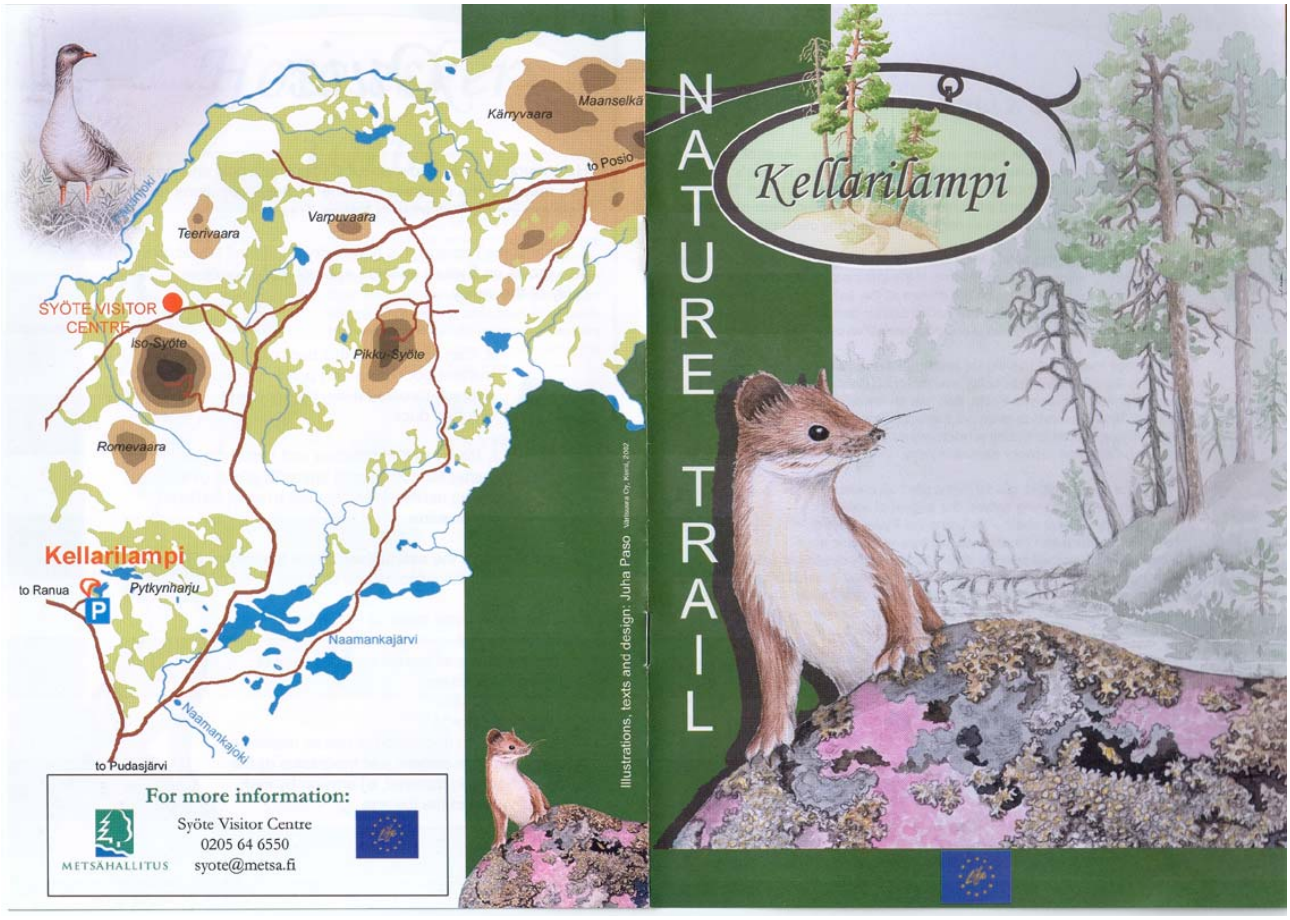





## How Syöte's landscapes were formed

The rocks of the Syöte region are extremely ancient. Much of the local bedrock was formed over 2,500 million years ago, and the area's granitic-gneiss outcrops are among the oldest rock formations in the world. The rocks visible here now are in fact the roots of ancient mountains which once stood many kilometres high, but have now been eroded away over millions of years.

