

Geosites in Salpausselkä UNESCO Global Geopark

Geosites Workshop
24.9.2025

Kati Komulainen, Executive Manager
Vilma-Lotta Tallgren, Geoscientist

www.salpausselkageopark.fi

#salpausselkägeopark
@salpausselkageopark



Contents

- Geopark concept and networks
- Salpausselkä Geopark area and main geological features
- Examples of geosites in Salpausselkä Geopark



UNESCO lists and designations

UNESCO sites connect the world and bring out the best in our shared humanity.



1248

World Heritage Sites

of exceptional cultural and natural value.



788

Intangible Heritage Elements

transmitted by communities worldwide.



759

Biospheres Reserves

where humans and nature coexist.



229

Global Geoparks

that shed light on our planet's geological heritage.



UNESCO Global Geoparks

Celebrating Earth Heritage - Sustaining Local Communities



2000

European Geoparks Network

2004

Global Geoparks Network

2015

**UNESCO Global Geoparks
*International Geoscience and
Geoparks Programme (IGGP)***

2025

**229 UNESCO Global Geoparks in
50 countries**

2022/2023



Rokua
UNESCO Global Geopark (2010/2015)



Impact Crater Lake
UNESCO Global Geopark (2024)



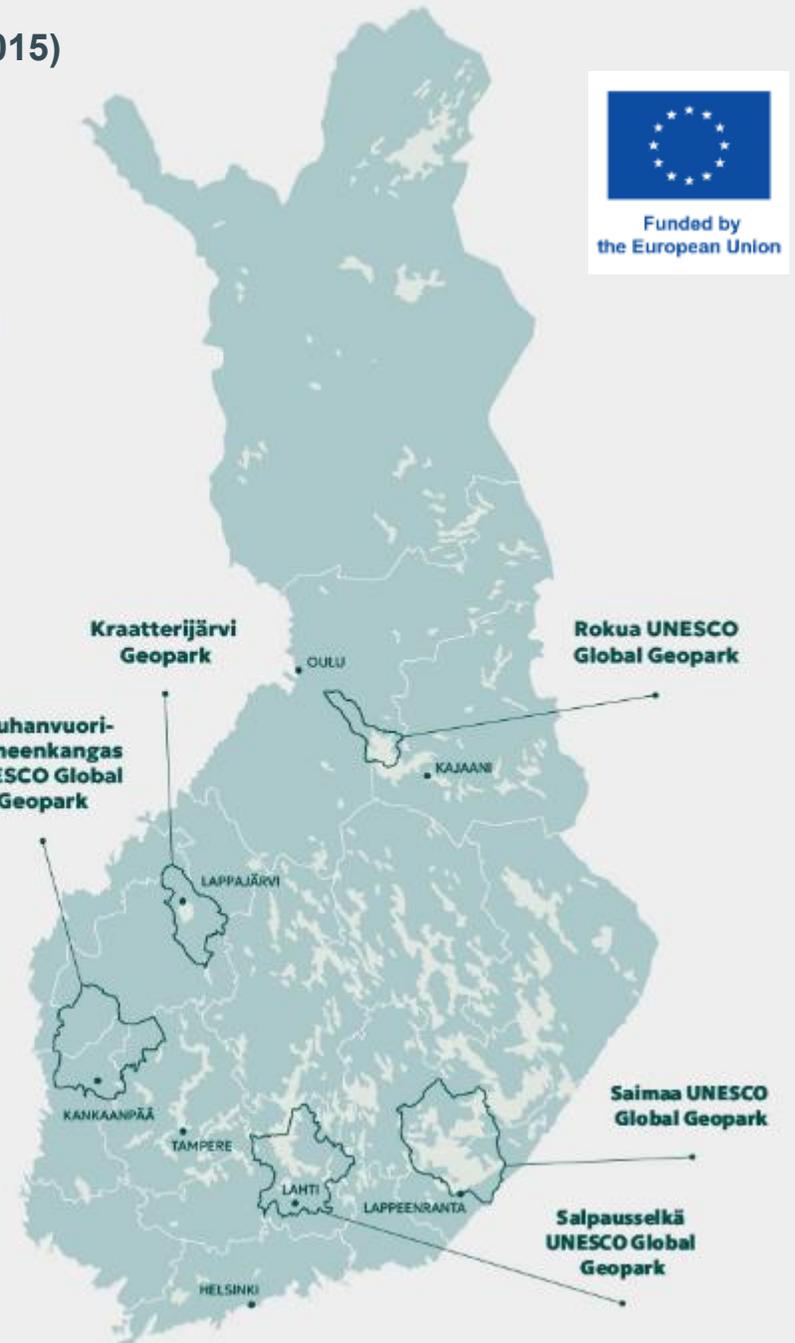
Lauhanvuori-Hämeen kangas
UNESCO Global Geopark
(2020)



Salpausselkä
UNESCO Global Geopark
(2022)



Saimaa
UNESCO Global Geopark (2021)



What is a geopark?

UNESCO Global Geoparks...

- are single, unified geographical areas with **sites and landscapes of international geological significance**
- are managed with a **holistic concept** of protection, education and sustainable development
- tell **the story of planet Earth** through the story of their territories, combining the geological heritage with other aspects of the area's natural and cultural heritage
- enhance **local identity**
- develop **sustainable** (geo)tourism
- work together in a **world-wide network** of geologically outstanding areas

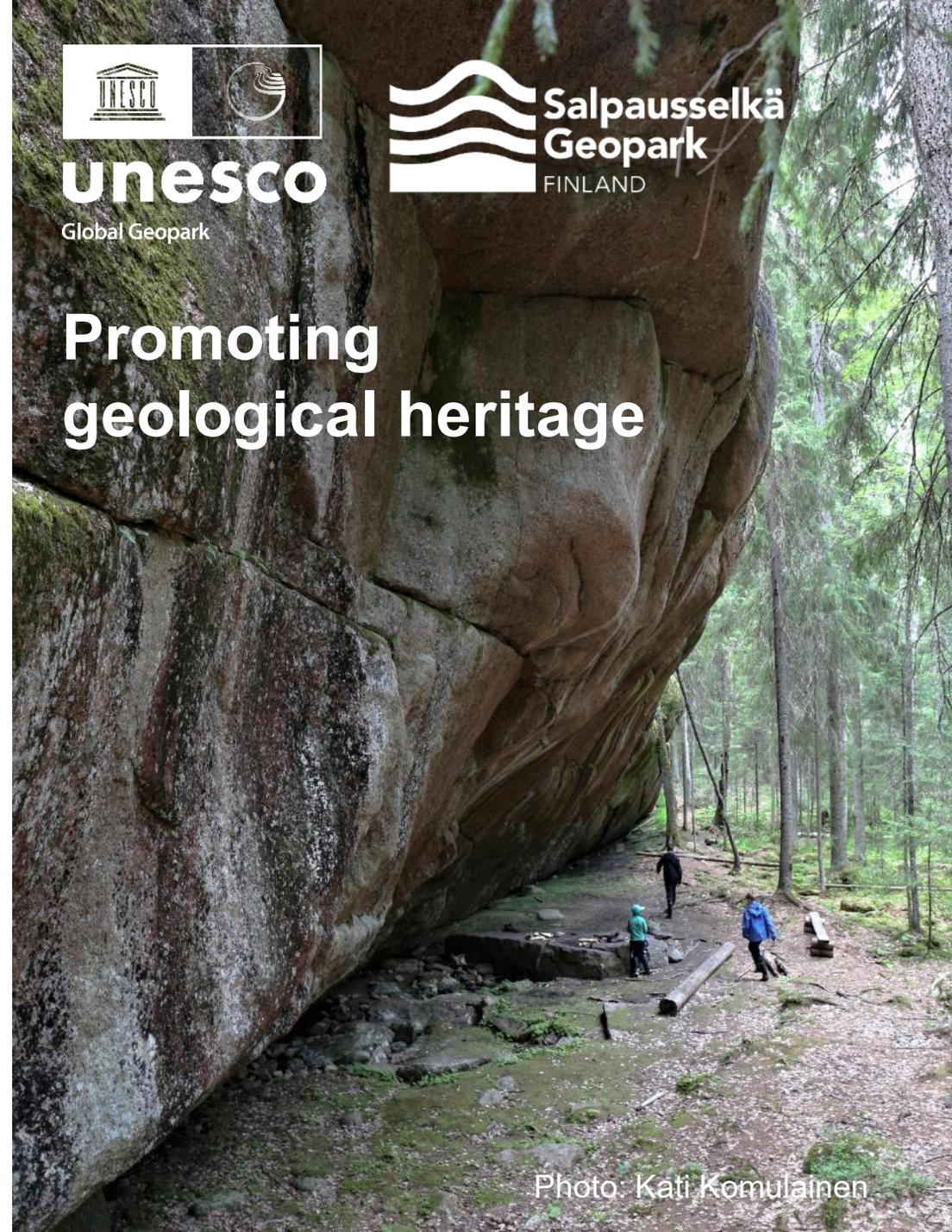
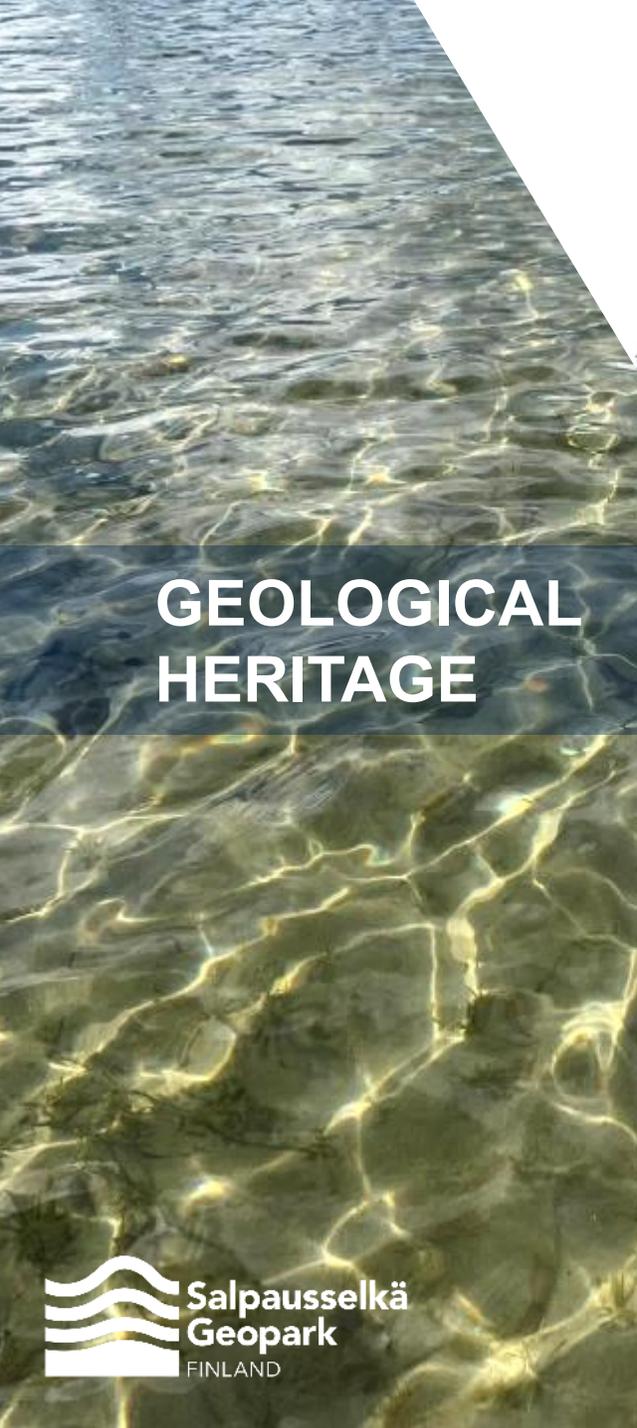


Photo: Kati Komulainen



unesco
Global Geopark



**GEOLOGICAL
HERITAGE**



CULTURAL HERITAGE



NATURAL HERITAGE

GEO PARK

The Sustainable Development Goals (SDGs)

- Also known as the Global Goals
- Adopted by all United Nations Member States in 2015 > Agenda 2030



Networking within the world-wide family of UNESCO Global Geoparks

- European Geoparks Network
- Global Geoparks Network
- Nordic Geoparks



European Geoparks Coordination Committee Spring Meeting 2024, Kula-Salihli UNESCO Global Geopark, Türkiye

- Education for sustainability
- Geopark guide training



- Sustainable travel development
 - Routes and attractions
 - Geopark partners
 - Local products and services



Visibility

- www.salpausselkageopark.fi
- [Facebook.com/salpausselkageopark](https://www.facebook.com/salpausselkageopark)
- Instagram @salpausselkageopark
- Attractions, museums, infopoints, trails, etc. > municipalities, Metsähallitus, other landowners





