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# EVIDENCE OF FIRES REFLECTED BY CHANGES OF PEAT PROPERTIES IN SAKLAURA BOG

**Inese SILAMIĶELE\*** Laimdota KALNIŅA  
Nils IVANOVŠ Oskars PURMALIS  
Viesturs OZOLS Aija CERIŅA  
Gintars KRŪMIŅŠ

\*Faculty of Geography and Earth  
Sciences, University of Latvia  
e-mail: [Inese.Silamikele@lu.lv](mailto:Inese.Silamikele@lu.lv)



foto:R.Mežaks



# SO... WHAT HAPPENED IN 2018 ?

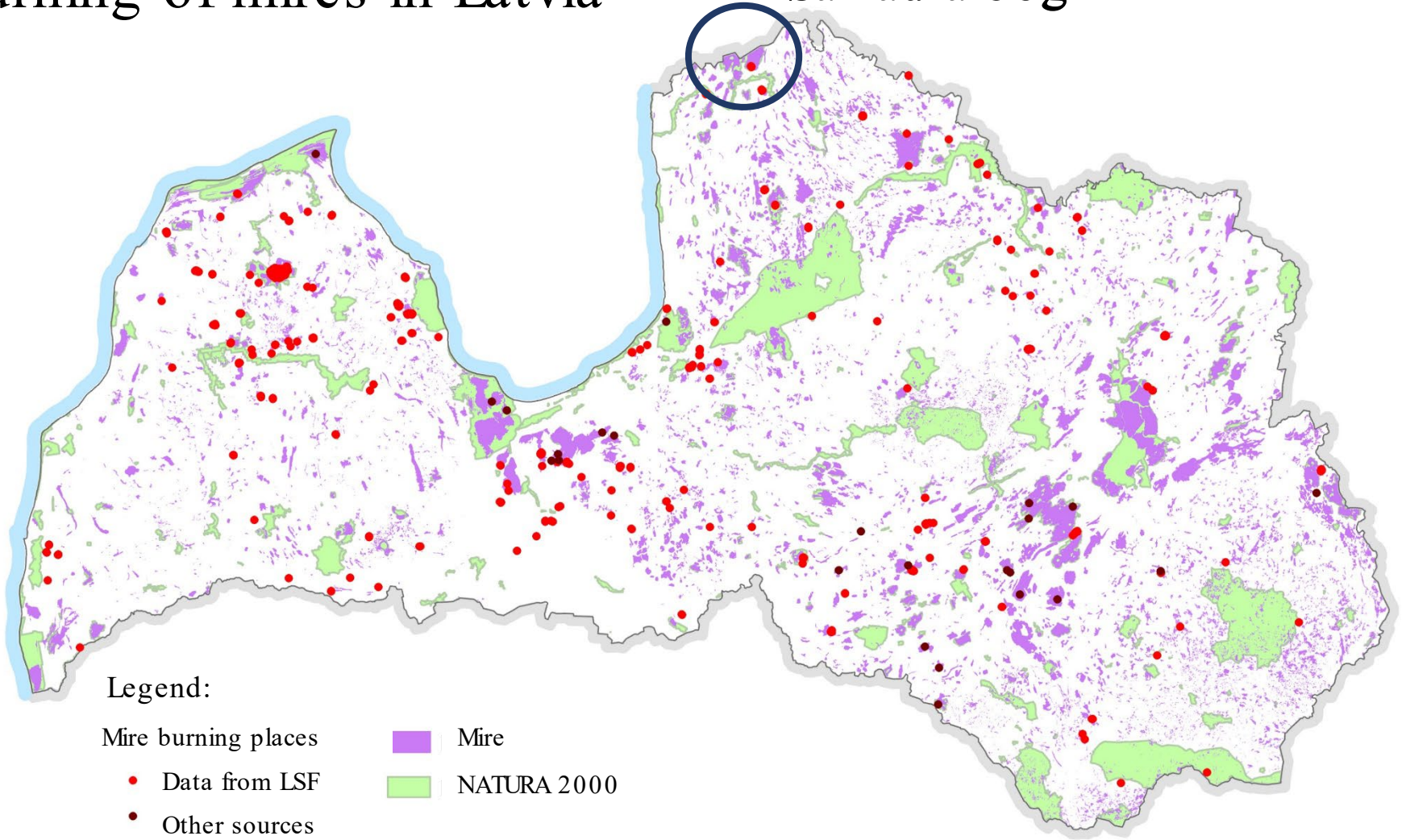
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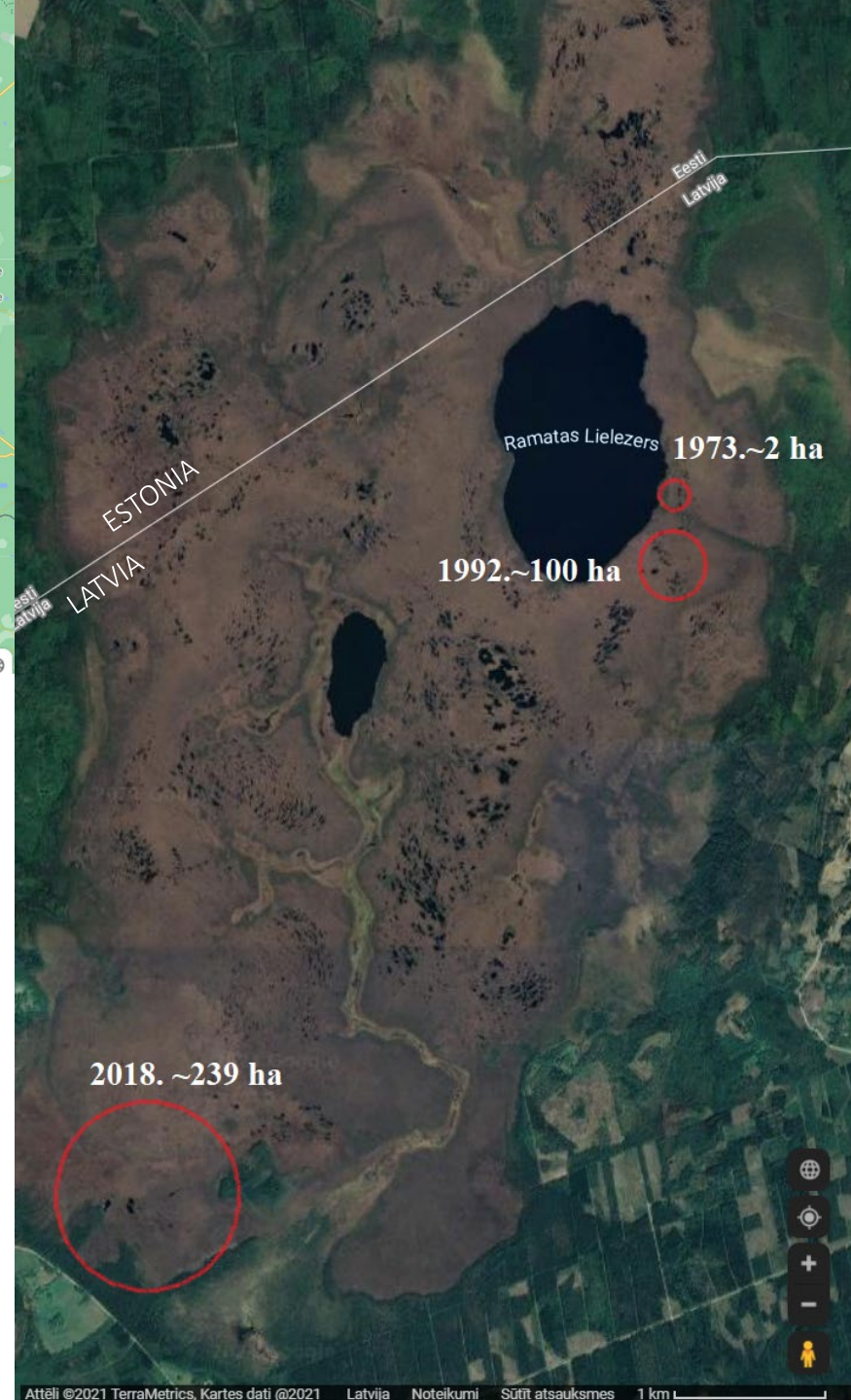
Project “Studies of impact by  
peatland burning on the  
environment and bog recovery  
intensity”



