



Protected Natural Objects in  
**IDA-VIRUMAA**

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## ADMINISTRATIVE AUTHORITY OF PROTECTED NATURAL OBJECTS

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ENVIRONMENTAL BOARD

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CENTRE

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Foto: Lynx, C. M. Feršel





Photo: Semicoke hills near Kohtla-Järve, L. Michelson

The landscape of Ida-Viru County (Ida-Virumaa) is diversified. Its northern part lies on the Viru Plateau and on the klint running along the Gulf of Finland. In the south, however, there is the Alutaguse Lowland and the more than 50-kilometre-long shore of Lake Peipsi. The eastern border runs along the Narva River and Reservoir for 77 kilometres. In the south-west and west, there are large areas of forests and wetlands. The county's territory encompasses plenty of lakes, 70 of which are larger than one hectare. Ida-Virumaa is Estonia's most urbanized county: 88% of the population live in the total of seven cities. There are also 16 rural municipalities.

Ida-Virumaa's unique protected areas are situated on the Baltic Klint and in the klint forest, on the sand dunes of the northern shore of Lake Peipsi, on the old rivers and flooded meadows of Narva, in the forests and mires. The county includes five nature reserves, 17 landscape protection areas, 13 Limited Conservation Areas, and 16 protected parks. The following individual objects have been placed under protection: one karst area, two waterfall terraces, seven erratic boulders, one boulder field, and 25 primeval trees and groups of trees. In addition, the habitats of rare species outside the protected areas are preserved.

Several protected areas are parts of the European Natura 2000 network, the objective of which is to ensure the protection of rare or endangered species of birds, animals and plants as well as of their habitats.

It was in 1939 when the first natural object – Oru Park surrounding the then president's of Estonia summer residence – was placed under protection in Ida-Virumaa. In 1938, Estonia's first protected wetlands were established in the Ratva Bog, which is now a part of the Muraka Nature Reserve. Nearly a third of the county's territory is covered with protected areas. Several areas, especially near the cities, for example at Kurtina, are densely visited recreational places. The local nature is also much affected by the mining and processing of oil shale and other mineral resources, and the production of electric power.

Ida-Viru County boasts Estonia's most water abounding river and highest esker and cliff; Estonia's as well as the Baltic countries' highest waterfalls, largest lake district, longest lake and sea sand beaches; and Europe's most powerful waterfalls. Besides, Estonia's largest populations of flying squirrels, willow grouse, and capercaillie are in Ida-Virumaa.



Photo: Northern coast of Lake Peipsi, L. Michelson



Photo: Poruni River, A.-L. Feršel





Photo: Valaste Waterfall, A.-L. Feršel



Photo: Perennial honesty, A.-L. Feršel

### PROTECTED AREAS RELATED TO KLINT

The North Estonian Klint is a part of the 1,200-kilometre-long Baltic Klint, which lies between Sweden and Russia. The Ida-Viru section of the klint is characterised by a quite straight-ended scarp. Impressive outcrops of limestone, sandstone and blue clay together with copious fossils, deposited in the warm sea 435–540 years ago, are denuded on the klint. Springs flow out from between the rock layers; sea waves and clay cause rock-falls and landslides. Unique and highly valued cliff forests with deciduous trees and diversified undergrowth grow on the moist and lime-rich soil in the dimness of the klint foot. Due to the difficult accessibility, these forests have remained nearly untouched by logging throughout ages and provide significant habitats for several protected species. The forest below the klint, tree hollows and cracks in the wall are significant habitats and stop-over sites for birds and bats. On the klint, the North Estonia Plateau with a thin soil layer lies. **The perennial honesty** (*Lunaria rediviva*) is a protected species which is rare in other parts of Estonia but quite common at the foot of the limestone bank of the northern coast. Its smelling blossoms develop into seed-pods, which leave shiny shells to the stem at opening. The forests below the klint where the perennial honesty grows are key biotopes.





Photo: Swedish cornel, P. Valge

**The Aseri Landscape Protection Area** (608 ha) was founded to preserve natural forest and wetland communities as well as protected species and habitats. The three detached plots of the protected area are located in the Kestla Bog, in the cliff forest between Kalvi and Aseri, and in Kõrkküla. The area is a part of the Natura 2000 network. Old natural and deciduous cliff forests of high value grow here. The Kõrkküla Mustmets (*Black Forest*) grows, in places, on the denuding sand stone. The cliff forests are rich in ramsons (*Allium ursinum*). The Swedish cornel (*Cornus suecica*) is a plant that can only be found on the North-Estonian islands, on the coast and in Hiiumaa.

People take advantage of the location of the Kestla Bog amidst the man-made environment to go and pick mushrooms and berries. Birds stop here on their migratory routes and animals use the bog as a wildlife corridor between the forests at Alutaguse and on the coast. In this karstified area, the bog is an essential water reservoir and its drainage may result in unpredictable harm. In 2012, the restoration of the water regime and wetland community started in the former peat field in the middle of the bog. To the north-east of the Kestla Bog, the Mustlao wooded meadow lies, the border of which is marked with a row of ash trees.

The ancient burial mounds on the Aseri Cliff, dating back to the 1<sup>st</sup> and 2<sup>nd</sup> millennia B.C., attest the fact that the region was inhabited already more than three thousand years ago.

**The Ontika Landscape Protection Area** (1,212 ha), one of Estonia's oldest protected areas, was established in 1939 on a prominent section of the Baltic Klint in order to protect its typical natural woods, species and habitats. The area is a part of the Natura 2000 network. In the Ontika Landscape Protection Area, the North Estonian Klint rises as high as 56 metres above sea level. The almost continuous limestone wall between the Saka Manor and Toila is nearly 23 km long. The protected area boasts three waterfalls, which are the highest on the Baltic Klint as well as in the Baltic countries: Valaste (30 m), Saka (3-terraced, 21 m),

and Karjaoru (2-terraced, 18 m). The Valaste Waterfall was described in a newspaper already in 1840. It offers a perfect possibility to observe the different rock strata of the Baltic Klint against the waterfall.

A species-rich and luxuriant deciduous forest with elms, ashes, maples, alders, white elms, and willows as well as several protected plants, mosses and fungi grows at the up-to-100-metre-wide talus.

The clouded apollo (*Parnassius mnemosyne*) is an endangered butterfly in many European countries as its caterpillars feed only on the species belonging to the family of Corydalis. The protected area provides the hiking trails of Saka-Ontika, Saka Klint Manor, and Toila-Martsa.



Photo: Strata of blue clay on Aseri Cliff, T. Amos





Photo: Pääite Cliff, A.-L. Feršel



Photo: Saka Waterfall, L. Michelson

**The Pääite Landscape Protection Area** (128.1 ha) has been formed to protect limestone outcrops, taluses, escarpment forests as well as rare species and their habitats. The area belongs to the Natura 2000 network. The protected area is located between the Voka and Sõtke Klint Bays, covering the Pühajõgi and Pääite Cliff. The edge of the solid klint raises 42–46 m a.s.l. The exuberant cliff forest skirting the terrace is narrow and, in places, intermittent. The elm, white elm, grey alder and willow prevail in the forest below the Pühajõgi Cliff, while grey alders are predominant in the forest below the Pääite Cliff. There are some unforested places in the area of the abrasion terrace. Old mixed and coniferous forests grow on the top of the cliff between Voka and Konju. The Vasavere River, flowing in the Voka Klint Bay, has cut a 30-metre-deep gully into its mouth.