But many of the Syöte area's most interesting geological formations only date back a few thousand years, to the end of the last ice age. After the continental ice sheet melted, Syöte lay on the shores of the vast Anclyus Lake. Ancient raised beaches formed during this period can be clearly seen on the southern slopes of eskers at Pytkynharju and Naamankaharju.

The heavy masses of moving ice reshaped the landscape, alternately eroding the ground or depositing new material. Glacial moraine is the most common soil type around Syöte, and has an average thickness here of 4-7 metres. Moraine tends to even out the landscape by filling hollows and valleys. Traces of glacial erosion are most easily seen up on the hilltops and in rocky rupture valleys.

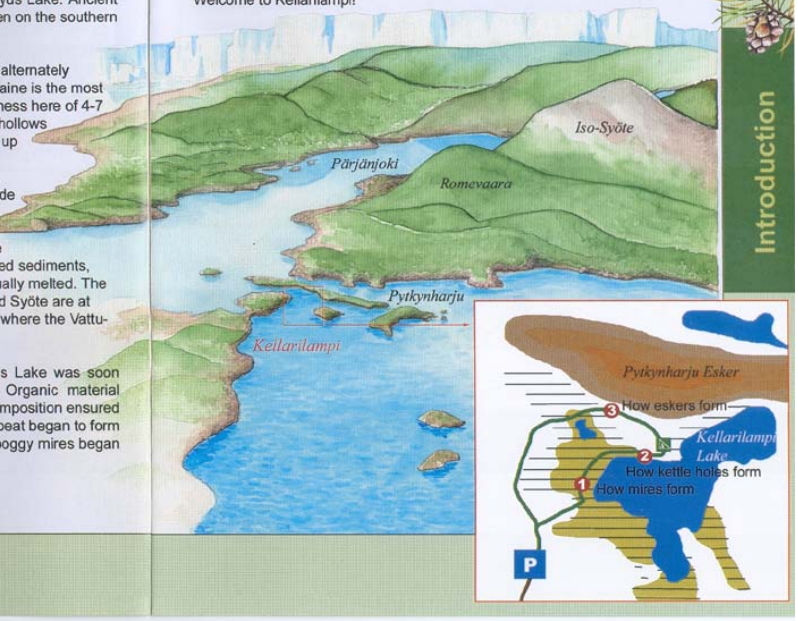
As the ice sheet melted, glacial rivers piled up material inside the ice in places, forming eskers, the largest of which form the Rytinkijärvi esker chain – including the Pytkynharju Esker which can be seen on this trail. In places, huge blocks of ice remained isolated amongst the newly deposited sediments, forming deep hollows known as kettle holes as they eventually melted. The best examples of valleys eroded by meltwater rivers around Syöte are at Portinkuru Gorge and Vattukuru – the Raspberry Ravine – where the Vattukuru Nature Trail runs through a striking overspill channel.

The bare soil exposed by the ice sheet and the Anclyus Lake was soon colonised by vegetation after the end of the ice age. Organic material gradually accumulated in the soil. In drier areas, rapid decomposition ensured that the organic layer remained thin, but in damper places peat began to form where decomposition was slow. The region's forests and boggy mires began to form.

The Kellarilampi Nature Trail is 900 metres long. Three notice boards along the trail describe how the area's mires, kettle hole lakes and eskers have been formed. A shelter by the lake is a good spot for a break. In summer the trail is suitable for the disabled.

The illustration below shows how Syöte would have appeared just after the ice had receded at the end of the ice age, during the Anclyus Lake stage, almost 10,000 years ago. A special quiz at the end of this booklet tests your knowledge of the area's geology and nature.

Welcome to Kellarilampi!




Introduction

# How mires form

Soon after the end of the ice age, the area now known as Kellarilampi Mire emerged from beneath the sea as the land rose. Plants soon occupied the fringes of the marshy pools of this new wetland.

Peat began to form as the pools gradually became overgrown, with sphagnum mosses and sedges accumulating. Paludification – the process of peat formation – is the defining characteristic of a mire. Once the process has begun, it can be self-perpetuating. As the water table rises, mires spread.

