



THE PUNKAHARJU NATURE TRAIL

The Finnish Forest Research Institute
Unioninkatu 40 A
SF-00170 Helsinki

Tel. (90) 661 401
Telex: 125181 hyfor sf attn:metla

Cover photograph: A Punkaharju Scots pine stand
in the Kokonharju primeval forest.

Text: Antero Mikkola

Photos: Teijo Nikkanen

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The Punkaharju nature trail

The Punkaharju nature trail provides visitors with the opportunity to see nature at close quarters, and to learn something about the wide range of research, silvicultural and multiple-use measures which are carried out in the Punkaharju Experimental Area, as well as in the other experimental areas of the Finnish Forest Research Institute.

The nature trail, which is about 6 km long, is marked by signs which read "LUONTOPOLKU" and by yellow circles painted on the trees. The path starts from the forecourt of the Valtionhotelli and winds, via the Czarina's Villa, into the Kokonharju primeval forest area. From there it runs via the Montell larch stand to the Seppälänmäki area, the site of rather intensive research activity, and then to the arboretum comprising dozens of foreign tree species. The trail finishes at the Finlandia Hotel. There are 12 numbered points along the trail where the visitor can stop to admire nature or to look at some special feature described in this guide. There is a wooden disk at each point marked with the words KOHDE-PUNKT, the number of the point, and the emblem of the Finnish Forest Research Institute. The trail and the points of interest along it are marked on the map on page 12.

Since Punkaharju has always been an important public through-way and an area of special natural beauty, the state authorities have, right from the start, played an active role in deciding how the Punkaharju area is to be managed. Czar Alexander the Ist, who travelled along Punkaharju Esker in 1803 at the time when Finland was part of Russia, urged the authorities to make sure that the forests alongside the road would not be felled. In 1841 the Finnish Diet ordered that "the whole of the said esker is to be marked out and properly managed at state expense". Thus the esker and adjoining land, covering an area of 1336 hectares, was annexed by the state and designated as a state park. The land was initially under the authority of the Governor of Mikkeli, but later on transferred to the National Board of Forestry. Punkaharju was transferred to the Finnish Forest Research Institute at the beginning of 1924. The Punkaharju Experimental Area, which was established at that time, covered an area of about 500 ha.

The experimental area has since been enlarged through bequests and land purchases, and now comprises about 1850 ha of land and about 800 ha of lakes and waterways. This state-owned property "is to be utilized and managed primarily to meet the needs of research and the esker area in accordance with nature

protection and landscape management norms", as is stated in the statutes of the Finnish Forest Research Institute. At present about 650 ha of the land area is taken up by various experimental plots, about 200 ha by park woodland and almost 70 ha by protected forest in a natural state. The rest is reserved forest where intensive commercial forestry is practiced.

In the latter half of the 19th century the forest land in Punkaharju, including the esker itself, was covered with the type of forest left by shifting agriculture (a common practice in the region): grey alder stands, a few birch and pine stands or mixed stands containing all these species. In addition, there were a lot of recently felled, burnt or cultivated areas. Intensive research activity and forestry have been practiced in the experimental area ever since its establishment. The tree stock in the experimental area has developed accordingly: Scots pine accounts for about 61 % of the present tree stock, Norway spruce 24 % and birch about 15 %. The annual cut in the area is about 5 500 m³.

Punkaharju is an important study area for the Forest Research Institute which, owing to its unique scenic beauty and historical and touristic heritage, places a considerable responsibility on the management to maintain and develop the natural beauty and vitality of the area.

The points of interest

Point 1. Valtionhotelli (The State Hotel)

After Punkaharju came under state ownership, two forest rangers were appointed to look after the esker area. Accommodation was built for the forest rangers on the northern side of the esker. Three rooms were initially reserved in this building for visitors, and from 1879 the house was used exclusively for tourists.

The name Valtionhotelli stems from the fact that the building was built and is owned by the state. The building was enlarged in the 1890's when the Czarina's Villa was built. Nowadays the complex is owned by the Ministry for Trade and Industry and is leased to Lomaliitto ry. Since the Valtionhotelli and Czarina's Villa are of great historical value and the site, owing to both its location and early use for tourism (it appears to be the first hotel in Finland built for tourism), has a long tradition in the tourist industry, the Ministry of Finance has made the National Board of Building responsible for the renovation and restoration work on the complex. The renovation work was finished in 1979. The Czarina's Villa is situated about 150 m in front of the hotel. The nature trail runs from there to the esker

road, continuing along the road, over the railway line, to the new esker by-pass. The trail then strikes off to the right of the by-pass, continuing for about 50 m to the nature trail sign pointing to the Kokonharju primeval forest area.