# Burning of mires in Latvia

Saklaura bog





## Saklaura bog

- Is a NATURA 2000 territory
- Is almost untouched by human activities
- Is active raised bog
- Area of 2903ha, of those 800ha in EST



# FIRES

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Reason for this wildfire was  
lightning



foto:R.Mežaks



### Main tasks:

What did  
we want  
to find  
out?

1. Collect information on the distribution and occurrence of fires in bogs;
2. To analyze peat properties of various combustion-affected peat using paleobotanical, physical and chemical methods
3. To prepare recommendations for the management of burnt bogs and to evaluate effectiveness of management measures;
4. Prepare scientific publications and inform public about the results of the research.

# What did we do?

## Methods used in this study:

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- Surveys of combustion area
- Coring and sampling of peat deposits
- Peat composition determination by loss on ignition analysis (LOI)
- Determination of peat natural density
- Determination of peat decomposition degree
- Analysis of peat botanical composition
- Determination of deposit age by  $^{14}\text{C}$  (dating) method
- Analysis of macroscopic charcoal in peat
- Determination pH, total dissolved solids and conductivity of peat





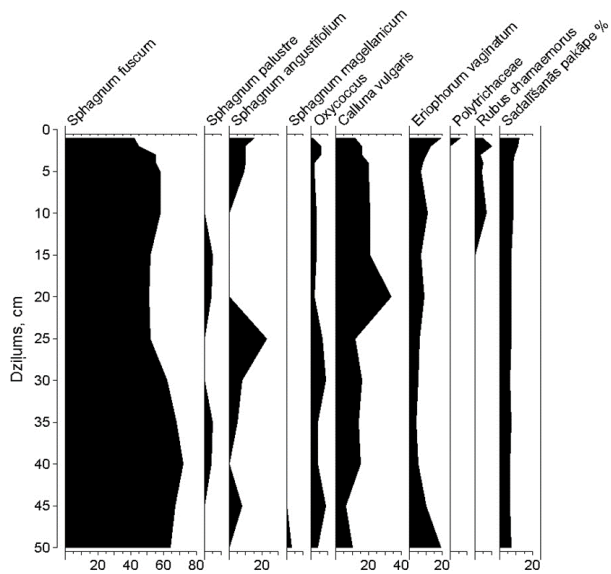
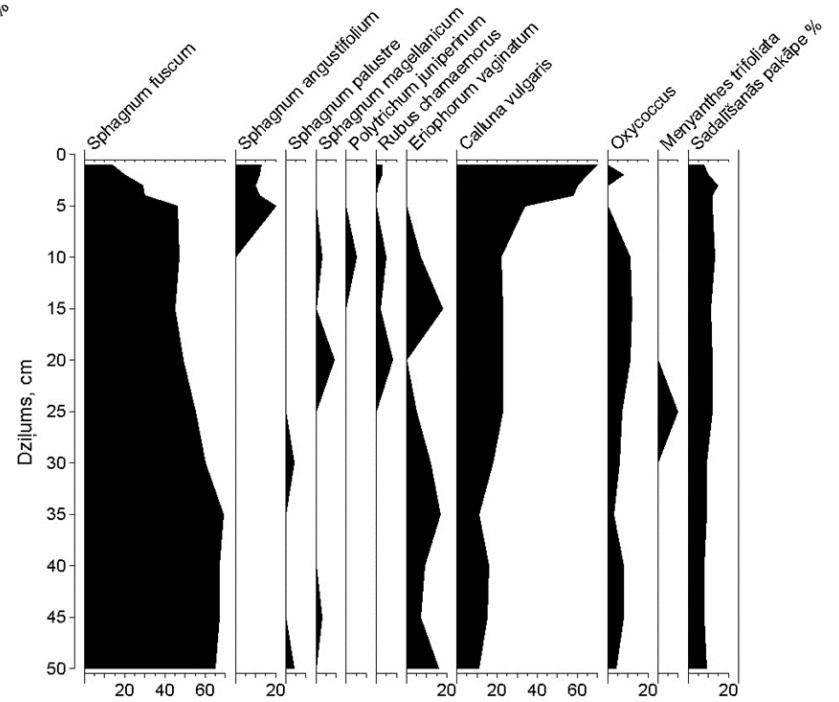
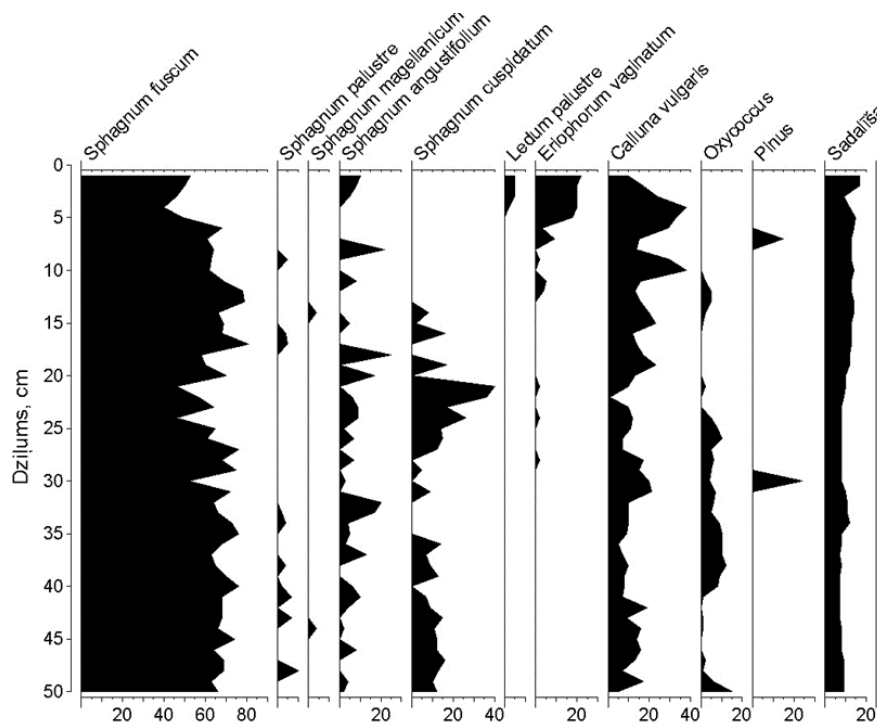
What we  
learned?





foto:R.Mežaks



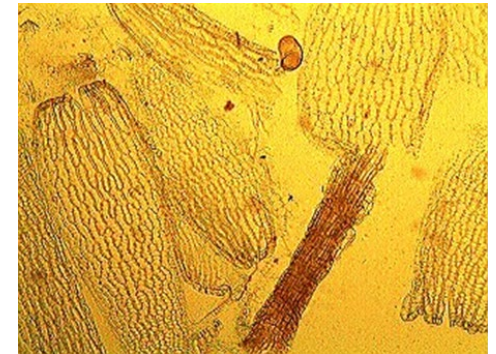


1978

1992

2018

Records of the peat botanical composition and decomposition degree of at Saklaura Bog burning sites in 1978, 1992 and 2018.