**The Udria Landscape Protection Area** (374.6 ha) has been established for the conservation of the Vaivara Klint Section, the forest strip in front of it, and the communities below it as well as of Udria Park, Boulder Field and the coastal landscape. The protected area overlaps, to a great extent, with the Natura 2000 Special Area of Conservation. The



Photo: Udria Cliff and Boulder Field, A. Animägi

area includes more than 50 hectares of meadows on dry and lime-rich soils. The only old and species-rich deciduous and natural forests have preserved and are protected in the detached plot of Arumäe. The area covers 15 km of the North Estonian Klint from Sillamäe to Meriküla, where the klint recedes inland. The highest cliffs are in Perjatsi and Meriküla (up to 22 m). The coastal lowland below the Udria Cliff is narrow, just some dozens of metres.

The Udria Brook flows in the bottom of a 20-metre-deep gully. A palace and a park were established there in the late 19<sup>th</sup> century, but only the basement wall, forest park and oak alley have preserved. The Udria Waterfall perished when an impounded lake was built for the sauna-summerhouse of the Sillamäe Plant.

**The Udria Boulder Field** lies at the mouth of the Udria Brook between the sea and the cliff on a coastal section, which is about 450 m long and up to 15 m wide. The erratic boulders, about 1–1.5 m in height and 10–18 m in girth, lie there next to one another. The diversity of the rocks reveals that the continental ice brought them together from different areas.

Two military landings have taken place in the region: in 1919 and in 1944.

The protected area is passed by the Vaivara History Hiking Trail, Laagna Hiking Trail, and the international E-9 hiking trail.



Photo: Clouded apollo, private collection





Photo: Narva fish spawns are temporarily flooded, A.-L. Feršel

## PROTECTED AREAS RELATED TO RIVERS

**The Narva River Canyon Landscape Protection Area** (14 ha) is located in the territory of Narva City in the border zone between Estonia and Russia. The protected area has been founded to protect the three-kilometre-long Narva River Canyon, cut into limestone, and the waterfall terraces. Kreenholm Island divides the Narva Waterfall into two terraces: the easterly one is 110 m wide and 6–6.5 m high while the westerly terrace is approximately 60 m in width and 3.5–6 m in height. Downstream the terraces, there is a canyon with steep walls and a rapid-water bottom. After the construction of the Narva Hydroelectric Station, the canyon and waterfalls, once the largest in Estonia as well as all over Europe, dried up and the significant spawning sites of several species of fish, such as the salmon (*Salmo salar*), sea trout (*Salmo trutta*), lamprey (*Lampetra fluviatilis*), and sturgeon (*Acipenser sturio*), were either destroyed or deteriorated. Even some partial restoration of constant waterflow in the now dry riverbed would improve the fish' spawning possibilities and increase their natural stock in the Narva River and in the Gulf of Finland.

**The Langevoja Protected Area** (2 ha) encompasses a canyon and a cascade in the limestone plateau next to the Sõtke Klint Valley. A brook cuts into the limestone a canyon of approximately 10 m in width and 2 m in depth, which, in its turn, becomes a two-terraced waterfall. The upper part of the waterfall is about 5 m long and 1.5 m high, while the height of the lower or the main ledge amounts to 4 m. The canyon beneath the cascade quickly gathers its width to about twenty metres and depth to more than ten metres. 300 m downstream, the brook and valley merge with the Sõtke River. The Langevoja Brook, which has a small catchment area and gets its water mostly from springs, is often dry in the summer. The waterfall and canyon, however, are picturesque and well observable. There is a recreation site and an observation platform near the cascade.



Photo: Langevoja Waterfall, A.-L. Feršel





Photo: Struuga, K. Viilma



Photo: Marsh gentian, J. Öövel

**The Struuga Landscape Protection Area** (1,244.3 ha) aims to protect the old rivers (also known as “struugas”), floodplain meadows as well as their habitats. Ida-Virumaa’s one of the most unique protected areas is also a Natura 2000 Special Protection Area.

The “struugas” lie on the low banks of the Narva River between the villages of Vasknarva, Jaama and Karoli. Almost a third of the protected area is covered with the water mirrors of old rivers, another third with flooded meadows, and a third is under shrubs, reed beds and swamp woods. The nutrients, swept to the plain by floods, make the soils fertile, allowing luxuriant growth of plants. In the 1930s, the floodplain meadows between Vasknarva and Jaama provided more than 530 local cattle as well as numerous horses and sheep with hay. Haymakers arrived here also from Jõhvi, Kuremäe, Iisaku and the northern coast of Lake Peipsi. When the land was not used any more, the unique meadow community became over-grown with bushes, the inherent species disappeared, and the characteristic openness ceased to exist. Since 2007, the mowing of the meadows and the water flow in the old river has been partially restored.

The “struugas” are the habitats for 21 species of dragonflies, among them Estonia’s largest population of the green hawker (*Aeshna viridis*). The old rivers are valued fish spawning sites – the roach, pike, ide,



Photo: Uhaku sinkholes, A-L. Feršel

breem, etc. come in schools to spawn here. The mud loach (*Misgurnus fossilis* L.), spined loach (*Cobitis taenia*) and bullhead (*Cottus gobio*) as well as the thick shelled (*Unio crassus*) river mussel are under protection.

A 4,000-year-old stone axe has been found from the source of the Narva River.

### UNIQUE TOPOGRAPHY

**The Uhaku Protected Karst Area** (33 ha) aims at the protection of Ida-Virumaa’s largest covered-type karst area and its karst forms. The area has been entered into the Natura 2000 network. The protected area boasts large, successive, valley-shaped sinkholes, a subterranean river and numerous eddies. During floods, which may last from some days to three weeks, two little waterfalls can be seen.

The Erra River flows for about 3 km in underground karst caves in the Uhaku Karst Area. The river mostly disappears into the sinkholes at Suurhaud (*Big Grave*) and springs up again by and in the Purtse River. The underground flow is up to 1,300 litres per second; the discharge of the springs amounts to 300 l/s. The underground channel of the river is marked with sinkholes. The largest is called Pikkhaud (*Long Grave*; 2.5–6 m deep, 250 m long and 10–30 m broad). The merging of several sinkholes has given rise to Suurhaud (4.5 m deep, 120 m long, 30 m broad). Surface water flows into ground water through the eddies at the bottom of the sinkholes. When they block up, ponds arise in the sinkholes. For decades, untreated waste water from the Kiviõli oil industry was directed into the Erra River. Sedimented oil residues have formed an asphalt-like layer on the walls of the sinkholes and canyon as well as at the bottom of the river.

Erstwhile, when the Uhaku River section was unpolluted and water-abundant all the year round, plenty of fish could be found in the karst pits after floods.



