




Owls in the forest

Team Owls

GLOBE learning expedition 2021



Our team



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The objective of the expedition

Forests are treated as the renewable resource. Forests are intensively cut for using wood in heat production, building and industry

Study the vegetation and biomass of the forest and find how the cutted forest has recovered near the shore of the Baltic Sea in Matsi.

- Assess amount of biomass in forest (using a model)
- Measure the height of trees
- Assess the age of trees (study the tree rings)
- Compare the vegetation in old forest and recovered forest

Observe the atmospheric conditions

Observe the attractive creatures found in forest

Research areas

Here you can see map of our research areas:

Herbaceous field (MUC 4422)

Pine forest 1 (MUC 1121)

Pine forest 2 (MUC 1121)

Recovered young forest (MUC 2232)

Meadow with trees and bushes (MUC 4323)



Research questions

1. What are the differences in plant cover between forests of various ages?
Millised erinevused esinevad metsa taimkattes olenevalt selle vanusest?
2. Which of the two research areas, covered mainly in pine trees, has a higher biomass?
Kummal männimetsaga kaetud alal on salvestunud rohkem biomassi?
3. Compared to a herbaceous field, how much more biomass per square meter is deposited in the forest?
Kui palju biomassi ruutmeetri kohta on salvestunud metsas rohkem kui rohumaal?

Hypotheses

- Recovered and older woodlands in the same area have little to no differences in species.
- The biomass is of a higher value in pine forest 1, where the average width of a tree is wider than in pine forest 2.
- Compared to a herbaceous field, ten times more biomass per square meter is deposited in the forest.

Instruments and methods

- MUC codes
- GPS
- measuring tapes
- soil thermometer
- handsaw
- PLUKE 561 HVACPro Infrared thermometer
- Psychrometer
- clinometer
- flags



Main species

Tree species in the old forest:

- birch
- willow
- pine
- spruce



Tree species in the recovered woodland:

- spruce
- alder
- maple
- rowan

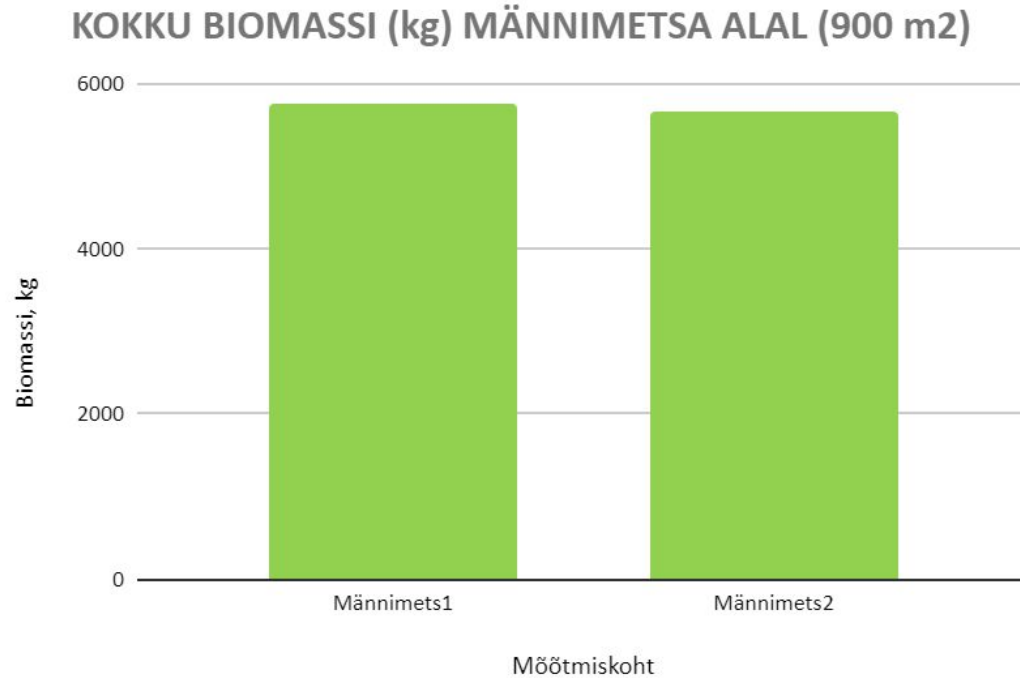


Plant species on the herbaceous field:

