LAHEMAA
National Park
on North Estonian Klint

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Soesoo, A., Miidel, A. 2006. Põhja-Eesti klint. Tallinn.

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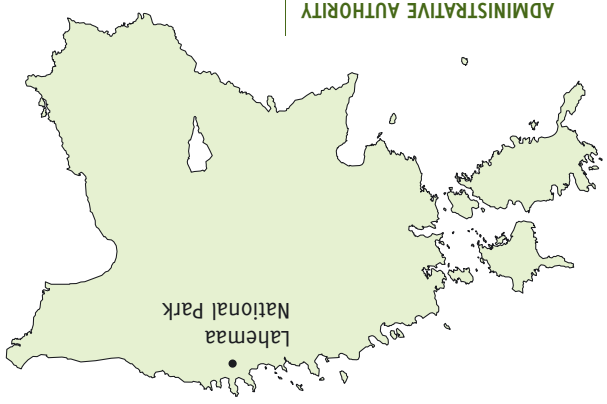


DOS AND DON'TS FOR VISITORS

- You can move about on private land from sunrise to sunset unless you do damage to the landowner. In case the private land is fenced or marked, you will need the landowner's permission.
- Drive your motor vehicle only on the provided roads and park it only in the car park.
- Put up your tent and make a fire only in the prepared and marked places. At the time of wildfire hazard, it is forbidden to make an open fire, even on special grounds.
- You can pick berries, mushrooms and other forest goods in the national park.
- Try to act without leaving traces in the nature.

When you see damage done to the nature or visiting objects, inform the Environmental Inspectorate by phone 1313.

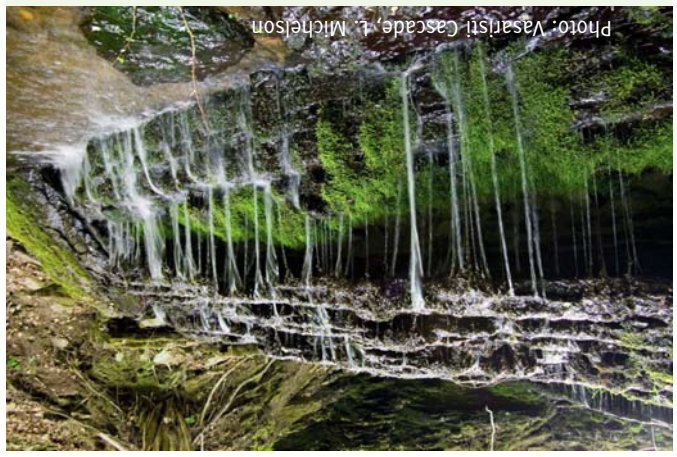


Photo: Vasaristi Cascade, L. Michelson

The **Pudisoo Klint Valley (3)** between Muuksi and Kolga Klint Capes is mostly buried under the Quaternary sediments. Sediments have also buried the Kolga-Aabla Ancient Valley on the north coast of the Klint bay, and the valley is not any more traceable in the landscape.

On **Kolga Klint Cape (4)** about five kilometres afar from the Kolga Bay, the Kolga Manor and the ruins of the former Cistercian monastery are located. Between Kolga Klint Cape and the Kolgakülla Klint Peninsula the **Liidiküve Klint Bay (5)** cuts into the limestone plateau but it is mostly buried by sand and is not traceable in the topography. A small sandstone terrace protrudes from the north-western tip of the **Kolgakülla Klint Peninsula (6)** at approximately 40 metres above the sea level; a limestone escarpment lies under a thin layer of residual soil at 50 metres above the sea level. A magnificent view over the North Estonian klint zone and the forests of Kõrvemaa opens from the edge of the escarpment at the Kolgakülla Community House. The **Valgejõgi Klint Bay (7)** to its southeast is a 1–2-kilometre-wide ancient valley. The Valgejõgi River valley follows its ancient predecessor at north of Nõmmeveski and in the southern part of the klint valley. At Nõmmeveski, it has cut an up-to-15-metre-deep canyon into the bedrock and drops over the 1.2-metre-high Nõmmeveski waterfall. The Vasaristi Stream, which descends into the klint valley from the southern bank of the Valgejõgi Klint Bay, falls over the three-step Vasaristi Cascade.