Salpausselkä Geopark

- Southern Finland, Päijät-Häme region
- One hour by train from Helsinki and international airport
- Southernmost part of the Finnish Lakeland
- UNESCO Global Geopark designation in 2022





Salpausselkä Geopark

- 4 500 km²
- Collaboration of 6 municipalities
- Geopark borders = outer borders of the municipalities
- Urban & rural
- Some 176 000 inhabitants
 - Lahti 121 000
 - Hollola 23 000
 - Heinola 18 000
 - Asikkala 8 000
 - Sysmä 3 500
 - Padasjoki 2 500



A Landscape Created by Water



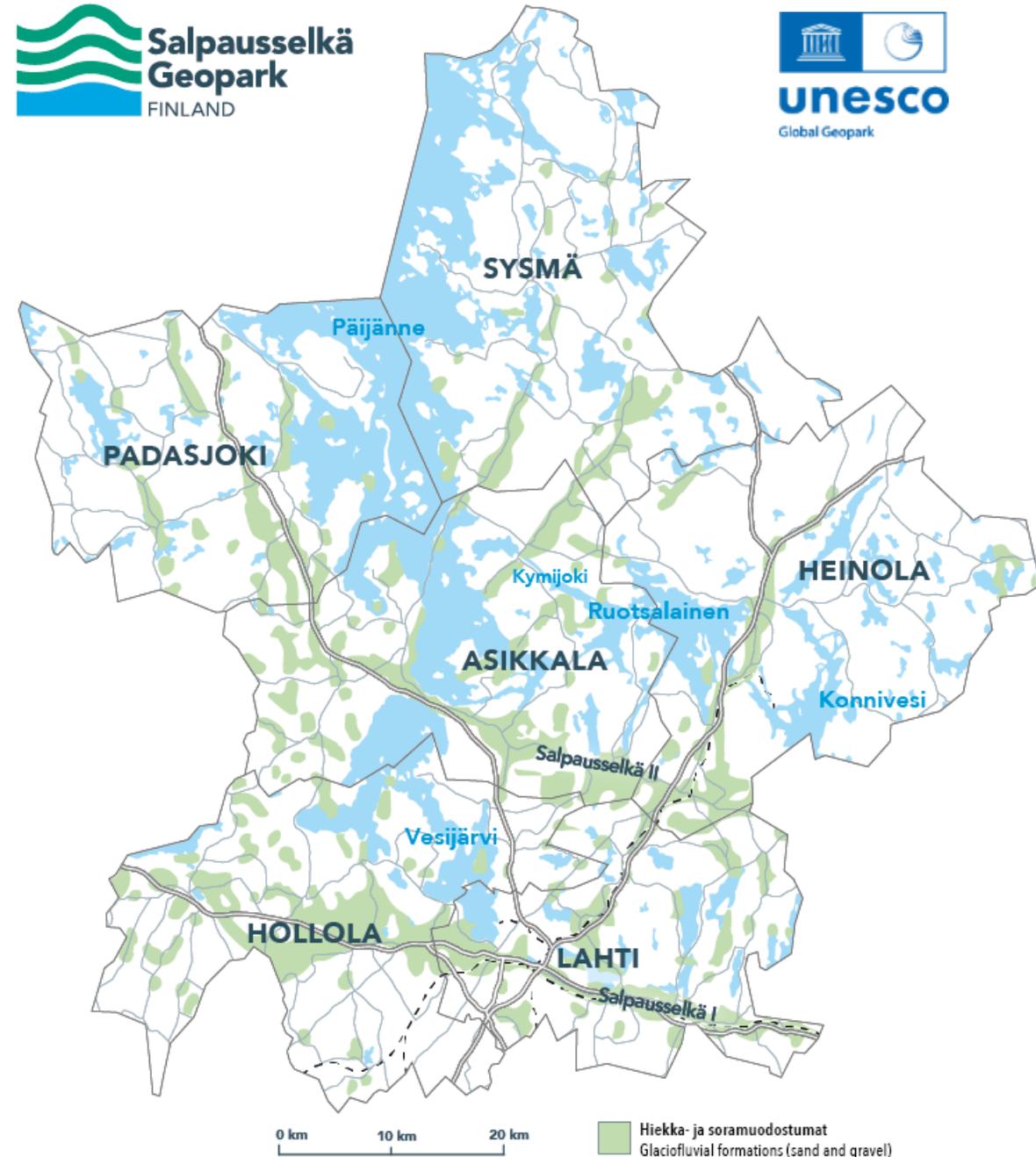
Esker island in Päijänne National Park

Water as a major theme

- Landforms shaped by water and ice
- Water covers 21 % of the area's surface
 - Over 800 lakes, including the southern part of the second largest lake of Finland, Päijänne
- The area provides some 25 % of Finland's population with drinking water
 - Groundwater for the area's residents; nationally significant renewable reserves
 - Finland's most significant groundwater resources are found in the sand and gravel aquifers of glaciofluvial deposits
 - Water from southern Lake Päijänne to the capital area (some 1,5 million people) via a 120-km-long rock tunnel
- Water protection
 - For several decades, water quality issues have been studied in Lake Vesijärvi, which is undergoing a long-term managed recovery from past human impacts.

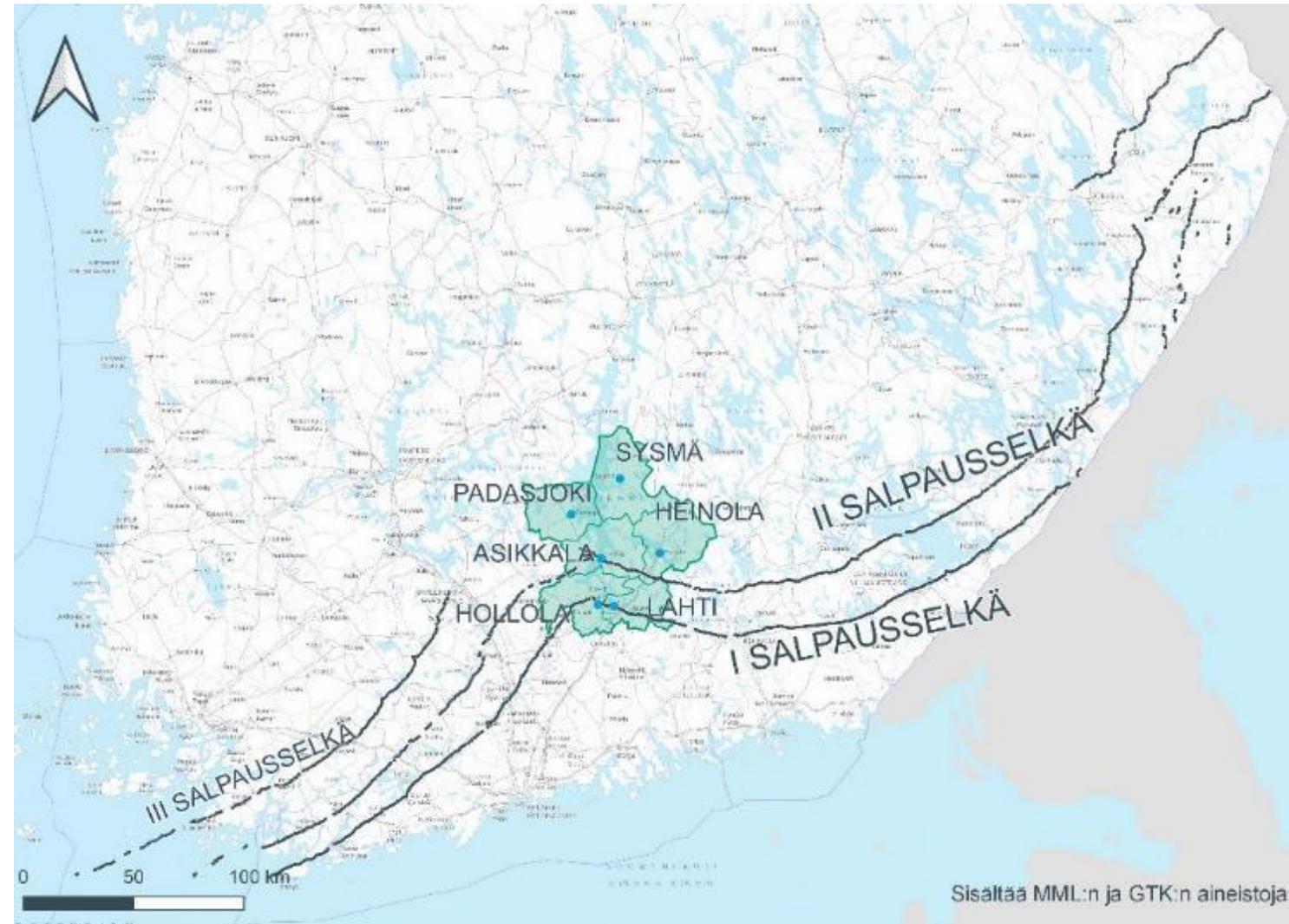
A Landscape Created by Water

- Glaciofluvial landforms **of international value**
 - Salpausselkä ice-marginal ridges
 - Feeding eskers
 - Gravel and sand transported, sorted and deposited by meltwaters of the continental ice sheet at the end of the Ice Age, some 12000 years ago.
- Hundreds of lakes
- Natural springs, rivers and streams
- The Quaternary landforms rest directly upon a Palaeoproterozoic bedrock
 - Rocks from the Svecofennian orogeny, 1.9-1.82 Ga old
 - Rapakivi granites, 1.65-1.54 Ga old



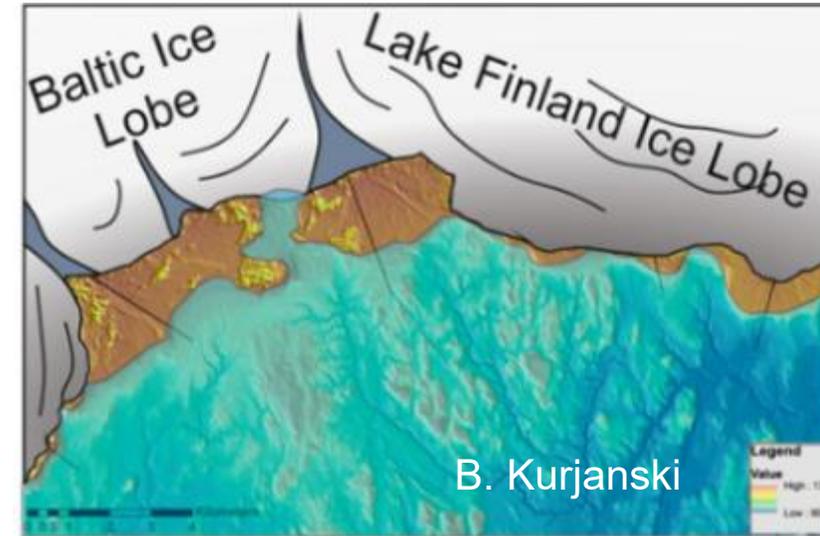
Salpausselkä ice-marginal ridges

- Exceptionally well developed and continuous formations that mark the positions of the ice sheet margin during the Younger Dryas period around 12800 – 11600 years ago at the end of the last Ice Age
 - Ice-marginal formations provide evidence of a rapid climate cooling during the melting phase of the last Ice Age
- Internationally known textbook example
- Represent the best-known geological heritage of Finland
- Salpausselkä ridges I and II reach across the entirety of southern Finland, over 600 km



Salpausselkä ice-marginal ridges

- At their most diverse and prominent in the area of Salpausselkä Geopark
 - Bend of Salpausselkä, formed between two deglaciation stage ice lobes
- Scientific research here since the 1870's
- Formed when sand and gravel, transported and sorted by glacial meltwater streams flowing in tunnels and cracks within the continental ice sheet, were deposited at the margin of the ice sheet as adjacent deltas



