

## **General information**

Data are related to the manuscript “Living, dead, and absent trees - How do moth outbreaks shape small-scale patterns of soil organic matter stocks and dynamics at the Subarctic mountain birch treeline?” By Nele Meyer, Yi Xu, Katri Karjalainen, Sylwia Adamczyk, Christina Biasi, Lona van Delden, Angela Martin, Kevin Mganga, Kristiina Myller, Outi-Maaria Sietiö, Otso Suominen, Kristiina Karhu

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Methods are in detail described in the paper

The dataset contains 5 excel files described below

### **Table: Site and plot properties**

- Provides general sampling site and plot description such as the center coordinates (UTM) and elevation above sea level, height of the individual trees as well as mean annual temperature measured by ibuttons, which were buried in 10 cm depth for 1 year

### **Table: Soil and ecosystem C stocks**

- Contains measurements of C stocks in soil, aboveground vegetation, and roots, calculated within a radius of 1 m around the tree in the plot center
- represents the basis for Fig. 4 in the manuscript

### **Table: Soil and ecosystem respiration**

- Contains data from chamber measurements, which were conducted in summer and autumn 2019. Measurements were conducted in 50 cm distance to a tree.
- Air temperature, soil temperature, and volumetric soil content were measured at the same time as respiration
- Represents the basis for Fig. 6 in the manuscript

### **Table: C contents and stock calculation**

- Contains data on soil C and N concentrations, horizon thickness, stone content, bulk density, C/N ratio, and calculated C stocks for the organic layer, E horizon, and B horizon separately and for different distances from the plot center (25 cm, 50 cm, 75 cm, and 100 cm). Soil samples were composite samples of 10 replicates around the tree in the plot center and at a given distance.
- Represents the basis for Fig. 3 in the manuscript.

### **Table: Soil properties**

- Properties of soil samples taken 50 cm away from the tree in the plot center. Data are provided for the organic layer and mineral soil (0-10 cm) separately.
- WHC = water holding capacity
- MBC = Microbial biomass carbon measured by substrate-induced respiration
- SIRacc is the cumulative CO<sub>2</sub> evolution within 100h after glucose addition
- Soil respiration as measured in the laboratory under standardized conditions (see manuscript for details).
- Represents the basis for Fig. 5 in the manuscript.