Point 2. Scots pine blister rust

The Scots pines in the surrounding area are damaged to a varying extent by pine blister rust, many of the dead trees having earlier succumbed to attack by this fungus. Blister rust, which is perhaps the most common damaging agent in pine forests in Finland, is caused by two different fungi: *Cronartium flaccidum* and *Endocronartium pini*. The latter fungus is the more common and spreads by means of spores from pine to pine. The former, however, requires an intermediate host plant, which in Finland can be swallowwort (*Vincetoxicum hirsutum*), peony or species of lousewort (*Pedicularis*). The name blister rust comes from the fact that the mycelia of the fungus often grow from damaged patches of bark into the healthy tissue. This results in abnormal growth in thickness and copious production of resin as the bark dies. The canker caused by blister rust enlarges year by year and when the bark running right around the stem is dead, the crown dies. Although most of the pines in our forests are very resistant to blister rust, some succumb to the ravages of this disease. Ring scale fungus (*Phellinus pini*) also causes damage in the old pine stands at Punkaharju. Root-rot (*Heterobasidion annosum*) is the most serious disease in old spruce stands especially.



The Valtionhotelli and adjoining Czarina's Villa are buildings of great historical and cultural value.

The trail then forks off from the old path and continues down to the next point.

Point 3. The old fortifications at Rakokivenniemi

During the period when the backwoods of Savo and Karelia were becoming permanently settled, Punkaharju, owing to its strategic location, became the sight of arguments and fights between two tribes — the Savonians and Karelians — and later on between two nations — Russia and Sweden. At times the national border passed to the east of Punkaharju, and at times to the west. The Russians constructed considerable fortifications and trench networks at this point during the Finnish War in 1808–1809. The fortifications in the Punkaharju area were the most important Russian defences at the time, and earthworks can be found in other parts of the esker area and surroundings.

Point 4. The Kokonharju primeval forest area

A primeval forest is a forest area which is preserved in an untouched state, no cuttings or silvicultural measures being carried out. Nature determines how the primeval area develops, without the disturbing hand of man. The Finnish Forest Research Institute designated the Kokonharju area a protected primeval forest in 1924, immediately after it came under the institute's jurisdiction. The area covers about 15 ha. The only naturally-growing spruces in the Punkaharju area are to be found here.

The terrain in the Punkaharju area is of very variable altitude and soil type. The stand compartments are small and variable owing to reforestation and the experimental activity practiced in the area. The Punkaharju area thus offers an exceptionally variegated environment and an extensive range of different types of landscape.

Plants characteristic of the Punkaharju ridge include alpine milk-vetch (*Astragalus alpinus*) and *Oxytropis campestris*. Bogmyrtle (*Myrica gale*) is common along the shores, where the rare species hemp agrimony (*Eupatorium cannabinum*) can also sometimes be found. The handsome ostrich fern (*Matteuccia struthiopteris*) and touch-me-not (*Impatiens noli-tangere*) grow in fertile groves.

The rich and varied flora of Punkaharju also means it has an extensive fauna. Foxes and badgers roam freely in the area, and even racoons can occasionally be seen. Elk are common. Roe deer (*Capreolus capreolus*) have even been sighted. The birds which nest in the area include wood pigeon (*Columba palumbus*), wood grouse or capercaillie (*Tetrao urogallus*), black



The Kanerva pine, plus tree E1101, was named after its discoverer, District Forest Officer Yrjö Kanerva.

grouse (*Lyrurus tetrrix*), hazelhen (*Tetrastes bonasia*), nutcracker (*Nucifraga caryocatactes*), and of course many species of woodpecker which thrive in these old forests.

Point 5. Kanerva pine

Tree individuals with the best production and quality have been collected over the years in Finland for tree breeding purposes.



The trees in the Montell stand are Siberian larches over 100 years old. The stand was named after its founder, Forest Councillor Montell.

These trees, called plus trees, have to meet the following selection criteria: above-average production, good stem form, long and dense crown, thin branches, straight branching angle, thin bark. As these properties are all inheritable, tree breeding has utilized plus trees to produce better seedling material for the commercial forestry sector. The plus tree you see at this point has been called after its discoverer Yrjö Kanerva, for long the District Forest Officer at Punkaharju. The inheritability of the characteristics of this tree are clearly visible in its progeny

growing in the area, one of which has been selected as a plus tree. The first plus tree to be found in Finland was a Scots pine discovered at Punkaharju in 1947.

