

Soil BON

Global Soil Biodiversity Observation Network participation as a collaborator

The Global Soil Biodiversity Observation Network (Soil BON: <https://geobon.org/bons/thematic-bon/soil-bon/>) is working in partnership with the Global Soil Biodiversity Initiative (GSBI) and other global and regional partners to make available the soil biological and ecosystem observations needed to ensure living soil resources are sustainably conserved and managed and can support essential human needs. Soil BON is a thematic network within GEO BON (www.geobon.org) and its partners represent a range of stakeholders, including researchers, educators, and policy advisors from academic, governmental, and private sectors. The goal is to further connect multi-national partners and initiatives in a worldwide effort to understand soil biodiversity, document how it is changing, how these changes affect people who rely on soil living resources for their well-being and livelihoods, and how a sustainable use of ecosystems can safeguard soil biodiversity.

In order to do that, we aim to monitor 1000 locations across the world using a simple soil sampling protocol. We ask each partner to sample soils in at least two paired sites (i.e., for the same ecosystem type, ideally a sample should be taken inside a conservation area, and one outside conservation areas; if these criteria cannot be met, we can discuss how to specifically implement it in your area/region). A standard sampling kit will be used and provided by the Soil BON team. For the purposes of this analysis, we work under the principle that the soil is yours, the data coming from the analysis that we will do on your samples is yours, but you allow us to use it in larger-scale analysis. Also, for samples coming from Africa, developing countries, or in global sampling gap areas (represented in Fig. 1 below in gray, unless you come from a developed country), we are able to cover all shipping costs related to sending you a sampling kit and receiving the sample from you.

We need all new sites to be proposed to us until the end of September 2021.

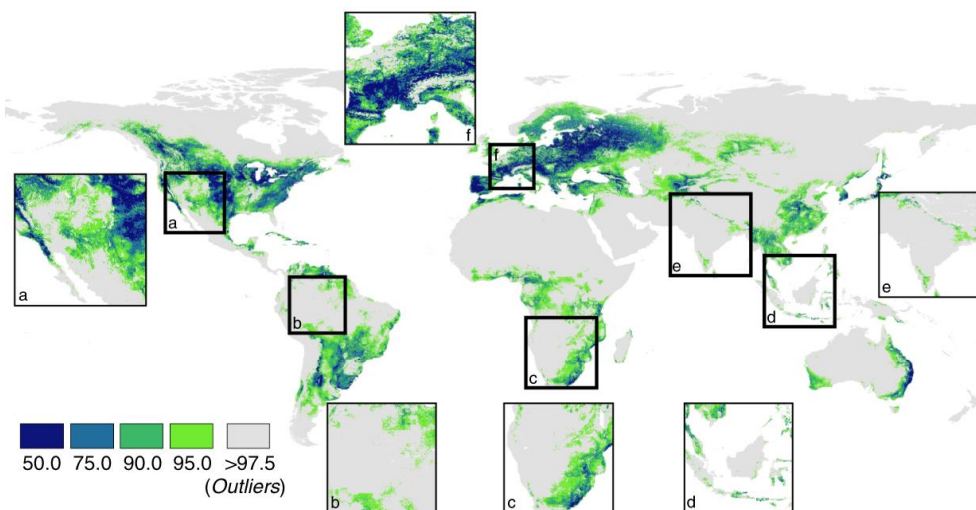


Fig. 1 global gaps in soil biodiversity data (Guerra et al., 2020)

What we offer to our partners is:

- i) The participation in a global collaborative project targeting soil ecology and specifically soil biodiversity;
- ii) Minimal resources required for participation, i.e., we provide financial support (in eligible regions) and a standard sampling kit;
- iii) Co-authorship in collaborative papers;
- iv) Networking opportunities for potential add-on projects;
- v) Prioritized access to potential Soil BON conferences / conference sessions /workshops

What we require:

- i) Each partner needs to be available to support us in complying with any local laws, including the ones referring to international agreements (e.g., Nagoya);
- ii) Sites are required to be sampled at least twice (once every 3 years);
- iii) Responsiveness to questions related to your samples / sampling;
- iv) Co-authors must comment on the respective manuscripts and/or indicate that they agree with the content of the work;

For this, we will, for scientific use purposes, apply genetic sequencing to the soil organism's "nametag" gene, the 16S ribosomal RNA and/or 18S rRNA genes of the collected soil samples. Furthermore, the DNA extracted will also be used for ITS and metagenomics sequencing with the purpose of identifying biodiversity in the soils. Non-genetic soil functional characteristics will also be performed for ecosystem function studies (soil respiration, substrate-induced respiration, microbial biomass, enzyme activity, and soil aggregate stability).

Due to the complexity of the analysis, and the fact that many countries are signatory partners of the Nagoya declaration, we need to follow the requirements of each countries and in particular their specific Access and Benefit Sharing (ABS) mechanism. Soil BON will manage this, it is important that you send our details to Zhiqin Pei (zhiqin.pei@idiv.de) quickly, so we can contact you with specific information regarding your country. This is a time-consuming procedure, but without it, we cannot legally receive any samples from any partner. So **please be diligent**.