*Eriophorum vaginatum*

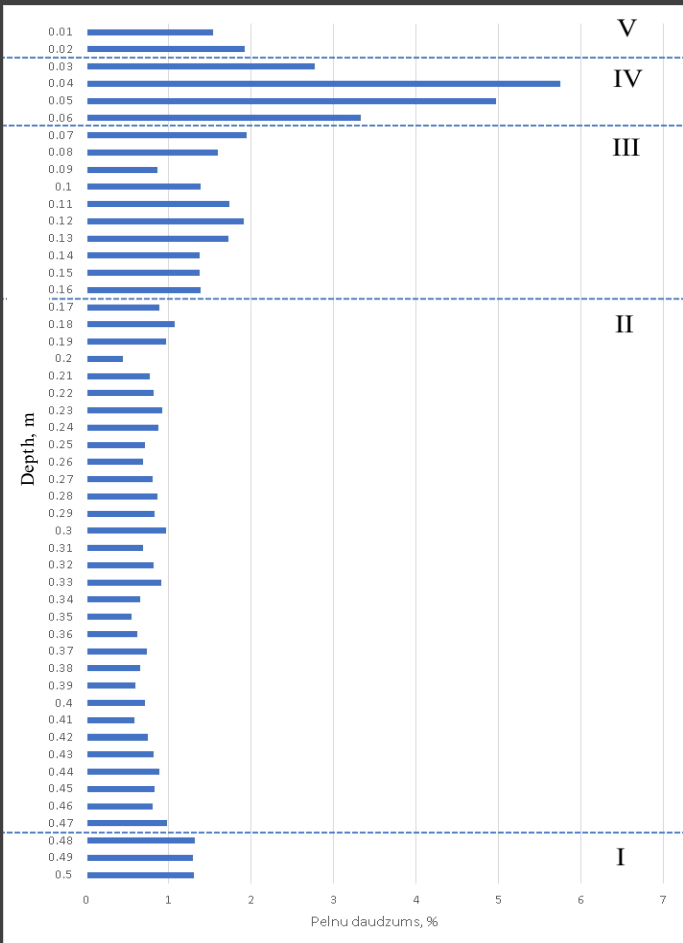
| Sampling place, depth<br>and interval, cm | Absolute age,<br><sup>14</sup> C g. |
|-------------------------------------------|-------------------------------------|
|-------------------------------------------|-------------------------------------|

|                   |             |
|-------------------|-------------|
| Saklaurs S1 60-61 | 815 ± 30 BP |
|-------------------|-------------|

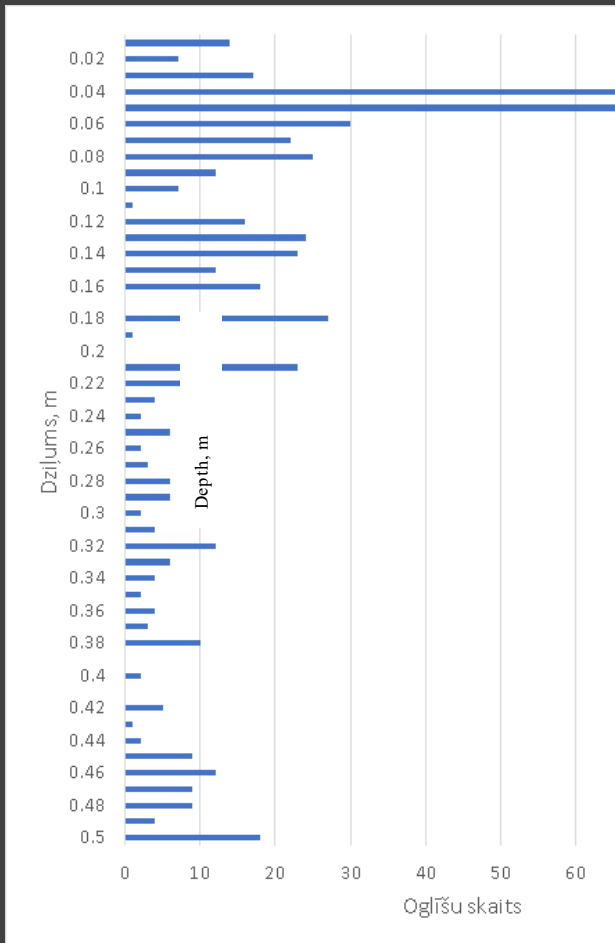
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| Saklaurs S2 80-81 | 1190 ± 30 BP |
|-------------------|--------------|

|                      |              |
|----------------------|--------------|
| Saklaurs S4b 157-158 | 1405 ± 30 BP |
|----------------------|--------------|