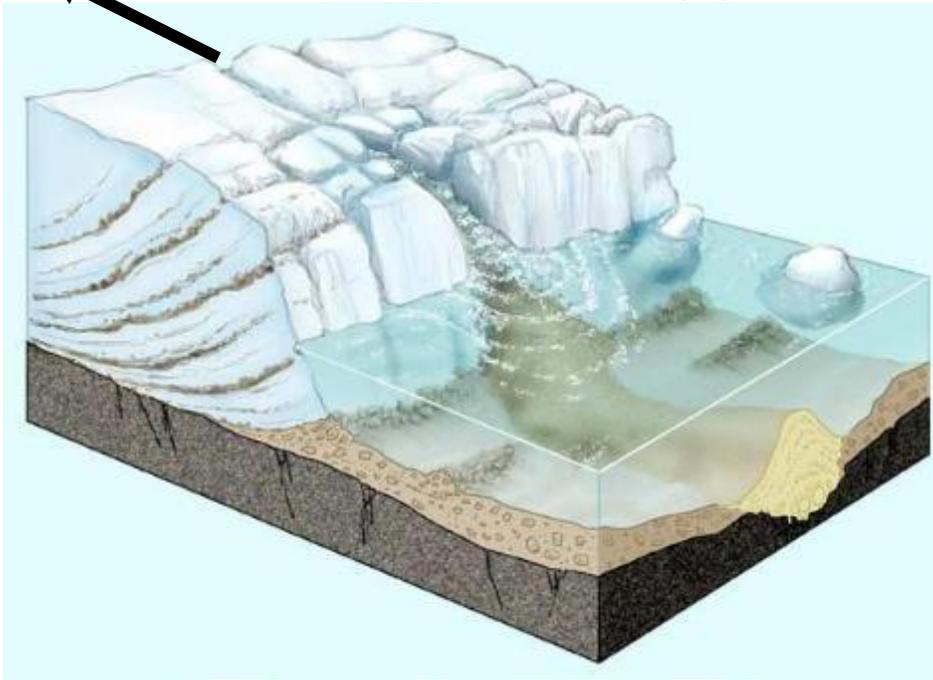
Deposition of a glaciofluvial delta



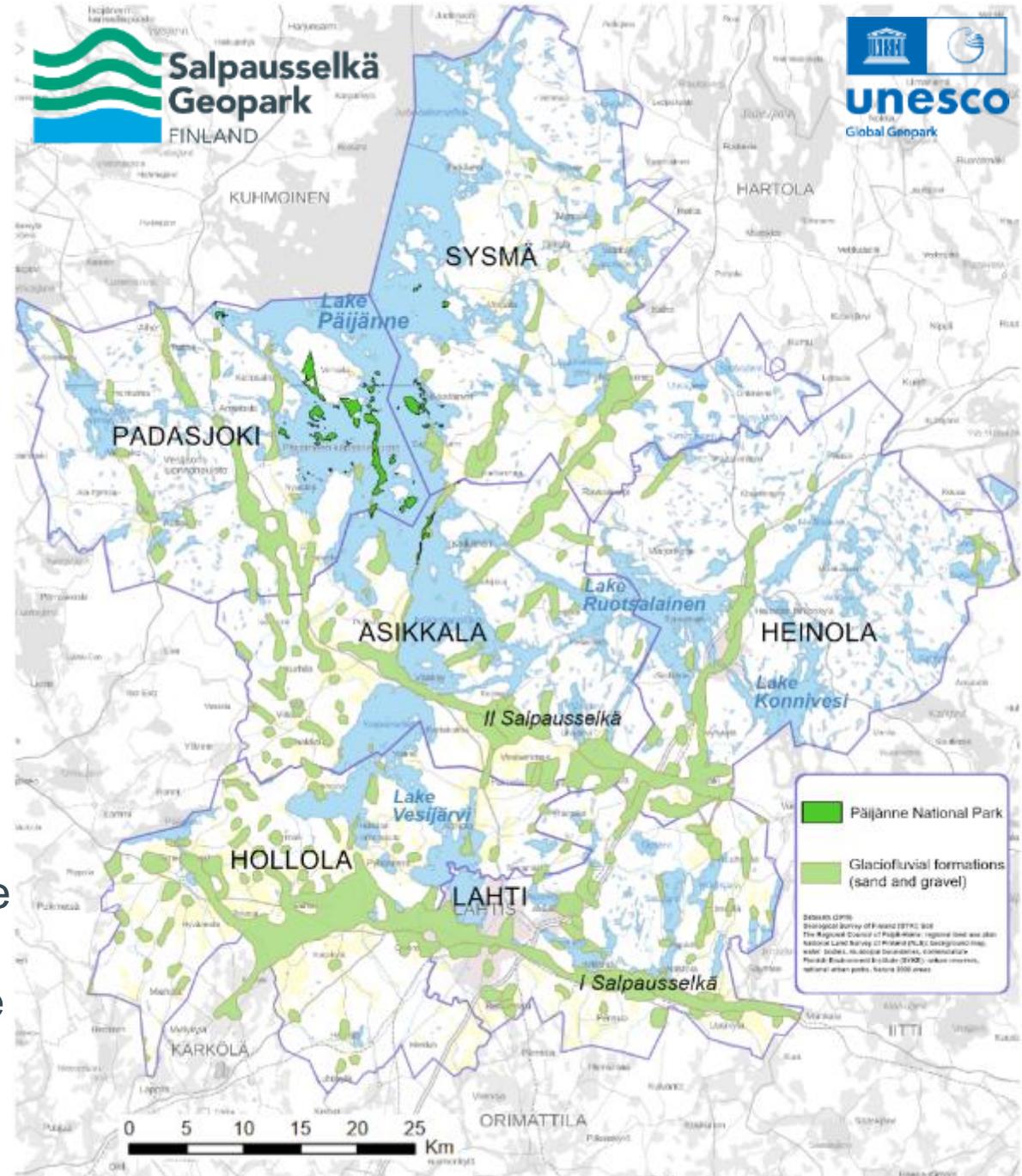
Images: H. Kutvonen, GTK

Eskers

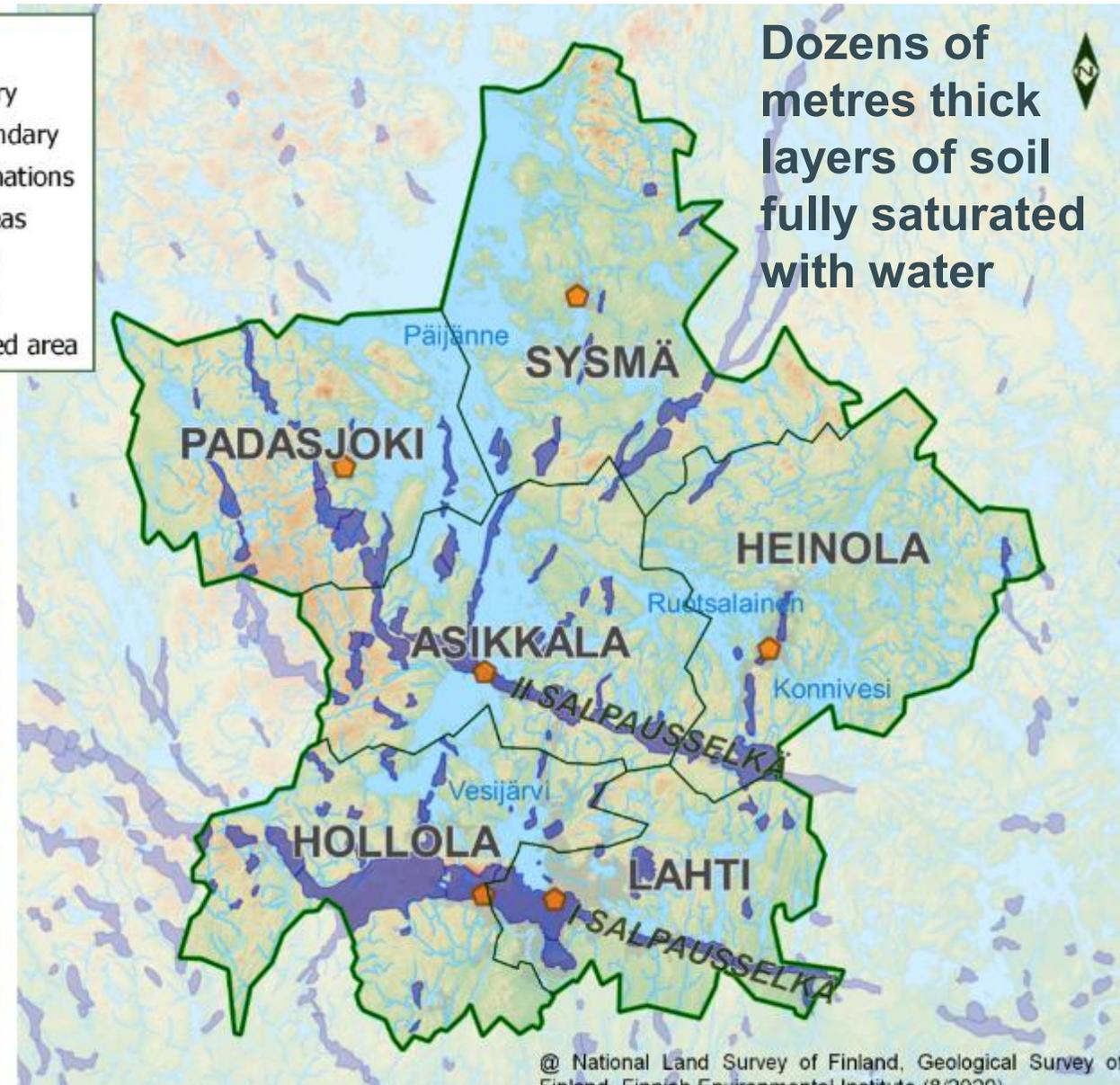
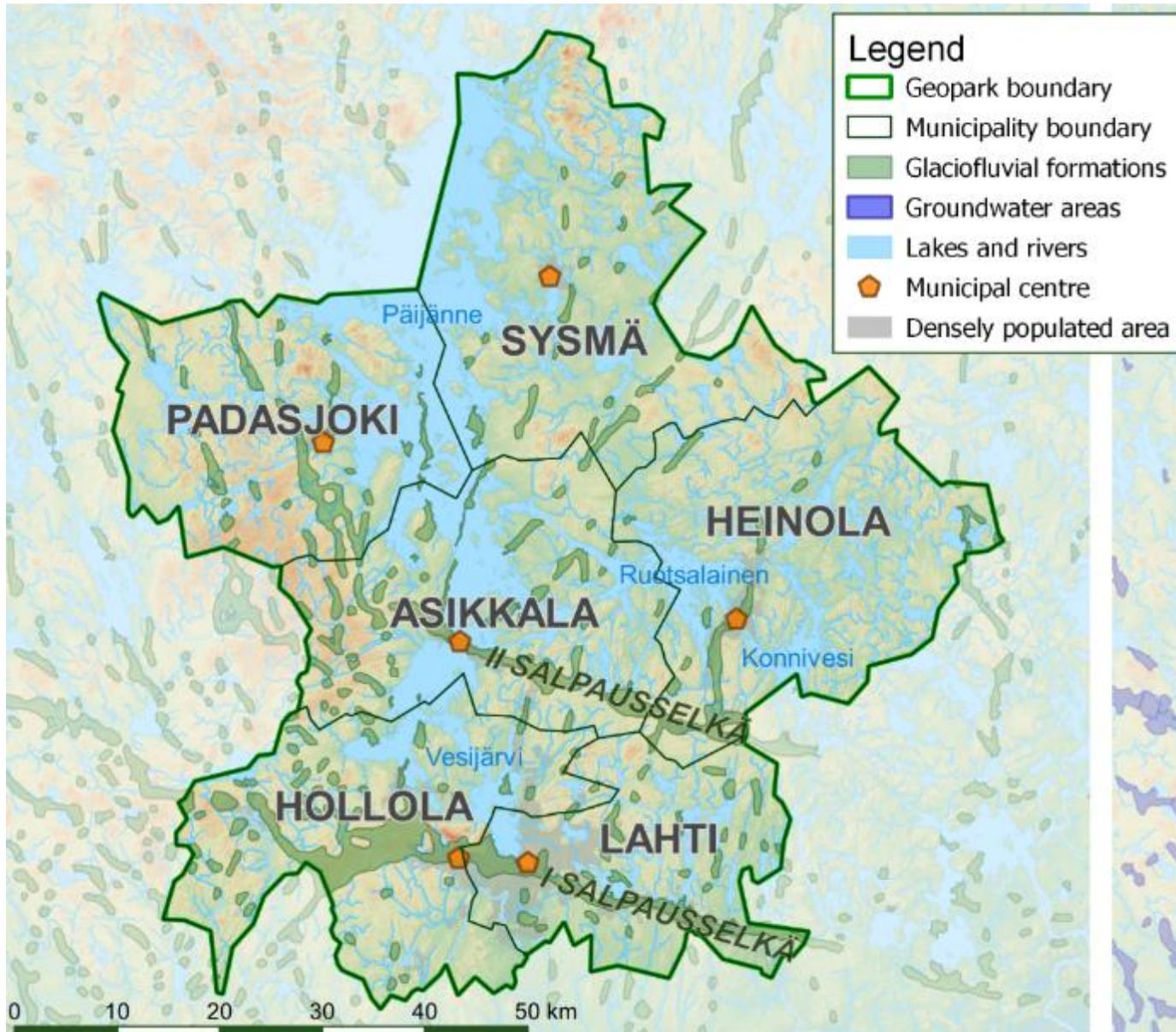
Direction of the retreating glacier