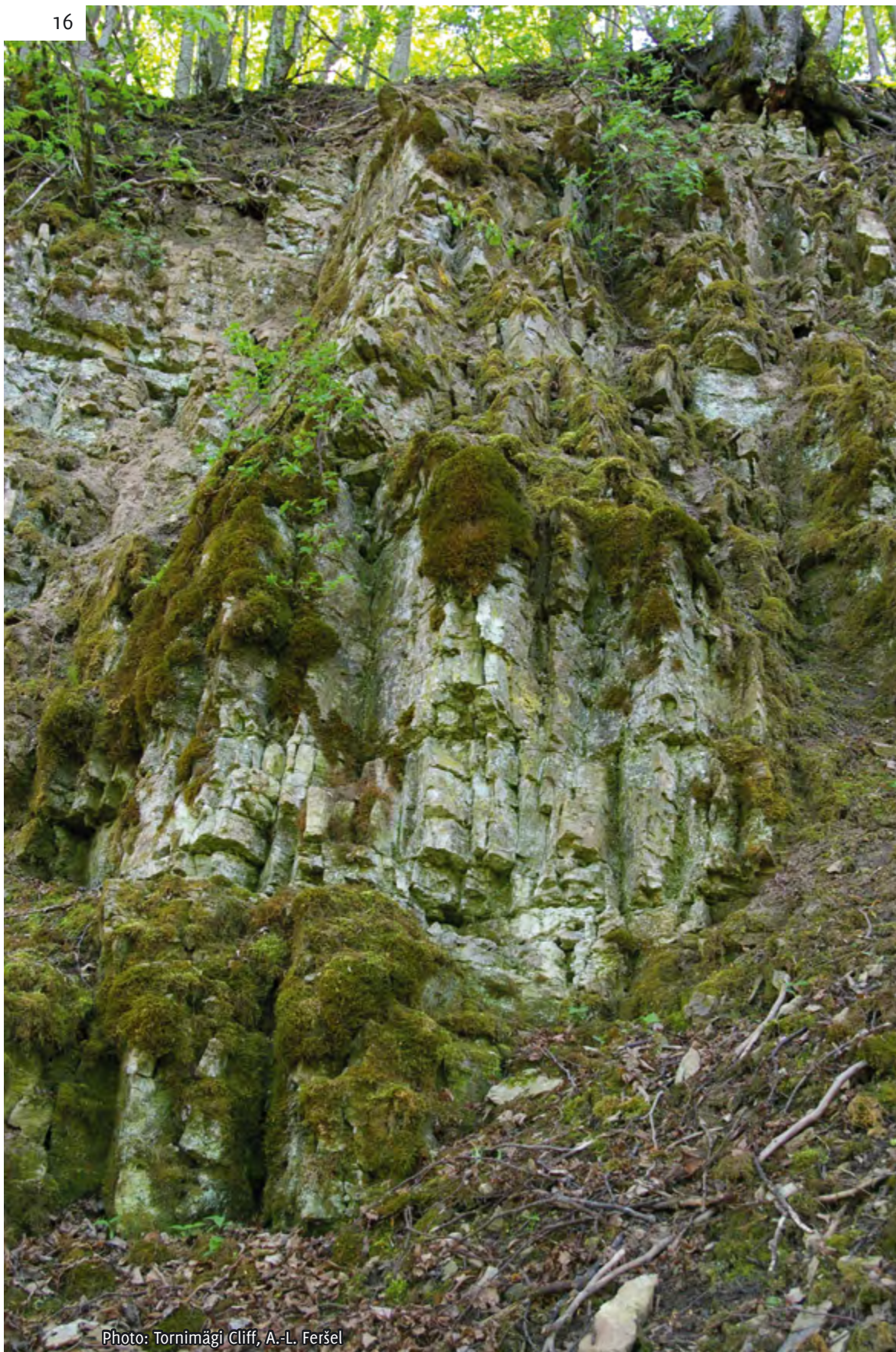


Photo: Tornimägi Cliff, A.-L. Feršel

The Vaivara Landscape Protection Area (80.5 ha) protects valued surface forms and the forests on screes and escarpments. In the detached plot of Viivikonna, a hundred-year-old spruce forest grows, which is one of the few survived natural woods in the neighbourhood and a part of the Natura 2000 network.

The Vaivara Sinimäed Hills (*Blue Hills*) is the name of an approximately five-kilometre long east-westerly ridge with three arising mounds: Tornimägi (*Tower Hill*), Põrguagumägi (*Hell Hole Hill*), Pargimägi (*Park Hill*). The cores of the hills are limestone rocks and they are characterised by steep northern slopes and gentle southern slopes.

The formation of the Sinimäed Hills was probably affected by numerous cracks in the limestone strata and the blue clay started to flow under the pressure of continental glaciers. As a result, giant rocks broke off from the limestone and rose up to 50 m higher. Usually, the blue clay layer lies about 50 m deeper in the earth. The hills were named after the coniferous forest which grew on the ridge and looked bluish from afar, but which was destroyed during World War II. The narrow passage between the Gulf of Finland and the wetlands of Alutaguse has been considered strategically critical in several wars. The northern part **Tornimägi** (71 m) consists of one huge limestone cliff. Beneath its nearly vertical northern slope, which is up to 10 m high, there is a 45-degree talus with perennial honesties (*Lunaria rediviva*) growing at its foot.

**Põrguagumägi** consists of several giant cliffs which are divided into two hills (81 and 83 m high) by an oval hollow. The memorial on the hill reminds us of the battles fought in the summer of 1944.

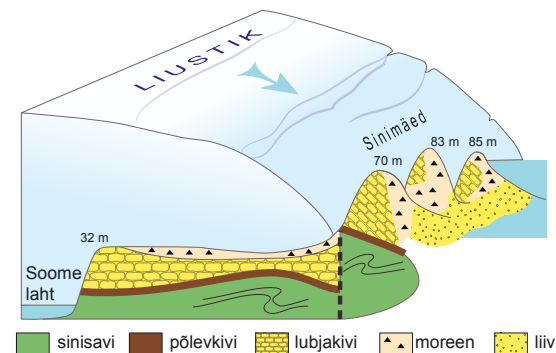
The core of **Pargimägi** (85 m) is one monolithic limestone rock. Bunkers were hewed into the steep upper part of its north-eastern slope during World War I. There is a nature trail, a children's playground and an observation tower on the hill.

The Sinimäed Hills are passed by the E-9 coastal hiking trail and they include several recreation and observation places.

The **Iisaku Forest Park Protected Area** (144 ha) has been established to protect Iisaku Esker and its forest park. Estonia's highest esker (42 m) and Ida-Virumaa's highest natural point (94 m a.s.l.) is called Tärivere Hill. The two-kilometre-long and 700-metre-wide esker is covered with mixed forests of spruces and deciduous trees, and the undergrowth typical of deciduous and primeval forests. The diversified shrub layer includes plenty of hazels (*Corylus avellana*), Alpine currants (*Ribes alpinum*) and mezereons (*Daphne mezereum*). Nearly 180 species of plants, including protected orchids, have been found in the

forest park. 14 out of 81 discovered species of mosses are under protection; seven species are rare species of lichens. The old spruce-aspen mixed forest houses flying squirrels (*Pteromys volans*), who find here suitable tree hollows for hiding and breeding as well as sufficient food.