Point 6. Untouched Larch Stand

We can see here how well European larch (*Larix decidua*) thrives on a good site in the climatic conditions prevailing at Punkaharju. This larch stand, 1.7 ha in size, was established in 1880 on a burnt-over area using 3-year-old seedlings. The stand is now over 100 years old. There are three plots in the stand, two of which have been subjected to silvicultural thinnings, and the third left to develop as it is. The volume of the stemwood on the untouched plot is now about 1100 m³/ha and the annual growth about 13 m³/ha. The tallest trees are already about 40 m high.

Point 7. The Montell larch stand

This stand is of Siberian larch (*Larix sibirica*). The stand has been called after the man who established it, Forest Councillor Montell. Now that the stand is about 100 years old the volume of stemwood is about 550 m³/ha and the annual growth about 6.5 m³/ha. The tallest individuals are 41 m high. The properties and external appearance of European and Siberian larch are very similar. However, the best way of telling them apart is by their cones.

Point 8. Some of the tree species planted in Punkaharju

The first experiments to be established in Punkaharju were concerned with forestation, mainly using exotic species. By 1957 a total of over 500 plantations had been established, encompassing an area of 290 ha. 112 ha of this area is under exotic species comprising 55 different tree species.

The following plantations can be seen from this point:

On the right-hand side of the road there is a 50-year-old stand of Swiss mountain pine (*Pinus mugo*). Mountain pine grows in the mountains of Central Europe and forms bushy forest along the tree line. The mountain pines seen growing here represent, however, a variety with an upright stem. Mountain pine is a very popular decorative tree in Finland, which is planted in places where the trees should have a very low growth form.

The next species is Siberian larch (*Larix sibirica*). It grows naturally in northern Russia and the eastern part of Siberia. Larch is an unusual conifer in that it sheds its needles in the autumn. The needles are a beautiful green colour in spring and summer,

and the bright yellow needles remain on the trees long into the autumn.

Behind the larch stand is a stand of Siberian fir (*Abies sibirica*). Siberian fir also grows widely across northern Russia and Siberia. The crown, even in old trees, is very dense and the green branches reach down almost to the ground. There are some naturally regenerated Siberian fir seedlings in the larch stand. There is a Swiss stone pine (*Pinus cembra*) stand, about 50 years old, to the left of the road. Stone pine grows naturally in Russia and the northern parts of Siberia, as well as in the Alps. It grows well even on infertile sites. However it is at its best when there is plenty of light and nutrients.

To the left of the road there is a stand of Macedonian pine (*Pinus peuce*). This tree grows naturally in the mountains of Bulgaria and Jugoslavia. The needles of Macedonian pine are grouped into bunches of five, as is the case with stone pine. Although it otherwise closely resembles stone pine, the cones of Macedonian pine are long and those of stone pine egg-shaped.

The birch stand at this point is curly-grained birch, a variety of silver birch (*Betula pendula*) with a very variable growth pattern. It usually has a rounded crown and is strongly forked.

Point 9. The Arboretum

The arboretum was established close to Punkaharju railway station and the highway to make it easily accessible to people



The Finnish Forest Research Institute's research station at Punkaharju specialises in forest tree breeding.

interested in the raising of exotic tree species. There is a small stand of 47 different exotic tree species in the arboretum. In addition, there are stands of domestic tree species of different geographical origin, and some old pine and birch stands. The arboretum was established at the end of the 20's, beginning of the 30's.

The creation of the Punkaharju arboretum and the execution of many of the extensive silvicultural experiments established in the experimental area are the result of pioneering work carried out by the earlier director of the Finnish Forest Research Institute, Prof. Olli Heikinheimo.

The nature trail now continues along the road over the railway line, past the new tree breeding research station. This is the most important centre of experimental tree breeding in Finland. Unless you want to continue to the Finlandia Hotel along the path, you can cross the road to Punkaharju station where Artist Niilo Lehikoinen carves wooden reliefs of themes from Kalevala, the Finnish national epic.

Point 10. The Finlandia Hotel

“Finlandia Aktiebolag för Internationell Turisttrafik” (Finlandia Company for International Tourism) was founded in Helsinki in 1905. The aim of the company was to create and promote tourism to and from Finland. The Finlandia Travel Agency, which as far as we know was the first agency in Finland to arrange package tours to and from Finland, was set up by the company for this purpose. At that time Punkaharju was already well known internationally as a tourist attraction, but there were no accommodation facilities available. The company decided to build a hotel to improve the services in the Punkaharju area, and bought the Kotila Farm in Punkaharju for this purpose. It was originally intended to build the hotel of wood, but the building authorities did not approve the drawings prepared by architect Knut Wasastjerna. New drawings were prepared by Architectural Office Walter & Thome. The building was constructed of the “best tiles”, plastered inside and out, set on a granite foundation. The new, magnificent hotel was christened Finlandia. It was intended to be a distinctive monument for both the company that built it and the whole country. The hotel opened its doors to the first guests on the 20th of July, 1914. During the first years the hotel was a favourite holiday place for the aristocracy from St Petersburg (nowadays Leningrad). In 1916, for instance, over half the guests were Russian.

