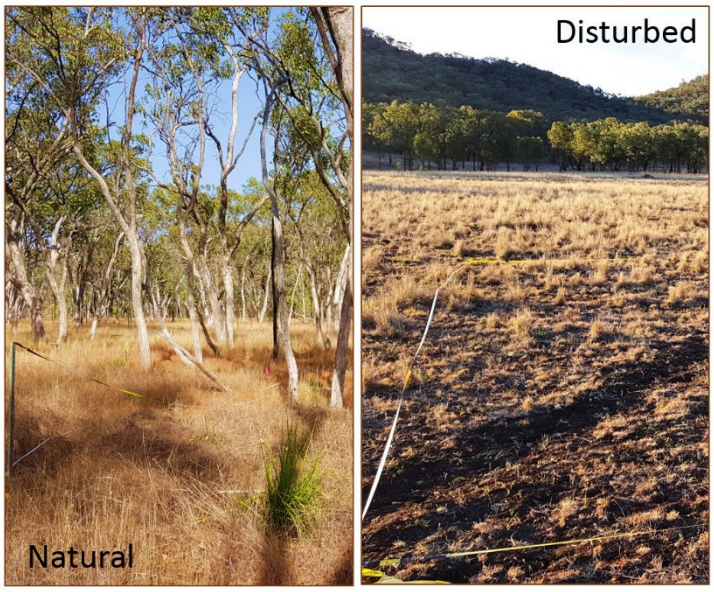
Currently we have 116 potential study areas by 85 teams across the world. The enthusiasm of your participation has been amazing! Some of these teams depend on funding to be able to perform the sampling. If you need a support letter from *DarkDivNet* to apply for a grant to sample your site, please let us know (darkdivnet@ut.ee).



Although the network is developing very nicely, we can improve it further. Darker background colours on the map indicate regions where we still would like very much to have some study areas (combined geographical and climatic distance to the nearest sampled point). Several biomes on the precipitation-temperature scheme are still rather "empty". Please suggest to us who might contribute to *DarkDivNet* from Eastern Africa, India, Siberia, Alaska, Amazonia, temperate and tropical rainforests, tundra or desert. Of course, new study areas from more covered regions are very welcome as well. In regions with more study areas we can explore more complex questions.



So far two study areas from Australia have already been sampled by Dr John T. Hunter. On the picture you can see a natural woody grassland and a cleared and grazed habitat from the study area D001 in the Carnarvon Bush Heritage reserve (NE Australia). We are looking forward to receiving more data soon!