There is a recreation site and some health trails in the forest park. From the top of the 28-metre-high observation tower opens a splendid view of the landscapes of Alutaguse, and in clear weather you can also spot Lake Peipsi, the ash hills of Kiviõli, and the chimneys of the Eesti Power Plant.



Map: Sinimäed Hills, by M. Rattas (*Eesti Loodus* 2004/1), A. Tõnisson





Photo: Sand-shored Lake Martiska between kames, A.-L. Feršel

## LAKES

The splendid and varied landscapes with lakes at **Kurtna**, **Uljaste** and **Jõuga** are under protection. The formation of the lakes took place about 12,000 years ago in the late glacial age. The development of Lakes Kurtna and Jõuga started when huge blocks of ice, buried in sand and gravel, melted and, as a result, formed deep hollows. Kurtna, Uljaste, and Jõuga are beloved recreation areas. Holiday makers, however, are sometimes too negligent: they trample on the fragile plants and soil, and also contaminate the lakes.

**The Kurtna Landscape Protection Area** has been formed to protect kames, lakes of different types and high value, as well as rare species of plants and animals. A part of the area is included into the Natura 2000 network. Kurtna is Estonia's lake-richest region: there are 42 lakes per 30 sq. km.

The clear-watered lakes with scarce vegetation in the middle part of the protected area are unique both in Estonia and all over Europe. Estonia's only ferrotrophic lake is located in Kurtna, and out of nine main types of lakes, common in Estonia, six are represented here. In the lakes of the protection area some rare plants, such as the water lobelia (*Lobelia dortmanna*) and quillwort (*Isoetes lacustris*), grow and dozens of algae occur, which are very sensitive to contamination and endangered with extinction. The names of lakes refer to the most common species of fish: Ahvenjärv (*Perch Lake*), Särgjärv (*Roach Lake*) and Haugjärv (*Pike Lake*). The European crayfish (*Astacus astacus*) can also be found.

The kame range at Kurtna amounts to 9 km in length and more than 3 km in width, covering the total of 15 sq metres. The sandwort (*Arenaria procera*), sand pink (*Dianthus arenarius*), small pasque flower (*Pulsatilla pratensis*), flat-stemmed clubmoss (*Diphasiastrium complanatum*) grow in the dry and sandy heaths. In the forests, there are plenty of orchids. The Kurtna Lakes have been deteriorated by the nearby peat fields, the mining of oil shale, and the Pannjärve sand quarry. The local water is pumped as drinking water to the cities of Ahtme and Jõhvi. The mine water, rich in clay and lime substances, is



Photo: Flat-stemmed clubmoss, A. Animägi

driven through several lakes, which changes the chemical composition of the lake water. Due to the abundant consumption of water, the water level in several lakes has fallen on average four metres.

Remnants of old trenches and rifle pits can be seen in the landscape because in the 1930s and during World War II there was a military training camp in this place.

The Kurtna Landscape Protection Area includes several recreation sites, hiking and health sports trails.

**The Kivinõmme (Jõuga) Landscape Protection Area** (310 ha) has been established for the protection of the relief, lakes and plant communities, which are unique and offer scientific interest. The area is a part of the Natura 2000 network. There are five forest-surrounded lakes in the protected area with three detached plots of land.

The lakes of Jõuga Liivjärv (2.2 ha), Pesujärv (2.0 ha) and Linajärv (1.1 ha) are located next to each other and feed only on precipitation. The bottoms of the up to nine-metre-deep lakes are covered with a deep mud layer. Several rarities have been found in the bottom fauna and among the zooplankton of the lakes. Lake Pesujärv is the northernmost habitat of the edible frog (*Rana esculenta*) in Estonia. The lake and its environment is a popular swimming and recreation site where an embankment to protect the high shores as well as a boardwalk have been established.

The lakes of Kõnnu Pikkjärv (2.1 ha) and Ümarjärv (1.6 ha) are spring-fed and clear-watered. The lakes are connected with a brook; the Alajõgi River starts here. The perch, pike and crucian carp occur in the lakes. The protected area covers the habitats of the saw sedge (*Cladium mariscus*), unique in East Estonia, and several orchids, as well as some species of rare birds, such as the capercaillie (*Tetrao urogallus*), black grouse (*Tetrao tetrix*), Ural owl (*Strix uralensis*), and three-toed woodpecker (*Picoides tridactylus*). At Jõuga, there is Estonia's largest barrow burial site.





Photo: Lake Uljaste, A.-L. Feršel

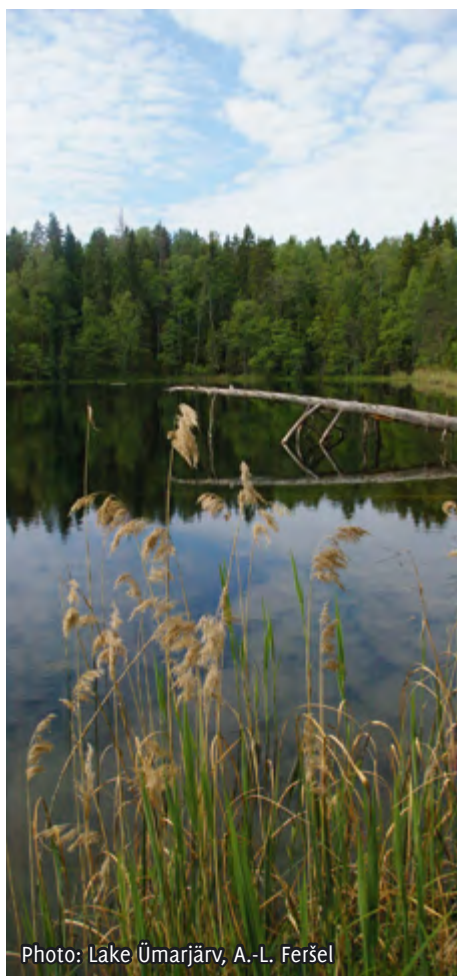


Photo: Lake Ūmarjärv, A.-L. Feršel

**Uljaste Esker and Lake Uljaste** – the protected area (254 ha) has been founded to protect Lake Uljaste, the esker and its adjacent kames, the forests and the bog together with its pools. A part of the area is included into the Natura 2000 network.

**Lake Uljaste** (64 ha) lies 66 metres a.s.l. between the esker and the bog. The terminal lake with the average depth of 2.2 m feeds on springs. Its water contains few minerals, which makes it greenish-yellow. Several rare organisms live in the lake. Recreational and bathing sites have been established on the lakeshore.

**Uljaste Esker**, shaped as a bow, surrounds the lakes from the north and the east. The narrow and up-to-twenty-metre-high ridge is covered with a fine coniferous forest. 3.5 km (out of the total of 5 km) of the esker has been placed under protection. Sand and gravel have been mined on the esker, and there is a road passing it.

**The Uljaste Bog** surrounds the lake from the west and the south. The lakes of Väike Uljaste, or Soojärv, Laukajärv, and Saarjärv with its mineral island, lie here.

The extension of the esker near the lake is considered to have been a stronghold hill.