However, the hotel was in financial difficulties right from the beginning. The First World War struck a serious blow to tourism. Finlandia soon changed owners, but was eventually turned over to the state in lieu of debts. The state first rented

and then sold the hotel in 1936 to the Finnish Tourist Association, nowadays the Finnish Tourism Federation. The buildings fell badly into disrepair during the period it was owned by the Tourism Federation. The state then bought back the buildings and leased them to the Punkaharju Rehabilitation Hospital. At the same time the state made the tenants responsible for carrying out a full renovation of the buildings, which was finished in 1982. An auxiliary ward of the Rehabilitation Hospital, with beds for 38 patients, is now operating in Finlandia. It also houses the Finlandia Cafeteria.

Just as Valtionhotelli with its villas represents the early days of tourism at Punkaharju and in the whole country, the Finlandia Hotel has been a hallmark of quality in its own time.

Point 11. Pususilta (Kissing Bridge) and Puruvesi

Pususilta is an indication of the fact that Punkaharju was, already in the early days, a popular tourist and recreation resort and that a lot of trouble was paid, even in the old days, to the comfort and enjoyment of visitors. The bridge was built by the Finnish Tourist Association in the 1930's to shorten the trip from the Finlandia Hotel to the esker area and Valtionhotelli. The bridge apparently got its name from the romantic feelings which the beautiful surroundings inspired in those using the path and bridge.

Puruvesi, of which only a small inlet can be seen at Pususilta, is about 40 km long and 30 km at its widest point. It stretches through three communes — Kerimäki, Kesälahti and Punkaharju. The total area is 578 km². The water is relatively shallow — the average depth less than 10 m although the deepest point at Hummonselkä near Kesälahti, is about 60 m. The water is exceptionally clear and well-stocked with fish — especially with tasty vendace. Puruvesi vendace are seine-fished in both winter and summer and are sold as far away as the market in Helsinki. Even nowadays Puruvesi is an important waterway for log floating.