- The distinct eskers indicate glacial meltwater routes, along which material was transported to accumulate at the ice sheet's margin, forming the Salpausselkäs
- The meltwaters deposited sand and gravel at the bed and mouths of the glacial rivers while the margin of the melting ice sheet was withdrawing -> eskers were formed

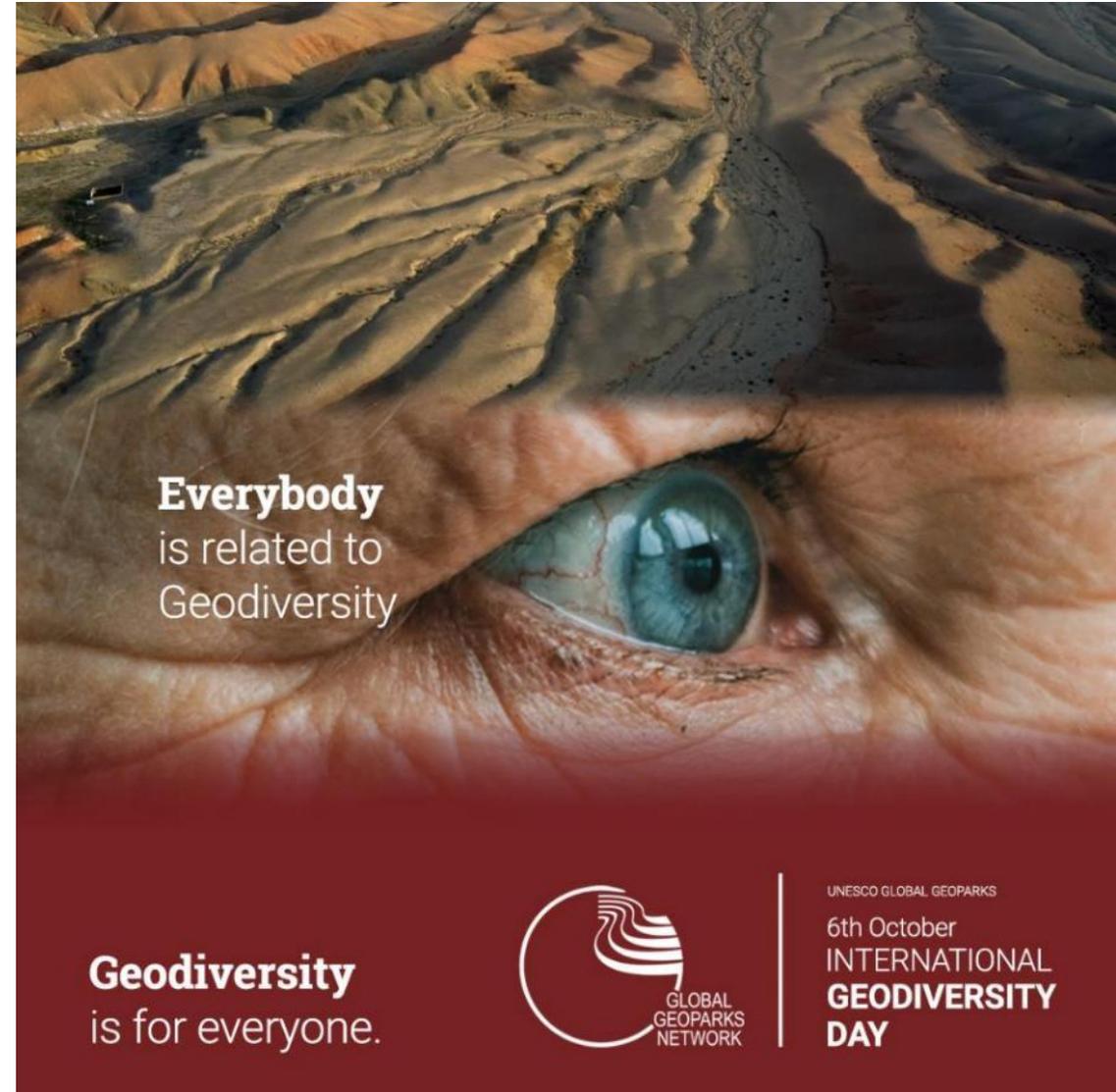


Glaciofluvial formations hold massive, renewable underground reserves of groundwater



Geological diversity / geodiversity

- Geological diversity: the diversity of the natural portion of the planet that is not alive, both at the surface and in the planet's interior
 - Earth's minerals, rocks, fossils, soils, sediments, landforms, topography and hydrological features such as rivers and lakes
 - Processes that create and modify these features
- Exceptional examples of geodiversity are preserved in UNESCO Global Geoparks around the world and promoted as the Geoparks' *geosites*
- Diverse landscapes and terrains offer opportunities for recreation and tourism
- <https://www.unesco.org/en/days/geodiversity>



Geosites in Salpausselkä Geopark

- A geosite is a place that has special geological or geomorphological significance / interest
- Many / most of our geosites are also valuable from a cultural and / or biological perspective
 - A geopark is not only about geology!
- 59 geosites listed within Salpausselkä Geopark
 - In these places, the geological features that characterise this part of the planet can be seen and experienced
- Most of the sites were already protected to some degree when they were selected as the Geopark's geosites
- Most of the sites were also already used in tourism and / or recreation / education
- Before the Geopark establishment, no sites in the region were called *geosites*

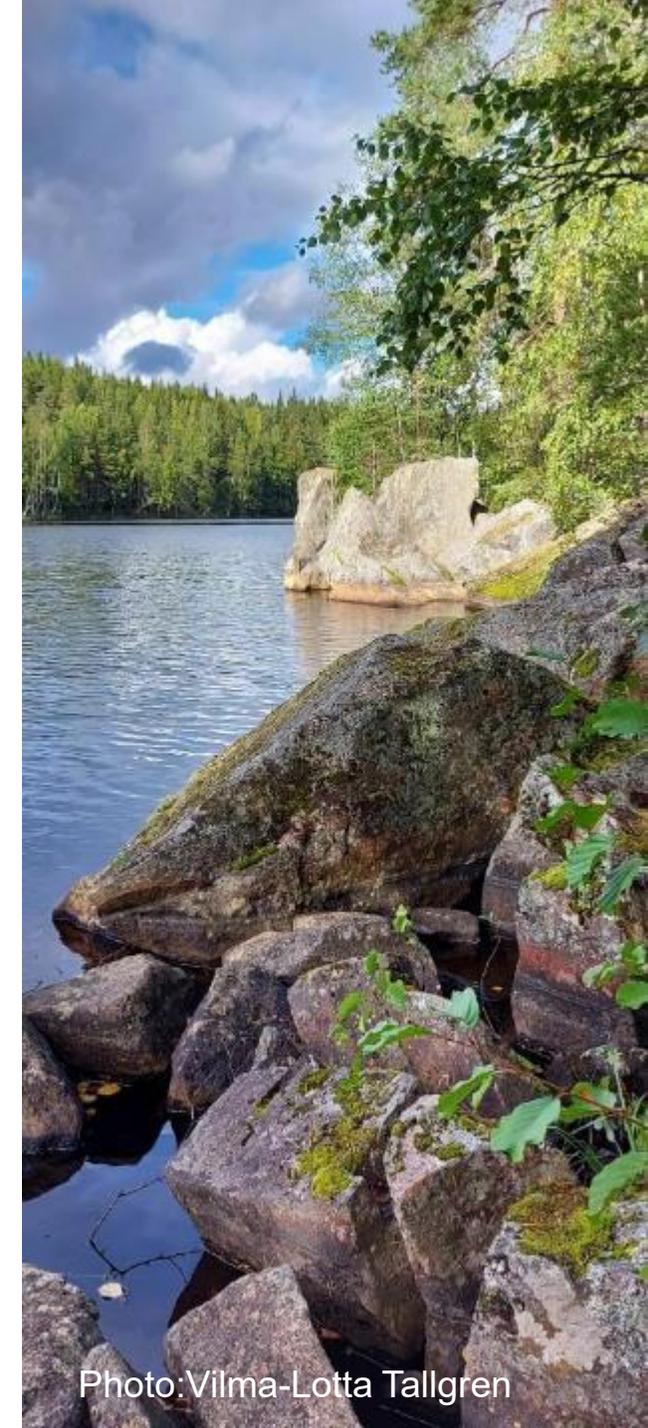


Photo: Vilma-Lotta Tallgren

Types of geosites (not a full list)

- Esker
- Delta (ice-marginal)
- Kettle
- Rocky outcrop
- Erratic boulder
- Lake
- Spring
- River
- Rapids
- Mire

Representing different geological and geomorphological processes, time periods, etc.

- Glaciofluvial Quaternary formations
 - Ice-marginal Quaternary formations
 - Groundwater
 - Precambrian bedrock
 - Different rock types
 - Tectonics
 - Waterways
 - Littoral
- Also: Archaeology, cultural heritage

Various means and levels of site protection (not a full list)

- Nature Protection Act
- Nature reserves
 - National Park
 - Other nature reserves
- Natural monument
- Act on the Protection of Rapids
- Water Act
- Antiquities Act

- National conservation programmes
 - National Esker Conservation Programme
 - National Shore Areas Conservation Programme
 - National Mire Conservation Programme
 - National Grove Conservation Programme

- International listings / designations
 - RAMSAR sites, under the global Ramsar Convention on the protection and sustainable use of wetlands
 - Natura 2000 (EU)
- Nationally Valuable Landscape area
- National Urban Park
- National listings based on inventories
 - Nationally Valuable Rocky Outcrop area
 - Nationally Valuable Littoral Deposit
 - Built Cultural Heritage site of national significance