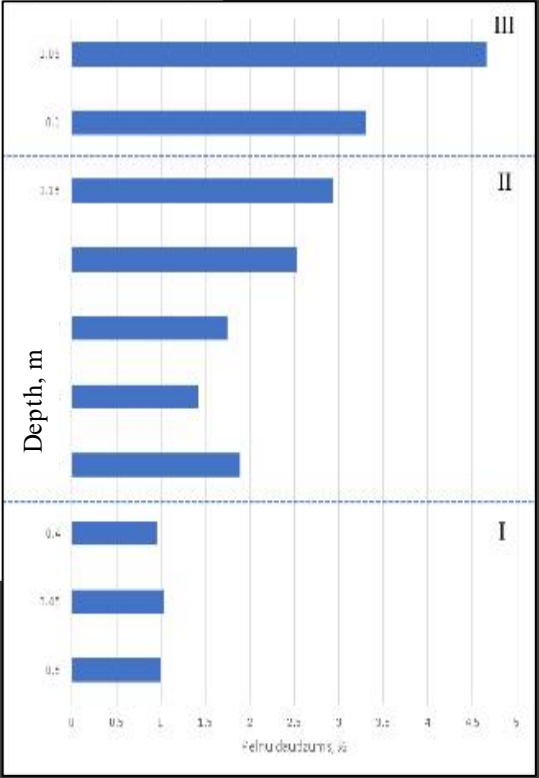
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| Saklaurs S5 187-188 | 2250 ± 30 BP |
|---------------------|--------------|