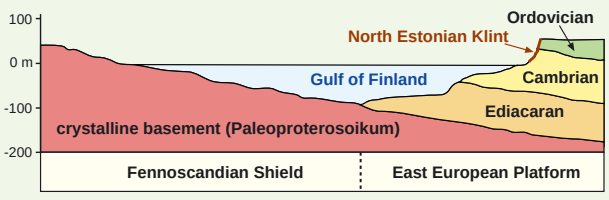
Joaveski Klint Cape (8), which is mostly buried under the sands of the Littorina Sea and is therefore hardly traceable in the topography, encompasses an area of a few square kilometres between the rivers of Valgejõgi and Loobu. Only at Joaveski and Nõmmeveski, where the Loobu and Valgejõgi Rivers descend into their respective


Photo: Cave of Turjekelder, R. Kotter

Division of the Baltic Klint („Põhja-Eesti klint", Tallinn 2006, drawing 3)

Looking afar from the sea, North Estonia's coast seems as a dark wall with, if you observe it closer, greenish, dark brown, yellowish and whitish stripes. **This is the North Estonian Klint or steep cliff coast – one of the most remarkable nature monuments in Estonia and in Northwest Europe.** The North Estonian Klint is a part of the 1,100–1,200-kilometre-long Baltic Klint, which runs on the borderline between the Fennoscandian Shield and the East European Platform. The klint between Osmussaar Island and Narva is 650 kilometres long.

The human eye associates the klint most often with coastal terraces and escarpments. However, a klint is a big system of escarpments and terraces, islands and capes, bays and valleys, which may run on land or at the sea bottom, be bare or overlaid with sediments. The North Estonian Klint is a unique border margin between two expansive structures of the Earth's crust – the hard crystalline rocks of the Fennoscandian Shield and the softer sedimentary rocks covering the East European Platform. Thus, northwards, e.g. in South Finland, we can see crystalline rocks on land, although the klint itself is the northernmost edge of a large platformal structure. The sediment layers have shifted southwards.



Position of the North Estonian Klint in section at the Gulf of Finland („Põhja-Eesti klint", Tallinn 2006, drawing 4)

The geological section of the klint is quite simple: the Cambrian and Ordovician clays, sandstones and argillites lie beneath and are covered with the Ordovician dolomites and limestone. The rocks may be 540–460 million years old. The klint's upper part is thin and comprises hard rocks, while the lower part consists of softer rocks. This is well visible from the outside: the hard rocks seem to hang as a cornice above the softer and more easily worn rock strata.

The height of the klint increases from west to east. The klint is divided into klint capes with klint bays of different shape and width between them. The **klint capes** follow the drop of bedrock mostly in the north-west–south-easterly or north-southerly direction with an escarpment at their north-western end. In the direction from north-west toward south-east, their height usually decreases and the limestone cliff either disappears or discontinues. The **klint bays** are comprised by old river valleys which used to flow here before the Quaternary Period. Given the movement of glaciers, the width and depth of the valleys have changed into their present form. The present rivers in the klint bays are much younger, rich in waterfalls, and have engraved deep valleys. The klint bays have been filled with Quaternary deposits of different age and origin. The ranges of the coastal formations of the Baltic Sea often run across the bays.

