Scanning improvement protocol

Sufficient image quality and, therefore, clean extraction is essential for further animal detection and classification. An algorithm can find only animals that are clearly visible for human eye. Main problems are (1) large soil particles that obscure animals, (2) small particles that result in animals being not in focus, (3) too many animals that cause many overlaps among them. It is recommended to put as much efforts as possible to make the extraction clean (see SBF Team extraction protocols). Approaches for improving scans of 'dirty' samples are described below. Please, select most appropriate method. Record information to the Comments in Samples table.

Dry extraction (microarthropods)

- **Diluting the sample**. If there are too many animals and/or soil particles, a sample can be equally distributed among 2,3 or more Petri dishes. Please, scan all Petri dishes together as one scan at 2400 dpi.
- **Filtering the sample**. If there are many small particles floating in a sample (e.g. clay suspension), the sample can be filtered through a 0.1 mm mesh, small particles discarded, and a new scan can be made. This may result in loss of few minute springtails and mites, but the imaging approach is not perfectly representative for them anyway.
- **Manual separation**. If there are few very large soil particles, or few (large) animals in the sample, they can be removed (particles) or separated to another Petri dish (animals) manually. If large animals are separated to another dish, please, scan both dishes together at 2400 dpi. Note that manual separation is also applicable to other sample conditions.
- **Manual counting and measuring**. If none of the above listed approaches is effective, animals in the sample can be counted under a microscope, measured (length and width), and identified to ~order level. ***Please, contact coordinator before doing manual counting***.

Wet extraction (nematodes, enchytraeids)

- **Diluting the sample**. If there are too many animals and/or soil particles, a sample can be equally distributed among 2,3 or more Petri dishes. Please, scan all Petri dishes together as one scan at 4800 dpi (if possible).
- **Manual counting and measuring**. If dilution is not effective, animals in the sample can be counted under a microscope and measured (length and diameter). ***Please use this template for data collection:*** https://docs.google.com/spreadsheets/d/1R2r5i1KbKtF8rLAHY06oeiK_2Gex-bgI2Z7zvfsKWnE/edit?usp=sharing

SBF nematods

W = (L^3 / a^2) / (1.6 x 10^6); W is the fresh weight ug, L length um, a the ratio of length to maximum body diameter

fresh weight / dry mass conversion factor of 0.27 [@Persson 1980 - trophic structure biomass dynamics and carbon metabolism of soil organisms in a Scots pine forests]; C content of 52% of dry weight [@Persson 1983 - Influence of soil animals on nitrogen mineralization in a Scots pine forest]