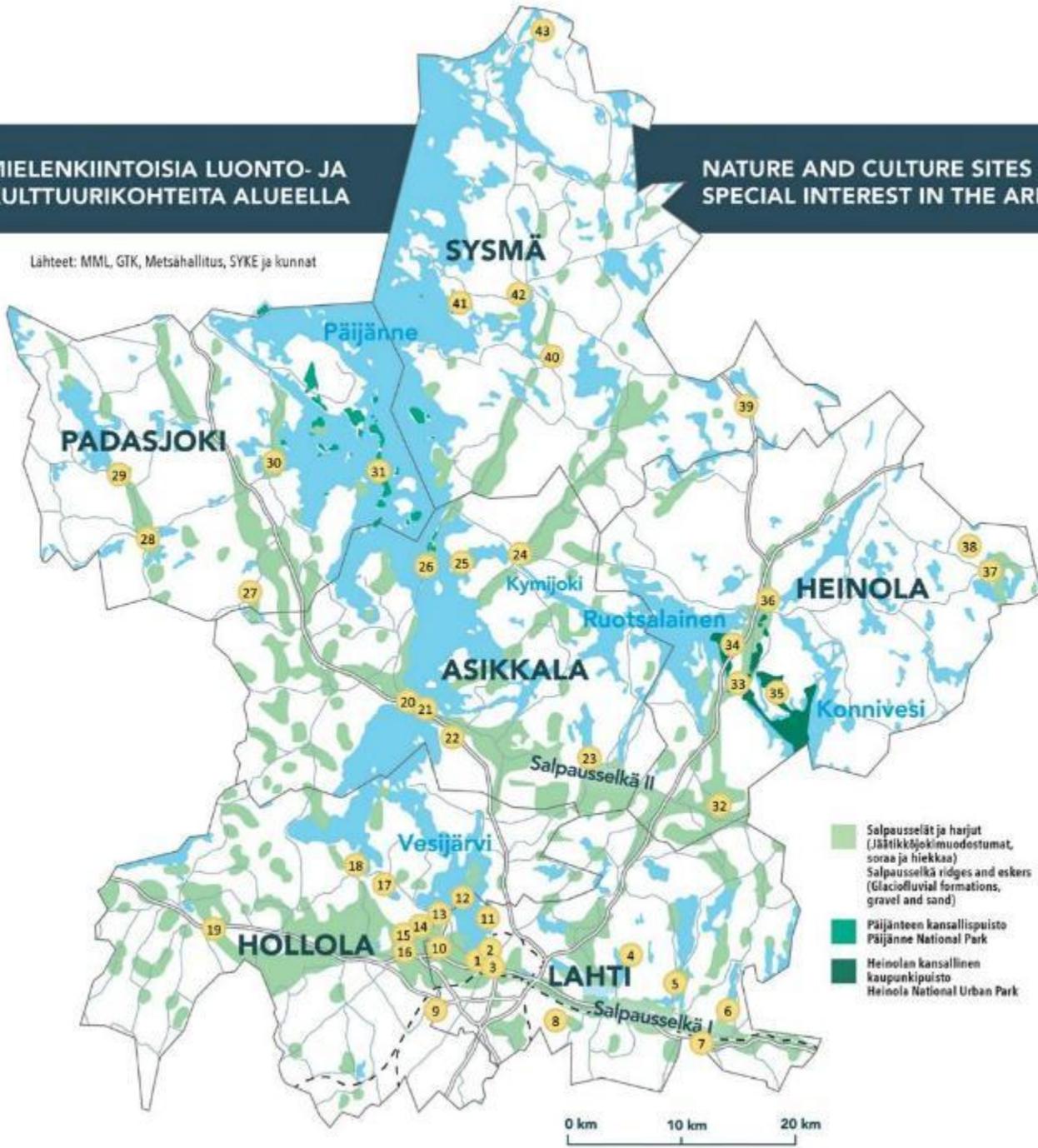
- Municipal plans
- Regional plans

MIELENKIINTOISIA LUONTO- JA KULTTUURIKOhteita ALUEELLA

NATURE AND CULTURE SITES OF SPECIAL INTEREST IN THE AREA



Lähteet: MML, GTK, Metsähallitus, SYKE ja kunnat



- | | |
|--|--|
| 1 LAHDEN URHEILUKESKUS JA HIIHTOMUSEO
LAHTI SPORTS CENTRE AND SKI MUSEUM | 22 PASOLANVUOREN LUONTOPOLKU
PASOLANVUORI HILL NATURE TRAIL |
| 2 LEHMUSREITTI, LANU-PUISTO JA VESIJÄRVEN SATAMA
AND LAKE VESIJÄRVI HARBOUR | 23 URAJÄRVEN KARTANO
URAJÄRVI MANOR AND LAKE |
| 3 RADIOMÄKI, RADIO- JA TV-MUSEO MASTOLA
RADIOMÄKI HILL, RADIO AND TV MUSEUM | 24 KALKKISTEN KYLÄ JA KYMIJOKI
KALKKINEN VILLAGE AND RIVER KYMIJOKI |
| 4 LAPAKISTON LUONNONSUOJELUALUE
LAPAKISTO NATURE RESERVE | 25 KALKKISTEN KANAVA JA KOSKI
KALKKINEN CANAL AND RAPIDS |
| 5 LIIKUNTAKESKUS PAJULAHTI
PAJULAHTI SPORTS CENTRE | 26 PULKKILANHARJU ESKER, PÄIJÄNNE NATIONAL PARK |
| 6 SAMMALSILLANSUO JA SYLVÖJÄRVI
SAMMALSILLANSUO MIRE AND LAKE SYLVÖJÄRVI | 27 TARUKSEN ALUE
TARUS HIKING AREA |
| 7 LOHKAREPUISTO, LUONTO- JA KULTTUURIPOLKU
BOULDER PARK, NATURE AND CULTURE TRAIL | 28 AUTOISTEN KYLÄN KULTTUURIMAISEMA
AUTOINEN VILLAGE CULTURAL LANDSCAPE |
| 8 LINNAISTENSUON LUONNONSUOJELUALUE
LINNAISTENSUO MIRE NATURE RESERVE | 29 VESIJÄON KYLÄN KULTTUURIMAISEMA
VESIJÄON VILLAGE CULTURAL LANDSCAPE |
| 9 LUHDANJÖEN LINTUTORNI
RIVER LUHDANJOKI BIRD-WATCHING TOWER | 30 PADASJÖEN LAIVARANTA JA KULLASVUORI
PADASJOKI HARBOUR AND KULLASVUORI HILL |
| 10 LAHDEN TERVEYSMETSÄ JA LIKOLAMPI
LAHTI HEALTH FOREST AND LAKE LIKOLAMPI | 31 KELVENNE, PÄIJÄNTEEN KANSALLISPUISTO
KELVENNE ISLAND, PÄIJÄNNE NATIONAL PARK |
| 11 MUKKULAN KARTANOPUISTO
MUKKULA MANOR PARK | 32 SUOMEN URHEILUOPISTO, VIERUMÄKI
VIERUMÄKI RESORT |
| 12 ENONSAARI
ENONSAARI ISLAND | 33 HEINOLAN PUISTOT JA KYMENVIRTA
HEINOLA PARKS AND RIVER KYMENVIRTA |
| 13 MESSILÄN UIMARANTA JA SATAMA
MESSILA BEACH AND HARBOUR | 34 RUOTSALAISEN RANTAREITIT
LAKE RUOTSALAINEN SHORE TRAILS |
| 14 TIIRISMAAN ULKOILUALLUE JA PIRUNPESÄ
TIIRISMAA HILL AND PIRUNPESÄ GORGE | 35 SATAOJAN LUONTOPOLKU
SATAOJA NATURE RESERVE |
| 15 TILLIJÄRVET JA SOISALMENSUO
TILLIJÄRVI LAKES AND SOISALMENSUO MIRE | 36 RAUTVUORI
RAUTVUORI HILL |
| 16 SALPA-SUPPA
SALPA-SUPPA KETTLE | 37 PAISTAJÄRVEN SUOJELUALUE
PAISTAJÄRVI NATURE RESERVE |
| 17 KUTAJÄRVEN LUONTOPOLKU JA LINTUTORNI
LAKE KUTAJÄRVI, BIRD-WATCHING TOWER | 38 PIRUNKIRKKO
PIRUNKIRKKO CLIFF |
| 18 KAPATUOSIAN LINNAVUORI JA HOLLOLAN
KESKIAIKAINEN KIRKKO
KAPATUOSIA HILLFORT AND HOLLOLA MEDIEVAL CHURCH | 39 ONKINIEMEN LIIKKUVA KIVI
ONKINIEMI ROCKING BOULDER |
| 19 HULJALAN HELVETTI, HELVETINROTKO
HELVETTI VALLEY OF HULJALA | 40 VIRTAANKOSKI, TAINIONVIRTA
VIRTAANKOSKI RAPIDS, TAINIONVIRTA RIVER |
| 20 AURINKOVUOREN ULKOILUALLUE
AURINKOVUORI HILL | 41 PÄLJÄTSALO, PÄIJÄNTEEN KANSALLISPUISTO
PÄLJÄTSALO, PÄIJÄNNE NATIONAL PARK |
| 21 VÄÄKSYN KANAVA JA -JOKI, PÄLJÄNNETALO
VÄÄKSY CANAL AND RIVER, PÄLJÄNNETALO | 42 SYSMÄN KESKIAIKAINEN KIRKKO
SYSMÄ MEDIEVAL CHURCH |
| | 43 KAMMIOVUORI
KAMMIOVUORI HILL |

Lahti

Lake Vesijärvi

First Salpausselkä Ridge



Lake Vesijärvi

Lahti Sports Centre & the recreation area at First Salpausselkä Ridge

Photos: City of Lahti



Lahti Sports Centre & the recreation area at First Salpausselkä Ridge

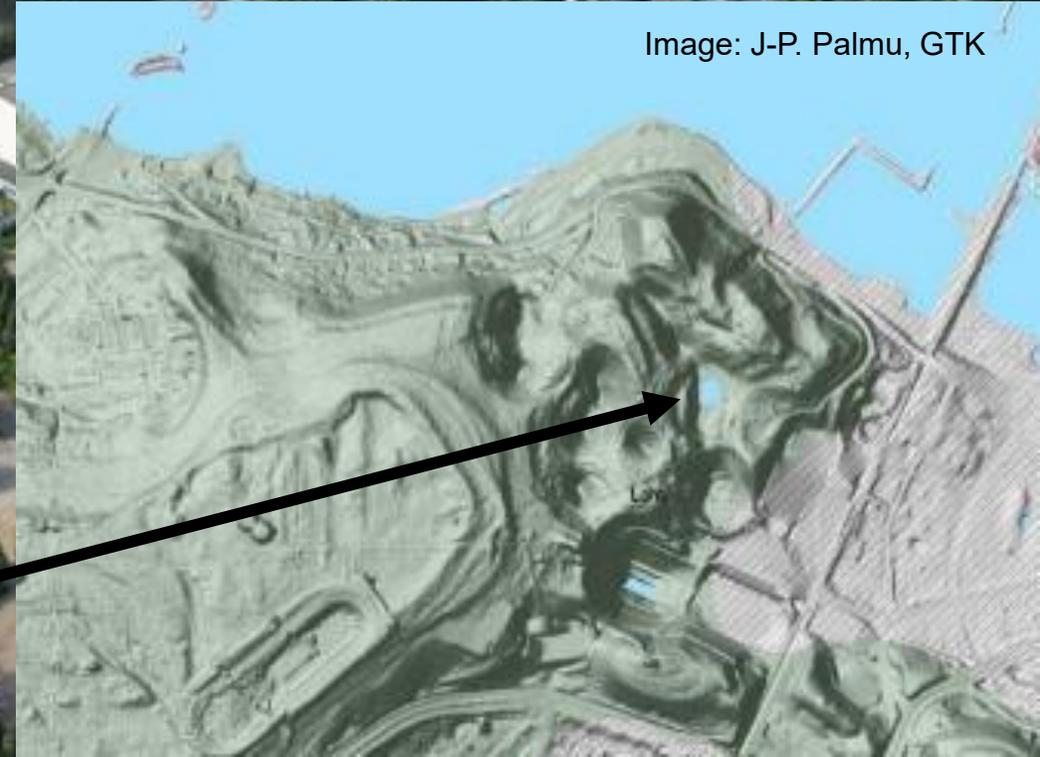
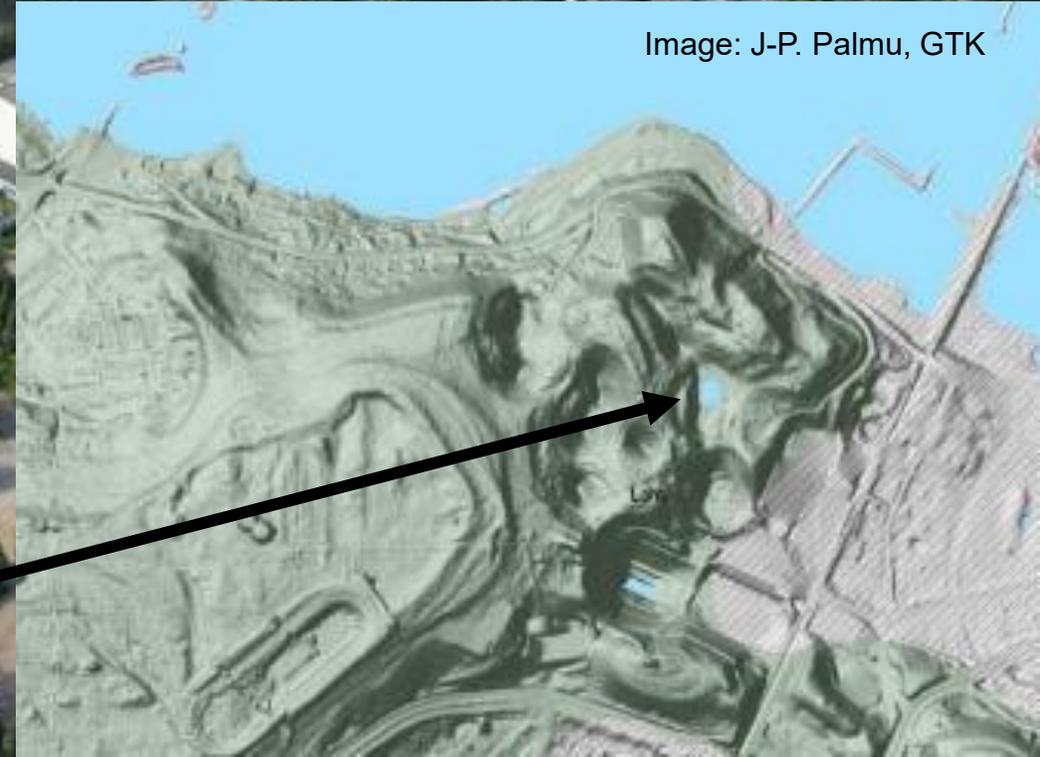
Protection:

- Municipal plan (City plan)
- Partly: Nationally Valuable Landscape area
- Partly: Nationally Valuable Littoral Deposit
- Partly: Built Cultural Heritage site of national significance
- Partly: Antiquities Act
- A small nature reserve within the area (Häränsilmä)

