**Case study: Effect of human disturbance on plant functional diversity at global-scale**

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**Introduction**

Climate change and an increase in human disturbance are major drivers of global biodiversity loss. Yet even if the global diversity of plants is well described, the influence of disturbances on plant diversity is understudied. Furthermore, the growing interest for functional traits and functional diversity has shown to be fruitful to better understand plant community. However, the impact of human disturbances on plant functional diversity at global scale considering a diversity of ecosystems is largely unknown.

**Aim**

How the different aspect of human disturbances affect the different aspects of the functional diversity of plant communities at global scale is unclear. Especially across a diversity of ecosystems (from boreal to tropical ecosystems). This will be done by leveraging on open datasets of community plant data across the world as well as open trait data and common indicators of human disturbances.

**Approach**

First, you will collect open plot data on plant community data from the sPlot Open Data portal. Then, you will match this to openly available trait data from the TRY database (discussion about which trait to select should be held). You will work on a subset of communities for which enough trait data is available (≥80% of the total abundances). Finally you’ll use the Human Footprint Index and its components to assess the effect of human disturbances.

Investigate how sensitive your results are to: (1) The aspects of functional diversity you’re assessing (richness, divergence, regularity), (2) Trait choice (which subsets of trait should be sensitive to what), (3) Aspect of human disturbance (integrated human footprint index, road density, population density, etc.), (4) Spatial-scale (global vs. ecoregions of the community).

Use your analyses to answer questions such as: Do we observe an effect of human footprint on plant functional diversity? Is it the case across different ecosystems (boreal, temperate, and tropical)? Is it the case for different aspects of functional diversity? And for different aspects of human footprints? Why is it the case? Are species occurring in disturbed landscapes functionally different than species occurring in undisturbed landscape? When writing up your report, make sure that you clarify what the problems/questions/hypotheses are that you are addressing, and why this research is important/relevant.

**Literature**

sPlot Open Community Data: <https://doi.org/10.1111/geb.13346>  
TRY Open Trait Data: <https://doi.org/10.1111/gcb.14904>  
Human Footprint Index: <https://doi.org/10.1038/sdata.2016.67>  
Plant Global diversity Kier et al. 2005: <https://doi.org/10.1111/j.1365-2699.2005.01272.x>