LANDSCAPE

Tulips -Authors

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Introduction

Study area: Varemurru Puhkekeskus

There were two research locations.

Our aim was to gain knowledge about whether post-glacial ground elevation and soil age could have an impact on plant diversity and vitality

Hypothesis

1. How much does the soil age affect plant biological diversity?
2. How much the tree height is affected by the growth position on the dune?
3. How does the trees positioning on the dunes and the closeness to the sea affect tree crowns?

TOOLS

Compass

GPS receiver

Camera/smartphone

MUC Field Guide

Measuring tape (1,5m and 50m)

Flags for marking (5pcs)

Plant determinant

Altimeter(clinometer)

Tubular densiometer.

Methods of investigation

Observing surroundings and describing it.

MUC code assigner helped to define specific areas.

Methods of investigation

Densiometer is used for taking measurements of canopy cover.
Measurements are conducted by walking along the diagonals and estimating ground cover and canopy cover using a scientific instrument known as a **densiometer**.
At each 2 pace, we described both the canopy and the ground cover.

Methods of investigation

Clinometer is a simple device used to measure angles.

In this study it was used to help measure tree heights.

We viewed from a 45 degree angle when looking at the top. The tangent of 45 is 1. The height of the tree was above your eye height is equal to the distance from the tree.

Methods of investigation

Mapping out the middle point is used to help define an area of research.

We identified our **Land Cover Sample Site**.

Measurements taken using the **Canopy Cover and Ground Cover Field Guide.**

We identified the scientific classification of the plant community observed using the **MUC Guide**.

Collecting positional data using a GPS; identifying the latitude, longitude and elevation of the center of the study site

Methods of investigation

Tree circumference was measured 1.5 m from base of the tree with a measuring tape.

We took circumference measurements on the same 3 trees we selected for tree height.

Study of biota in tree bark

Research area 1

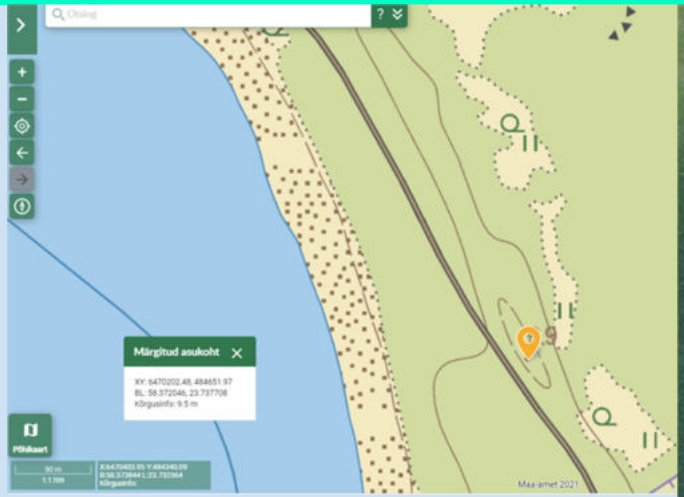
N: 58°22'19"

E: 23°44'16"

H: 9.5 m

37 plant species on the ground level

MUC: 1121



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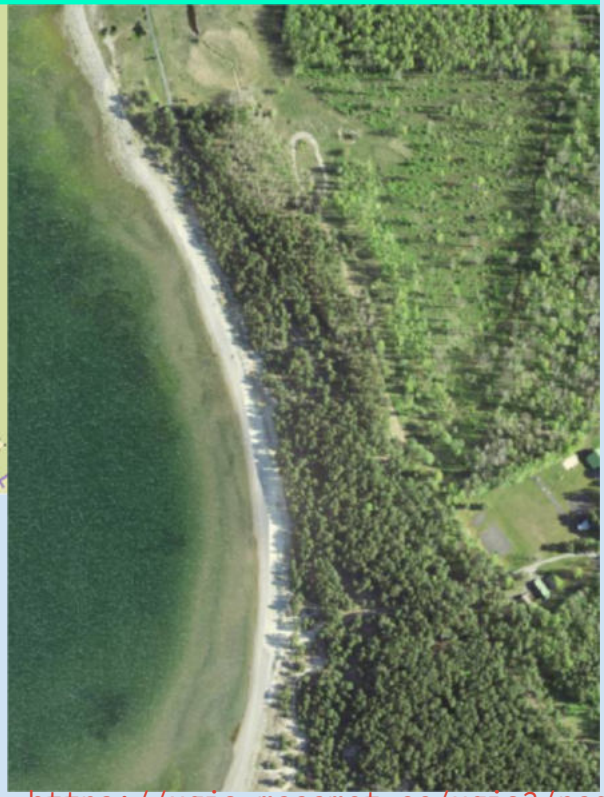

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Research area 1

A rich vegetation on ground level.

