

# Peatland renaturalization experience in Latvia and results of vegetation studies in LIFE REstore project

Dr.biol. Māra Pakalne  
University of Latvia & «Baltic coasts»  
LIFE REstore conference  
13/06/19



Latvijas  
Kūdras  
asociācija



## Aim of the presentation



- Characterise the results of LIFE Restore project *Sphagnum* re-introduction experiment in Lielais Ķemeru tīrelis peatland in the Ķemeri National Park.
- Introduce with the results of the studies of peatland vegetation development in post-harvested peatlands.



## Peatland renaturalisation

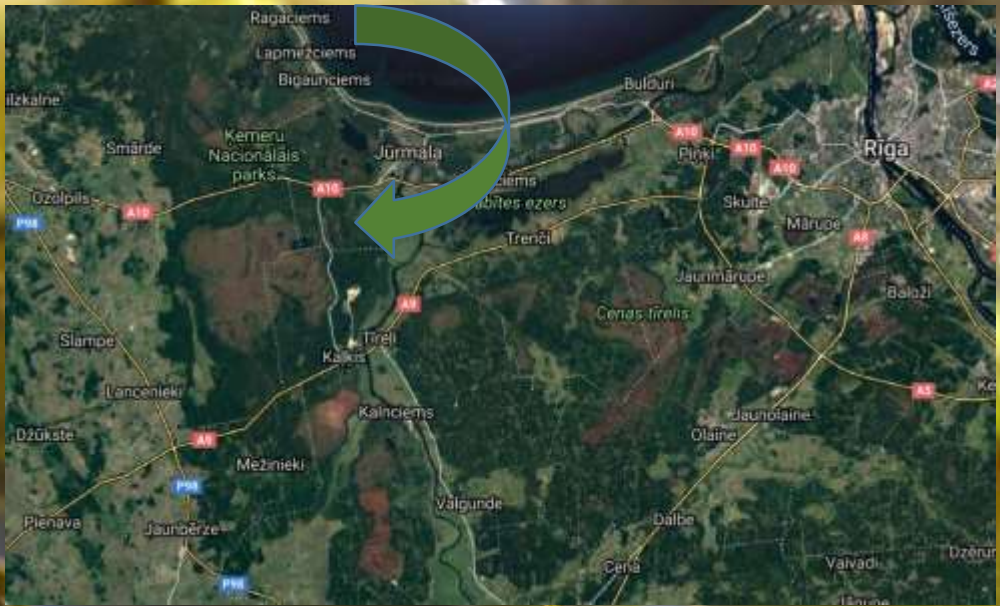


Renaturalisation is one of the post-harvested peatland recultivation methods. It aims in restoring the characteristic mire environment.

Aim of renaturalisation – restoration of the main functions of mire ecosystems – water storage and peat formation.

Only in case optimal hydrological conditions are established, the mire vegetation re-generation can start.

# Location of *Sphagnum* re-introduction area in Kemeru peatland



# Role of Sphagnum species in peatland ecosystems



# Sphagnum re-introduction in May 2018



**Sphagnum re-introduction  
experiment results in Kemerli  
peatland in June 2019**



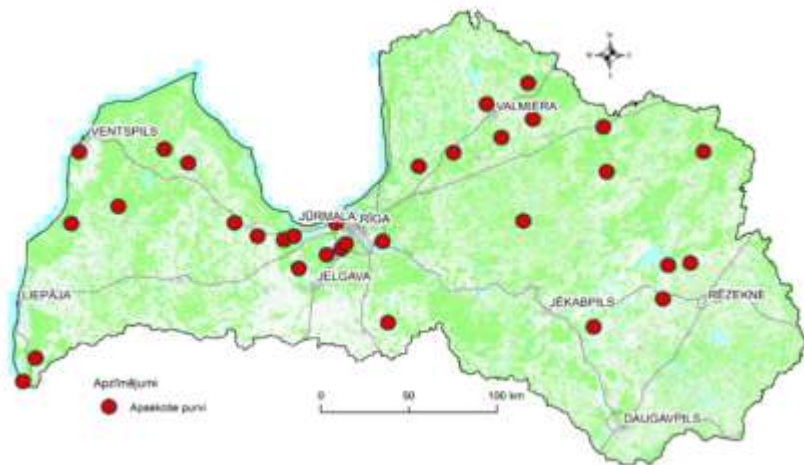
# Renaturalisation in former peat fields in Lielais Ķemeru tīrelis Mire



LIFE project «Conservation of  
wetlands in Kemeri National  
Park» LIFE02 NAT/LV/008496