Photo: Blossom of cranberry, R. Lille

## WETLANDS

Ida-Virumaa's largest protected areas have been formed to protect the Alutaguse Wetlands, all of which being the parts of the Natura 2000 network. The naturally preserved mires are rare throughout Europe. Wetlands contain considerable stocks of clean water and it is important for both people and the species living there to protect them. Only 16% of the former territory of our wetlands has been placed under protection. Due to drainage, most bogs are not able to produce more peat. Nearly all Estonia's greatest wildfires have taken place in drained bogs. The importance of wetlands is more and more acknowledged and possibilities for their restoration are actively being sought for. In addition to the drainage for the forest plantations and peat production, the county's fens and bogs are also endangered by the oil shale mines and alkaline air pollution.

**The Agusalu Nature Reserve** (11,003 ha) has been established to protect the intact bog landscape, diversified communities and rare species.

The Agusalu Nature Reserve with its three detached plots lies amidst the Alutaguse Lowland and is a part of Estonia's largest wetlands – the Puhatu Wetlands. Alteration of east-westerly high and narrow, forest-covered sand ridges with small patches of bog is characteristic of the area. Estonia's only continental dunes cover almost a fifth of the wetlands' area. There are approximately 200 dunes, most of which are 7 m high, 200–3,000 m long, and 20–200 m wide. Old natural forests, rare in Estonia and all over Europe, grow on the dunes. In the landscape you can notice short and sharp transitions from wet to dry and from one habitat type to another. All the stages of bog development are also well observable. Although the mire is one of Estonia's richest habitats of cranberries, it is hardly accessible and therefore little affected by human activities. Lake Imatu (28 ha) is a unique naturally eutrophic body of water. The area offers favourable breeding and stop-over sites for plenty of protected species of birds, including the white-tailed eagle (*Haliaeetus albicilla*), golden eagle (*Aquila chrysaetos*), capercaillie (*Tetrao urogallus*), and willow grouse (*Lagopus lagopus*). The ridges surrounded with large fens and bogs provided the local people with shelter at the wartime. The protected area has a cycling trail and recreation sites.



Photo: Lady's slipper, R. Lille





### PROTECTED AREAS

- Agusalu Nature Reserve
- Aseri Landscape Protection Area
- Muraka Nature Reserve
- Paadenurme Nature Reserve
- Puhatu Nature Reserve
- Sirtsu Nature Reserve
- Iisaku Forest Park
- Kivinõmme (Jõuga) Landscape Protection Area
- Järvevälja Landscape Protection Area
- Kurtna Landscape Protection Area
- Langevoja Protected Area
- Mäetaguse Landscape Protection Area
- Narva River Canyon Landscape Protection Area
- Ontika Landscape Protection Area
- Oru Park Landscape Protection Area
- Päite Landscape Protection Area
- Selisoos Natura 2000 Area
- Smolnitsa Landscape Protection Area
- Struuga Landscape Protection Area
- Udria Landscape Protection Area
- Uhaku Protected Area
- Uljaste Protected Area
- Vaivara Landscape Protection Area

### PARKS

- Aa
- Iisaku
- Illuka
- Järve
- Kiikla
- Kukuruse
- Kurtna
- Maidla
- Mäetaguse
- Pagari
- Püssi
- Saka
- Voka
- Jõhvi City Park and Alley
- Narva Pimeaed (Dark Garden)
- Kõnnu Dendrological Park

### LIMITED CONSERVATION AREAS

- Arupealse
- Atsalama
- Avijõe
- Kalvi
- Loode-Peipsi
- Lower course of Narva River
- Upper course of Narva River
- Padajõe
- Pühajõe
- Raju
- Sahmeni
- Tagajõe
- Uljaste

### INDIVIDUAL OBJECTS

#### ERRATIC BOULDERS

- Letermaa Rock
- Mangumetsa Rock
- Olgino Rock
- Oonurme Rock
- Oru Park Rock
- Peri Rock
- Rannikmaa Large Rock
- Sirtsu Rock
- Sidani Rock
- Varja Giant Boulder
- Varja Sacred Stone
- Võrnu Rock
- Udria Boulder Field

#### KARST AREAS AND WATERFALLS

- Aluoja Waterfall Terrace
- Tõrvajõe Waterfall Terrace
- Kalina Karst Area

### TREES AND GROUPS OF TREES

- Avinurme Limes
- Hoovi White Elm
- Jõemetsa Alder
- Jõemetsa Lime
- Jõhvi Silver Poplar
- Kalina Sacrificial Oak
- Karu Pine
- Katase Juniper
- Katmani Oaks
- Kohtla-Nõmme Oak
- Kuremäe Sacred Oak
- Kuru Pine 1
- Kuru Pine 2
- Lemmaku Pines
- Letermaa White Elm
- Mehide Pines
- Meriküla Pine
- Purtse Sacrificial Lime
- Pühajõe Limes
- Riia-Võhma Oak
- Cross Pine at Illuka
- Rääsa Juniper
- Sõrumäe Pines
- Tammiku Sacred Oaks
- Uuetoa Sauna Birch





Photo: Common toothwort, A.-L. Feršl



Photo: Agusalu Mire, A.-L. Feršl



Photo: Mealy tooth, A. Soomets



Photo: Coral tooth, A.-L. Feršl

**The Puhatu Nature Reserve** (12,320 ha) has been founded for the conservation of wetlands, protected species and their habitats. In its east, the protected area encompasses the Poruni River and the river valley together with species-rich alluvial and broadleaved primeval forests. The Puhatu Protected Area covers almost a fifth of the former largest complex of wetlands in Estonia (57,000 ha). A big part of the wetlands has been destroyed due to both the oil shale and peat production and the forest drainage. In Puhatu, there is one of the last big transition mires in Estonia which has not been affected by drainage. 21 protected species of plants grow in Puhatu. There is Estonia's only habitat of the grove sandwort. The special protection area of international importance provides habitats for the golden (*Aquila chrysaetos*), short-toed (*Circaetus gallicus*) and white-tailed eagles (*Haliaeetus albicilla*) and the osprey (*Pandion haliaetus*), as well as for Estonia's largest population of the willow grouse. The number of the willow grouse (*Lagopus lagopus*) is decreasing and there is a danger of extinction of the species in Estonia. 48 species of mammals, including some rare ones in Europe, live in the protected area. The migration routes of numerous species pass through the wetlands. The Poruni Study Trail enables you to learn about primeval and alluvial forests.

**The Sirts Nature Reserve** (4,558 ha) aims at protecting the Sirts Wetlands, the surrounding forests as well as protected species and their habitats. In 1976, a strict nature reserve for brown bears (*Ursus arctos*) was founded in this region. The nature reserve of water protection value consists of six detached plots of land. The Sirts Wetlands are composed of a range of mires in the north-westerly – south-easterly direction with a bog, rich in hollows and pools, in the middle and quagmires on the edges. The Sirts Brook and the rivers of Hirmuse, Purtse and Kunda flow through the protected area. The natural forests around the mires offer shelter to plenty of shy species, such as the flying squirrel (*Pteromys volans*), black stork (*Ciconia nigra*), and golden eagle (*Aquila chrysaetos*). Bears, lynxes, and wolves also live in the forests. There are numerous legends about the Sirts Mire. The former winter road between Central Estonia and St. Petersburg is still distinct in the landscape.