There are many different kinds of mires, and mires evolve over time. At first, Kellarilampi Mire was dominated by sedges, and richer in nutrients than it is today. But as the peat thickened, the supply of nutrients declined, and the mire became an open bog. This trend has been continuing, and there are signs that Kellarilampi Mire is becoming a nutrient-poor raised bog.

**Aapa mires and raised bogs**

Mires are commonly classified according to their structure (aapa mires, raised bogs), or their vegetation (open mires, pine mires, spruce mires). Open aapa mires – which are flat, or slope gently down towards their centres – are widespread in northern Finland. Convex-shaped raised bogs are more common further south. Since their water comes only from the rain and snow, rather than in runoff from the surrounding land, raised bogs are very poor in nutrients.

1

# Kettle hole lakes

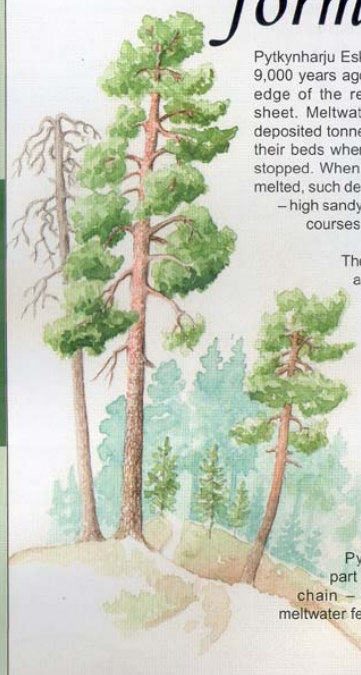
Kettle holes are striking features formed at the end of the ice age by huge remnant blocks of ice. Several kettle holes can be seen near the trail around Pytkynharju Esker.

As the main ice sheet receded, isolated ice-blocks were often left behind amongst or beneath the masses of sand and gravel deposited by raging meltwater rivers. When the blocks eventually melted, steep-sided hollows formed in their place.

Mires often form in the bottoms of these hollows, or they can fill with water – becoming kettle hole lakes.

2

# How eskers form



Pytkynharju Esker was formed just over 9,000 years ago, when Syöte lay at the edge of the receding continental ice sheet. Meltwater rivers within the ice deposited tonnes of sand and gravel on their beds wherever the flow slowed or stopped. When the ice sheet eventually melted, such deposits were left as eskers – high sandy ridges winding along the courses of the former rivers.

The sediments within eskers are naturally sorted according to the speed of the river flow – into sand, gravel and pebbles. The sands and gravels in eskers are valuable raw materials, but esker landscapes with their picturesque pine-clad ridges are very much part of Finland's natural heritage, and are widely protected.

Pytkynharju Esker forms part of the Rytinkijärvi esker chain – the only major glacial meltwater feature in the Syöte area.

3

# Quiz

How much do you know about Syöte's geology and nature? You may find the answers to some of these questions as you walk around the Kellarilampi Nature Trail.

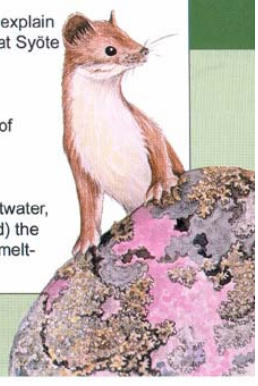
1. What is the name of this typical dry heathland flower, which also grows on Syöte's eskers? a) heather, b) bogbean, c) lily-of-the-valley

2. Can you identify this bird, often seen on nutrient-poor lakes and ponds around Syöte? a) black-throated diver, b) goldeneye, c) tufted duck

3. Rocky raised beaches and scree slopes provide shelter for many small animals. Which of them is shown here? a) red squirrel, b) stoat (ermine), c) wolverine

4. Choose one of the alternatives below to explain how each of the following natural features at Syöte were formed:
- eskers and kettle holes at Pytkynharju
- Iso-Syöte Fell
- The long piles of stones on the slopes of Pytkynharju Esker
- Kellarilampi Mire
- Portinkuru Gorge

a) wave action, b) deposition in glacial meltwater, c) tectonic uplift in ancient fold mountains d) the build-up of organic material, e) erosion by meltwater at the end of the ice age



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Test your knowledge