# Study areas



	Nosaukums	Apsekotā platība (ha)
1	Cenas tīrelis	4124
2	Melnā ezera purvs	1463
3	Medema purvs	805
4	Lielsalas purvs	1117
5	Sedas tīrelis	5007
6	Vārnēnu purvs	30
7	Nidas purvs	1524
8	Paļu purvs	720
9	Rekšņu purvs	160
10	Tīrlauku purvs	119
11	Cepļa purvs	74
12	Salaspils purvs	70
13	Skrebeļu purvs	2875
14	Viļānu purvs	148
15	Slēperu purvs	57
16	Silguldas purvs	627
17	Ezera (Līgotņu) purvs	97
18	Kalna purvs	301
19	Vārves purvs	396
20	Umuļu purvs	80
21	Ķirbas purvs	1192
22	Brīgu tīrelis	524
23	Kačoru purvs	564
24	Strūžānu purvs	2717
25	Diervanīnes purvs	588
26	Kaigu purvs	1583
27	Laugas purvs	1016
28	Ķemeru tīrelis	5265
29	Labais purvs	226
30	Praviņu purvs	129
31	Strēļu purvs	122
32	Dedziņpurvs	351
	<b>Kopā</b>	<b>34 071 ha</b>

## Results of survey

- Peatland vegetation development stages determined after peat extraction
- Assessed moisture conditions
- Restoration possibilities

Surveyed peatlands – where peat extraction ceased 40 years ago and recently.



## Peatland degradation stages \*



**Minimal** – natural spontaneous vegetation: undrained, human impact restricted to hunting or gathering; possibly some change in flora and fauna.

**Minor** – not or slightly drained; minor change in vegetation.

**Modest** – freshly deeply drained; spontaneous vegetation changed through recent drainage purvs.

**Moderate** – long-term very shallow drainage; spontaneous vegetation developed, peatland changed by long-term use for peat extraction.

**Major** – long-term deeply drained or inundated, peatland form modified by subsidence and oxidation.

**Maximal** – intensively drained; peat body severely affected by peat erosion, oxidation or extraction.

\* Schumann, M. & Joosten, H. 2008. Global Peatland Restoration Manual. Institute of Botany and Landscape Ecology, Greifswald University, Germany, 68 pp.



# Results of inventory of post-harvested peatlands

- Main factors impacting vegetation recovery are water level and thickness of residual peat layer was determined
- Different stages of vegetation recovery are characteristic for one peatland



# Comparison of peatland self-regeneration in Latvia with Lithuania, Poland, The Netherlands

- Pušcia peat fields in Lithuania
- Peatlands in Slowinski National park in Poland
- Peatlands in The Netherlands



# Dry peat fields dominated by cotton-grass



Puščia peat fields, Lithuania



Slowinski National park



Lauga peat fields, Latvija



The Netherlands LIFE Restore | LIFE14 CCM/LV/001103



# Dry peat fields / invasion of *Sphagnum* species



Cooton -grass



*Drosera intermedia* in Poland and the Netherlands, protected species in Latvia



*Drosera rotundifolia*



# Wet peat fields and *Sphagnum* invasion in Bargerveen peatland in the Netherlands





## Raised bog vegetation development in the peat fields



Vārnēnu peatland, Latvia



Puščia, Lithuania





Dwingelderveld Nature Reserve, The Netherlands



Melnais Lake Mire Nature Reserve peat fields, Latvia

## Transition mire development in the peat fields



Slowinski National Park, Poland

# Development of fen vegetation in Dedziņpurvs peatland



Fen vegetation with *Schoenus ferrugineus*



# Protected plant species in in Dedziņpurvs peatland



*Liparis loeselii*



*Schoenus ferrugineus*



*Cladium mariscus*



# Fen and transition mire development in the Netherlands



Veerribben – Wieden National Park



## Peatland afforestation



Slowinski NP, Poland



Puščia, Lithuania



Cena peatland, Latvia LIFE Restore | LIFE14 CCM/LV/001103





Bargerveen peat fields, Netherlands



Seda peat fields, Latvia

## Flooded peat fields



- Slowinski National Park, Poland
- Artificial islands



# Vegetation formation in peat pits of Labais peatland





## Invasive species



*Campylopus introflexus*

- ✓ Ķemeru pilot area
- ✓ Puščia peatland, Lithuania
- ✓ Bargerveen, Netherlands



## Conclusions

1. Vegetation development after peat extraction is determined by a number of factors, like site hydrological conditions, remaining peat layer, peat chemical properties, as well as surrounding vegetation.
2. Various vegetation types in dry and wet conditions can develop, including fen, transition mires and raised bog vegetation, as well as site afforestation takes place.
3. Establishment of peat-forming vegetation (*Sphagnum*) is possible in territories where water level is not 0,3 m below peat surface.



# Thank you for attention!



Aktivitātes tiek īstenotas ar Eiropas Komisijas LIFE programmas un Latvijas vides aizsardzības fonda administrācijas finansiālu atbalstu projekta "Degradēto purvu atbildīga apsaimniekošana un ilgtspējīga izmantošana Latvijā" (LIFE REstore, LIFE14 CCM/LV/001103) ietvaros.

Informācija satur tikai projekta LIFE REstore īstenotāju redzējumu, Eiropas Komisijas Mazo un vidējo uzņēmumu izpildāģentūra nav atbildīga par sniegtās informācijas iespējamo izmantojumu.