1978

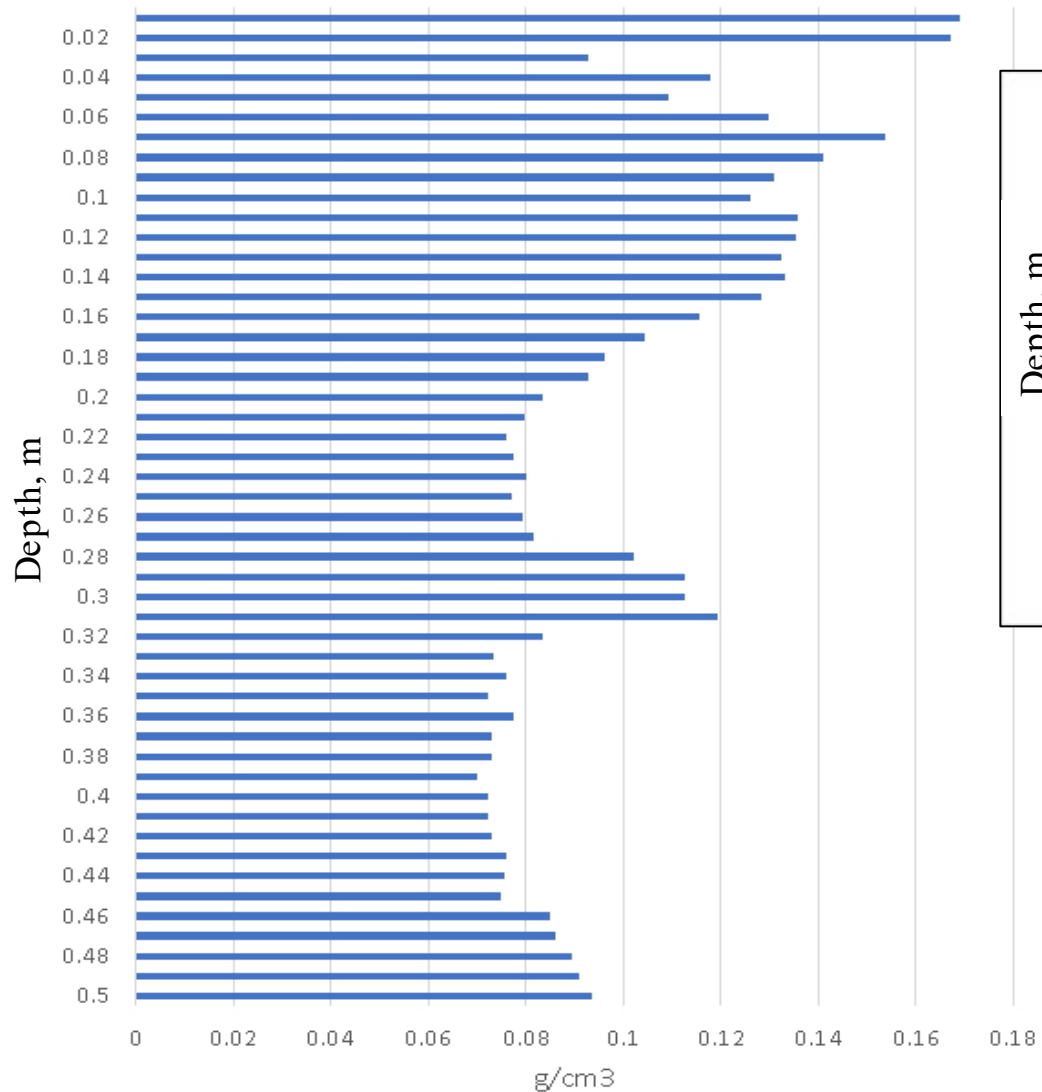


1992

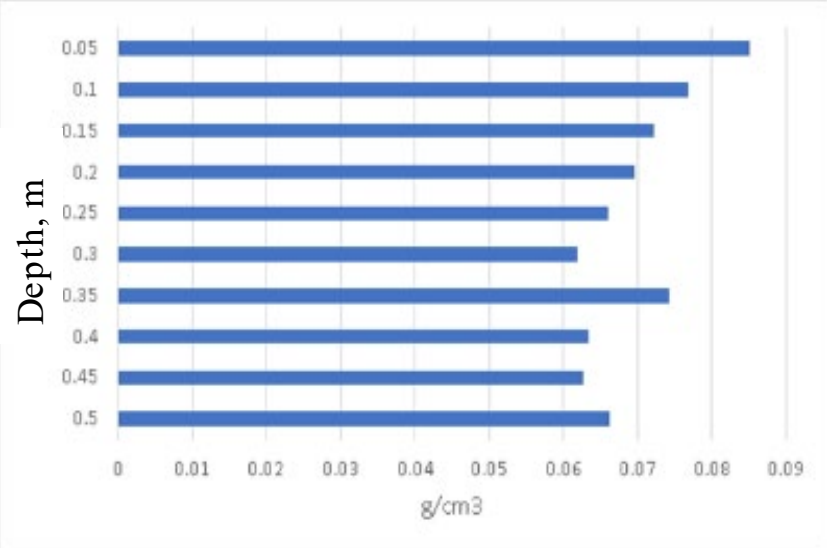


2018

Changes in ash composition in peat section at Saklaura bog burn sites in 1973, 1992, 2018



Changes in the natural density of peat in the Saklaura Bog 1978 combustion site in the section of peat deposits.



Changes in the natural density of peat in the Saklaura Bog 1992 combustion site in the section of peat deposits.



foto: R. Mežaks



**What is our main question?**

Is it necessary to manage sites  
after fire?



2018 fire site in Stiklu Mire (2020)

# What to do after?

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Rožu purvs foto: A.Slišāns

# Changes in vegetation





Teiči bog > 20 years after burning



Ķemeri bog 20 years after burning

How will  
Sakalaura bog  
development  
continue?

