

UURO CIRCUIT



Photo: METLA

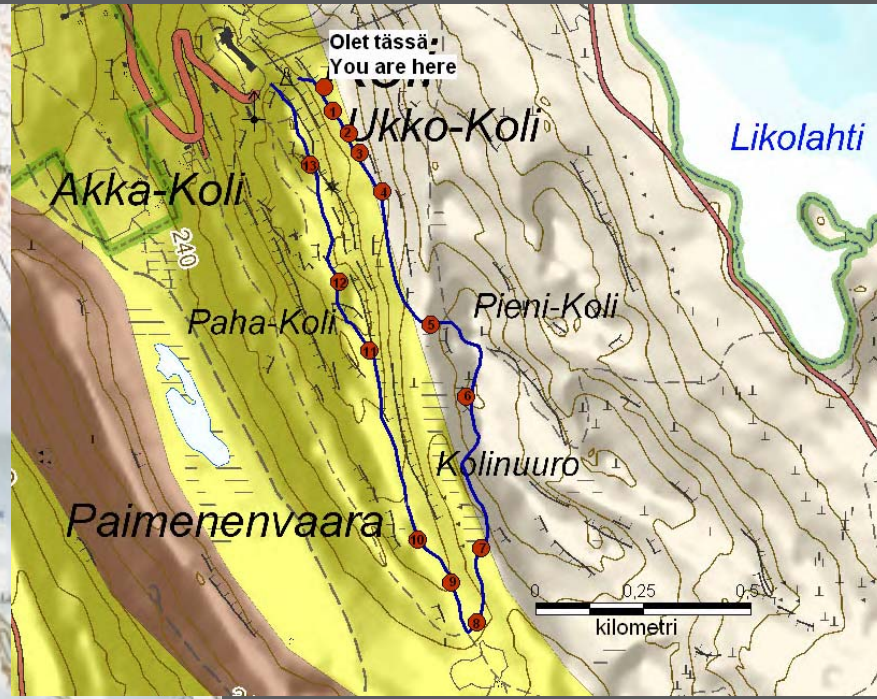
In the Koli area there are many geological formations that have played a central role in the formation of the Earth's crust. They make the area significant even globally. In the bedrock and soil you can see signs of ancient deserts, oceans, mountains and continental glaciers. The oldest parts of the landscape are almost 3 000 million years old but the youngest parts were formed only a few centuries ago. The Earth changes constantly. These changes are very slow compared to a man's lifetime, but time is endless for nature. Time is the landscape's fourth dimension.

This is the starting point of the Uuro circuit. There are 13 information signs along the path. The geological information points give an overview of the bedrock and soil found in the Koli area. In route you will also find some other information about the nature of the area. The **Geological map and handbook**, published by The Geological Survey of Finland (GTK), offers more information about the unique landscape of the area (the information points G1–G28 can be seen on the next map).

The Uuro circuit is about 3.5 km. It goes round the Kolinuuro valley, the tops of the Pieni-, Paha- and Ukko-Koli hills and back to the Ukko Heritage Centre. The difference in elevation between the highest and the lowest points of the route is 112 m. Thus, although the circuit is short, it is demanding. You can walk the trail in ordinary shoes, though. At each crossroads the trail is clearly marked with blue-tipped sticks with a picture of a cone.