Lake Vesijärvi

Photo: City of Lahti

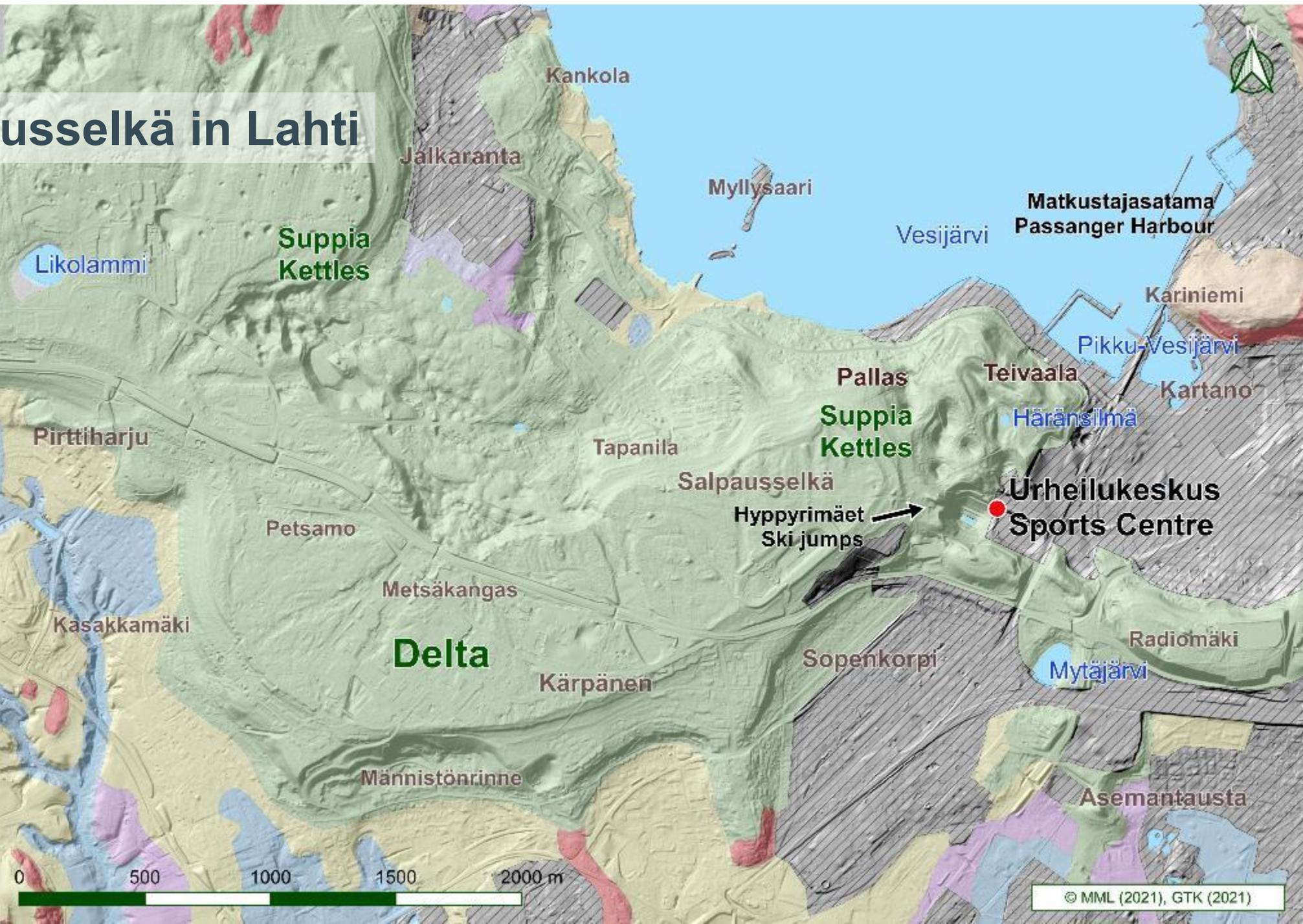
Image: J-P. Palmu, GTK



An aerial photograph of a dark, circular kettle pond surrounded by a dense forest. The pond is the central focus, with a small wooden pier extending into it from the right side. The surrounding forest is lush green, with some areas of yellowish-brown grass or low vegetation near the pond's edge. The text is overlaid in the center of the pond.

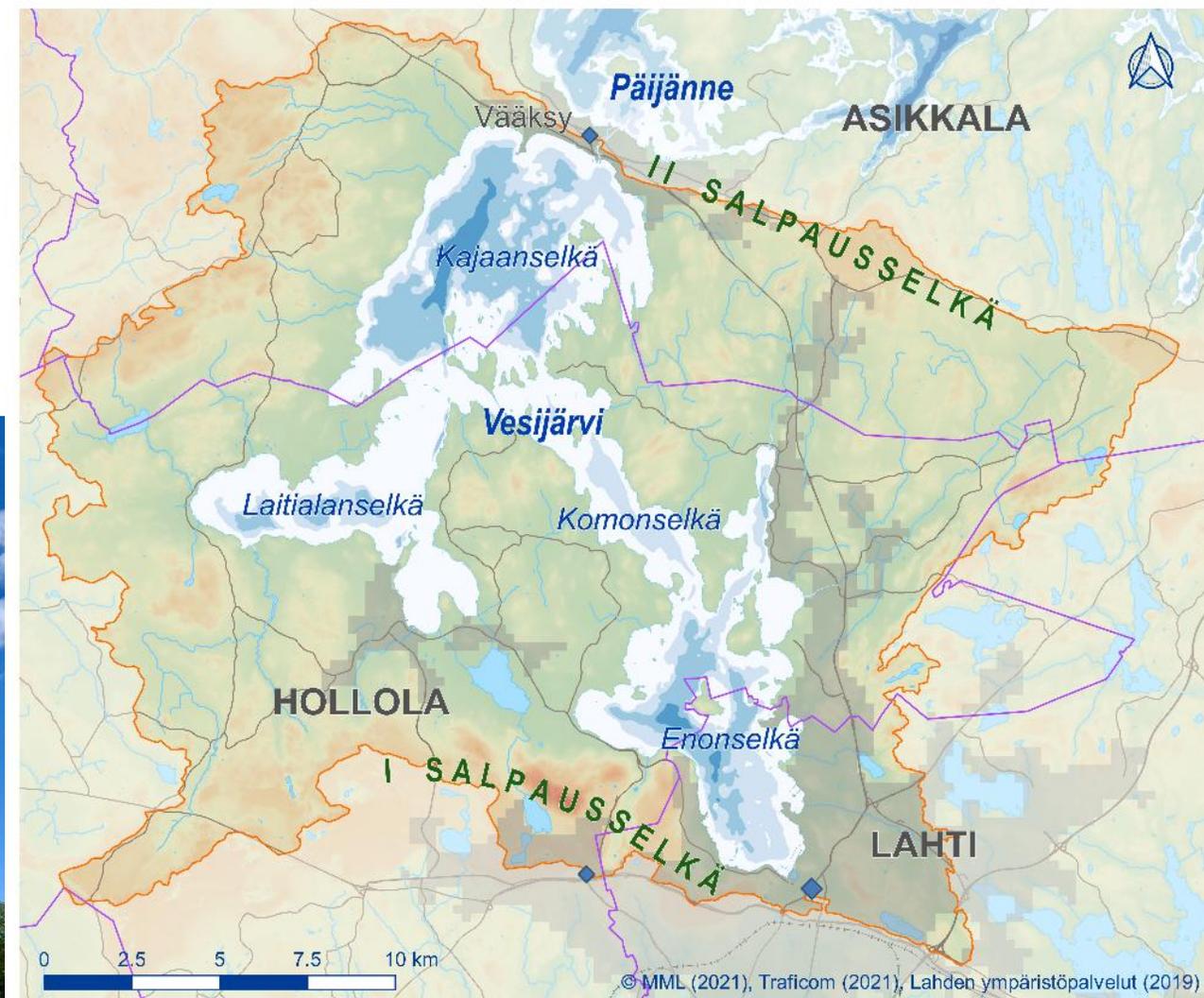
Häränsilmä
"Bull's Eye"
A kettle pond

Salpausselkä in Lahti



Lake Vesijärvi

- Several nature reserves
- Part of the lake belongs to a RAMSAR area
- Subject to water protection and lake restoration



— Vesijärven valuma-alue / Lake Vesijärvi drainage basin

— Kuntaraja / Municipality boundary

■ Taajama / Densely populated area

◆ Kuntakeskus / Municipality centre

Syvyysalueet / Depth areas

< 6 m

6 - 10 m

10 - 20 m

> 20 m

© MML (2021), Traficom (2021), Lahden ympäristöpalvelut (2019)

Linnaistensuo Mire Nature Reserve

- Natura 2000
- Nature reserve
- National Mire Conservation Programme



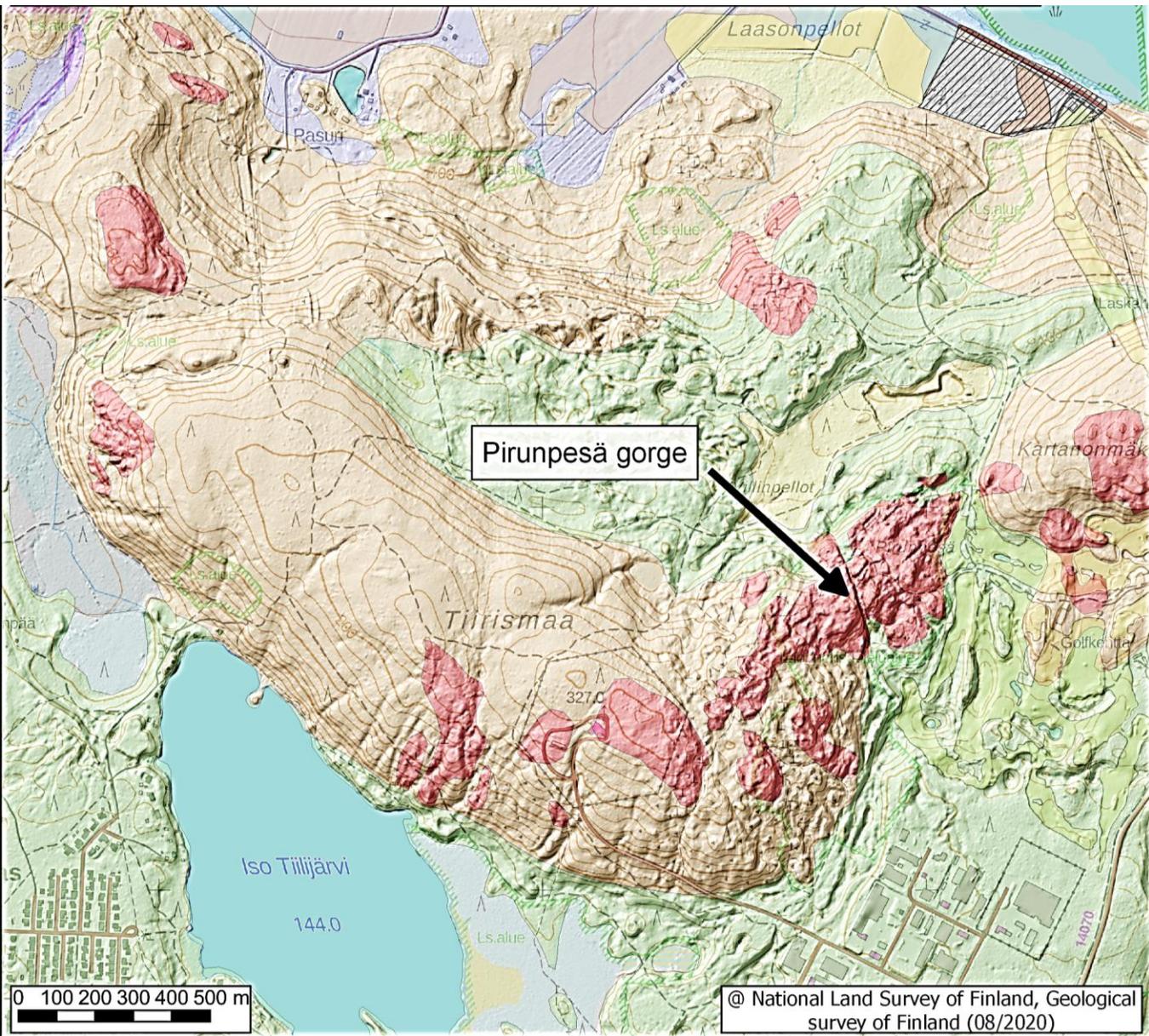
Hollola municipal centre on Salpausselkä



A photograph of a rocky outcrop in a forest. The outcrop is a large, light-colored rock formation with a jagged, layered appearance, situated in the center of the image. It is surrounded by dense evergreen trees. In the foreground, a stream flows, reflecting the rock formation and the surrounding forest. The water is dark and still, creating a clear mirror image of the scene above. The overall atmosphere is serene and natural.