Ādaži bog after sevreal burnings





Dzērves bog, Baltmuižas bog,  
Kreiču bog

Changes in  
microrelief



Changes of hidrological conditions in Sēme Bog



At depth of 15 cm peat extraction fields are still saturated with water reaching 80-85%

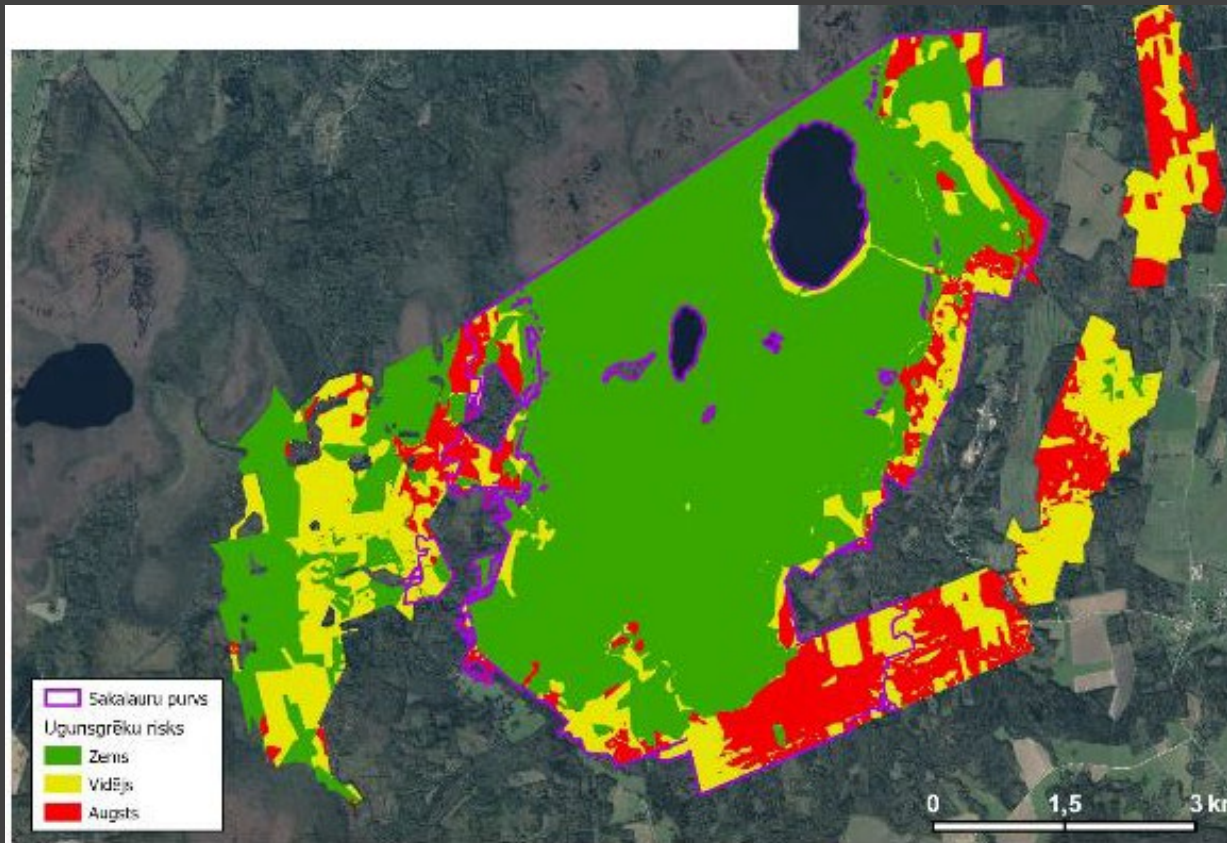
A photograph of a bog landscape. The foreground shows a dense network of bare, grey tree roots and some green mosses. In the middle ground, there are patches of peat, some with green mosses and small plants. In the background, there are clumps of tall, green grasses. The overall scene is a natural, somewhat desolate bog environment.

## Plan for future activities

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- **studies of physico-chemical properties of peat,**
- **water permeability studies of burnt peat,**
- **improvement of methods**
- **establishment of a mire fire classification system;**
- **development of proposals for the management of bogs after a fire**

# EVALUATE RISKS



Potential fire security model for Saklaura bog and for territories around it (developed by G.Kūmiņš).

Bog fires can be grouped by :

- Burning intensity
- Age
- Impact level

***Thank you for your attention!***