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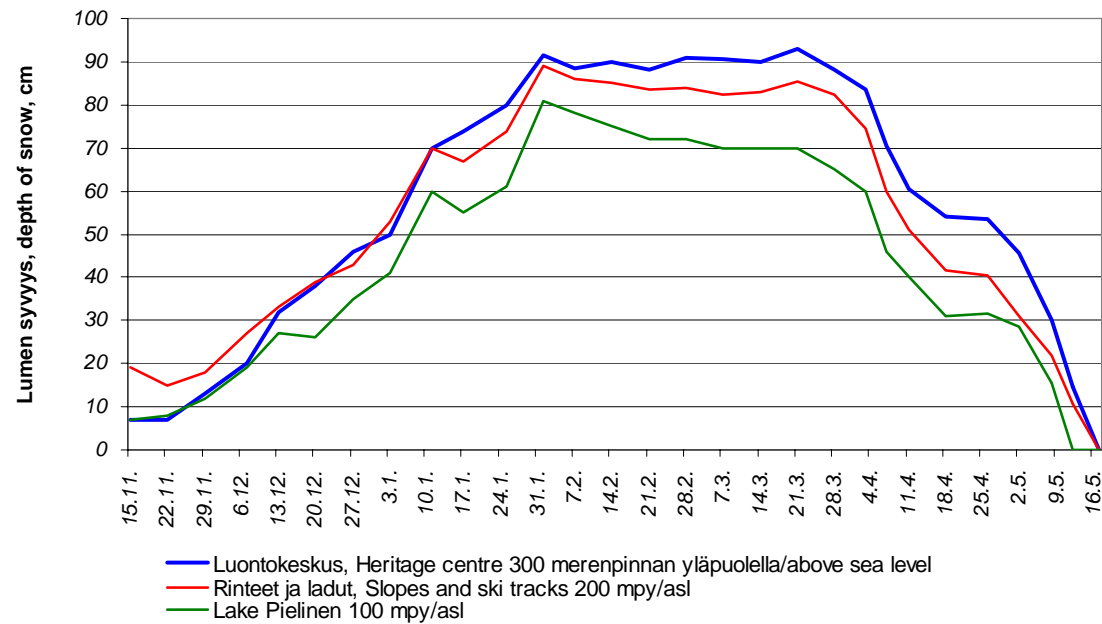
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Photos: METLA

SNOWY HILL TOPS



Crown snow load refers to snow, ice and frost that stick to trees and pile up. The crown snow load develops when the moist mass of air cools as it rises along the slope of the hill, condensing the water vapor into rain and frost, which then sticks to trees. In the Koli area the crown snow load develops regularly on the hills over 210 m above sea level.

In the winter 2004–2005 there was most snow during the January–March period. Snow depth increases with altitude.



THE CROWN SNOW LOAD SHAPES THE LANDSCAPE OF THE HILLS



There are many fallen and broken trees along the trail. They are mainly the result of exceptionally bad snow damages that were incurred during the winter 2004–2005. The Finnish Forest Research Institute measured snow damages of up to 250 m³/ha in one area.

At worst, there can be several tons of snow on the canopy of a middle-aged spruce. Therefore, it is more or less natural that damages occur. On the top of hills the effects of crown snow load are reinforced by the wind. The thinness of the soil on the rocks and the lateness of soil freezing in the fall mean that trees are unable to anchor themselves firmly to the soil, making them more vulnerable to snow damages.

Photo: METLA



CHRONICLES OF THE LANDSCAPE

The national landscape at Koli is like a chronicle of the development of the Earth. The top of the Ukko-Koli hill behind you is quartzite, ancient sand from the sea-bed, which stratified about 2 300 million years ago. The bedrock here is sand sedimentation and is an archaic granite-gneiss area, representative of an ancient continent about 3 000–2 600 million years old. The area continues across the lake far into the horizon.



Photo: METLA

The small islands (Pieni-Hölö, Iso-Hölö and Sikosaari) in Lake Pielinen near the shores of Koli are dark vein. Molten rock material crystallized into dark vein and mixed with older rock types 2 200 million years ago. Behind the little islands you can see a chain of ridge islands cutting across the Lake. They were formed about 11 000–12 000 years ago, at the end of the last Ice Age, and are made of layers of ridge gravel deposited by a glacial river. The organic layers of mires are younger. Thus the national landscape of Koli reflects more than half of the Earth's evolutionary

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THE CIRCLE OF LIFE

Snow damages the trees of a hilly landscape, but some organisms are dependent on damaged and dead trees.