Photo: Selisoo Mire, J. Öövel

**The Selisoo Natura 2000 Special Area of Conservation** (2,051 ha) values bog and forest communities. The Selisoo Nature Reserve is under formation. The Selisoo Mire with its numerous pools formed when a lake overgrew after the glacial age. It is one of Estonia's oldest mires, and is 7.4 km in length and 3.7 km in width. The last pool (3.4 ha) of the former lake is overgrowing faster due to an outlet. After World War II, an extensive network of ditches was established around the mire, which has drained most transition mires and fens around the bog. Therefore the bog is covering with forests in the north, east and west, and the biota typical of an open bog is in danger. In the west, the mire is bordered with Mäetaguse Esker.

The Selisoo Mire stabilizes the water regime of the neighbourhood and of the Muraka Wetlands. The mining of oil shale in its north and north-east may demolish the basic equilibria forever.

The pools and bog of Selisoo provide habitats for protected species of birds. Geese and cranes stop here during their spring and autumn migration.

There is an ancient iron melting site nearby in the village of Metsküla. The Selisoo Mire has an observation tower, a hiking trail, and recreation and camping sites.

**The Muraka Nature Reserve** (13,980 ha) has been founded to protect one of Estonia's largest and best preserved mire landscapes, protected species and their habitats. The protected area consists of four detached plots of land, and encompasses fens and bogs at different development stages as well as natural forests. The protected area found its beginning in 1938 when a strict bog reserve for the protection of eagles was established.

With the withdrawal of the continental ice sheet, relict lakes were formed in the northern part of the Peipsi Basin, which overgrew into fens 9,000–10,000 years ago. Fens grew into bogs, their borderlines widened and they merged, making up extensive wetlands where bog expanses are divided with swamps or quagmires. A range of bog islands and pools



Photo: Nest of golden eagle, A.-L. Feršel





Photo: Muraka Bog, H. Aia

runs across the mire in the north-easterly – south-westerly direction. To the north, there are marshes and watery open bogs; the south has wooded and pool bogs. The core of the protected area – the Muraka Bog – is surrounded with the bogs of Lipu in the south, Matka in the south-east, and Ratva together with a relict lake in the north-east. The varied landscape of the Muraka wetlands provides habitats for numerous rare species. Valued primeval forests with the habitat of the flying squirrel (*Pteromys volans*) grow on the edges of the wetlands and on the island. 18 rare species of birds have been registered; geese and swans stop here on their migratory routes. Some rare insects, such as *Cucujus cinnaberinus* and *Boros schneideri*, have preserved in the protected area. 14 farms were located on the bog islands and in the surrounding forests until the middle of the 20<sup>th</sup> century. The ruins of the buildings or primeval trees are reminiscences of them. The protected area can be studied in the Nature Room of the Oonurme Community House and on the Turba Hiking Trail.

### OAK FORESTS AND WOODED MEADOWS

**The Mäetaguse Landscape Protection Area** (53 ha) aims to preserve Mäetaguse Esker together with the forest on it, and to restore the semi-natural biotic community of a wooded meadow and a wooded pasture. The main value of one of Estonia's and Europe's northernmost oak forests is its very tall and broad-crowned trees of 150–300 years of age. The old trees have varied biota, providing habitats for lichens, mosses, fungi, invertebrates, and related birds and animals. Preserving old trees and fostering the growth of young broadleaved trees is significant in terms of the biodiversity both in Ida-Virumaa and across North Europe.

Wooded meadows are one of the most species-rich communities in Europe and all over the world. The natural grassland with a sparse tree layer, which was regularly mown and grazed, was abandoned or cut clear when large scale production was introduced. The meadows grown into scrubs or, in places, woods, are being gradually restored.



Photo: Mustassaare Farm, A.-L. Feršel



Photo: Mäetaguse Oak Forest, A. Animägi





Photo: Protected woolly butterbur, A.-L. Feršič



Photo: Flying squirrel, R. Kurbel

### NATURAL FORESTS

**The Paadenurme Nature Reserve** (344 ha) has been established to protect the rare species of animals and their habitats as well as prehistoric woods. The three detached plots of the protected area make up unique “islands of nature” between the industrial and agricultural plots of land. A part of the area belongs to the Natura 2000 network.

**The old natural forests** have not been much affected by human activities, so they have renewed and developed in a natural way. There are plenty of dried or drying trees of different ages, as well as windfallen trees and natural gaps, or glades. Since the second half of the 20<sup>th</sup> century, the proportion of old natural forests has significantly decreased. Dead trees are a natural part of a forest. Mosses and lichens grow on their trunks; inside, fungi, insects and other invertebrates have made up their habitats. A decaying tree is quickly inhabited by adapted organisms, and in the changing microclimate old communities are slowly replaced with new ones. The rare species that live on the big dried or decaying trees are not found in forest plantations.

### DUNES

A fragmentary range of dunes, approximately 32 km in length and up to 1 km in width, covered with a pine forest, reaches from Rannapungerja to Vasknarva along the northern shore of Lake Peipsi. The dune ridge came into being at the withdrawal of Lake Peipsi. Its height is mostly 5–8 m but at Alajõe even up to 20 m. Water is stuck between and behind the dunes, which has caused the formation of fen communities.

On the white dunes (the dunes outside the wave zone) some single plants, such as the sea lyme grass (*Leymus arenarius*), willows and the woolly butterbur (*Petasites spurius*) grow. The grey dunes with different species of moss and lichen, forming eventually pine forests, are followed. The lower and damper slope of the dunes is covered with plants faster than the high and dry middle part where the loose sand is blown away by wind. The very unique environment of the dunes offers habitats for some insects with interesting





Photo: Smolnitsa Dune, A.-L. Feršel

ways of life, such as the antlion (*Myrmeleon formicarius*) and the *Sphecidae*. Trampling on the dunes may destroy the vegetation, and cause sand drift and erosion.

On the northern shore of Lake Peipsi, the friction of sand grain against grain produces a unique sound. "Singing sands" prove that the beach and lake water have not yet fully contaminated with salts, oils and washing detergents.

**The Järvevälja Landscape Protection Area** (581 ha) has been formed to preserve the sand dunes, plant communities and habitats of protected species. The protected area consists of three detached plots, a part of which belonging to the Natura 2000 network. An old, nine-metre-high dune is separated from the Jõhvi-Tartu Road by an approximately 500-metre-broad paludified area. The range of dunes is 1.5 km in length and 100–150 m in width. There is also a younger dune range, which consists of 10–14 dunes and is up to 6 m high, on the lakeshore. A 140-year-old dry boreal pine forest where cowberries grow prevails on the dunes. Behind the dunes, however, there are small fens and paludified forests. As to the protected species, the clubmoss and orchids grow, and the capercaillies (*Tetrao urogallus*) and ospreys (*Pandion haliaetus*) breed here.