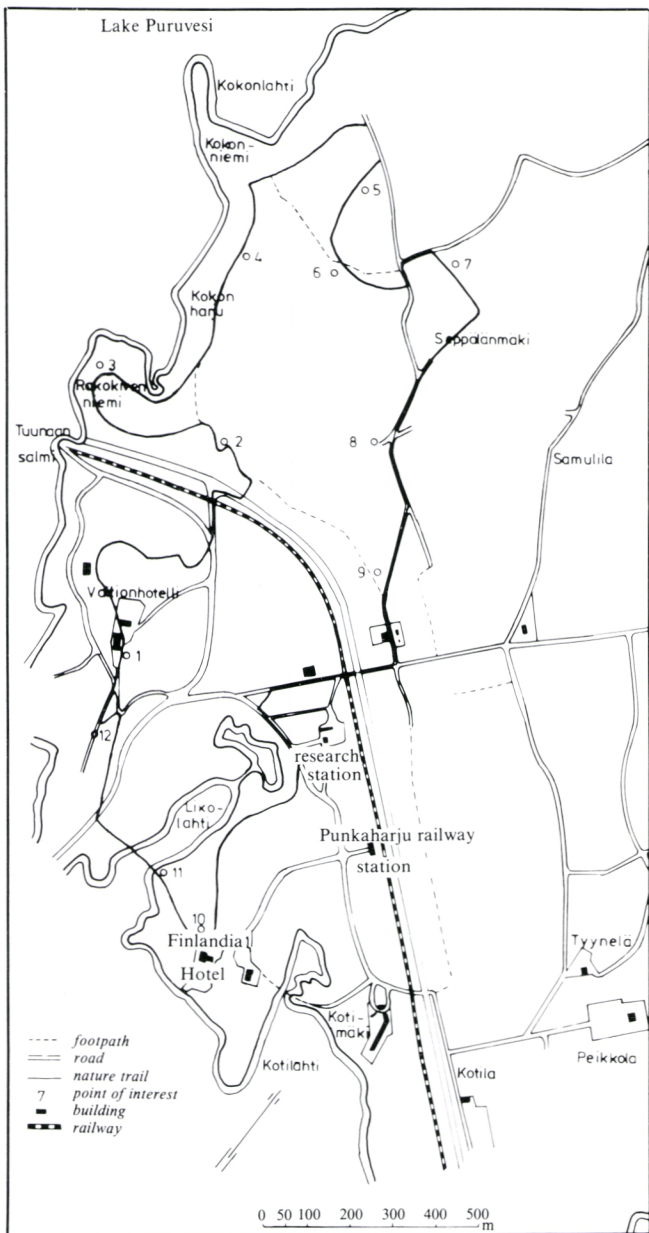
Point 12. The esker and the old road

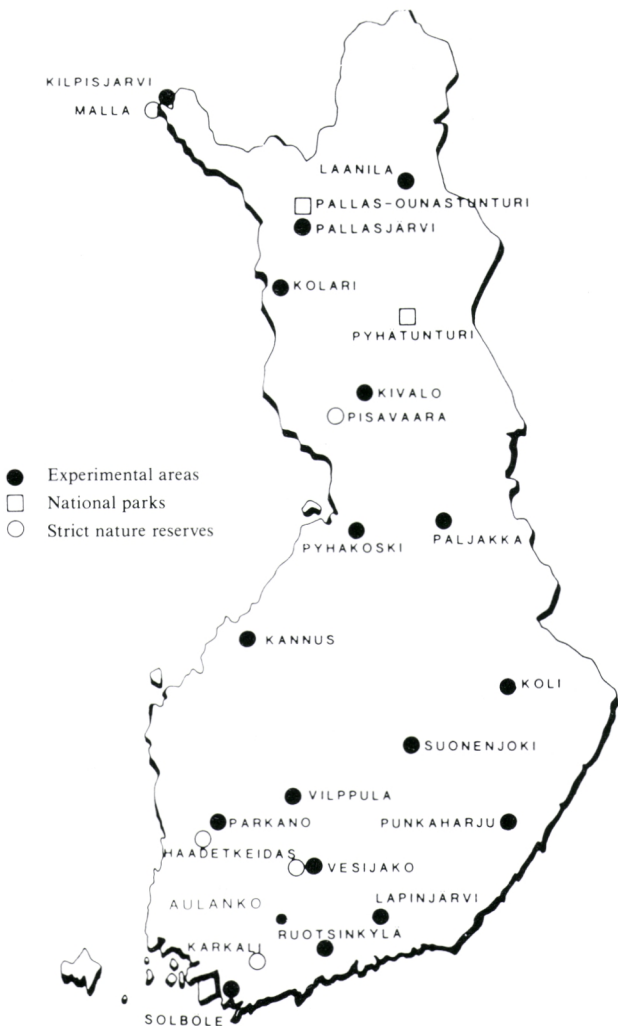
This 7-km-long sand and gravel esker was formed at the time when the continental ice sheet melted and receded, from the SE to the NW, about 8 500 years ago. The heavy morainic and sandy material carried by the glacier melt water formed layers at the edge of the glacier, the finer material being washed out and carried away into deeper water. Most of the area was covered by water at the end of the last ice age. As the ice sheet melted and gradually receded, the lines of sediment deposits also followed the edge of the glacier, leaving transverse eskers. Punkasalmi in

the SE and Tuunaansalmi in the NW separate Punkaharju from the mainland.

The pines growing along the esker are in places over 150 years old, although if you climb up to the top of the esker from Pususilta you may be able to see vigorous young pine stands. However, you can also see that a number of old trees have reached the end of their biological cycle, and have died standing. These old faithfuls are gradually removed and space provided for new trees. This means that the tree stand running along the esker is maintained in a vigorous and resistant condition.

The old road which runs along the top of the esker has originally been a track used by backwoodsmen, which developed over the centuries into an important route from Savonlinna to Vyborg. The Russians built a road along the esker already at the time of the Peace of Turku in 1743, marking the end of the "Lesser Hate" War. Traffic across Punkasalmi and Tuunaansalmi was by ferry already in ancient times. The original stone railings can still be seen alongside the old road, the oldest apparently dating from the 1830's. The narrow esker road was rebuilt starting in 1937, and was paved in the 1950's. The last stage in the life of the esker road took place in summer 1976 when the so-called esker by-pass, running alongside the railway line finished in 1908, was opened to traffic.





Research forests of the Finnish Forest Research Institute.

The Finnish Forest Research Institute, founded in 1917, is a state-owned research organisation, which is subordinated to the Ministry of Agriculture and Forestry. Its main task is to carry out research to promote Finnish forestry and the expedient use of Finland's forest resources. The Institute has nine departments, ten research stations and a staff of 800. For research and experiment purposes the Institute administers some 150 000 hectares of State forests all over the country, which include two national parks and five strict nature reserves.