Photo: METLA/Erkki M. Oksanen

The red-belted polypore (*Fomitopsis pinicola*) decays wood. It lives in damaged or dead conifers and deciduous trees. When the polypore is young, its upper side is reddish and when it is older the upper side is dark grey or black. Underneath the polypore is cream in colour.



Photo: Markus Varesvuo

The three-toed woodpecker (*Picoides tridactylus*) is a species native to the taiga forest and lives in elderly conifer-intensive forests. It prefers to eat the larvae of bark beetles, which it finds by barking trunks of dead conifers. Usually Finnish woodpeckers have four toes but the three-toed woodpecker is an exception. The female has a dark crown and the male has a yellow one.

Photo: METLA/Erkki M. Oksanen



The spruce bark beetle (*Ips typographus*) breeds in enfeebled standing trees, windfalls, snow break-downs and fresh timber. If the spruce bark beetles are plentiful, they can also spread into healthy spruces. The patterns eaten by the beetles and their larvae cut the fluid flows in the phloem of the tree, obstructing the flow of nutrients to the top of the tree and causing the tree to dry out. If the patterns reach around the tree, it dies.



KOLINUURO – A FORMER MEADOW BETWEEN HILLS

Kolinuuro, a mire situated between the hills, has never been used in forestry because the transportation of timber would have been very difficult on the slopes of the hills. Instead it has been utilized as a natural meadow between 1850–1930, when two farmer families collected grasses and sedges for their cattle.

According to the Finnish Forest Research Institute's inventories (1936 and 1996), the northern part of Kolinuuro mire is very nutritious peat land, where a natural mixed forest grows quite well. The ditching carried out in the southern part of the mire has lowered the water table here too and consequently the forest has become thicker during the last few decades.



THE PIENI-KOLI HILL AND ANCIENT UPHEAVALS

The Kolinuuro area, which opens up ahead, is a contusion zone in the bedrock and a significant geological interface. The rocks of the Pieni-Koli hill are archaic granite but the top of the Paha-Koli hill is quartzite, which is over 300 million years younger. The Kolinuuro was formed where the unbending rocks have moved with respect to each other. The ice sheet gave the finishing touches to the form of the canyon. The ice cleaned the canyon of broken rocks and weathered materials, mined the fragile edge of the quartzite precipice and transported the blocks of quartzite to the granite rocks of the Pieni-Koli hill.

The details of how archaic rocks were formed are not known. As early as 2 600 million years ago they were almost the same as they are today and they formed a base for stratifying quartzite. The stratification of quartzite and the birth of veins are related to series of events which lasted for hundreds of millions of years. In the first stage, the ancient continent cracked and the crack opened up becoming an ocean. This stage was followed by a collision of the lithospheric plates. With this the sea closed and a high mountain range was formed along the collision joint.