A lot of different species.

European fly honeysuckle - *Lonicera xylosteum*

Marsh cranesbill - *Geranium palustre*

Research area 1

The dominant species of high vegetation was the pine tree.

Most was found on the ground level the false lily of the fally.

Measurement of the height of the trees. Measuring the observer's distance from a tree.

Research area 2

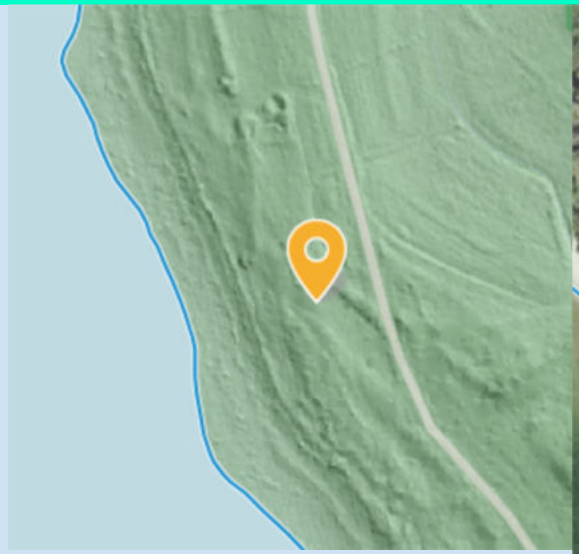
N: 58°22'28"

E: 23°44'03"

H: 2 m

43 plant species on the ground level

MUC 212



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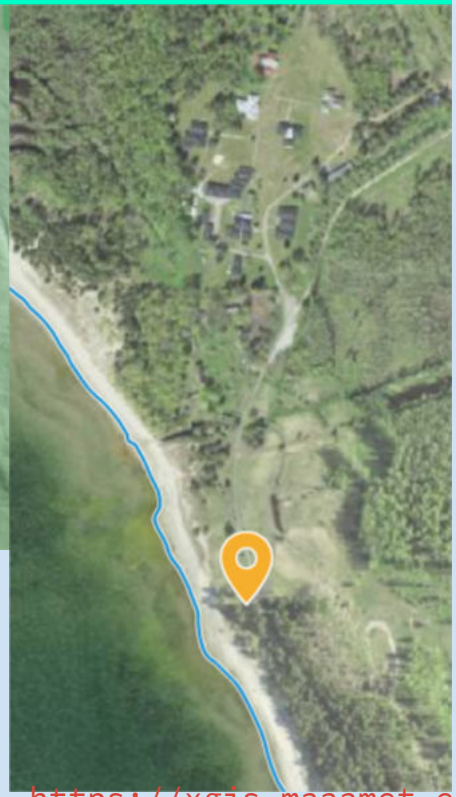

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Research area 2

Measurement of the height of the trees. The tree crowns on the shore were sloping and wider than in the forest

Identification of plants

Research area 2

A lot of different species of graminoids.

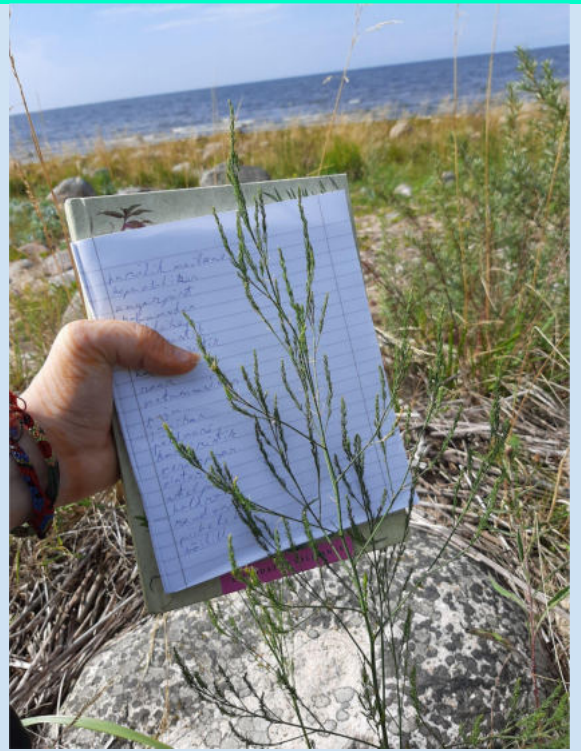
The dominant high species were the pine tree (*Pinus sylvestris*)and the common juniper *(Juniperus communis L.)*

The pine tree circumference measurement

Research area 2

We found some domestic plants, for example sea-buckthorn and asparagus.