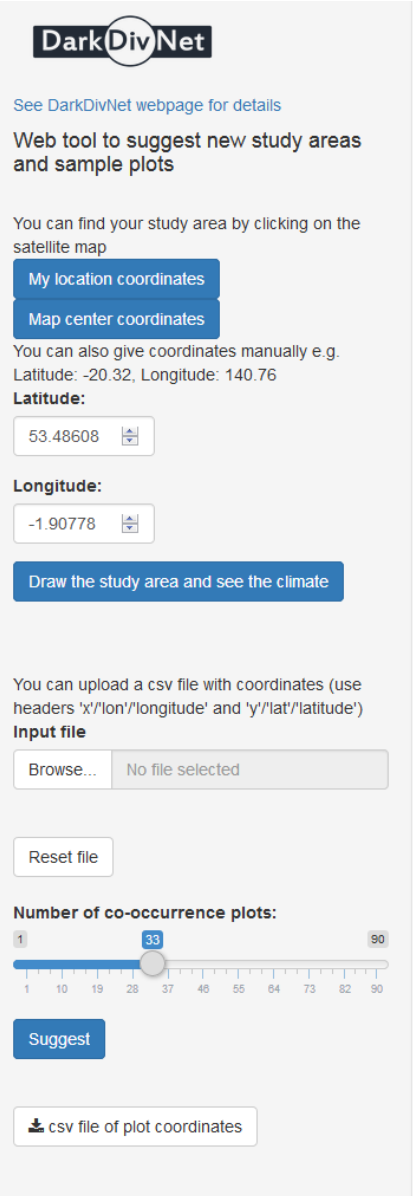
Keeping the contact

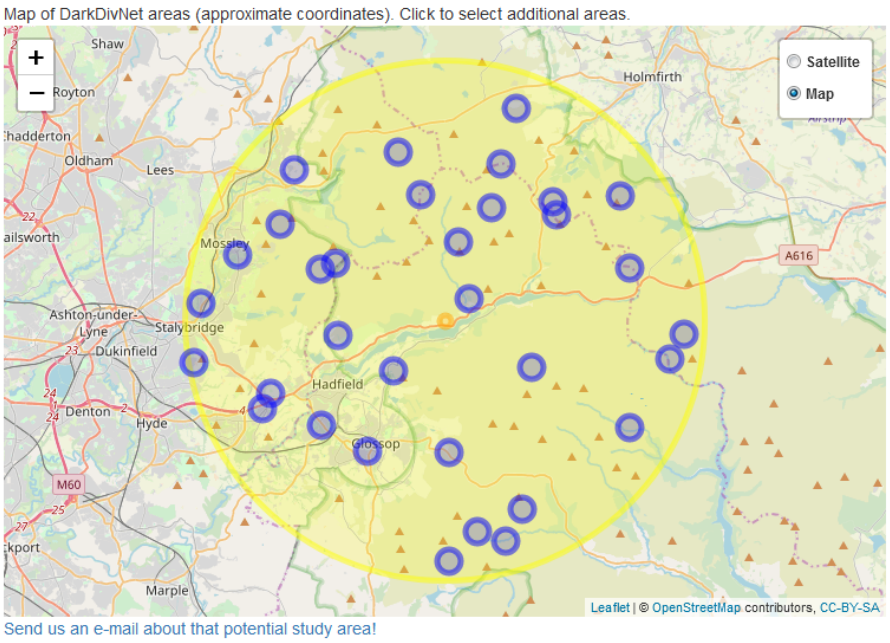
Some participants have given rather precise coordinates and planned dates of sampling. For others we have a very approximate coordinates (e.g. your university or even your town) and sampling time is not known. We will soon contact all participants to assign study area codes and check the validity of our data (coordinates, planned sampling time, e-mail and postal addresses). If you plan to start sampling soon (within a few months), please let us know by e-mailing darkdivnet@ut.ee – then we can send out eDNA kits well in advance. Similarly, inform us about any changes in your addresses or work plans. The most updated detailed protocols and excel file forms for data can be found in our web page: https://www.botany.ut.ee/macroecology/en/darkdivnet

Now and then we will post news about *DarkDivNet* in the twitter account of the macroecology workgroup at the University of Tartu: https://twitter.com/MacroecologyUT

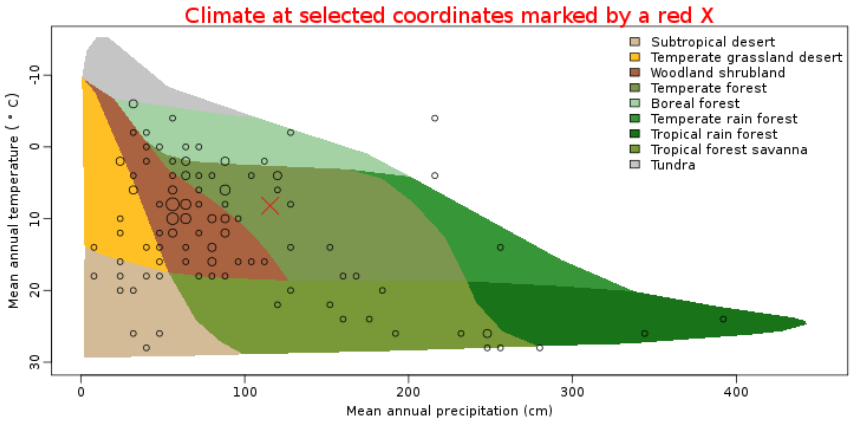
Web tool for *DarkDivNet*

We are developing a tool to recommend new study areas and sample plots: https://shiny.botany.ut.ee/DarkDivNet/





Send us an e-mail about that potential study area!



You can zoom-in in the map and click on the location where you would like to sample. You can draw a 10 km radius study area (yellow on the map) and send us an e-mail of this directly from the link below the map. The tool can also suggest random plot locations within the 10 km circle, whose coordinates you can then download. These random locations are only guidelines, since co-occurrence plots should be on relatively undisturbed terrestrial vegetation (outside agricultural and urban areas). Accessibility can also be considered (distance to roads, private lands) when selecting the plot locations. You can also upload coordinates of existing plots to your map and suggest additional plots around them.

DarkDivNet2019 workshop in November

We are planning our first *DarkDivNet* workshop in Tartu during November 20-23, 2019. This is the darkest time in Estonia (usually no snow yet, very short days), so it is ideal to discuss dark diversity topics. All *DarkDivNet* current and potential participants are welcome. We plan both oral and poster presentations; we will invite some speakers but you are welcome to present any ideas, views and results connected to dark diversity.