Photo: METLA



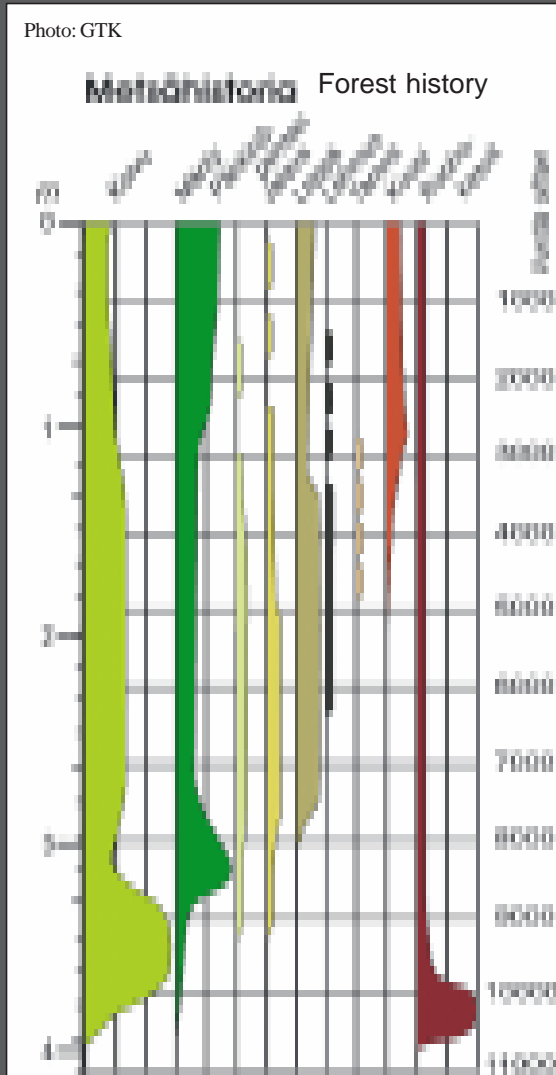
Photos: GTK

Try out!

Shout and the echo will answer you. The echo here is excellent due to the hard surfaces, especially in calm weather.



KOLINUURO – A NATURAL MIRE



The Kolinuuro mire has developed in a narrow and craggy rock valley and is typical of this area. It is a small aapa mire, which slopes to the South and gets its nutrients from the surrounding rocks. The most impressive part of the mire is its southern end, which is nearly open. It is not entirely in a natural state, since it has once been ditched in its southern part. This has dried and changed the vegetation at the edge of the mire.

The Life to Koli –project, which is restoring the Natura 2000 areas in Koli National Park and is partly funded by the EU LIFE-fund, dammed up the ditch of southern part with three beaver-like dams in 2003. The mire's water table has since risen about 30 cm and the mire is slowly beginning to revert back to a natural state.

The forest history of the area is recorded in peat layers. Different plant species' pollen is found from varying depths. Plantspecies from left to right: birch, pine, hazel, elm, alder, lime, oak, spruce, grass vegetation. The number scale on the right stands for years ago.



RICH MORAINE AND SLASH-AND-BURN SOIL

The rowan growing here suffers from snow damages. This is an old slash-and-burn area. The undrained and nutritious till has been well suited for slash-and-burn cultivation. The area has not been cultivated since the 1920s and thus the trees have returned and it has become forested.

If you wish to see what a traditional landscape looks like when it has been carefully maintained, turn left at the next crossroads and continue for about 50 m. You will come to the Mäkränaho clearing, which the Finnish Forest Research Institute mows every year. Note, however, that the Uuro circuit continues in the direction of Ukko-Koli hill, i.e. to the right at the crossroads.

Photo: I. K. Inha 1895



EROSION – A THREAT TO THE TRAILS ON THE HILLS



Different surfaces and soils wear differently. This is why the trails look very different and there are great differences in their condition depending on where they are. The trails on the slopes in the National Park are especially vulnerable to erosion, because the rains and the large amounts of melting snow carry the loose soil. The trails are also worn by the many visitors walking them, as is the forest vegetation at the scenic points in the Park.

Here the effects of erosion have been repaired and prevented by making the back of the trail round. This leads the water to the ditches and prevents it from running along the trail. The latest measures have been taken in 2005. Good trails improve the sustainability of the nature in the National Park.

