

The impact of the water level on the peat layer and vegetation near Varemurru

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Introduction

- We investigated peatlands.
- Peatlands are terrestrial wetland ecosystems in which waterlogged conditions prevent plant material from fully decomposing.(International Peatland Society)
- Peatlands are the most important land reserves of carbon.
- Vegetation in peatlands is special.

Research Question and Hypotheses

Research Question:

How does peat water level influence: 1) peat quantity, 2) peat quality, 3) vegetation height and 4) vegetation composition?

Hypotheses:

A higher water level supports: 1) a thicker peat layer, 2) less-decomposed peat, 3) taller vegetation, 4) less species and 5) more wetland specialist plant species

Research sites

We had 6 different research sites.

- The sites called “Jaan” and “Johannes” were wet fens.
- The sites called “Clixu” ja “Kristel” were moist swamp forests.
- The sites called “Hans” and “Sofja” were dry peaty forests.

Märgitud asukoht

XY: 6470972.09, 484403.85

BL: 58.378947, 23.733415

BL: 58°22'44.210", 23°44'0.294"

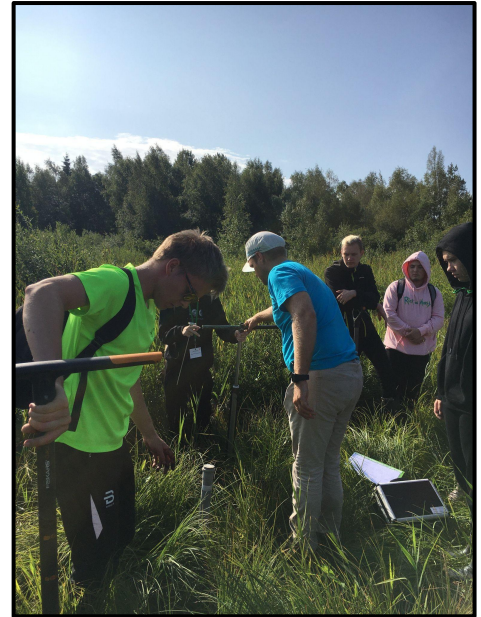
H: 3 m



X-GIS. Maa-amet. Koik õigused kaitstud.

Research methods

- Fieldwork at Varemurru on the 10th of August 2021.
- We identified all the plant species using supervisor`s expertise, identification handbooks and the internet.
- We measured the height of trees and undergrowth.
- We measured soil oxygen level and water level.
- We observed the soil profiles.
- We divided the identified plant species into generalists (wide habitat) and specialists (narrow habitat).



Research methods

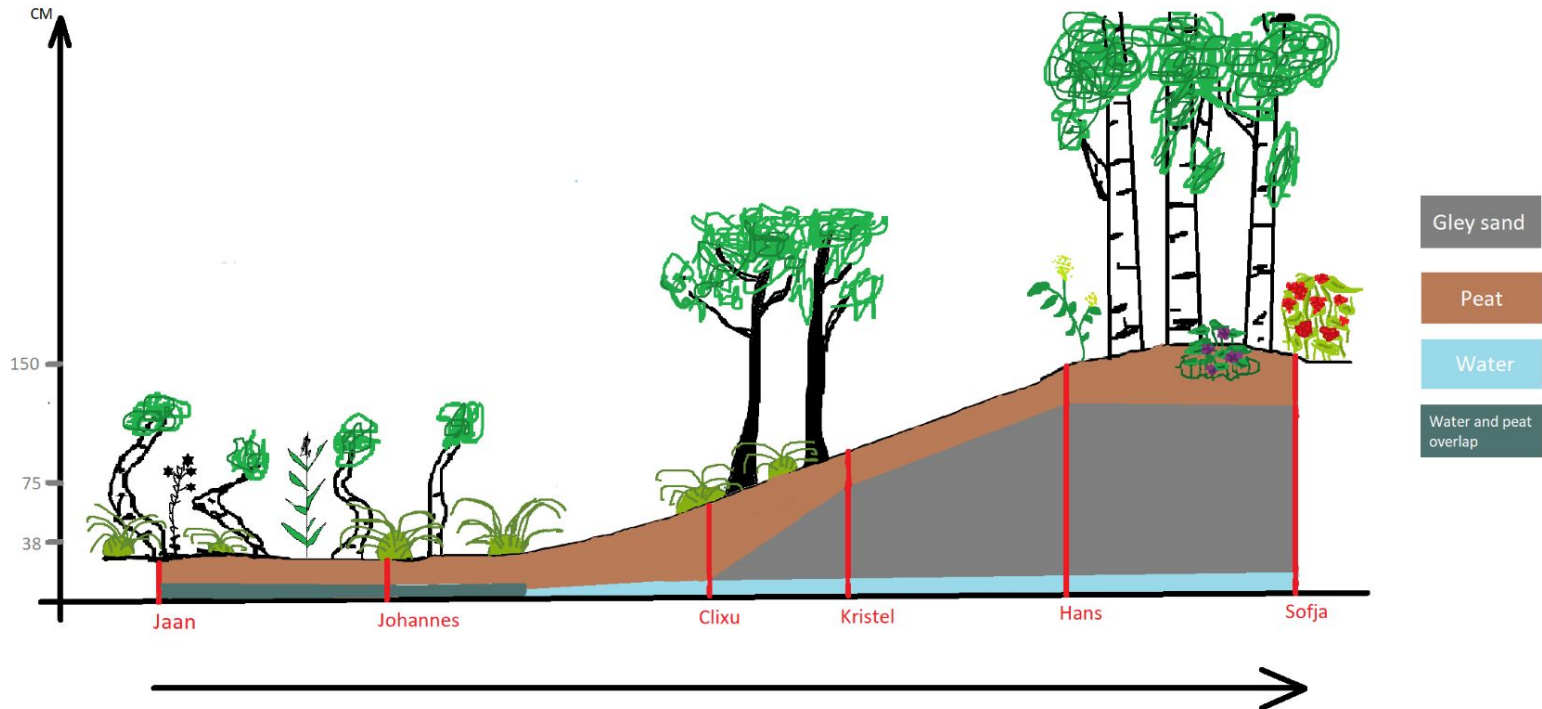


Results

- There were 36 different species. 30 of them were generalists and 6 of them were specialists.



Results



Results and discussion of hypotheses

- Hypothesis 1 was not supported, the peat layer was consistently 16 to 30 cm.
- Hypothesis 2 was supported, the wettest peats were poorly to mid decomposed while the fresh peats were mid to well decomposed.



- Hypothesis 3 was supported, where the water level was 16 cm to 28 cm below the ground, the trees were 2 to 3 m tall, and where the water level was 60-75 cm below the ground, the trees were 11 to 22 m tall. However the wet peats supported the tallest undergrowth while the sparsest undergrowth occurred on fresh peat.
- Hypothesis 4 was not supported. The number of undergrowth species was equally 7 in both the wet and fresh peat sites.
- Hypothesis 5 was supported. The number of wetland specialists was 5-6 in the wet sites, while in the fresh sites we found only one wetland specialist species.



Discussion of Research Question

- Peat quantity is currently not related with water level. Maybe this mismatch is due to the recent extreme drought.
- Peat decomposition rate is negatively related with water level.
- Tree height is negatively related with water level.
- Water level had no clear effect on plant diversity, as both wet and fresh supported high species numbers.
- Most of the species in the wet peatlands were specialist plants.