Proceeding from its constructional and regional peculiarities, the North Estonian Klint is differentiated into nine sections, three of which lie in the area of Lahemaa National Park (72,500 hectares), being, from the west to east, the **East-Harju, Lahemaa and West-Viru Klints.** The 70-kilometre-long Lahemaa Klint section encompasses the major part of the national park in an area between the Muuksi Klint Cape and the Palmse Klint Valley. The klint section is characterized by partly or fully buried, strongly indented and rather

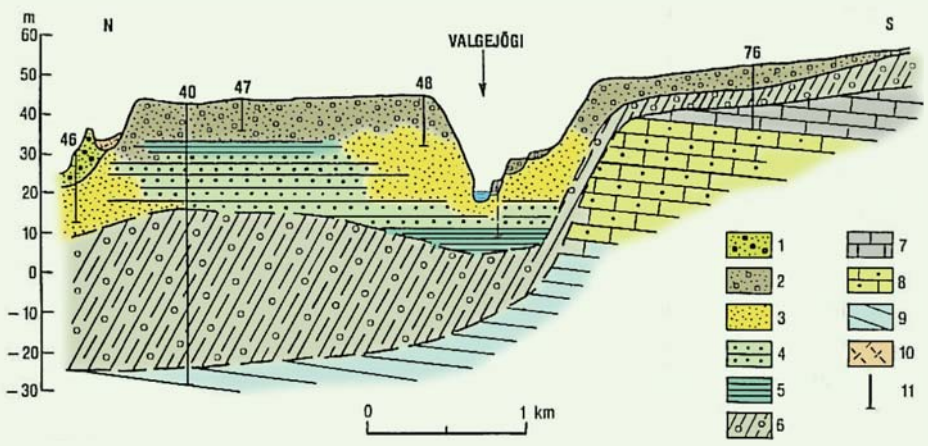

Photo:Limestone out-cropping at Nõmmeveski in Valgejõgi River Valley, K. Kingumets

gentle-sloping off-sea escarpments. The klint is best observable from the tops of Capes Muuga and Kolga, where the relative height of the klint is the biggest, reaching up to 30 metres. In the Valgejõgi River Valley and at Nõmmeveski, the bedrock, characteristic of the klint, crops out.

The landscape's indentation has played an important role in the development of the permanent human settlement in Lahemaa. The ancient area of population covers the spring-rich alvars not far from the klint. These alvars with thinner or thicker layers of residual soil, covered with sparse forests and shrubberies, were, thanks to their high content of humus and nutrients, well used as grasslands and fields.

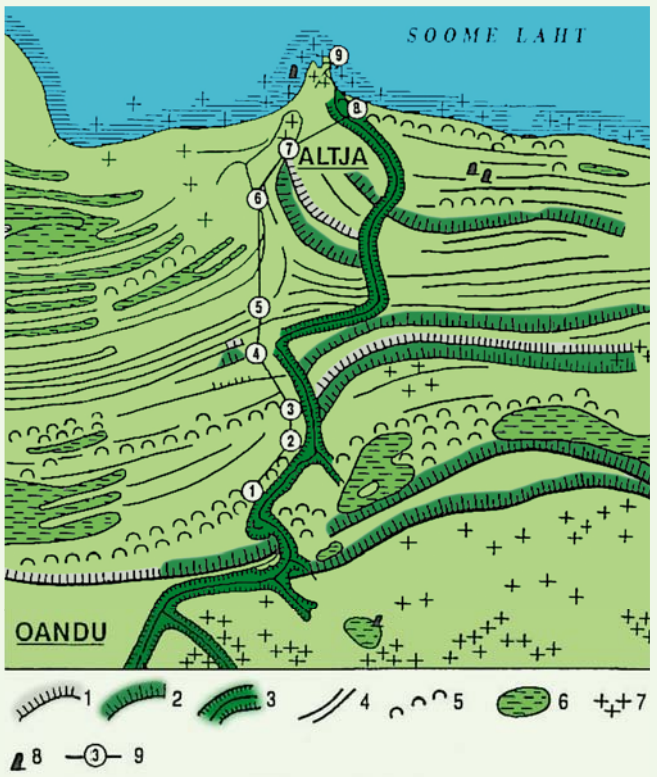
Klint forests have spread anywhere here where man and saw have not reached. Ferns and honesty thickets grow and hops crawl on tree trunks like lianas in the mixed forests where broad-leaved trees prevail and the soil is moist and rich in minerals.