Sea-buckthorn (*Hippophae rhamnoides*)



Asparagus (*Asparagus officinalis*)

RESULTS

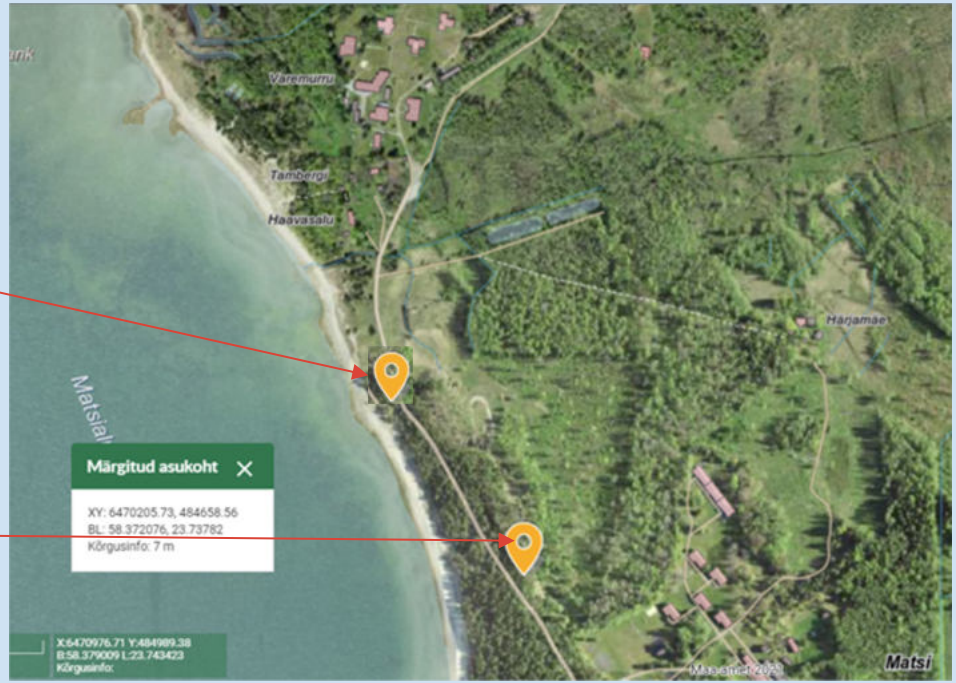
Canopy cover and ground cover measurements					
		Average canopy %	Coniferous trees %	Ground canopy %	Graminoids %
Research area I BL: 58°22′19″, 23°44′16″	N/S diagonal	80.3	86.0	72.3	25.0
	E/W diagonal	71.7	98.3	78.3	22.3
Research area II BL: 58°22′28″, 23°44′03″	N/S diagonal	60.5	61.0	91.5	62.5
	E/W diagonal	37.0	100.0	87.0	57.5

Pine trees height and circumference measurements					
Research area I				Research area II	
On the dune (9m above sea level)		On the foot of the dune (5m above sea level)		2 m above sea level	
Tree height m	Circumference m	Tree height m	Circum-ference m	Tree height m	Circum-ference m
17.9	no measurements	22.2	1.6	9.2	1.1
17.3	no measurements	23.1	1.7	9.2	0.9
18.5	no measurements	22.2	1	14	1.2

Results

Land age near the sea on the ground level was around 600 years.

Land age on the top of the dune was around 1600 years.



Conclusions

1. The tallest trees grew at the foot of the dune, on the ground level (5m). The lowest trees were one the shore (2m)
2. We found 6 species more on the shore more than the dune, but we couldn’t determine all of the craminoids we saw.
3. The tree crowns on the shore were sloping due to the winds and wider than in the forest, because they had more room to space out.

Used literature

- https://xgis.maaamet.ee/xgis2/page/link/7S5wcUWV
- Maapinna tõus on tuhanded kinnistud jätnud veepiirita | Majandus | ERR
- Varemurru Puhkekeskus - Google Maps
- Tilde MT
- https://www.globe.gov/get-trained/protocol-etraining/etraining-modules/16867717/3099387
- Expedition photos: I. Henno

Thank You for listening