With the destroyed vegetation, the loose sand of the dune slopes is easily drifted away by wind. This is the reason why the lighthouse, built at the mouth of the Rannapungerja River, came in danger. In order to prevent further sand drift, a stairway was built, and the platform and dune slope were fortified. A section of the historic post road between Russia and West-Europe runs on the northern dune in its unchanged form.

**The Smolnitsa Landscape Protection Area** (250.6 ha) aims at the protection of the unique dunes of different ages on the northern shore of Lake Peipsi and their varied plant communities. This protected area, approximately 7 km in length and only 200–650 m in width, is a part of the Natura 2000 network. The dunes, 5–12 m high, are covered with sparse plant vegetation, mosses, lichens, and shrubs. There is plenty of loose sand, unfixed with vegetation. There are damp hollows between the dune ridges. Behind the dunes, there are fens and about a-hundred-year-old paludified or still paludifying deciduous forests, e.g. birch forests with the *Carex*, which have a very high nature protectional value. The stagshorn clubmoss (*Lycopodium clavatum*) and several orchids are the protected species growing here.

The Smolnitsa Village has been named after production of tar (in Russian "smola").



Photo: Sand dune, M. Alja





Photo: Tree lungwort, A.-L. Feršič

## PARKS

Old parks are a part of our history, intertwining the nature and the culture. The former generations have bequeathed plenty of new species into our nature. Parks are the habitats of numerous, and in some cases rare, species of fungi, lichens, plants, and animals.

**The Oru Park Landscape Protection Area** (74.7 ha) has been established to preserve the historical Oru Park with diversified biota and varied landscape as well as the habitats of protected species.

The River of Pühajõgi (*Holy River*), which flows in the deep valley intersecting the park, has been included into the Natura 2000 network as a river habitat.

The landscape park is valued for its English-garden-style open views of the sea and river, winding paths and alleys, and the river landscape with picturesque park meadows. Some small forms of architecture, such as a grotto, the spring of Hõbeallikas (*Silver Spring*), contribute to distinctiveness.

The seaside plain, the cliff, denuding sandstone and slopes of river valley diversify the landscape. Through ages, more than 800 taxons of woody plants have been growing in Oru Park, as compared to the 300 species of trees growing in the protected area now. The age of the heath pine forest may amount to 300 years. The protected species living in the park are different bats (*Vespertilionidae*) and river lampreys (*Lampetra fluviatilis*). The palace, completed in the late 19<sup>th</sup> century, and a part of the park were destroyed during World War II.

**Kõnnu Dendrological Park** (6 ha) with its more than 300 species of trees, shrubs and lianas is worth attention. If booking in advance, you can visit the park, which is in private ownership, and participate in the learning programmes.



Photo: Terraces of Oru Palace, L. Michelson

### The following manor parks are under protection in Ida-Virumaa

Name	Hectares
Aa	10
Iisaku	2.3
Illuka	3.6
Järve	5.4
Kalvi	13.3
Kiikla	6.7
Kukruse	10.9
Kurtina	6
Maidla	3.1
Mäetaguse	9.4
Pagari	7.9
Püssi	7.1
Saka	7.6
Voka	17.4
Jõhvi City Park and Alley	41
Narva Pimeaed ( <i>Dark Garden</i> )	2.4





Photo: Lime alley in Toila-Oru Park, L. Michelson



Photo: Purtse Sacrificial Lime, A.-L. Feršel

## INDIVIDUAL PROTECTED NATURAL OBJECTS

### Single trees under protection (C – circumference, H – height)

Name	C (m)	H (m)	Age
Katase Juniper	0.7	9	
Siskini Pine in Meriküla	4.1	19	
Jõemetsa (Matsra) Cut-Leaved Alder (rare form)			
Jõemetsa (Matsra) Lime	2.7	18	
Kohtla-Nõmme Oak	4.6	24	~300 y
Avinurme Limes 3 trees; biggest	4	27	
Katmani Oaks 38 trees; biggest	5.6	27	
Kuremäe Sacred Oak, has dried	4.2		
Kuru Pine, has dried	3	8	~400 y
Lemmaku Limes		22	
Hoovi White Elm	2.7	20	
Mehide Pines (4 trees, 1 has dried); biggest	2.8	27	
Riia-Võhma Oak	4.5	24	
Purtse Sacrificial Lime, top broken	5	21	
Sõrumäe Pines Group			
Cross Pine at Illuka	3.9	24	
Kalina Sacrificial Oak	4.2	24	
Pühajõgi Limes Group	3.9	17	
Räasa Juniper	0.7	10	
Tammiku Sacred Oaks; group of trees	4.6	14	

### Trees registered as worth attention (C – circumference, H – height)

Name	C (m)	H (m)	Age
Uuetoa Sauna Birch at Raadna (with knots)	3.27	19	180 y
Karu Pine in Illuka	3.3	31	
Kuru Pine 2	2.6	15	
Jõhvi Silver Poplar (Estonia's highest)	5	29	
Letermaa White Elm	5.1	28	

### Protected trees destroyed in the storms of the recent years:

- Oru Balsam Poplar
- Värava Birches
- Matsra Maple
- Revino Maple
- Lagedi Limes