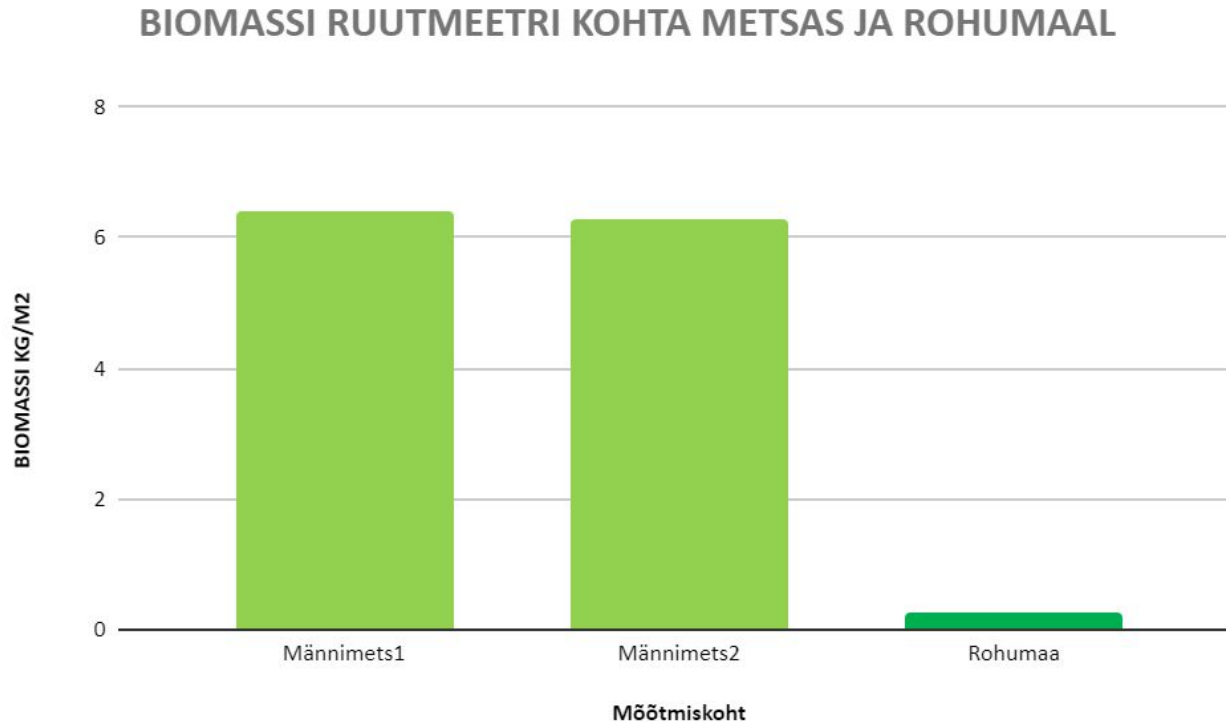
21 species on 50x50 cm



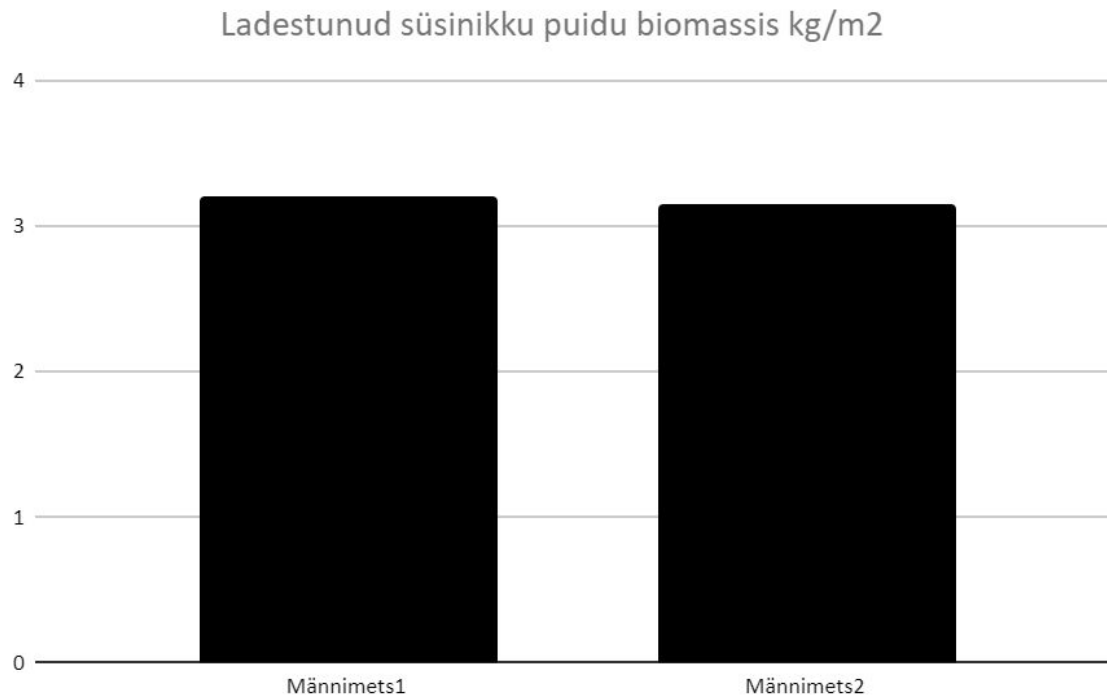
The total biomass on 900 m² pine forest area