Pirunpesä
"Devil's Nest"
rock formation
in Tiirismaa hill,
Hollola

- Nature reserve
- Natura 2000
- Nationally Valuable Landscape area
- Nationally Valuable Rocky Outcrop area



Kapatuosia hillfort Hollola historical central village



- National Esker Conservation Programme
- Built Cultural Heritage site of national significance
- Partly: Protected by Antiquities Act (295/63)



**Municipal centre of Asikkala (Vääksy)
on the Salpausselkä between
lakes Vesijärvi and Päijänne**

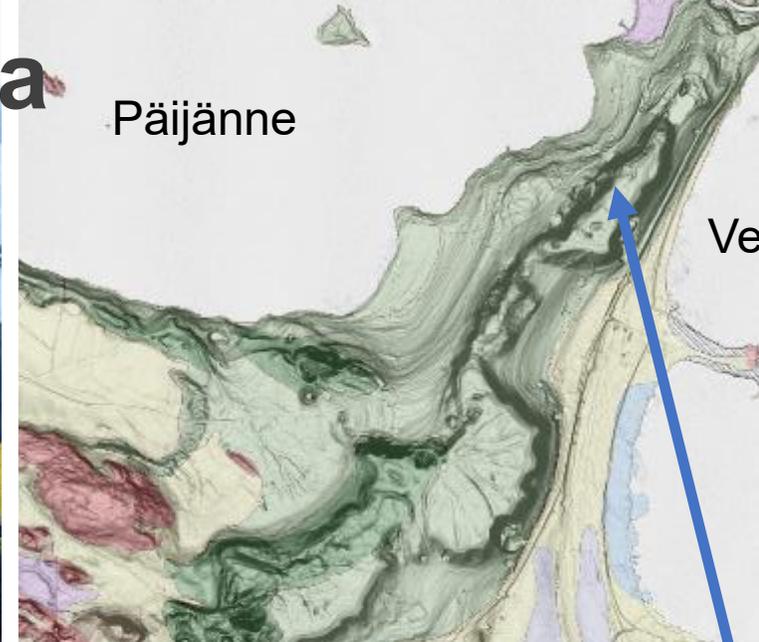
Aurinkovuori hill, Asikkala

Päijänne

Vesijärvi

**Second
Salpausselkä**

Photo: J. Väätäinen, GTK



Päijänne

Vesijärvi

- National Esker Conservation Programme
- Natura 2000



Päijänne

Photo: Eetu Linnankivi

Maankamara

Syrjänsupat

Päijänne

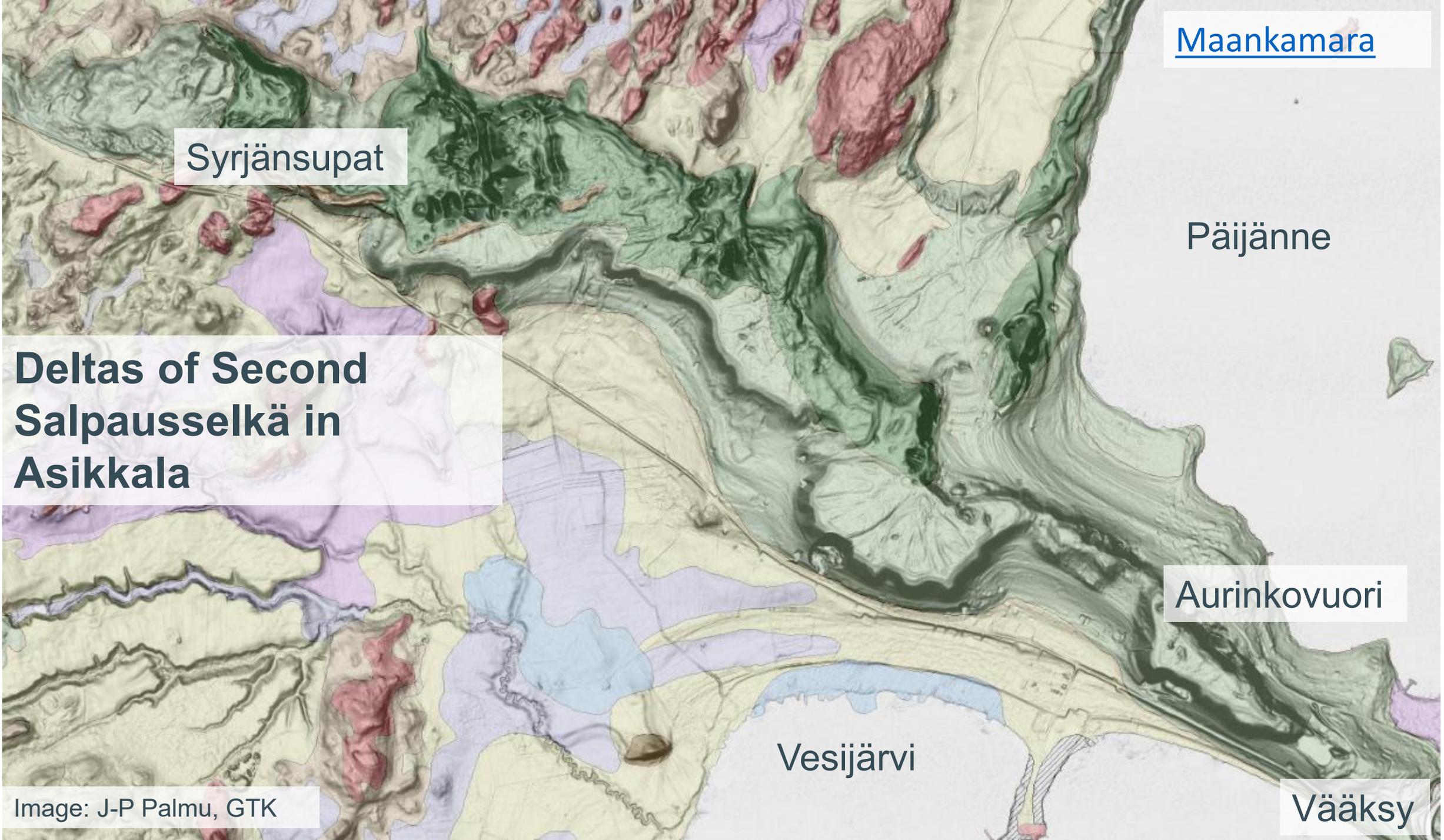
**Deltas of Second
Salpausselkä in
Asikkala**

Aurinkovuori

Vesijärvi

Image: J-P Palmu, GTK

Vääksy



Pulkkilanharju Esker, Lake Päijänne, Asikkala

- National Esker Conservation Programme
- Nationally Valuable Landscape area
- Partly: Natura 2000
- Partly: National park
- Partly: Nationally Valuable Littoral Deposit