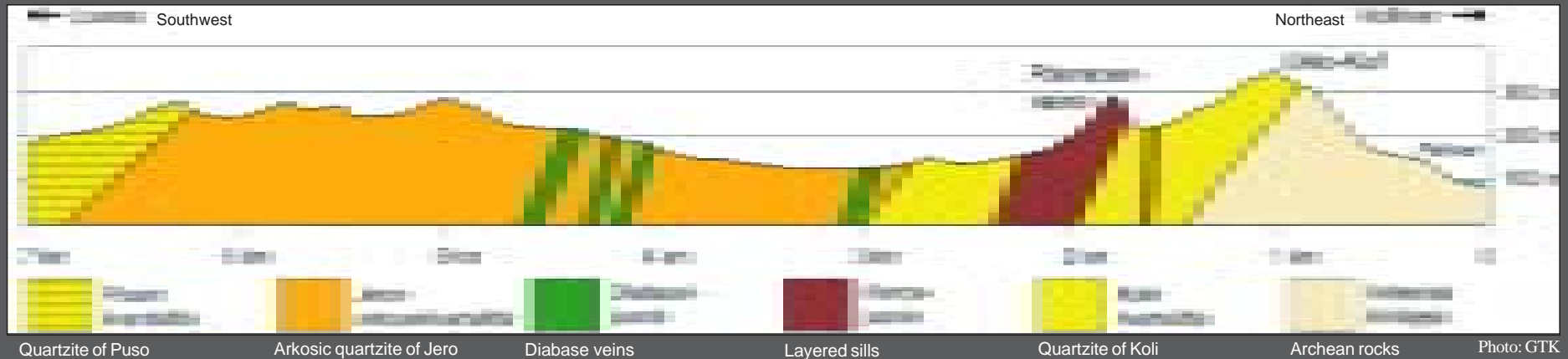
A trail suffering from erosion.

Photo: METLA

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THE BIRTH OF THE KOLI BEDROCK



The quartzite of Koli is sand that stratified 2 300 – 2 000 million years ago on the ancient continent and its coastal area. Looking from the North-East to the South-West, the strata become younger and were shaped into their present form 1 930–1 880 million years ago, when the lithospheric plates collided and the chain of mountains was formed. The quartzite of Koli contains a bluish mineral called cyanite. The air pressure must be 3000 and the temperature 300-500°C for it to be formed. Cyanite is evidence that the quartzite rocks have been formed at a depth of 10 kilometers, at the foot of the ancient mountain chain.

About 50 m North of here by the side of trail you can see a rock surface where the cyanite is visible. The deposit is beside the rock stairs and it is clearly marked with a blue stick. The quartzite rocks that have been formed deep in the Earth have been exposed through erosion. The hilly landscape of Koli is a consequence of the differences in durability of various types of rocks. Thus, the differences in altitude do not reflect the shapes of the ancient mountain chain.



THE PAHA-KOLI HILL AND THE COURT STONES

There is an old legend about the depths of this magnificent cliff. The elders of the Lapp Siida (a small hunting community) would gather here on a circle of probably twelve stones to conduct a court hearing and pronounce judgement. If the court could not agree whether the accused was guilty or not, it was left to the gods to decide. The accused was thrown down from the cliff. If he died, his guilt was proven. If, however, he survived, this miracle was a clear sign that he was innocent.



The community also undertook the social care of its members, controlling the number of the small society. The society decided whether the born child was fed or abandoned. If an elder was unable to hunt, he might choose to die and thus be thrown over the cliff, having first been guest of honour at his own funeral rites.

Photo: METLA



TRACES OF A GLACIER IN THE ROCK

During the last ice age, the ice sheet flowed in the Koli area from North-West to South-East. Rock material moved along with the water, grinding diverse signs of erosion (striations, furrows, groove and breakage surfaces) into the rock under the glacier. Signs of wear can be found everywhere in the National Park but the glaciated rock surface of Paha-Koli hill is especially impressive.

**Climb the rocks and find signs
of the ice sheet yourself!**



THE NATIONAL LANDSCAPE OF KOLI – ELEMENTS OF NATURE

All the basic elements are visible in the national landscape of Koli: **earth, air, water and fire**. The solid, more than 2 billion-year-old white quartzite underfoot represents earth. The sky above and the distant horizon, over 70 km from here, define the element of air. Geologically speaking, the whole national landscape of Koli is shaped by water. Water is visible in different forms – the open sea of Lake Pielinen, the white clouds and snowy trees – these are all well-known symbols of Koli. The element of fire – energy – is represented by the diversity of living nature: trees, bushes, lichens growing on rocks, and even the nature tourists who stand on the rocks admiring the landscape.

Photo: METLA