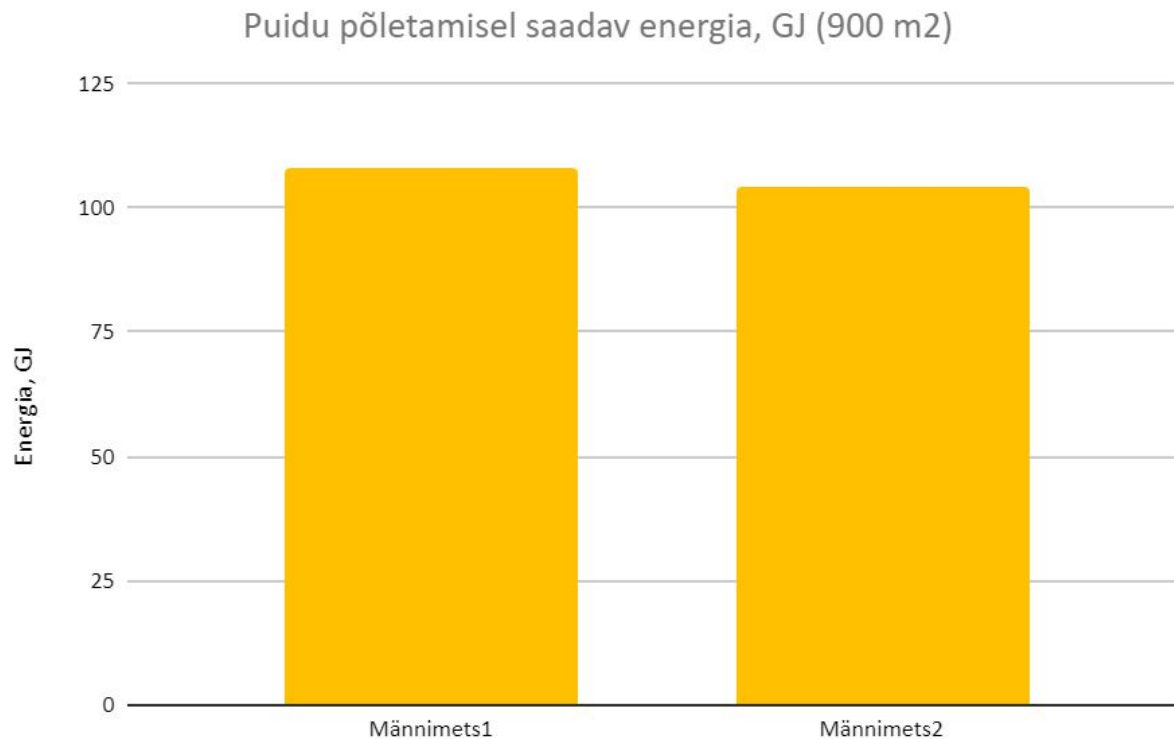
Biomass per 1 m² in pine forest and herbaceous field