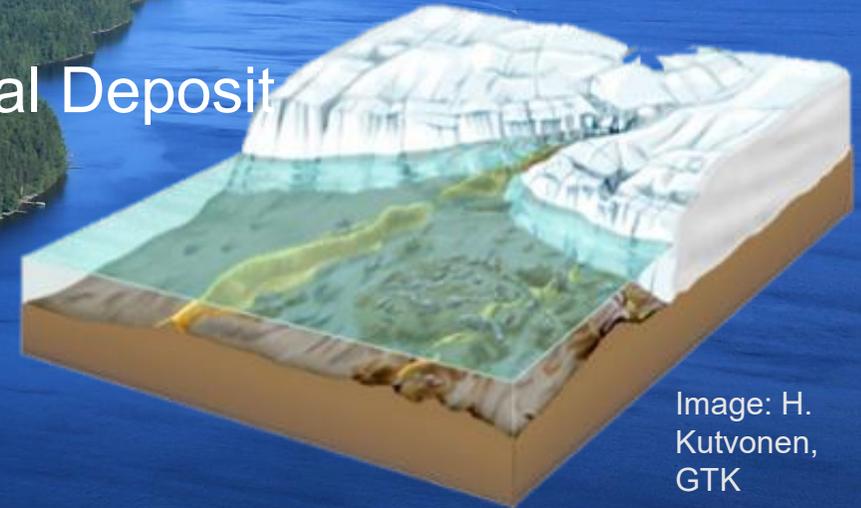


Image: H. Kutvonen, GTK

Pulkkilanharju esker

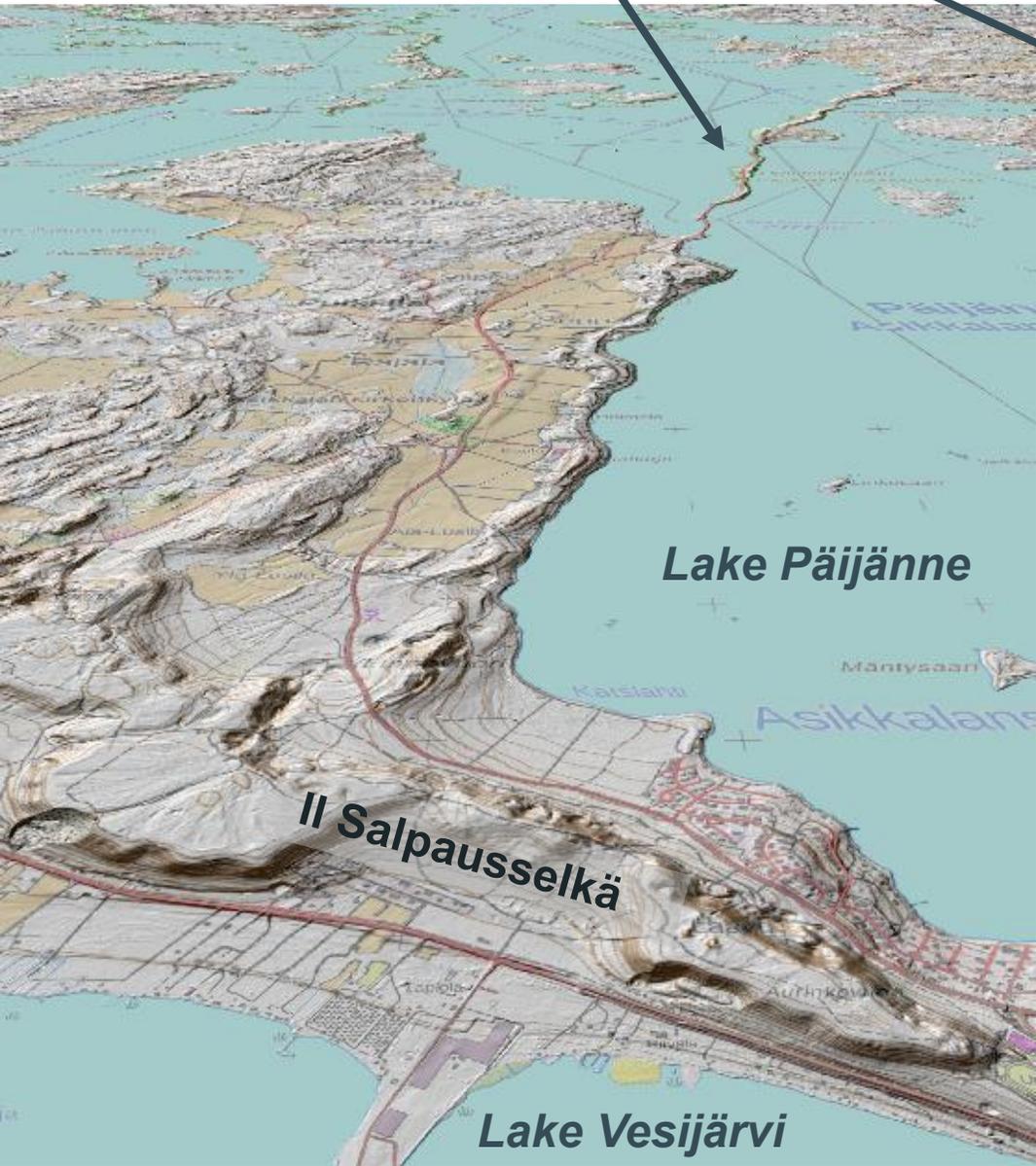


Photo: Municipality of Asikkala

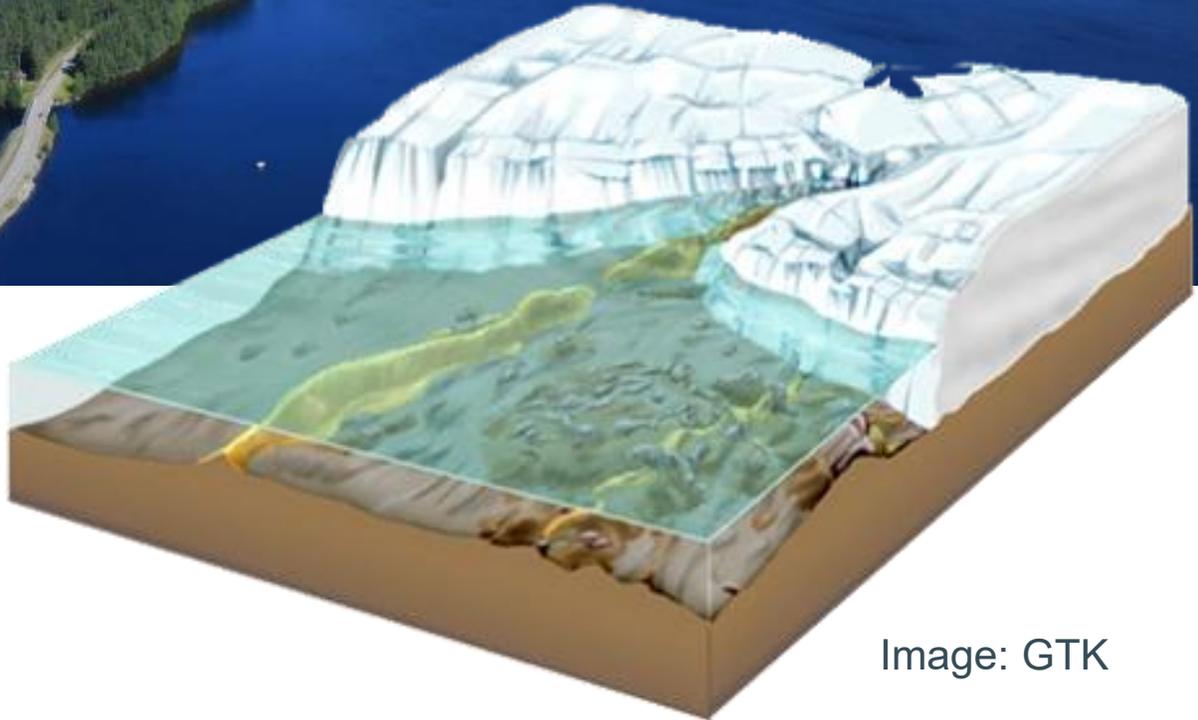


Image: GTK

Heinola city centre at the crossing of river Kymijoki and Heinolanharju esker

- National Urban Park
- Municipal plan
- Partly: Built Cultural Heritage site of national significance

Heinolanharju esker

Jyrängönkoski rapids



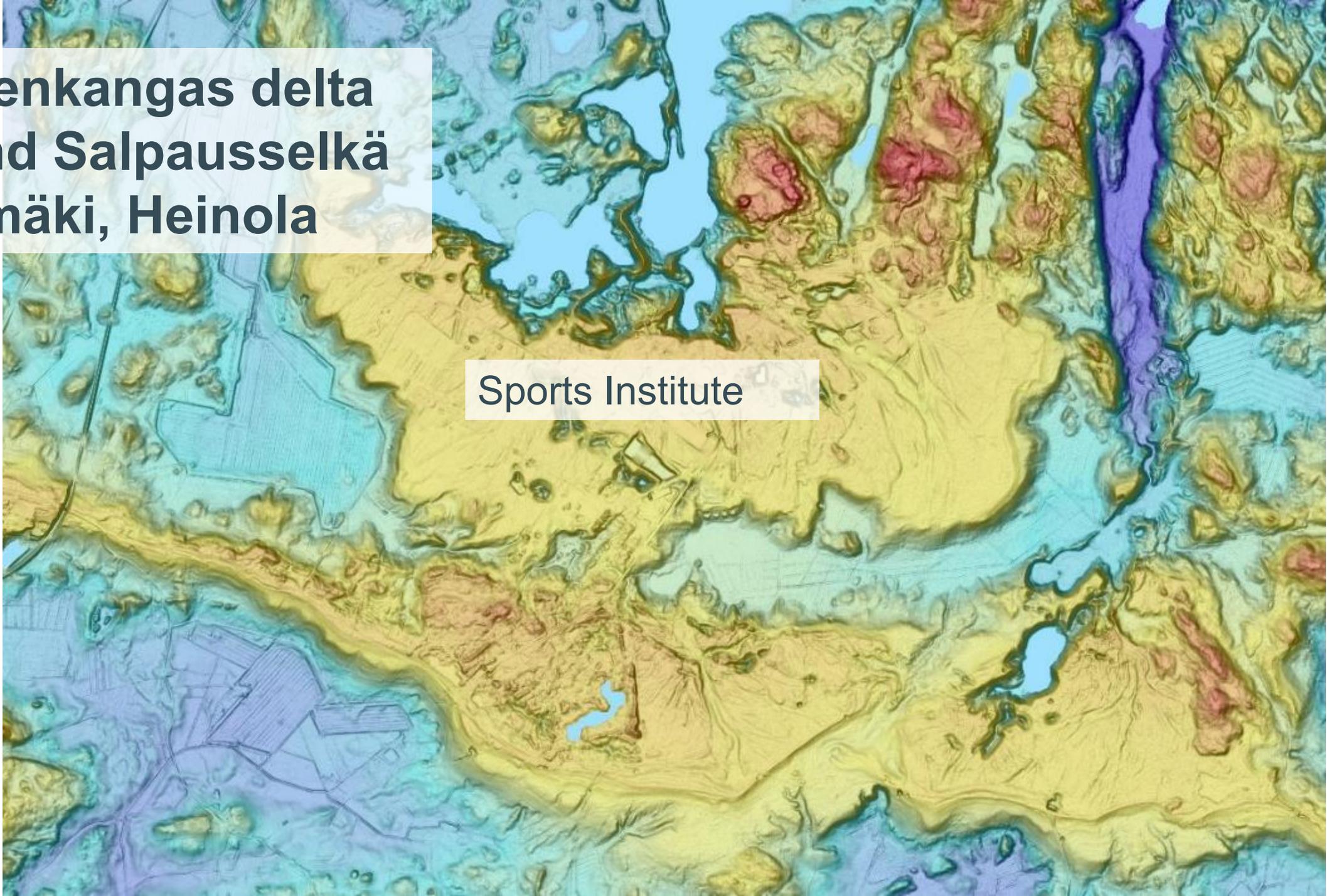
A photograph of a dirt path winding through a dense forest of tall, thin trees. The path is made of dirt and leads towards a group of people in the distance. The forest is lush with green foliage and moss on the ground. The trees are tall and thin, with dark trunks and green leaves. The sky is visible through the canopy, showing a bright blue color. The overall scene is a peaceful and scenic view of a forest path.

Vierumäki area at Second Salpausselkä, Heinola

- Partly: National Esker Conservation Programme
- Partly: Built Cultural Heritage site of national significance
- Municipal plan

Vierumäenkangas delta of Second Salpausselkä in Vierumäki, Heinola

Sports Institute



Padasjoki municipal centre between lakes Kirkkolammi and Päijänne



Päijänne National Park

Lake Päijänne

Kullasvuori hill and
Padasjoki harbour

- Municipal plan

Esker island Kelvenne in Päijänne National Park, Lake Päijänne, Padasjoki

- National Park
- Natura 2000
- National Esker Conservation Programme



Photo: Tea Karvinen



Photo: Jari Väätäinen, GTK

Sysmä municipal centre by lake Päijänne

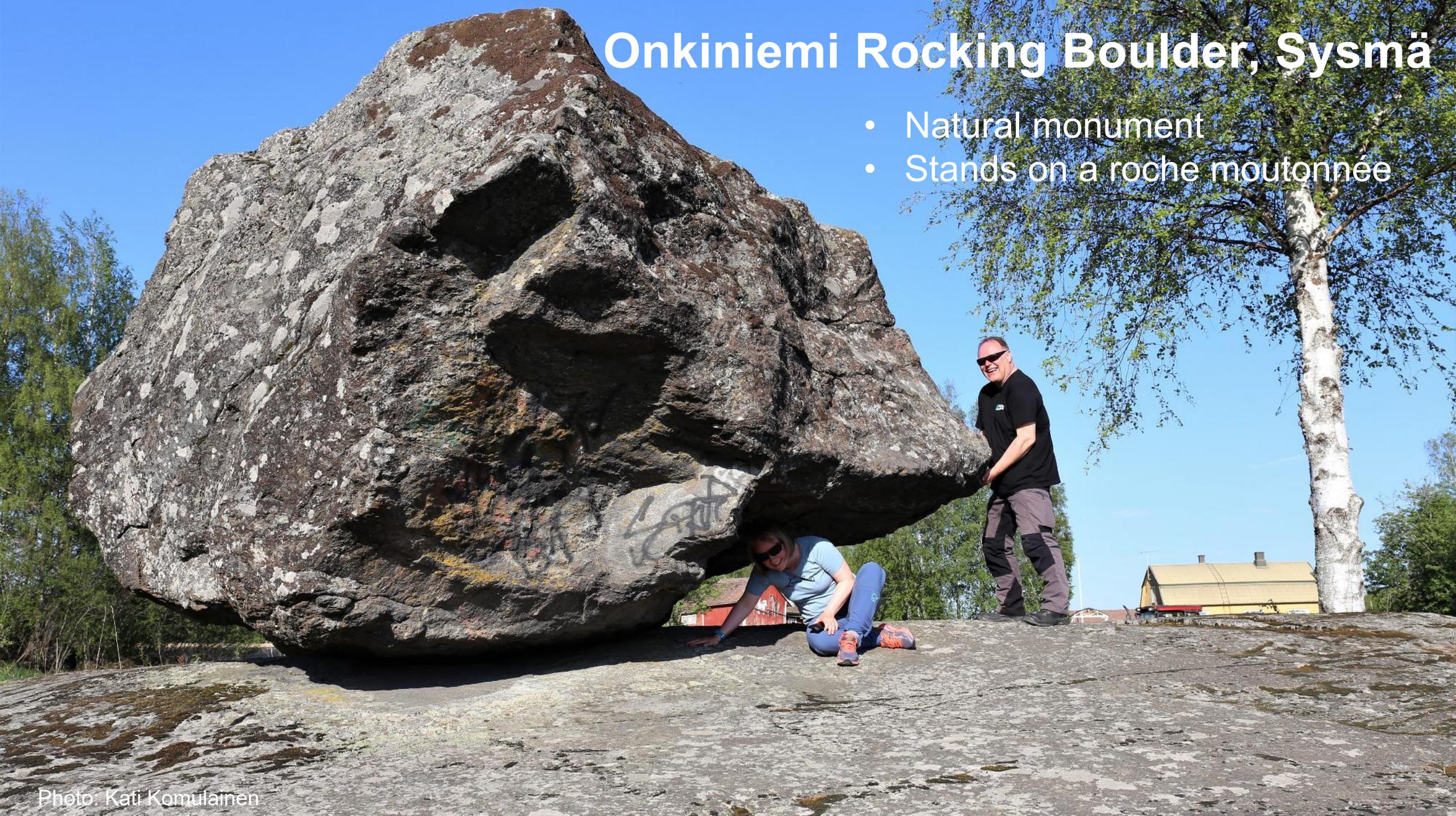


Kammiovuori hill, Sysmä

- Natura 2000
- Nationally Valuable Rocky Outcrop area

Onkiniemi Rocking Boulder, Sysmä

- Natural monument
- Stands on a roche moutonnée



Geopark Management - Let's Work Together!

- Management and coordination by Salpausselkä Geopark team: an independent unit within the regional tourism company Lahti Region Ltd (Visit Lahti)
 - Owned and funded by the municipalities
- Site management and maintenance are taken care of by the landowners!
- The work of the geopark is based on collaboration between the municipalities and on cooperation networks
- Important partnerships within the geopark territory include
 - Metsähallitus Parks & Wildlife Finland
 - Other landowners
 - Educational institutions
 - Private companies and NGO's

Further information

Salpausselkä Geopark:

www.salpausselkageopark.fi / www.visitlahti.fi



Global and European Geoparks Network:

<https://en.unesco.org/global-geoparks>

<https://globalgeoparksnetwork.org/>

<https://www.visitgeoparks.org/>

<http://www.europeangeoparks.org/>



unesco

Global Geopark

Finnish Geoparks:

<https://geoparksfinland.fi/>

Rokua Geopark <https://www.rokuageopark.fi/fi/koe>

Lauhanvuori-Hämeen kangas Geopark <https://lhgeopark.fi/>

Saimaa Geopark <https://www.saimaageopark.fi/>

Kraatterijärvi Geopark <https://kraatterijarvigeopark.fi/>



unesco
Global Geopark

Thank you!

kati.komulainen@lahtiregion.fi
[#salpausselkageopark](https://www.instagram.com/salpausselkageopark)
[facebook.com/salpausselkageopark](https://www.facebook.com/salpausselkageopark)
Instagram [@salpausselkageopark](https://www.instagram.com/salpausselkageopark)
www.salpausselkageopark.fi

Photo: Markus Hänninen