Fourteen smaller morphological units can be differentiated in the Lahemaa subsections of the North Estonian Klint. **Tsitre Klint Island (1)** on the border of the East Harju and Lahemaa Klints boasts an up-to-15-metre-deep gully descending from its northern slope with the six-metre-high escarpment of the Turjekelder Waterfall and the cave of the same name. Estonia's largest ancient burial field – Hundikangrud (*Wolf's Heaps*) – is located on the main plateau of the klint island. To the east, **Muuksi Klint Cape (2)** lies where the Middle Ordovician limestone stratum opens under the thin soil. An Ancient Estonian fort was located here from the second half of the 1st millennium BC to the end of the Viking period in the 11th century. It was protected from three compass points by natural escarpments or the klint, and from the fourth point by a wall.



Drawing: Geological section of the Valgejõe-Loobu Klint Bay (by R. Karukäpp and A. Miidel), „Põhja-Eesti klint", Tallinn 2006

1 – sea sands
2 – delta sediments of ice melting water (sand, gravel), ice lake sediments
3 – sand
4 – silt
5 – varved clay
6 – moraine
7 – Ordovician limestone and dolomite
8 – Cambrian and Ordovician sandstone and slate
9 – Cambrian clay
10 – peat
11 – boreholes of Geological Survey of Estonia



Drawing: The relief of the surroundings of Altja, „Põhja-Eesti klint", Tallinn 2006

1 – escarpment
2 – slope
3 – valley
4 – wall of maritime origin
5 – dune
6 – swamp
7 – erratic boulders
8 – large erratic boulder
9 – study trail

Photo: Perennial honesty, R. Lille

ancient valleys, can one see bedrock cropping out in the riverbank escarpments (limestone, sandstone, slate). Nice and sunlit heath pine forests grow on the sandy patches of the klint cape.

The **Loobu Klint Valley (9)**, called by the village of the same name, partly follows the course of the present-day Loobu River. The depth of the rather narrow (up to 500 metres) and gentle-sloped ancient valley is 20–30 metres.

The six-kilometre-long **Ilumäe Klint Peninsula (10)**, stretched from northwest to southeast, is partly buried and runs at the edge of the old and respectable villages of Vatku, Tõugu, Võhma, Ilumäe and Muike in its north. The main plateau of the klint peninsula encompasses an ancient settlement area: stone barrows and burial mounds as well as numerous cupstones have been found here.

The **Palmse Klint Valley (11)** cuts into the klint plateau at Oruveski Artificial Lake, north of the Palmse Manor. The buried ancient valley, trending southeast, joins the Loobu Ancient Valley behind Viitna. About one kilometre north of Oruveski, the Palmse Klint Valley broadens into the Eru Klint Bay, which, running northwest across the Eru Bay and the Pärispea Peninsula, extends its depth up to 140 metres.

The 16-kilometre-long **Sagadi Klint Plateau (12)**, running between Palmse and Vihula, lies mostly 60 and more metres above sea level. The highest point of the North Estonian Klint Plateau, reaching 67 metres above sea level, is also located here, near the Altja crossroad. The Sagadi Klint Plateau and the old coastal formations are well traceable on the 4-7-kilometre-long trail, which goes from Oandu to Altja through a natural forest. The Ordovician escarpment bordering the klint plateau in the north is relatively gentle-sloping but well observable in the topography.

The **Vihula Klint Bay (13)** and the **Karula Klint Peninsula (14)** were probably created by a fault zone, in terms of interruptions in the continuity of rocks. The formation of the Vihula Klint Bay has been affected by the more than 100-kilometre-long Kõrvemaa Fault Zone, which starts near Paide in Central Estonia and cuts into the klint at this place. The Karula Klint Peninsula turns south in an arc shape two kilometres from the North Estonian limestone plateau at the Karula Manor. The Cambrian sandstone escarpment does not follow this change of direction but continues more or less in the original east-westerly direction. The change of direction was probably caused by the Rakvere tectonic fault which cuts into the klint here.