Carbon deposited in pine forest

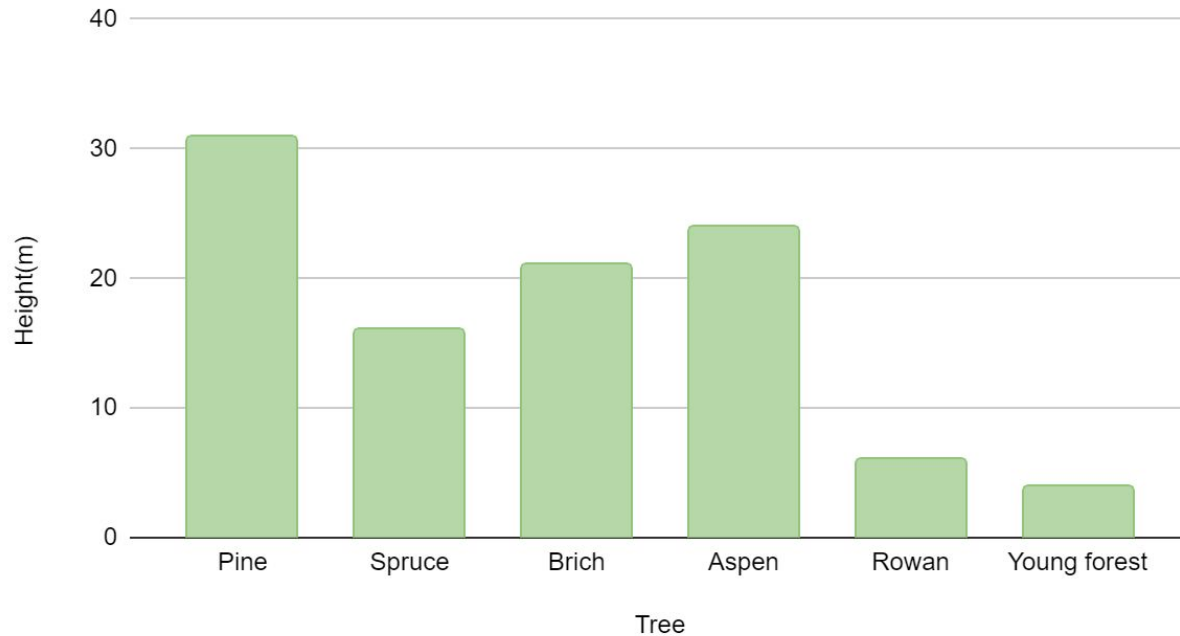


Energy outcome from burning the pine forest wood



The average tree height

Average tree height



Cloud viewing

Coordinates: 58,3703 23,7366

Time: 12.18 08.09.2021

Cloudiness: changing (25%-50%)

Types of clouds seen: cirrus,
cirrocumulus, cumulonimbus,
altocumulus.



Discussion

Recovered and older forests in the same area have little to no differences in species.
Hypothesis was rejected. Recovered younger forests have more hardwood trees, old forests have mostly conifer trees.

The biomass is of a higher value in pine forest 1, where the average width of a tree is wider than in pine forest 2.

Hypothesis was approved but the difference was small.

Compared to a herbaceous field, ten times more biomass per square meter is deposited in the forest.

Hypothesis was rejected. The actual relation was 26 times.

Conclusions

The difference in the value of the deposited biomass per square meter between pine forest 1 and pine forest 2 was small. The deposited biomass per square meter was 6,4 kg/m² in pine forest 1 and 6,3 kg/m² in pine forest 2.

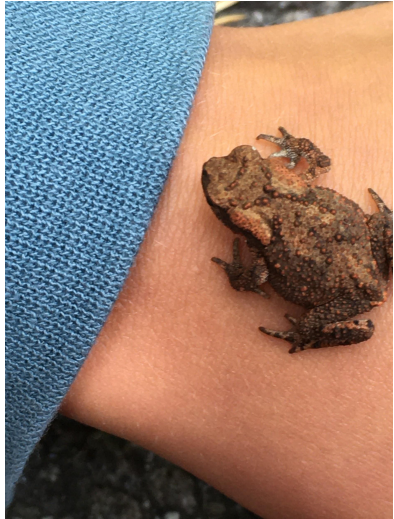
In the forest the biomass per square meter was 26 times higher than on the herbaceous field. The biomass in trees has deposited for a remarkably longer time than in herbaceous plants.

Recovered younger forests have more hardwood trees, old forests have mostly conifer trees.

The age of the trees in the old forest was 60-67 years and in the recovered young forest about 6 years.

The height of most trees in the old forest was over 20 m and in the young forest about 4 m.

Other animals



Thank you for listening!