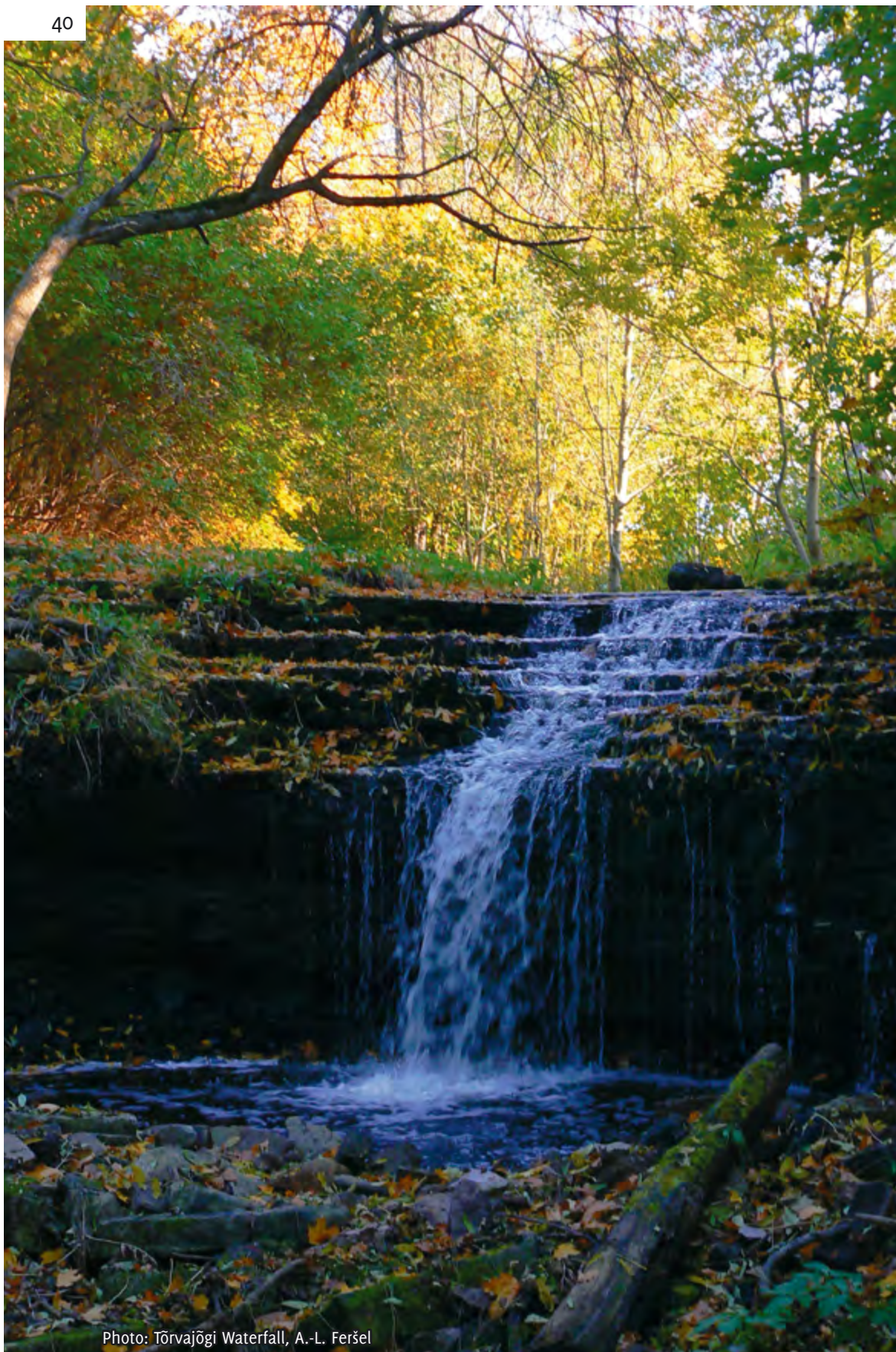


Photo: Tõrvajõgi Waterfall, A.-L. Feršel

#### Protected erratic boulders (with circumferences)

Location	Name	Circumference (m)	Rock
Jõhvi	Peri Erratic Boulder	19.5	dark grey granite
Lüganuse	Varja Giant Boulder	27.6	rapakivi granite - <i>Vyborgite</i>
Lüganuse	Varja Cult Stone	22.8	aplite granite
Maidla	Sirtsu Erratic Boulder	27.1	biotite gneiss
Mäetaguse	Võrnu Boulder	17.2	pink pegmatite
Toila	Oru Park Rock	26.5	granite
Tudulinna	Oonurme Boulder	10.8 and 14.5	rapakivi granite
Vaivara	Olgina Erratic Boulder	21.3	rapakivi granite

#### Remarkable boulders

Location	Name	Circumference (m)	Rock
Lohusuu	Sidani Rock	29.9	grey migmatite
Mäetaguse	Leterma Big Rock	23–26	pink granite
Mäetaguse	Mangumetsa Rock	15.2	
Vaivara	Rannikmaa Big Rock	20	piterlite

#### The Aluoja Cascade

Before debouching into the Pühajõgi, the Aluoja Brook flows in its terraced bed, forming a cascade with four escarpments, where the Aluoja Sacrificial Spring bursts out from the limestone valley slope. A boulder field also lies over there.

#### The Tõrvajõgi Cascade

The Tõrvajõgi River cuts into the klint plateau in the two-metre-deep and five-six-metre-wide valley, forming three terraces of up to 0.5 m and one main terrace of 2.5 m in height. Downstream the cascade there is a ten-metre-deep canyon.

**The Kalina Karst Area** includes the Kalina Doline, which is 60 m long, 20 m broad and 2.7 m deep. It “swallows” up to 185 litres water per second during floods, when a group of temporary lakes form here.

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Photo: Bogbean, M. L. Feršič

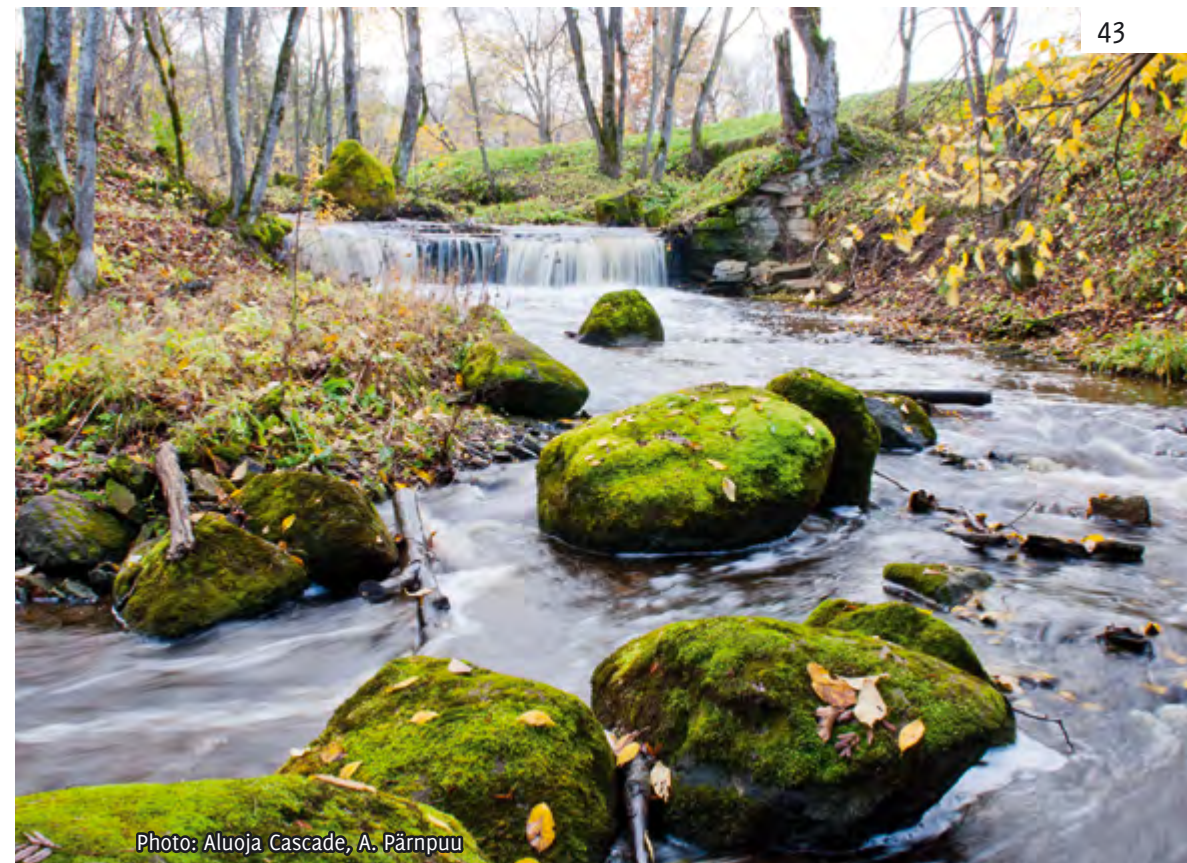


Photo: Aluoja Cascade, A. Pärnpuu



Photo: Udria Cliff, J. Öövel





Photo: Elk, L. Michelson

## NOTES

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