The main building of the University of Tartu

The preliminary program is as follows:

- Wednesday, 20 November 2019: arrival, welcome reception
- Thursday, 21 November 2019: full day seminar. Evening gathering
- Friday, 22 November 2019: full day seminar. Evening gathering
- Saturday 23 November 2019: half day excursion to nature, visit of the observatory of the University of Tartu

Participation in DarkDivNet2019 is free, but participants have to organize their own travel and accommodation. We are happy to support participants with letters for those who need them to apply for funds to come to Tartu. The workshop is sponsored by the Doctoral School of Earth Sciences and Ecology. We shall post more information about the DarkDivNet2019 workshop on our web page soon: https://www.botany.ut.ee/macroecology/en/darkdivnet

Add-on study: *SOIL-DarkDivNet*

We have recently accepted the first add-on study within *DarkDivNet* (additional soil sampling):

***SOIL-DarkDivNet* 'Linking Dark Diversity to soil microbiological functioning and soil carbon dynamics'**

This add-on study brings an additional component to *DarkDivNet* and aims to **shed light on the effects of biodiversity loss on soil biogeochemical processes**. The functioning of soil microbial communities is regulated by multiple biotic and abiotic factors, which operate differently in diverse habitats. Our understanding of these processes at different scales, ranging from individual plants to habitat types is still critically limited. Although plant communities impact soil functioning via multiple routes, it remains unclear how plant diversity affects microbial activity and biomass and related biogeochemical processes. This study will investigate the links between plant traits and soil biogeochemical parameters and indices regulated by soil microbial metabolic processes, i.e. soil respiration, carbon fixation and mineralisation, at several spatial scales. This will allow us to quantify the extent to which **soil microbial functioning has been affected by anthropogenic processes and biodiversity loss across habitats**.

Each participant in this add-on study will be asked to **collect, process and send additional soil samples from each core plot or 'site'** ('natural site' and 'anthropogenic site') at each habitat. Soil collection can be carried out at the same time as the field survey for *DarkDivNet*. If this is not feasible, make sure to conduct the sampling during the growing season. Please contact the coordinators if you have any questions.

The estimated amount of time for this study is 4.5 hours per site (1.5 h in the field, 3h in the lab). Participants in this add-on study complying with the **protocol** (https://drive.google.com/open?id=15d00DkzTCtfi874w54m1UeEpVjop1yaN) guidelines are entitled to be included as a co-author of those papers that use data from their study area (please see note to participants in the protocol guidelines for more specific information).

Coordinators: Miriam Muñoz-Rojas and Angela Moles (UNSW, Sydney, Australia)

Contact: Miriam Muñoz-Rojas, School of Biological, Earth and Environmental Sciences, UNSW Sydney, Australia. Email: geobionet@gmail.com

PhD student and postdoc positions at the University of Tartu

DarkDivNet is planning to hire a PhD student, supervised by Prof Meelis Pärtel. The thesis would focus on some aspects of the network and the PhD project will start from September 2019. Study language is English. The PhD student can get excellent scientific and research networking experience. If you know a strong candidate, please contact: meelis.partel@ut.ee until 15 February 2019.

We are also planning to apply for funds for a postdoc position and the presence of a strong candidate will increase the chance to get it. Thus, you are welcome to contact us to discuss postdoc options: meelis.partel@ut.ee

Other coordinated sampling initiatives: GrassPlot and SoilTemp

Leading members of two coordinated sampling initiatives have joined *DarkDivNet* and they also distribute information about our network among their participants. If you study grasslands or have measured soil temperature, you might be interested in joining one of them:

GrassPlot (https://www.bayceer.uni-bayreuth.de/ecoinformatics/en/forschung/gru/html.php?id_obj=139267) is a database of multi-scale plant diversity in Palaearctic grasslands. This consortium collects high-quality phytodiversity data from eight standard spatial scales from 0.0001 to 1000 m2. Data on vascular plants and/or terricolous non-vascular plants (bryophytes, lichens and macroalgae) can be provided.

SoilTemp (https://soiltemp.weebly.com/) aims to compile a global database of soil temperatures. This database allows us to explore more exactly how microclimate and species distributions are related. If you have georeferenced soil temperature data (0 till 10 cm below the surface) with a maximum of a 4-hour interval, you are welcome to join. Even better if you have associated species (plants or other taxa) composition or trait data from the same location.

With warm greetings,

DarkDivNet Steering Committee
(from left) Riin Tamme, Carlos P. Carmona, Mari Moora, Kersti Riibak, Martin Zobel, Meelis Pärtel

darkdivnet@ut.ee